

Elementary Economics and Statistics

CLASS- XI



**BOARD OF SECONDARY EDUCATION, RAJASTHAN
AJMER**

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Elementary Economics and Statistics

Class - XI

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PREFACE

The book "Elementary Economics and Statistics" has been written according to the new syllabus of Economics for class-XI prescribed by the Board of Secondary Education, Rajasthan. This book is very useful and important in providing the theoretical knowledge of Economics to students.

In writing this book, based on new syllabus, it has been tried that students should not only be familiar with the study of economic behavior of human being but also with the economic environment all around us. Examples and diagrams have been used as per requirement to explain the economic theories in the simpler way. Simple examples have been given to analyse the chapters on Statistics. Each chapter follows the important points which can be helpful for students also.

All the officials of Board of Secondary Education, Rajasthan extended their valuable cooperation and facilities in preparation of this book for which I am thankful to them.

Even after keeping caution and alertness, there can be some shortcomings and mistakes in the work. Students and teachers are requested to give their valuable suggestions for further improvement in the book.

CONVENER

Syllabus

Economics Class-11th

Time : 3.15 hours

Subject code : 10

M. Marks : 100

Section – A : Elementary Economics and Statistics

Unit – 1 : Introduction 10

1. Meaning and definitions of Economics : Wealth, material welfare, scarcity and development related definitions.
2. Nature and Scope of Economics : Consumption, production, Exchange, Distribution and public Finance.
3. Economy : Meaning, types and characteristics.

Unit – 2 : Stages of study of statistics 12

1. Meaning, definition and scope of statistics, role of statistics in economics, limitations of statistics.
2. Collection of data : Primary And secondary data, methods of collection, population and sample, main sources of secondary data.
3. Classification of data : Individual, discrete and continuous series; exclusive and cumulative frequency series.
4. Presentation of data : Tabulation, graphical presentation, simple bar diagram, rectangular diagram, histogram, frequency curve, frequency polygon, circle, concept of slope.

Unit – 3 : Measures of central Tendency 14

1. Arithmetic Mean : Meaning, calculation and uses.
2. Median : Meaning, calculation and uses.
3. Mode : Meaning, Calculation and uses.

Unit – 4 : Indian Economic Ideas

1. Ancient Indian economic concepts : Emergence of wants in Indian philosophy, controlled consumption, co-consumption, earning of wealth and code of conduct of wealth earning vedic nature of environment.
2. Economic ideas of Kautilya.
3. Economic ideas of Pt. DeenDayalUpadhaya.

4. Economic ideas of prof. J.K. Mehta.

Section – B : Indian Economy 20

Unit – 1 : Indian Economy on the eve of independence- Condition of agriculture, industry and infrastructure. 05

Unit – 2 : Development Policies and experience 15

1. Economic planning –Meaning, objective, brief introduction of five year plans, detailed analysis of 12th five year plan, NITI Aayog.
2. Agriculture Development – Role of agriculture in Indian economy, land reforms, agricultural productivity, agricultural inputs, green revolution, agriculture finance, pollution free agriculture development.
3. Industrial Development – Role of industrial sector in Indian economy, problems of industrial development, latest industrial policy, role and problems of small and cottage industries, role of ‘Make in India’ plan in industrial development of India.

Unit – 3 : Foreign trade of India 06

Composition, direction, recent trends, latest export-import policy, measures of export promotion, concept of swadesi.

Unit – 4 : Recent Challenges of Indian Economy 12

1. Poverty : Meaning, types, measurement, present position, causes of poverty and measures of poverty alleviation.
2. Unemployment – Meaning, types, measurement, present position, causes and measures of unemployment.
3. Environmental Pollution – Types, causes, measures of control, concept of sustainable development.

Unit – 5 : Economy of Rajasthan 12

1. Position of Rajasthan in Indian economy.
2. Natural Resources in Rajasthan : Land, water, mineral, forest. Present position, conservation and promotion of natural resources.
3. Human resource development in Rajasthan.
4. Tourism development in Rajasthan.
5. Obstacles in economies development of Rajasthan and measures to remove them.

INDEX

Section - I

Unit	Chapter No.	Chapter Name	Page
1. Introduction	1.1	Meaning and Definition of Economics	1-8
	1.2	Nature and Scope of Economics	9-15
	1.3	Economy or Economic System	16-28
2. Stages of Statistical Study	2.1	Meaning and Definition of Statistics	29-33
	2.2	Collection of Data	34-40
	2.3	Classification of Data	41-52
	2.4	Presentation of Data	53-65
3. Measures of Central Tendency	3.1	Arithmetic Mean	66-75
	3.2	Median	76-81
	3.3	Mode	82-90
4. Indian Economic Thought	4.1	Ancient Indian Economic Concepts	91-102
	4.2	Economic Ideas of Kautilya	103-112
	4.3	Economic Ideas of Pt. Deendayal Upadhyay	113-122
	4.4	Economic Ideas of Prof. J.K. Mehta	123-131

Section - II

1. Indian Economy on the Eve of Independence	1.1	Indian Economy on the Eve of Independence	132-138
2. Development Policies And Experiences	2.1	Economic Planning	139-149
	2.2	Agricultural Development	150-162
	2.3	Industrial Development	163-177
3. Foreign Trade of India	3.1	Foreign Trade of India	178-192
4. Recent Challenges of Indian Economy	4.1	Poverty	193-202
	4.2	Unemployment	203-214
	4.3	Environmental Pollution	215-222
5. Economy of Rajasthan	5.1	Position of Rajasthan in Indian Economy	223-228
	5.2	Natural Resources in Rajasthan	229-238
	5.3	Human Resources Development in Rajasthan	239-248
	5.4	Tourism Development in Rajasthan	249-256
	5.5	Constraints in the Economic Development of Rajasthan & Remedial Measures	257-262

SECTION - I

Chapter - 1.1

Meaning and Definitions of Economics

Human being is a social animal and Economics is a social science. Living in the society, human being performs many economic activities. Human being purchases goods for satisfying the needs of individuals and family, performs agriculture, establishes industries, sells produced goods, does services, works in industry and gives services for earnings. All these are the economics related activities.

Economics is the study of the complete work organized by human being. Economists like Samuelsson calls Economics as the Queen of social science. The whole structure of Economics is based on two things:

1. Resources which are scarce,
2. Wants which are unlimited

Human being and society produce goods and services by using scarce resources economically and thus they satisfy their wants.

Definition of Economics :

Before study any subject, it should be defined because the definition provides the subject matter, nature and scope of a subject. Economics is a growing subject. Because of the difference in the nature of economic activities and the continuous changes in them the economists are not having the same views on the definition of Economics. Different economists had given different definitions of Economics time to time and each

economist had defined Economics according to the circumstances. Smt. Barbara Wotten correctly said "there are seven views where there is six economists." For the simplicity there are five types of definitions of Economics, namely:

- (a) Wealth centered definitions
- (b) Welfare centered definitions
- (c) Scarcity centered definitions
- (d) Wantlessness definition
- (e) Development based definitions

a. Wealth Centred Definitions:

Prof. Adam Smith, J.B.Say, Walker, and other economists gave such definitions of Economics whose centre point was "wealth". In the book of Prof. Adam Smith "An Enquiry into the Nature and Causes of Wealth of Nations," publish in 1776, The Economics was defined as "Economics is the science of wealth".

According to Walker, "Economics is that branch of knowledge which is related with wealth."

According to J.B.Say, "Economics is the science which studies the wealth."

All the classical economists assumed that the ultimate objective of economic activities of human being is to earn wealth. Many thoughts had been developed which created illusions in Economics. This resulted into the view that

Economics considers the human being who loves wealth or money. But in the beginning of the 19th century some economists started by saying that wealth is a mean for the human life and thus it is not correct to relate Economics with the analysis of emergence of the wealth. This view was criticized.

Criticism :

i. More Emphasis on Wealth:-

In these definitions more emphasis has been given to wealth. Wealth has been considered to be a goal of end while to get wealth is not a goal but a mean which is used to satisfy the wants.

ii. Improper Imagination of Economic Human Being:

According to the old economists work done by human being is governed by wealth incentive and selfishness. But this is wrong thinking. In reality, human being gets worked being governed by the incentive based on love, pity and other human spirits.

iii. Narrow Scope of Economics:

Under these definitions of Economics wealth included only the physical goods and thus services (doctors, engineers, avocats, teachers, etc.) have been ignored. Thus the scope or Economics has been narrowed down.

b. Welfare Centred Definitions :

In 19th Century, economists like Prof. Marshall, Pigou and J.S.Mill explained that the objective of Economics is not to analyse the nature and origin of wealth only. It is more important to analyse the fact that wealth should be used to satisfy the wants and to increase the material welfare of the society rather than to analyze the nature and origin of wealth. Marshall emphasized economic welfare of human being more than wealth.

According to Marshall- "Economics is the study of common business of human life. Under this that part of individual and social activities is evaluated which is deeply related with the consumption and the achievement of the resources of material bliss."

According to Pigou, "Economics studies the economics welfare and it is limited upto that part of welfare which can be directly or indirectly related with money as the measuring device,"

In brief, according to Marshall, Pigou and other economists Economics is the study of "material welfare".

Explanation of Definition of Marshall

The main points of definition given by Marshall are given as below:

1. Human being more Important than Wealth:

Marshall emphasized human welfare more than wealth. According to him "wealth is for human being and human being is not for wealth." Thus human welfare is most important.

2. Study of Human Being as Social, Normal and Real:

Economics studies the activities performed by socials, normal and real human being. Economics does not study economics activities of abnormal, unsocial and unreal people like saints, etc.

3. Study of Normal Business/Occupation of Human Life:

Marshall studies the normal occupation in Economics. political, social, moral, religious and cultural aspects of human activities are not studied in Economics and thus only economic aspects are studied. This economic aspect includes the activities of production, consumption, exchange, distribution and public finance.

4. Study of Material Welfare of Human Being:

According to Marshall human being is a social animal. Thus, study of Economics includes only those activities which are directly related with the wealth and increase of material welfare from the wealth.

Criticism of Welfare Centred Definitions:

In 1932 Prof. Robins, in his book "An Essay on the Nature and Significance of Economic Science", said that the welfare centered definitions of Economics are narrow, impractical and illusory and Marshall and his supporters criticized these definitions as below:

1. Improper Classification of Recourses as materials and Non-Material:

Marshall limited the subject matter of study of Economics only upto the consumption of and obtaining the material resources. But in reality resources are non-material also, e.g. doctor, engineer, labourer, advocate, etc. who render their services and thus these services are also studied in Economics.

2. Economics is not a Social Science only:-

It is not correct to consider Economics as social science only because economic laws are applied on people who live in society as well as on people who do not live in society. So Economics is a human science. For example, law of diminishing marginal utility, law of equi-marginal utility and other laws are equally applicable on all people.

3. Improper to Establish the Relation of Economics with Material Welfare :

According to Robins, the relation of Economics cannot be established with the causes of material welfare. Robins considered the concept of welfare as defective on the basis of these grounds.

i. These are such activities whose production and consumption is not welfare oriented, as

liquor, but these are studied in Economics.

ii. Welfare can not be measured with proof. Welfare can not even be measured in terms of money because welfare is a psychological and spiritual feeling.

4. Economics is Indifferent to Objectives:

When the relation of Economics is established with welfare it means that economists have to take decisions about good and bad economic activities which becomes related with normative science. Robins considers Economics as a positive science which does not take decisions about good and bad economic activities but decides on the ground of reality.

5. Narrow Scope of Economics :

According to Marshall economics does not include the production and consumption of non-material resources, unsocial and non-economic activities and these the welfare centered definitions are criticized also.

(c) Scarcity Centered Definitions:

Prof. Robins gave a new approach to Economics. He emphasized more neither to wealth nor to human welfare but he tried to establish the relation between unlimited wants and limited resources. Robins defined Economics with a new approach.

According to Robins, "Economics is the science which studies the human behavior related with the ends and the limited an multi-use resources." Thus Robins gave a new definition of Economics in which following four points are important :

i. Human wants (ends) are unlimited and infinity

ii. Resources with people are limited which have to be used to satisfy human wants. In this situation people have to face the problem of choice of wants.

iii. Resources have their alternative uses. Due to

this the scarcity of resources increases more and thus problem of choice has to be solved. The problem of choice is always there with us.

- iv. There is difference in the intensity of needs some needs are more intensive while some are less intensive. This difference in the intensity of needs helps in the solution of the problem of choice. A rational person keeps his/her needs according to the preference.

It is clear from the above analysis that wants are unlimited and resources are limited and thus there is the problem of choice to be faced by human being. Robins calls it as the economic problem.

Criticism of Robins Definition:

Economists do not consider the definition of Economics given by Robins as errorless. Following are the criticisms:

1. Scope of Economics Wider than Need:

Robins considers Economics as a human science and its subject matter thus becomes the choice of all types of human activities. It makes the scope of Economics wider and thus the formulation of economic theories, analysis of economic problem and their description have become more complicated.

2. No Proper Attention to Social Character of Economics:

According to Robins the activities of people living out of the society are also studied. But Economics is required only when economic problems take the form of social problems and thus activities of one human group affect the activities of another human group.

3. Economics not only the Theory of Value:

The definition of Robins studies only the fact that how the factors are allocated in the production of different goods and as result of this how the factor prices are determined. But scope of

Economics is much wider than the resource allocation and the resource price determination.

4. Indifference of Objectives:

According to Robins, Economics is related only with resources. It studies how the objectives, for which the limited resources are used, are determined. If we do not know the correct information about objectives, we can not make the maximum use of resources. If Economics is indifferent to objectives, then there will be no importance of economic plans in the present era.

5. Economics not only a Positive Science but an Art also:-

If Economics is assumed to be a positive science then it remains a subject of only the theory formulation. According to economists who criticize the Robins definition, Economics not only aims to manufacture equipments but to show the way of their application also. Thus Economics is normative science and is also along with the positive science.

6. Static Definition:

Robins assumes that ends are constant or stable which are always changed in practical life and thus resources are changed. Thus the nature of definition of Robins is static and lacks dynamic nature.

7. Cause of Economic Problems:

Economic problem is created due to scarcity. This statement of Robins is not correct. Opposite viewers are of the view that economic problem is not only due to scarcity but it is due to abundance also. For example, the cause of 1930's economic depression was the over production.

Thus, even after having some demerits, definition of Robins is logical and it strengthens the scientific foundation of Economics. This definition gives more importance to the issue of choice making. In recent years the importance of "Economic Growth" has increased and the issues of national income, increase in per capita income,

growth of productive capacity, etc. are not found in this definition.

(d) Wantlessness Definition:

The famous Indian economist and Professor of Allahabad University, Prof. J.K. Mehta, defined Economics in the view of Indian ethics. This definition of Economics is completely different from the western approach and is based on wantlessness. The western approach is concerned with the satisfaction of maximum needs while Indian approach is concerned with reduction of needs or ending the needs rather than satisfying the maximum needs. According to Indian approach the maximum satisfaction can not be obtained by want satisfaction but can be obtained by reducing the number of wants.

Thus according to Prof. Mehta, "Economics is the science which studies how the human behavior can be reached into the state of wantlessness." Following facts are clear from this definition-

1. Human behavior is governed by the lack of mental peace and balancelessness. According to Prof. Mehta, this balancelessness is the result of the difference between human wants and resources available to satisfy these wants.
2. The ultimate objective of human being is to get happiness in the life. Human mind is completely balanced in the state of wantlessness and this is the happiness. The ultimate objective of Economics is to maximize this happiness.
3. According to Prof. Mehta the objective of Economics is not to increase the satisfaction but it is to increase the real happiness in the life. The real happiness can be obtained by reducing the wants.

Prof. Mehta says that human being can experience the real happiness only in the

state of mental balance. There are two methods of achieving the mental balance:-

- i. To reduce the difference between wants and the resources to satisfy these wants.
 - ii. Mental state should not be affected by external forces.
4. To achieve the wantlessness human being should reduce the resources upto that limit so that mental imbalance can not be created. Human being should reach the ultimate objective so that no want can be experienced.

Criticism of Prof. Mehta's Approach:

Economists criticized the definition of Economics given by Prof. Mehta. According to them modern period is the materialistic period in which wants can not be reduced. Material wants are increasing continuously. Following are the main criticisms:

1. Difficult Imagination of Wantless Human Being:

In the modern time nobody is ready to sacrifice wants and tries to get the maximum bliss or happiness. People think that bliss and sorrow are the two unseparate parts of human life and thus are associated with the life. Wants can not be reduced.

2. Improper Concept of Maximum Bliss:

The critics consider the concept of Prof. Mehta as contradictory. According to them, on one hand, Prof. Mehta talks to reduce wants and on the other hand explains the concepts of maximum bliss. Practically, when we try to reduce wants slowly we feel mental dissatisfaction. In this situation it is not possible to get the maximum bliss or happiness.

3. Existenceless Economics:

Economics is mainly based on the unlimitedness of wants. If needs are reduced slowly and thus wantless situation will be

obtained. As result, it will end all the economic activities automatically and thus Economics will become existanceless.

4. Economics Completely not a Normative Science:

Prof. Mehta considers economics a normative science while Prof. Robins considers Economics a positive science.

In reality Prof. Mehta imagines such period which is not possible in the today's materialistic world. It is not also correct to say that the approach of Prof. Mehta is associated with the life of poor, saints, etc. Prof. Mehta advocates the achievement of real bliss or happiness in the life.

(e) Development Based Definitions:

Modern time is the time of development. So there have been changes in the definitions as Economics with development of the subject of Economics. After the definition the of economics given by Robins (1932) the subject matter of Economics has changed a lot. Specially the subject matter of economic development has been changed drastically. Now such type of definition of Economics should be given which emphasizes more the economic development rather than only the distribution or allocation of limited resources. Modern economists like Samuelson, Peterson, Ferguson, etc. defined Economics.

According to Samuleson, "Economics studies that how individuals and society allocated the limited resources (with alternative uses) in the production of goods and how these goods are distributed among different groups for the consumption in present and future times by using money or by not using it" This definition of Samulelson can be understood as below:

1. Samuleson gives more importance to the choice behavior of human being and the scarcity of resources.

2. According to Samuelson the problem of resource allocation under barter system is important.
3. Definition of Samuelson is dynamic. This definition includes the elements of both the definitions given by Marshall and Robins.

According to Prof. K.G.Seth- "Economics studies that human behavior which is related with the development and changes in resources in reference of the ends."

According to Prof. Hicks,- "Economics studies the specific aspects of human behavior. Economics is that science which studies the business activities." Modern economists present the development and welfare oriented approach of the Economics which is nearer to the positivity.

Important Points:-

- Economics is a developing and dynamic subject.
- Economists are not having same view on definitions of Economics.
- The wealth centered definitions have been given by Adam. Smith, J.B. Say, Walker, etc.
- In Wealth centered definitions of Economics wealth is the central point.
- Welfare centred definitions of Economics have been given by Marshall, Pigou, etc.
- The central point of welfare centred definitions is the human welfare and not the wealth.
- Scarcity centred definitions have been given by Robbins in which the relation between human behavior and scarce resources, with many applications, is studied.
- Prof. Samuelson gave development centered definitions in which the growth and development of resources are emphasized.

- The wantless definition of Economics has been given by Prof. J.K. Mehta.

Questions For Exercise:

Objectives Type Questions:

- Who gave the wealth centred definition ?
 (a) Marshall (b) Samuleson
 (c) Adam Smith (d) Robins ()
- Who gave welfare centered definition of Economics ?
 (a) Robins (b) Pigou
 (c) J.K. Mehta (d) All of the above ()
- The definition "Economics is the study of economic welfare" is related with –
 (a) Wealth centered definition
 (b) Economic development centered definition
 (c) Welfare related definition
 (d) Scarcity centered definition
- To which definition the effort to establish the relation of unlimited wants with limited resources, is concerned ?
 (a) Wealth Centered Definition
 (b) Economic Development Centered Definition
 (c) Scarcity Centered Definition
 (d) Welfare Related Definition
- Who considers Economics as the positive Economics ?
 (a) Marshall (b) Pigou
 (c) Robins (d) J.S. Mill ()

Very Short Answer Questions:

- Write the thoughts of Marshall about Economics.

- What is the wealth centered definition of Economics according to Smith ?
- Give the scarcity centered definition of Economics.
- What type of science is the Economics according to Marshall ?
- Who is the economist according to whom Economics is the science of choice ?
- What type of science the Economics is according to Robins ?
- What is the wantlessness centered definition according to J.K. Mehta?

Short Answer Questions:

- Write any two criticisms of the wealth centered definitions.
- According to Marshall the main subject matter of Economics is the human welfare and not the wealth. Explain it.
- What is economic problem according to Robins ?
- What are the main elements of the development centered definition of Economics ?

Essay Type Questions :

- Analyse critically the definitions of Economics given by Marshall and Robins.
- Critically describe the welfare centered definitions of Economics.
- Critically evaluate the development centered definitions of Economics. Explain the Indian approach in this regard.
- "Economics was science of wealth, now it is science of human being." Explain this statement.
- Critically describe the "Scarcity" definition of Economics.

Answer to Objectives Type Questions:

(1) c (2) b (3) c (4) c (5) c

Reference Books :

1. Marshall – Principles of Economics, 8th Edition.
2. Joan Robinson- The Second crisis of Economic Theory (1974).
3. Boulding- "Principles of Economy
4. Robins - Nature and Significance of Economic Science.

Chapter - 1.2

Nature and Scope of Economics

The issue of different approaches to define Economics is a debatable one which created many problems in determination of the proper area of research in this subject. Economics is a developing dynamic social science. We study all economic activities in Economics. There are many different views in economics about nature and scope of economics because of the continuous changes in economic activities of human life and naturally contradictory definitions of economics. According to some economists the scope of economics is narrow but some other economists consider it to be broad. Prof. Keynes includes three elements in the scope of economics.

- (1) Subject matter of Economics
- (2) Nature of Economics
- (3) Relation of Economics with other sciences.

Subject Matter of Economics:

Following are the main approaches to the subject matter of economics.

1. Classical View :

Adam Smith, J.B. Say, Senior, J.S. Mill, etc. are the supporters of this approach. In the wealth centered definition given by Adam Smith economics relates with earning and accumulating wealth. According to this approach issues like what is wealth, how it is utilized, how it is distributed, etc. are studied in economics.

2. Welfare Economists' Approach:

According to Marshall, Pigou and some other economists the main subject matter of economics is human welfare instead of wealth and thus wealth is for people and people are not for wealth. According to Marshall, only economic activities related with physical welfare are the subject matter of economics. Robins's scarcity centered definition extended the scope of economics. Robins considers economics as humanity based science and thus economic choice between limited resources and unlimited wants became the subject matter of economics.

As result of continuous division of economic activities the subject matter of economics became broad. The subject matter of economics can be divided in five parts as consumption, production, exchange, distribution and public finance.

1. Consumption:

Consumption is the economic activity which is related with utilization of utility of goods and services for direct satisfaction. Consumption is both the start and end of economics because all the economic activities like production, exchange, distribution, etc. are performed for consumption only.

2. Production :

Production related with the creation of utility or value of goods and services. The activity of making bread is production. land, labour,

capital, organisation and entrepreneurship are the main factors of production.

3. Exchange:

The activity of exchange is related with buying and selling of good or factor of production. Exchange is required for the consumption of produced goods and satisfaction of wants. Due to the problems in barter system money was discovered which made the activity of exchange simpler. Now, we use money in selling and buying of goods and factors of production. Theory of price determination is based on money.

4. Distribution :

The joint effort of all the factors of production results in to production. So determination of rate of payment to factors of production is necessary which is related with the income distribution among factors of production. Under income distribution it is known that what is national income, how is national income calculated, how interest, wage, rent and profit are determined It is also ensured whether the distribution of national income is in a justified way. Presently the state interference is continuously increasing.

5. Public Finance :

In this activity we study the issues related with public revenue, public expenditure, public debt, deficit finance, tariff policy, etc. The subject matter of Economics has changed with the time.

Nature of Economics:

Under nature of economics, following issues are considered.

1. Is economics a science ?
2. If economics is a science, is it positive science or normative science ?
3. Is economics an art ?
4. Is economics both science and art ?

1. Is Economics a Science ?

The systematic and complete study of

knowledge which explains the cause and effect relationship is known as science. Science analyses and studies any event. This study is of the systematic nature. On the basis of this analysis and study for casting can be possible. On the basis of the following arguments it can be said that economics is a science.

(a) Use of Scientific Method :

Economics uses the scientific method to study cause and effect relationship between two or more variables and to construct or formulate the economics theories and laws. The behavior of individuals and groups is observed, hypothesizes are formulated & tested and then economic laws are constructed. Clearly speaking, economics uses the scientific method.

(b) Power to Explain:

Economics has the power to explain the economic phenomenon correctly and sufficiently after construction of general laws.

(c) Power of Prediction :

Because economics has the explanatory power so it can predict the economic phenomenon. The power of prediction of economics has increased more due to the use of mathematical & statistical tools and application of modern computers and more development of economic policy.

(d) Systematic Study:

Economics studies only the activities relating with wealth like consumption, production, exchange, distribution, etc. This study of all economic activities is a systematic one.

(e) Validity of Laws:

In every science the validity of laws is tested. Economic laws are based on human nature which is equally applied on the people of all the countries of the world.

(f) Cause and effect Relationship:

Many economic laws (law of diminishing

marginal utility, law of equi-marginal utilities, law of demand, etc.) explain the cause and effect relationship. Thus economics is science on this basis.

Economics is a Science - Arguments Against It:

Many economists do not consider economics as a science on the basis of the following arguments :

(a) Lack of Uniformity:

There is no uniformity about any special event of economics. In other words, analysis of any event can not be done in single way. There are different ways to analyse any event used by different economists.

(b) Disarguments:

There are disarguments among economists on the issue of considering economics as a science. They do not consider economics as a science.

(c) Not Objective :

Economics can not be an objective subject like natural sciences because its subject matter is human being. Economics studies human related economic activities and not the non-living goods. Economist is also a human being so his approach and opinion affects his analysis and research studies. In this way economics can not be objective science.

(d) Economic Laws are not Exact :

Laws of natural sciences are general and completely certain, for example, The law of gravitation. But laws of Economics are not completely certain.

2. Positive Science and Normative Science:

If Economics is a science then the question is to decide whether economics is positive science or normative science. Before the explanation, it will be appropriate to understand their meaning-

Positive Economics :

As Positive economics, Economics studies the relationship between causes and effects. It explains that what is it? Why is it ? and how is it? Positive economics does not relate with goodness or badness, correctness or wrongness of economics functions. It is based on rationality.

Normative Economics : Normative Economics explains the policy related facts, like what ought to be, what should be done in given situation, etc. as normative science highlights the goodness and badness of economic functions.

Arguments in favour of Economics is Positive Science :

Classical economists, Prof. J.B. Say, Senior, and modern economist Robins consider economics as positive science. According to Robins, "Economics studies testable facts while ethics studies the facts of evaluations and discoveries."

- i. Positive approach in economics gives systematic, logical and correct economic conclusions because logic is the base of cause and effect relationship.
- ii. Positive approach can postulate strong economic theory on the basis of positive assumptions and scientific analysis.
- iii. If only the positivity of economic activities are studied in economics then differences in economists will be less, they will be having more common views and nature of economics will be more intensive.
- iv. According to Robins, human being must work according to the best efficiency keeping in view the scarcity of resources. People should do that work in which they have specialization. If all the activities are done, the time and money are wasted. Thus, economists must keep themselves limited upto causes and effects. Economists should

not touch the issues relating with what should be done and what should not be.

Arguments in favour of "Economics is Normative Science :

Fraser, Henderson and Quandt and some other economists considers economics as normative science. Following arguments can be given in this favour-

i. Human being is sensitive and logical :

Human being is sensitive and logics oriented so it is necessary to study both approaches of human behavior namely positive and normative. Thus economics is both positive science and normative science.

ii. More Useful:

Economics really aims the social welfare so, use of economics as normative science is more important. Economists should also think (alongwith the study of economic activities) how these activities can be more useful and effective.

iii. Wrong Argument of Division of Labour:

It is not correct to say that economist should study a subject, explain the cause and effect relation and the responsibility of getting solutions to be given to ethicists and political leaders. As result of this the positive analysis will become interest less and without incentives and thus there will be no saving of labour and power. So, capacity of taking decisions should be given to economists.

iv. More Realistic:

The nature of economics is a changing phenomenon. Today Economics is being developed rapidly as welfare economics. Subjects like economic planning and social security have become vary important. In this situation the normative approach of economics can not be ignored. More realistic situation will take place when economists give suggestions about concrete measures like rapid economic

growth rate, increase in employment levels and economic stability.

v. Helpful in Social Betterment :

If economics works for social betterment then the normative approach to economics can not be forgotten. Economics is social science also.

It is clear from above analysis that economics is both of positive and normative science. Economics can be considered as pure and realistic economics.

3. Economics as an Art:

Economists do not have same opinion whether economics is an art. Adm Smith, Ricardo, Mill., Marshall, Pigou etc. say that economics is an art. While Walras, Shumpeter, Senior and some economists do not consider economics as an art.

Before judging whether economics is an art, we should look into the meaning of art.

Meaning of Art :

Generally getting any work done with efficiency is known as art. Art provides us applied knowledge. Art not only analyses the problem but it solves it also. Prof. Keynes says- Art is that branch of knowledge which shows the best way for the satisfaction of certain objectives.

Arguments Against Treating Economics as an Art :

Following are the arguments in this regard-

- i. There is difference in the nature of art and science. Science discovers something and then explains it while art gives the applied information of a subject. Science constructs theories while art gives the real shape to these theories. So, if economics is considered as science it can not be an art.
- ii. Economic problems are not always economic but they are also affected by

social, political and religious circumstances. So it is not possible that economists frame proper policy for the solution of problems only on the basis of the economic approach.

- iii. Policy making is not the only work of economy but it analyses the problems also. Economic theories do not give such definite conclusions which can at once be used as policies. Economics is a method not a faith. When economic laws can not at once be used in policy making, it is not correct to consider economics as an art.
- iv. Economics is just like the pure science so to keep this type of nature of economics maintained it is not correct to consider economics as an art. Economist should work as an expert only.
- v. According to Keynes, theories of economics do not give such perfect conclusions which can be used in policy framing at once. This is a way of analysis, a method of thinking and an instrument of the mind which helps in deriving the correct conclusions. It means economists do not provide solution of economic problems at once.

Arguments in Favour of Treating Economics as an Art:

These arguments are as given below:

- i. Last decision on the purely economic problems can be taken only by economists. For example, problems of exchange rate, bank rate, etc. are associated with economists who solve them. Political leaders can decide the employment policy, tax policy, etc. when they have the sufficient economic knowledge.
- ii. The one of the main objectives of economics is to maximize the welfare of individuals or society. To achieve a certain goal, framing policy by government can be considered to be an art.

- iii. As science economics postulates theories and laws which are verified when these theories and laws are implemented. Thus the applied use of economic laws and theories makes economics an art.
- iv. Importance of applied economics is continuously increasing. Most of time of economists is being utilized in solving the real problems of life as inflation, unemployment, economics growth, etc. So it is correct to consider economics as an art.
- v. If economics is studied as an art it will be helpful in verifying the economic theories and thus it will be known whether economic theories are correct. This helps in the postulation of new theories.
- vi. In present time the planning system is becoming the base of whole of the world. Most of the countries of the world are trying to achieve higher level of economic growth through planned economic growth strategies. For this economics should be studied as an art.
- vii. The art form of economics does not create any problem in its scientific nature. It is not only sufficient to search truth in economics but it is also necessary that this truth should solve the economic problems. Economics should also be helpful in the solution of human problems also.

4. Real Nature of Economics :

Economics is Science as well as Art.

It is clear from above analysis that economics is both science and art. As a science Economics is both positive science and normative science. Economics studies both theoretical and applied aspects of a subject. The theoretical aspect relates with the scientific nature of economics while the applied aspect relates with the art.

Theoretical economics is science and applied economics is art. As a scientist, an economist has two types of role as a scientist and as a good citizen. Koussa rightly says, "Science requires art and art requires science. Both are complementary to each other."

Important Points :

- Economists are having different views on nature of economics that whether economics is science or art or both science and art.
- Subject matter of economics is divided into 5 parts- consumptions, exchange, distribution, production and public finance.
- Economics is both positive science as normative science.
- Economics is human science also which studies moral decisions related with different economic phenomena.
- Science is that branch of study which relates with the analysis of cause and effect.
- That branch of study is known as art which suggests the best way of getting definite objectives fulfilled.
- A new branch of economics is "development economics" in which we study the main elements, criteria, etc. of development.

Questions for Exercise:

Objective Type Questions:

1. Normative Science is related with.
 - (a) What is
 - (b) What should be
 - (c) Where is
 - (d) Where was ()
2. Positive science is related with.
 - (a) What is
 - (b) Where was
 - (c) Where is
 - (d) Where was ()
3. 'What should be' is the subject matter of –

- (a) Positive Science
- (b) Normative Science
- (c) Art
- (d) None of Above ()

Very Short Answer Questions

1. What are the parts in which the subject matter of economics is divided ?
2. What is consumption activity ?
3. What is production activity ?
4. What is distribution ?
5. What is exchange ?
6. What is positive science ?
7. What is normative science ?
8. What is an art ?
9. What are the questions solved by economics as a normative science ?

Short Answer Questions.

1. Explain the parts of subject matter of economics.
2. Explain the statement "Economics is positive science."
3. Explain the statement "Economics is normative science."
4. "Art is the action or activity on doing any work in the best way". Explain this statement.

Essay Type Questions:

1. Economics is science or art or both. Explain.
2. Explain the nature and scope of economics.
3. What is the meaning of science ? Is economics a science ? Explain.
4. Economics is positive Science or normative science or both. Explain.

Answer to objective Type Questions

(1) b (2) a (3) b

Reference Books :

1. Marshall - Principles of Economics, 8th Edition.
2. Joan Robinson- The Second Crisis of Economic Theory (1974).
3. Boulding – Principles of Economy
4. Robins – Nature and Significance of Economic Science.

Chapter - 1.3

Economy or Economic System

Meaning of an Economy :

"By economy we mean the legal and institutional structure in which all the economic activities are performed." It is clear that in the institutional structure where human related economic activities of consumption, production, exchange, distribution and finance are performed is known as economic systems or economic organization. In an economy people earn their living and under economic system the ways of working, rules and institutions of persons are included by which the economy is run.

Definition of Economy:

Many economists have defined economy or economic system. In words of **Prof. A.J. Brown,** "Economy is mostly used for such system by which people earn their living." In simple words, by economy or economic system we mean that system by which people of any area cooperate with each other to produce goods and service so that they can satisfy their wants.

In Present time economists put more emphasis on the aspect of economic growth and economic development. So in all nations human economic activities are more or less affected by the state and thus the nature of economy or economic system is mostly depends on the interference of the state, nature and social customs.

Salient Features of an Economy :

Following are the salient Features of an

Economic System:

1. Base of Economy is the Human Group:

The concept of economy is related with the way of living of people of a special private area who become part of the production process to earn living and thus satisfy their wants. Thus economy is human made and studies economic activity.

2. Essential Processes of Economy :

There are three essential processes of economy, namely- production, consumption and investment which are related with the living of individuals and groups. These processes are run continuously in life.

(a) Production :

In this process we include production of goods and services which depends on needs, efficiency, technique and quantity of economic resources.

(b) Consumption:

Under consumption goods and services are used to satisfy the wants of human groups.

(c) Investment:

The net increase in the capital stock in the current year in comparison to the last year is known as investment.

3. Exchange is Necessary for Economy :

The ultimate aim of consumption is to

satisfy the consumer wants. In all economic systems there is freedom of consumer choice and for it exchange is required, e.g. food shops, consumer stores, etc.

4. Government Control Over Economy –

There are many development responsibilities over the economy or economic system. Thus, now the ‘Policy of Freedom’ of capitalism is not much believed and the important role of government is accepted more. Economic growth rate and level of employment can rapidly be increased through the coordination of monetary and fiscal policies.

Forms of Economic Organization or Economic System :

The factors like increasing state interference, different nature, social laws, economic customs and structure of economic organization have effect on the economic activity being performed by people. Due to this there are many forms of economic system. The economy can be classified according to the below given bases.

Classification of Economy

Base of Classification	Types of Economy
Ownership of factors of Production	Capitalist Economy Socialist Economy Mixed Economy
Level of Development	Developing Economy Developed Economy

All the above forms of economy can briefly be analyzed as below:

Capitalism or Free Economy:

The capitalism or capitalist system emerged in 18th century in England and Europe with the industrial revolution. Capitalism is the economic system in which the resources of distribution and output are owned and controlled by private hands.

In the words of Ferguson and others, "Capitalism is that system in which there is private property and economic decisions are taken privately."

Main Characteristics of Capitalist Economy

Following are the main characteristics of the capitalist economic system-

1. Right to Own Private Property-

In capitalism every person has the right to own private property which can be used according to the own desire. Private property can be transferred to the future generations on the basis of inheritance.

2. Economic Freedom :

In capitalism each person has the freedom to use the own property and to choose the industry according to the own will and need.

3. Consumer's Sovereignty :

In this economic system there is a very important place of the consumer's sovereignty. Consumers are free to consume according to their own interest and preference.

4. Objective of Private Profit :

In capitalism the main objective is to get the private profit. Each work is governed by the objective of the private profit.

5. Competition :

There is competition between buyers and sellers in the goods and factor markets in the capitalism.

6. Price Mechanism :

In capitalism all the economic activities are governed, coordinated and controlled by the price mechanism and not by any central authority.

Merits of Capitalism:

We find following merits in the capitalism :

1. **Effective Production :**

Due to profit incentive and perfect competition each entrepreneur produces good quality and durable products. The producer use the new techniques of production. It is also tried to keep the cost of production at the minimum level.

2. **Flexibility :**

An important merit of capitalism is that it is flexible form of economy. It has the power to change itself as per the need of the time.

3. **Development of Individual :**

Under capitalism each person tries to increase own ability because success goes to the best person.

4. **Increase in Standard of Living:**

There is diversity in production of goods which results into the large scale production and the levels of cost and price are lower. Thus the life standard of poor persons increase in capitalism.

5. **Optimum Use of Resources :**

The only objective of producer is to earn profit so the available resources are used optimally. These resources are used in the economic manner in capitalism.

6. **Automation :**

The price system plays important role in this type of economy. There is not any type of interference from any side.

7. **Technical Progress :**

There is mutual competition among the producers in capitalist economy. Each producer tries to produce maximum output at the minimum cost. Producers use new techniques of production. This all results into capital formation.

Demerits of Capitalism :

There are many good points in favour of

capitalism but it is not free from some demerits. These are:

1. **Unequal Distribution of Income and Wealth :**

In capitalism there are inequalities in the distribution of income and wealth. This is due to the presence of factors like inequality of private property, free competition, desire to earn more profit, etc. Thus rich becomes richer and poor becomes poorer.

2. **Class Struggle :**

The inequality of incomes and wealth divides the society in two classes in capitalism as rich class and poor class. The rich class leads a wealthy life while poor class (labour class) is not able to arrange even two time meal. This situation gives birth to class conflict further.

3. **Trade Cycles and Economic Unstability :**

Due to Automation there are ups and downs in economic activity always in capitalism. Sometime there is inflation and sometimes there is deflation in the economy. During inflation the levels of price and output increase rapidly and during deflation price, employment and output levels decrease. Thus, trade cycle and economic unstabilitiy take place in capitalism.

4. **Unemployment and Social Insecurity:**

As results of trade cycles, unemployment is created in the economy. Labourers do not get work and they become dependent on the rich class. The labourers have low level of income due to unequal distribution of wealth and thus they always face the insecurity in their life. In accidents, unemployment, disease, and old age they get less sources of income.

5. **Exploitation :**

There is maximum exploitation of labour class in capitalism. Labourers do not get wages according to their marginal

productivity. They get very low wage rates and thus the labour class is exploited.

6. Unearned Income and Social Dependence :

In capitalism some people get income due to private ownership in property and inheritance laws and thus they get unearned income without any effort. Landlords get rent and capitalists get interest and rent and they live on the labour of others generation to generation.

7. Lack of Public Welfare:

Under capitalism entrepreneurs are governed by own profit motive and due to this they use resources for national product. But their objective is to earn maximum profit so they have interest in the production of those goods only which give maximum profit, for example, luxuries. The producers are less interested in producing the goods of public welfare.

8. Other Demerits :

Some other demerits of capitalism are as given below:

- i. There is uneconomic use of resources in capitalism due to cut throat competition.
- ii. Some collusions can be emerged which reduce the competition or by showing artificial shortage of goods the way of exploitation is created.
- iii. Lack of coordination can be seen in capitalism. There is lack of mutual cooperation and organization in capitalism.

Modern form of Capitalist Economy

Due to many defects in capitalism there have been changes in it time to time and thus a new refined form of capitalism has emerged. Imperfections in the market, preference to modern rules and integration, increasing effect of trade union, increase in public enterprises control of state etc. are the features of the modern

capitalism but there are some characteristics of pure capitalism still present in the modern capitalism. Although governments are not silent observers now a days and thus they are playing their significant required role in capitalist economy.

Socialistic Economy or Socialism :

Due to defects of capitalism a new form of economy emerged which is known as socialistic economy. The economic systems of Cuba, China, Vietnam etc. are the socialistic economies. In this economy, government controls and performs the main economic activities for the social welfare. Different economists have defined socialism in their own ways.

Meaning of Socialism:-

Socialism is that form of the economic system in which main resources of output and distribution are owned and controlled by government and these resources are used for the maximum social benefit on the basis of cooperation.

Definition of Socialism :-

According to Leftwithch, in socialistic economy the main and central role is of the government. Government owns the factors of production and directs the economic activities.

Joad writes about socialism that "Socialism is a type of cape which has got its shape deteriorated because everybody puts it on. Socialism has the temper of multi aspects. Government interference is all of the above. It is only the state which effectively controls and runs the economic system."

Characteristics of Socialism or Planned Economy :

Characteristics of a socialistic economy or a pure communalism are exactly opposite to the characteristics of the capitalism. These are:

1. Government Ownership:

In socialism all the main factors of production are owned by the government. Private

property and all factors of production are nationalized and kept under the ownership of government. Resources are used in the planned way for the maximum benefit of the society.

2. Central Planning :

There is an effective system of central planning in socialism. Economy is run by central planning for obtaining certain objectives. All the decisions regarding production and distribution are taken by the central planning. According to Pigou, "Central Planning with the ownership of government on the factors of production is the main feature of socialism."

3. Objective of Maximum Social Welfare :

The objective of government in socialism is to maximize the social welfare. Private benefit is not given any importance in this economic system. Central organization formulates policy by keeping the maximum social benefit in the centre.

4. Lack of Exploitation :

There is no scope of exploitation of people in the socialist economy because the economy is governed by government whose objective is the maximum welfare. Labourers and consumers are not exploited because there is spirit of equality in this economy.

5. Equality :

In socialism whole of the control is of the government, there is no objective of private property and private profit, there is no place of exploitation and the principle of equality works. Economic inequalities are found less because of the equal opportunity and equal right on profit.

6. Full Employment:

It is an important characteristic of socialism that there is full employment in the economy. There are efforts of the government for the best and full utilization of human resources and thus unemployment is not seen.

7. Concrete Objectives :

Socialistic economy works with objectives

and these objectives are certain. Various objectives are made and achieved by working according to plans. Rapid industrialization, increasing life standard, achieving full employment, reducing inequalities in income and wealth, etc. are the main objectives of socialism.

8. Lack of Competition :

In socialism there is lack of competition because government is the main entrepreneur and the economy is under the central control. We see government monopoly instead of cut throat competition.

9. Development of Basic Heavy Industries :

Economy under socialism is completely controlled and planned and these heavy industries and basic industries are rapidly developed.

10. Social Security :

Due to government control each person is secured from hunger, disease, accident, etc.

Advantage or Merits of Socialism:

Main merits of socialism are as under:

1. Optimum use of Economic Resources :

All the natural and human resources are used by central planning in socialistic economy which aims the maximum social welfare and social security.

2. Freedom from Trade Cycles :

Socialism is a planned economy so trade cycles occur less in comparison to free market economy. Government uses resources in a planned way keeping in view the maximum welfare and social security. So there is less possibility of ups and downs in economic activities.

3. Rapid Economic Growth:

The main decision maker in socialism is the planning authority which coordinates economic resources efficiently and thus rate of growth increases rapidly. This is also due to the

participation of all people in economic growth process.

4. Better Solution of Basic Problems :

What to produce, how much to produce and how to produce are the basic economic problems of an economic system. In socialism these problems are solved by the central planning. Here is the perfect freedom to the government to use resources efficiently and to produce goods and services according to the real needs of the society.

5. Balanced Development :

In this economic system the planning authority has the objective of economic development along with the effort of the balanced economic development. All the areas and regions of the state should have the balanced development.

6. No Exploitation and class Struggle:

The main motive of socialism is the equality. There is no separate recognition of capitalists and the poor class. Only one class does not participate in economic development. All the sections of society participate simultaneously so there is no chance of strikes, lockouts etc.

7. Economic Equality :

No inequality of income and wealth is found in socialism because decision regarding distribution of income is taken by the central authority. Rich section is taxed heavily which now income section is provided free services.

Demerits of Socialism:

Many economists like Robins, Dikins, Georjholm, Moriss Dob, etc. criticised this economic system as below:

1. Defective Allocation of Factors of Production :

Prof. Hayak writes, "in socialistic economy resources are allocated without price system by

the central authority." Through Price system resources are allocated automatically in important uses. There is no free market system in socialism and thus without price system there is no way out to allocate resources rationally. According to some modern economists like Tailor, price system is theoretically considered proper in capitalism while practically the resource allocation in socialism is proper and in the planned way.

2. End of Consumer Sovereignty:

In socialistic economic the sovereignty of consumer gets ended. Issues like what to produce, how to produce etc. are decided by the central planning which takes decisions in keeping view the needs of consumers. Goods and services actually required by consumers are not available in this economic system. The output which is decided by the central planning has to be accepted by all people.

3. Lack of Individual Motivation :

Owning private property and individual benefit are the elements which give motivation to human being for doing work. These both elements lack in socialism. There are new experiments being carried out in the socialistic economies.

4. Lack of Productive Efficiency :

In socialism there is neither rational resource allocation nor the incentive of individual benefit. As result, there is lack of productive efficiency. On the other hand in capitalism the objective of the producer is to maximize the profit and for this the producer produces at the level of minimum cost.

5. Presence of Servant Culture:

Socialism is a servant culture oriented economy which is an important demerit of it. All the decisions are taken by the central organization. Servants are appointed to implement these decisions who do not have their

own interest. Promotions are based on seniority and not on qualification and work efficiency. This results into red tapism and thus corruption takes place.

6. Concentration of Power :

Some experts have the opinion that in socialism there is more concentration of power which misutilizes the man power. The man power is used in the work of planning formulation, counting and implementation. Actually, this is not a demerit but it is the planning of the main power to make socialism more sensitive and effective.

Conclusion :

Although the supporters of capitalism criticize the socialism but this is beyond reality. There are less defects of socialism than capitalism. Unemployment and inflation are the long term problems in capitalism while these problems are kept under control in socialism. There is no price stability in capitalism while it is there in socialism. According to Prof. Shumpeter, "Socialism is better economic system than capitalism because in socialism output efficiency is managed by government and resources are used with more rationality. Trade cycles are absent and monopoly tendencies are ended. Economic inequalities are less and there is end of unemployment and exploitation."

Presently, some changes can be observed in socialistic economies. Training, concentration of power, innovations for development and limited personal freedom are being more emphasized.

Mixed Economy:

Demand for interference in capitalism raised because of its defects like cut throat competition, unemployment, inflation, economic instability, class struggle, etc. On the other hand, socialistic economics had been criticized on the grounds of hard control, concentration of power, servant orientation, lack of personal freedom, excess state interference, etc. As a result, such an

economic system was developed in which there are presence of characteristics of both capitalism and socialism. This type is known as the mixed economy.

Meaning of Mixed Economy :

Generally mixed economy is the economic system in which there is sufficient co-existence of private and public sectors. In mixed economy the work areas of both sectors are controlled and determined in such a way to get rapid economic growth and maximum social welfare.

According to Prof. Samuelson, "mixed economy is that economy in which there is control of both public and private institutions in economic life."

Features of Mixed Economy :

Mixed economy has the following characteristics

1. Co-existence of Private and Public Sectors:

It is an important characteristic of the mixed economy that there is co-existence of both private and public sectors. Both sectors work together. Industries of national interest like basic industries, industries of war goods, electricity etc. are found in public sector and consumer goods industries, small industries, agricultural industries and such other are run under private sectors. The objective behind this co-existence is to cooperate each other. Both industries are complementary to each other.

2. Private Property and Economic Equality :

In mixed economy on one hand, People can own and accumulate private property and on the other, government formulates strict policy regarding equal distribution of income and wealth. Government imposes tax on income, property etc. and thus controls the private property and on the other side, government launches welfare schemes for poor people like old age pension, etc.

3. Price System and Government Control –

In mixed economy both price system and central planning system work. The price system controls the economy through its effects on demand and supply forces. Main economic decisions like what to produce, how to produce for whom to produce are taken with the help of the price system. Planning system plays important role in achieving the objectives like economic growth, full employment, price control and inequality of income.

4. Personal Profit Motive and Social Welfare :

Mixed economy works with both the objectives of personal profit and maximum social welfare. Production is done with the incentive of self interest and benefit and like socialism the main objective of planning system is to maximize the social welfare.

If private industries do not work in social interest, government nationalizes them and thus transferred into the public sector.

5. Controlled Economy :

Progressive taxation, expenditure on social security functions, control on the monopoly tendencies and other such policies are adopted to keep the equal distribution of income. The maximum limit of land is also fixed.

6. Economic Planning :

The socio-economic objectives are achieved through the economic planning in the mixed economy. No economy can be said mixed economy if there is no economic planning even if there is control and interference of the state. Important economic decisions are taken with the help of economic planning.

Merits of Mixed Economy :

The mixed economy has the merits both of socialism and capitalism. These are:

1. Sufficient Freedom :

People have the sufficient freedom in

economic sphere. People can use income at their will and they can choose business according to their ability and interest. Private profit can be earned and personal property can be owned but upto a certain limit only.

2. Efficient Use of Resources :

In mixed economy both private and public sector co-exist and thus try to make the efficient use of resources. Private sector tries to use the resources efficiently according to the objective of the private benefit. The public sector uses resources efficiently but for maximizing the social welfare. In this way the mixed economy establishes the coordination between private and public sectors.

3. Decrease in Economic Disparity :

Economic inequality is a curse for the economy. Government imposes progressive taxation to reduce the economic inequalities in the mixed economy. Monopoly practices are controlled for this purpose. The increasing prosperity of private sector is controlled and efforts are made for social security and economic equality.

4. Lack of Exploitation :

Mixed economy tries to keep society safe from the monopolistic tendencies and exploitation of zamindars. There are welfare schemes for private labourers and farmers. Necessary laws are enacted and cooperation is developed.

5. Planned and Rapid Economic Growth:

Price system works in mixed economy but it is not given full freedom. The role of private sector in economic growth is decided through proper planning and for this purpose available resources are sufficiently surveyed and used for the economic growth. Public sector plays its significant role in the balanced economic growth of the country and capital formation gets momentum.

Defects or Disadvantages of Mixed Economy :

In mixed economy there are demerits of both capitalism and socialism. This economy incorporates the objectives of maximum social welfare, economic growth, reduction in unemployment, reduction in income inequalities, social security, etc. But due to the capitalism the exploitative tendencies are developed and become intensive. If the socialistic elements are strengthened then the problems of red tapism and inefficiency are developed. This mixed economy can not be free from any defects. Following are such some demerits of this economic systems.

1. Difficulty in Efficient Implementation :

Mixed economy is a joint form of capitalism and socialism which are opposite to each other. Due to this fact there is problem in its efficient implementation. In mixed economy neither economic planning becomes successful nor the price system works efficiently.

As Shumpeter says, mixed economy is capitalism in oxygen tent.

2. Unstable Economy :

There is instability in the mixed economy. Either private sector harms the public sector and thus public sector losses its importance with changing itself into capitalism. Or public sector becomes so powerful and thus it ends the private sector and thus the economy becomes socialistic.

3. Inefficient Planning:

In mixed economy a large part of economy remains out of the government control and thus this part works only for under the selfishness which creates big problems in the success of plans. Under this situation public sector fails in achieving its objectives.

4. Corruption:

There is wide spread corruption in the mixed economy. Public sector is misused by political parties for their defective motives and thus create

obstacles in the success of plans.

5. Black Money :

In mixed economy black money is created. Political parties misuse the public sector due to selfishness and private sector tries to disobey the rules and thus corruption is created which leads the black money in the economy. This black money becomes an obstacle in the process of economic growth.

6. Challenge to Democracy :

Economic planning and government policies challenge the economic democracy slowly. There is fear of dictatorship in the economy. In reality, it is only a fear. In democracy it is respected that the real power is in the hand of the public.

Even there are many demerits of mixed economy, it always supports the path of economic growth and social welfare. Although there is fear of inefficiency and dictatorship in mixed economy but co-existence of private and public sectors makes the economy healthy which leads the economic progress. Trade cycles, unemployment, exploitation and class struggle are controlled by the government.

Indian Economy as a Mixed Economy :

The emergence of mixed economy in India can be considered from the industrial policy of 1948 and after first five year plan in industrial policies of 1956, 1977 and 1991 in which industries were categorized.

Separate objectives were fixed both for private and public sectors in first five year plan also. In 1954 we took the objective of the establishment of socialistic society and accepted the important role of public sector in planned economic development which followed the rapid industrialization. In India, as result of the planned development policies we got progress in the areas of rapid economic growth, poverty and unemployment removal, control over concentration of economic power, balanced

industrial development, agriculture development, social welfare, etc. Prof. K.N. Raj writes- Although Indian Economy is the mixed economy but the elements of mix have kept it capitalism made nor equal as the socialism.

Classification of Economy on the Basis of Development:

On the basis of development economy can be divided into two parts as – (i) Developed economy, and (ii) Developing economy.

Developed Economy:

It is that economic system in which there is rapid economic growth and levels of per capita income and national income are very high. U.S.A., Canada, France, Germany, Japan, etc. are the examples of developed economy. Following are the characteristics of developed economies.

1. High National and Per Capita Incomes:

The rates of growth of national income and per capita income are high in developed economies where the living standard of people is very high. According to the world Bank Report 2012, in 2010 the per capita gross national product in capitalist countries was on an average of \$38745. The per capita gross national product was \$47340 in U.S.A.

2. High Rate of Capital Formation :-

Economists always accept the importance of capital formation for increasing the levels of output. When a large part of national income is saved and then reinvested, it is known as capital formation. In developed countries the rate of capital formation is very high and thus there are no vicious circles of poverty.

3. Dominance of Industries and Non-agricultural Occupations:

In developed economies a large part of population is engaged in non-agricultural occupations like industries, transport, communication, banking insurance, etc. The

contribution of service sector in national income is higher.

4. High Technology :

Developed economies are technically efficient economies. A large portion of national income in these economies is used on innovation and technique. The production techniques are always changed for increasing levels of production.

5. Other Characteristics:

In developed economies human resources are managed and used in efficient manner also, the sensitiveness of increasing the process of economic growth is found comparatively more.

Developing or Under Developed Economy :

According to Samuelson, "An under developed or developing economy is that one in which per capita real income is less than that in Canada, U.S.A., Great Britain or generally western european countries. Optimistically it is understood that in developing countries there is capacity to improve the levels of income sufficiently." Indian planning commission has defined the under development in first five year plan as, "that country is said to be underdeveloped in which, on the one hand, there is low level of utilization of man power and on the other hand, natural resources are not fully utilized." In this way, all those economies of the world are developing economies where the level of per capita income is lower than that of U.S.A., Australia and the countries of the west Europe. India, Bangladesh, Pakistan, etc. are the examples of developing economies.

Characteristics of Developing Economies :

General characteristics of developing economies are as given below:

1. Low Level of National Income and Per Capita Income :

In developing economies levels of national

income and per capita income are lower in comparison to developed economies. According to World Bank Report 2010, it was \$528 in low income developing countries and \$3725 in medium income developing countries. It was \$1270 in India in 2010. Due to low per capita income level the standard of living is very low and civil amenities are less.

2. Low Living Standard:

The low levels of per capita income in developing countries result in low living standards and thus there are low levels of work efficiency. Levels of consumption of food, cloth, housing, etc. are low.

3. Dependence on Agriculture :

In these countries 30 to 70 percent, population depends on agriculture. Even after being dependent on agriculture the agricultural growth is lower and thus it is also a characteristic of developing economies. Due to slow growth of agriculture the contribution of agriculture in national income is reduced.

4. Backward Industrialization :

Industrial structure in underdeveloped economies is generally backward and imbalanced. The basic and heavy industries like iron and steel, heavy engineering, machine tools, heavy chemicals, transport, etc. are less developed. Due to this there are lower employment opportunities and the reduced contribution in the national income.

5. Lower Labour Productivity:

Productivity of labour is lower in these economies. It is both cause and effect of the low living standard. This lower productivity causes lower income levels which gives birth to poverty. Health of labourers, work efficiency, incentive to work, infrastructure facilities are the factors which affect the lower productivity of labour.

6. Wide Poverty :

There are vicious circles of poverty in

developing economies. Low level of per capita income and income inequality are the causes of widespread poverty. Malnutrition, less food, diseases and lack of health facility are the some other causes of this problem.

7. Backward Technology:

Due to low level of research and development in developing economies there is backwardness of technology. There are obstacles in new technology due to lack of resources, lack of capital and excess of labour. Due to these causes there are negative effects on productivity and quality of production.

8. Unemployment and Disguised Unemployment :

Unemployment is seen at the high level in these economies. Involuntary unemployment is mostly found both in rural and urban sectors. Agriculture sector has the disguised unemployment. In agriculture there is low level of employment due to the traditional nature of it. Due to increasing population in developing countries, disguised unemployment continuously increases.

9. Other Characteristics:

Low levels of human welfare, health facilities, educational achievement and probable real income are seen in these economies. Inequalities in the distribution of income and wealth are present there. In developing economies the issues like tax system, social security system, education and training and employment are not considered seriously as done in developed economies.

Classification of Economies according to World Bank:

World Bank divided the economies of the world in 2003 on the basis of per capita national income in four parts as below.

1. **Lower Income Countries :-** These are the countries where per capita income is \$675 or less.
2. **Medium Lower Income Countries:-** In these countries per capita national income is between \$676 and \$3035.
3. **Medium Higher Income Countries:-** Here the per capita national income is between \$3036 and \$9385.
4. **Higher Income Countries:-** These Countries have their per capita national income more than \$9386.

Important Points :

- Economies system or economy is that structure of institutions where there is social control on the consumption of goods and services produced by factors of production and the factors of production.
- On the basis of the ownership of factors of production economies are of three types- Capitalism, Socialism and Mixed economy.
- On the basis of development economies are of two types – (i) Developed Economies (ii) Developing Economies.
- World Bank divided economies into 4 parts on the basis of per capita national income. These are:
lower income countries, medium lower income countries, medium higher income countries and higher income countries.

Questions for Exercise

Objective Type Questions:

1. Capitalism is the economy in which-
 - (a) Public ownership on property
 - (b) Equality in income distribution
 - (c) Price property
 - (d) Effective planning system ()
2. The important objective of capitalism is –
 - (a) Welfare of labourer
 - (b) Economic equality
 - (c) Maximization of private profit
 - (d) Establishment of socialism ()
3. The oldest system of economy is –
 - (a) Socialism (b) Mixed
 - (c) Communalism (d) Capitalism ()
4. Socialistic Economy is –
 - (a) Planned economy
 - (b) Unplanned economy
 - (c) Price system based economy
 - (d) Economy of Private ownership of factor of production. ()
5. The possible danger of capitalism is-
 - (a) Class struggle
 - (b) Increase in trade cycles
 - (c) Economics exploitation
 - (d) All of the above ()
6. Main objective of socialism is-
 - (a) Personal benefit
 - (b) Increase in employment
 - (c) Increase in national income
 - (d) None of above ()
7. Which one is not a characteristic of socialism–
 - (a) Central planning
 - (b) Role of price system
 - (c) Maximum social welfare
 - (d) Public ownership of factors of production ()
8. In mixed economy factors of production are controlled by –

- (a) Government
- (b) Private people
- (c) Both Government and private
- (d) None of above ()

9. Central problems in mixed economy are solved by –

- (a) Price system
- (b) Central planning
- (c) Both price system and central planning
- (d) None of above ()

10. On the basis of per capita national income World Bank divides economies into number of parts –

- (a) Two (b) Three
- (b) Four (c) Five ()

Very Short Answer Questions:-

1. What is economy or economic system ?
2. Write name of any three countries having capitalism.
3. Write name of any two countries having socialism.
4. What is a developed economy ?
5. What is a developing economy ?

Short Answer Questions :

1. What are the important elements of economy?
2. Write important characteristics of an underdeveloped economy.
3. What are the different forms of economic systems ?
4. What is mixed economy ?
5. What is capitalism ?
6. State the difference between developing and developed economies.

Essay Type Questions :

1. Describe the characteristics of the mixed economy. Show that upto what extent the mixed economy is a mixture of merits of both capitalism and socialism.
2. What type of economy is known as socialism?
3. Describe the characteristics of capitalistic economy. What are the important merits and demerits of capitalism ?
4. Describe merits and demerits of mixed economy. Why is Indian economy known as a mixed economy ?
5. Describe merits and demerits of socialism.

Answer to Objective Questions :

- (1) c (2) c (3) d (4) d (5) d (6) b
 (7) b (8) c (9) c (10) c

Reference Books:

1. J.S. Mill- Principles of Political Economy (1948)
2. J.M. Keynes- Scope and Methods of Political Economy
3. Samuelson – An Essay on the Nature and Significance of Economic Science.
4. Schumpeter – Capitalism, Socialism and Democracy
5. M.P. Todaro and Stephen ‘C’ Smith- Economic Development (2003).

Chapter - 2.1

Meaning and Definition of Statistics

Modern time is the time of knowledge and scientific activities. Each branch of Knowledge and scientific activities is concerned directly and indirectly with the numerical facts. All the small incidents of life can be assigned the numerical values. Without numbers the accuracy of facts is not completed. Information of social, economic, political and other problems are analysed on the basis of numerical values by the state and thus efforts are made for their solution. Thus, the knowledge based on numerical facts is real and actual. According to the British writer Lord Kelvin, "If the topic about which we are talking can be measured and expressed by assigning numerical values, it means we know something about that topic. But when we can not measure it and can not express in numbers then our knowledge is unsatisfactory and less."

Origin of Statistics:

Statistics has its origin along with the national organizations. The rulers in the old time collected data about the issues concerned with management.

There were many facts related with statistics collected about administration, social system, war, etc. According to the Arthashastra of Kautilya. Tendency of data collection is also found in Rome and other countries also. Statistics was considered as the Science of State efficiency or the Science of kind because the policies of the

State used based on data.

Meaning of Statistics:

The English word Statistics is derived from the word state. The word state is known as 'status' in Latin, as 'stato' in Roman as 'statistik' in German and as 'Statista' in Italian. All these words mean the state. The relationship between state and statistics has been very deep. Sometimes this word had been used for such person who was expert in state related work. We find the use of statistics in India in many old books like Arthashastra of Kautilya. The German mathematician Gottfried Achenwall was the father of statistics who, first of all, used the word 'Statistics' in 1749 and enhanced and developed it as the branch of knowledge. In modern time data are widely used so their demand has increased. Introduction of new methods in statistics has saved time, labour and cost.

The English word STATISTICS is used in three senses in Hindi as data, Statistics as a subject and Statistic (value calculated from samples). Generally 'Statistics' word is used for data like, data of death and birth in India, data about crime, data about price level, etc. Data are the collection of numerical values of facts.

Secondly, statistics mean the methods which are used in statistics. These are the methods relating with theories and devices which

are concerned with the collection, analysis and interpretation of data.

The word 'Statistics is used for the plural groups or data of statistics, e.g. census data.

Thirdly, statistics means the values which are calculated from the collected data like sample mean, sample mode, sample standard deviation, etc. These values are known as statistic and used as estimates of the population parameters.

Definition of Statistics :

There are many definitions of statistics. **Quetelet** gave 180 definitions of statistics in 1869. In his book John Griffin writes, " it is difficult to define Statistics. Till now there is no definition of Statistics which has universally been accepted. Some authors have defined statistics as below:

According to Bowley, "Statistics is science of counting." At the other place Bowley writes, "Statistics is properly the science of ends."

According to Boddington, "Statistics is the science of investigations and probabilities."

According to Saligman. "Statistics is the science which deals with the methods of collections, classification presentation, comparison and analysis of the collected data" This is considered as a wide definition of Statistics.

It is clear from all the above definitions that like economists, there are many ways of giving definitions of statistics. This difference in giving an idle definition of statistics is due to the fact that it is not an easy work to define Statistics.

Scope of Statistics :

In ancient times the scope of statistics was very limited. Statistics originated as the science of Kings. But in modern time scope of statistics is very wide. Statistical methods are used in every science as a tool. So, it is correct to say that without statistics, science is not complete and

without science statistics is not complete.

The subject matter of statistics is of two types :-

(a) Statistical Methods

(b) Applied Statistics

(a) Statistical Methods :

Statistical methods are helpful in collection of data, proper presentation of data and making data comparable and understandable. Proper conclusions are also derived with the help of the statistical methods. Thus, according to Johnson and Jackson, " Statistical methods are the processes which are used for the collection, organization, summary, analysis, interpretation and presentation of the numerical facts." It is clear that following functions are included in the statistical methods.

i. Collection of data :

This function of statistical methods explains that how much, from where and how the data are to be collected.

ii. Classification :

Under this function different methods of classification of data are studied. The classification makes data easier to understand and compare.

iii. Tabulation:

In tables, data are properly presented in rows and columns.

iv. Presentation:

Under this function of statistical methods data are presented in the form of diagrams and graphs so that they can be easy to understand, compare and interpret.

v. Analysis:

Measures of central tendency, dispersion, skewness, regression, correlation, etc. are used to

analyse the data. These all are the various statistical methods.

vi. Interpretation:

Under interpretation it is studied that what the messages or informations are given by the various calculated values with the help of various statistical methods.

vii. Forecasting:

The values of variables are forecast on the basis of old and present given information and thus necessary announcement are made.

(b) Applied Statistics:

Statistical methods provide the theoretical knowledge. How are the statistical methods can be used practically is the subject matter of applied statistics. For example, data on population, national income, industrial production, prices, wages, etc. are the applied data. Applied data are related with economics, commerce, sociology, administration, biology, psychology, etc. There are two types of applied statistics:

i. Descriptive Statistics:-

In descriptive statistics we study the collected data of past and present related with any sector of economy or society.

ii. Scientific Applied Statistics:

Under this type of statistics the applied data are collected for the specification of the scientific laws about different subjects. Law of demand, trade cycles, etc. are such examples.

Under applied statistics, statistical methods are used for the study, analysis and solution of the different applied problems. Thus, the scope of statistics is very wide.

Role of Statistics in Economics:

Statistics and economics are deeply related. Statistical data play pivotal in different laws and theories of economics. Here data are just like the foundation stone. According to Marshall-"data

are those elements, in which just like each economist, I also make bricks (economic laws)."

The essential role of data both in theoretical and applied economics has been proved. The inductive and deductive methods are based on data which are used to test economic laws. Theory of population, quantity theory money, theory of distribution, etc. which are the important theories of economics, have been propounded with the help of data. These all theories have been verified by the statistical methods. In applied economics statistical data are required to evaluate the progress of development plans and their implementation. Diagrams and graphs are used to analyse the effects of plans on economic variables. According to Bowley, "any student of economics cannot be a perfect one if he or she does not have the full knowledge of statistical methods."

Limitations of Statistics:

Scope of statistics is very wide. At present, the popularity of statistical methods is continuously increasing but there are certain limitations of statistics as described below:

i. Study of only the Numerical Facts:

Statistics studies the numerical facts only. It does not study the qualitative facts. In other words, statistics studies only those problems which are expressed in numbers only, e.g. age, height, production, price and wage. The quality issues like health, mental level, poverty, etc. are not directly studied under statistics.

ii. Study of Groups, not of Individual Units :

In Statistics we study the aggregate characteristics of numerical facts like per capita average income in the country. This per capita average income highlights only the aggregative characteristics and does not tell any thing about the per capita average income of poor, begger, rich persons.

iii. Not a Single Method of Study :

Statistical method is not a single method to study a problem. According to Croxton and Cowden, "It should not be answered that statistical method is the only method to use in study of any investigation. The results obtained by the statistical method should not be accepted as true until proved so by the other methods or verified by the other results."

iv. Illusion Oriented Conclusion:

To understand the statistical conclusions very well it is necessary to study their references also otherwise they can be proved wrong. According to Bowley, "students who use data should not be satisfied by assuming the results of investigation as proved but should also study all the related parts of knowledge."

v. Long Run Correctness of Statistical Rules only in the Average Form:-

Statistical rules, as the rules of Physics, are not completely correct and can not be applied always and in all circumstances. These rules are applicable only in the long run and in average form.

vi. To be used by Experts:

The work of collection, analysis and interpretation of data should be done only by experts who have the special knowledge of statistical methods. If the data are dealt by unqualified and untrained persons the conclusions can be derived or wrong conclusions either cannot be obtained. As Yule and Kendall write, "statistical methods in the hands of unqualified persons are like dangerous equipments."

As Conclusion, it is proper to mention that in the present time there is no science where statistics is not used.

Important Points :

- Statistics is a science which relates with significant numbers.

- The subject of statistics can be divided into two parts-
(i) Statistical Method and (ii) Applied Statistics
- The laws and principles of Economics are derived from statistical data.
- There are limitations of applications of statistics. If these limitation are not kept in mind, the results may be illusive and biased.

Questions For Exercise

Objectives Type Questions:

1. In plural sense STATISTICS means-
(a) Statistics as Science
(b) Data
(c) Statistical Measures
(d) All of the above ()
2. Statistics is –
(a) Science of Counting
(b) Science of Estimates and Probability
(c) Science of Data Interpretation and analysis
(d) All of the above ()
3. Who defines statistics as "Statistics is science of counting or ends"-
(a) Bowley (b) Cowden
(c) John Griffin (d) Parsen ()

Very Short Answer Questions :

1. Write the meaning of Statistics.
2. Write the meaning of Statistics in plural sense.
3. Define data.
4. Write any two limitations of statistics.
5. What are the areas in which applied statistics is used?

6. Who is the father of Statistics?
7. Define Statistics in singular sense.

Short Answer Questions :

1. What do you understand by Statistics ?
2. Explain the scope of Statistics in brief.
3. What are the different statistical methods?
4. Explain any two limitations of Statistics.
5. Explain the relation of Statistics with Economics in brief.

Essay Type Questions :

1. Explain the meaning and scope of Statistics.
2. Explain Statistics in brief. Describe its relation with Economics.
3. Define Statistics. Describe its limitations.
4. Define Statistics. Explain the role of Statistics in Economics.

Answer to objective Type Questions

- (1) b (2) c (3) a

Reference books:

1. Kailash Nath Nagar- Sankhyiki ke Mool Tatva.
2. Ranga, Gupta, Goyal, Bhatnagar, Shah, Raghuvanshi- Sankhyiki, 2nd Edition.

Chapter - 2.2

Collection of Data

Statistical investigation is a complicated process. After planning the statistical investigation a proper method is chosen and then the work of data collection is started. Collection of data is the fundamental activity of the science of Statistics. Data are the base of the statistical Science. The success of analysis and interpretation of data and their further activities depends on the correctness of the data collection. The work of data collection for a statistical investigator is just like a building constructor who collects stone, sand, cement, brick, etc. As without the collection of building material the construction of building is not possible, in the same way investigation is not possible without data collection. If the collected data lack the accuracy and sufficiency, the results derived from these data will be doubtful and incorrect. So there is need of precautions in the data collection.

Primary and Secondary Data:

Data are of two types on the basis of the sources of data collection –

- (i) Primary Data
- (ii) Secondary Data

Primary Data:

Primary data are data which are collected first time newly by the investigator for the own use. In other words if the investigator collects data first time from the beginning to the end are

known as primary data. When original data are collected about the playing habits of students after going on the play ground, these are the primary data.

Secondary Data :

There are the data which have already been collected by other persons or institutions and which have been published. The investigator only uses these data. In other words, if the data have already been collected by some investigator and other investigator uses these data for the investigation then for the second investigator the data are known as the secondary data. For example, if the investigator uses the data collected and published by government on agriculture, labour, employment then these data are known as secondary data.

Difference between Primary and Secondary Data :

These differences can be seen as below:

(i) Nature of Data:

Primary data are original and as the raw material for the statistical methods. Secondary data have already gone through the scope of statistics and are like the finished goods.

(ii) Collection of Data:

Primary data are collected either by the

investigator or by the representative of the investigator. Secondary data are collected by other people or institutions which have already been published.

(iii) Planning of Collection of Data:

Primary data are newly collected after an independent planning while secondary data are already available. It means the data which are available in publications, reports, etc. are the secondary data.

(iv) Objective of Data:

Primary data are always collected according to the investigation while less money and time are used in the collection of secondary data. Secondary data are set according to the objective of the study.

(v) Money, Time and Effort :

More money, time and effort are required in the collection of secondary data.

Methods of Collection of Primary Data:

Following are the different methods used for collecting the primary data-

- (i) Direct Personal Investigation
- (ii) Indirect Oral Investigation
- (iii) Information through correspondents
- (iv) Information through schedules to be filled by the informants.
- (v) Information through Enumerators

1. Direct Personal Investigation Method:

This method is appropriate for such investigations whose area is limited, has the local nature and in which more emphasis is given to the originality, accuracy and secrecy of data. In this method of primary data collection the investigator himself or herself meets to the persons from whom the data have to be collected in the investigation area and directly comes in the contact of the

persons and thus collects data on the basis of inspection and experience. Investigation relating with income-expenditure, condition of labourers, educated unemployment etc. in the limited area are carried out by this method of data collection. Arthur Young used this method in the study of agriculture production. This method has the merits of accuracy, uniformity, reliability and flexibility. In this method of data collection the investigator can be biased, there can be more expenditure and some others are the demerits.

2. Indirect Oral Investigation:

In this method of collection of primary data the information is not collected from the persons who are directly related to the problem to be investigated but is collected from the third persons by the way of oral investigation. Persons from which the information is to be collected are not contacted directly. For example, collecting information about way of life of labourers from trade unions or mill-owners instead of from labourers. This method is used when the area is large. Being economical, biaslessness, etc. are the merits of this method of data collection. Getting information indirectly, possibility of getting false information, etc. are the demerits of this method.

3. Information through Correspondents:

In this method the investigator appoints the local people or special correspondents who send or collect the time to time information and send the same to the investigator.

4. Information through Schedules to be filled by the Informants:

In this method the investigator prepares a list of questions or questionnaire and this questionnaire is sent by post to persons from which the information has to be collected.

Along with this the investigator also requests the informants to maintain secrecy and to send the information within the time. This method is appropriate when the area is very large. For the success of this methods the informants should be literate or educated. This method is used to collect data on family budget, polling survey, unemployment, etc. Being original, economic, etc. are the merits and being biasedness, lack of accuracy, etc. are the demerits of this method.

5. Information through Enumerators :

In this method of data collection a list of questions is prepared and given to enumerators who ask the questions and thus the schedules are filled in. Enumerators are trained and know the local language. This method is appropriate when labour and money resources are sufficient. Generally governments use this method for data collection. Census, Socio-economic survey, etc. are the areas in which this method is used. Accuracy, reliability, biasednessless, etc. are the merits of this method. This method is not economic, and there is chance of being delayed due to training.

Schedule and Questionnaire:

Schedules and questionnaires are used in the survey to collect data. Generally schedule is got filled in by the enumerator after asking the questions and the questionnaire is got filled in by the informants.

Merits of a Good Questionnaire :

Following are the merits of a good questionnaire :

- (i) Size of questionnaire should be small and the number of questions should be less.
- (ii) Questions should be simple and easy to understand.
- (iii) Questions should be set in such a manner that their answers can be given correctly.

Questions can be objective type.

- (iv) Question should not be of the type to hurt the self respect of the informants. The spirit hurting questions should not be asked.
- (v) Questions should be of the type so that the informants can give the answer.
- (vi) Words used in questions should be correct and relevant.
- (vii) Questions must have a clear-cut answer.
- (viii) Order of questions should be proper and consistent so that answer can be given with strictly convenience.
- (ix) Questions should strictly be related with the investigation.
- (x) There should be all alternatives to a questions.
- (xi) Open questions should be less in number (for example, give the suggestion to remove corruption).
- (xii) Written instructions should be given to maintain secrecy regarding information and the given answers.
- (xiii) Such questions should be asked so that their correctness can be tested.
- (xiv) There should be clear instructions about filling in the questionnaire.

Difference between Questionnaire and Schedule :

Below mentioned are the differences between questionnaire and schedule.

- (i) Questionnaire is filled in by the informants while schedule is filled in by the enumerator by asking the questions.
- (ii) Questionnaire is sent to informants by post while schedule is filled in by enumerator who meets the informants.
- (iii) There is no direct contact between investigator and the informants in case of

questionnaire while in case of schedule there is direct contact.

- (iv) Questionnaire is related with an educated informant while schedule is related both with educated and uneducated informants.
- (v) System of questionnaire is economic while system of schedule is related with higher expenditure.
- (vi) In questionnaire the level of accuracy is lower but in schedule the level of reliability is higher.

Collection of Secondary Data:

Secondary data are the data which have already been collected by any person or institution or government. Thus secondary data are the data which are reused in the investigation.

There are two sources of secondary data:

- (i) Published Source
 - (ii) Unpublished Source
- (i) **Published Source** : Many investigating agencies, government departments, research institutions and corporations collect and publish the original data. Following are the sources of published data:
1. Government publications
 2. Report of committers and commissions
 3. Publications of semi-government institutions
 4. Publications of commercial institutions
 5. Publications of news paper and magazines
 6. Publications of research institutions
 7. Research work of universities
 8. Publications of international institutions
 9. Original books of expert persons
- (ii) **Unpublished Source**: Sometimes government or other institution or persons

(specially researchers) collect information or data on different subjects but they do not get it published. Such unpublished material is available or can be obtained from the office files, records, registers and diaries of researchers.

Scrutiny and Uses & Secondary Data:

Before using the secondary data, these data should critically be scrutinized and then the data should be edited in an enlarged way. There are many short comings in secondary data so these data should be used with precautions. The investigators should look into the reliability, sufficiency and accuracy of the secondary data before using these data in the study.

Precautions in Use of Secondary Data:

Following points should be noticed while scrutinizing the data on the basis of reliability, appropriateness and sufficiency:

- i. First of all it is necessary to know that which investigator collected the secondary data primarily
- ii. It is also essential to know that the used method of data collection is useful or not.
- iii. Before using the secondary data it should be noticed whether the collected data are proper and useful as per the objective and area of investigation. If there is difference in objective and area these data are not considered to be appropriate.
- iv. It should be ensured that the to which time the available data are related and in which circumstance data are collected. Data collected in war circumstances can not be used in the circumstances of peace. If there is difference in the circumstance of primary collection of data and their use, such data can be of less utility.
- v. The level of precision in data collection should be kept high so that these data can be more reliable.

- vi. Data should be compared if these are collected from different sources so that their reality can be judged.

Method of Statistical Investigation :

All the statistical investigations try to get the information about population. This information can be obtained in two ways which are known as the methods of statistical investigation. These two methods are :

- (i) Census method
- (ii) Sample method

i. Census method :

When investigator gets information from all the units of population, this is known as the census method or the complete enumeration. Under this method information of each unit of the population is collected. Population census in a country is an example of this method. Under population census information about each house and each person is collected. This information is wide one. Results of this method are pure and reliable. This method is very expensive, more labour using and time consuming.

ii. Sample method:

Under this method some units are selected from the population and conclusions are obtained from these selected units. While purchasing wheat, rice, etc. we do not examine each wheat or rice but a few quantity of wheat or rice is examined and thus on the basis of this examination we take decision whether to purchase wheat or rice or not. This method saves the time and money. This method requires some additional precaution otherwise there is possibility of wrong conclusion.

Sample method is based on three principles, known as three laws: These laws are: (i) Principle of Probability (ii) Statistical Regularity Law, and (iii) Law of Large Inertia.

Methods of Sample Selection :

When statistical investigation is carried out

from the sample method, a sufficient number of unit are selected from the population. These are the samples which are unbiased and representative. Following are the methods of sample selection:

1. Purposive Sample :

When samples are selected by the investigator with the help of his own mind and experience, the samples are known as purposive sample.

2. Random Sample :

If samples are selected randomly and thus each unit of population has same probability to be included in the sample, the samples are known as random sample. Following are the methods of taking random samples.

i. Lottery Methods:

Under the lottery method chits of paper are prepared for each unit of the population and then one by one chits of paper are taken away by any unbiased person.

ii. By Rotating Drum:

Under this method of sample selection small pieces of wood or iron are taken and the number of all the units are mentioned one by one on these pieces of wood or iron. These numbered pieces are then put in this drum. Now drum is rotated. An unbiased person now takes away the pieces of wood or iron from the drum in the predetermined number.

iii. Blindfold Method :

Under this method a map is prepared by making as many sections on it as the number of units in the population. Now this map is used for the sample selection by a person having a piece of cloth on the own eyes. The person now throws arrow on the map and in which section of the map the

arrow touches that marked number becomes a sample.

iv. Arrangement in Definite Order :

Under this method all the units of population are arranged in a proper way according to the alphabet. Then desired units are selected from this list on the basis of the equal differences.

v. Using Random Number Tables:

Many Statisticians have prepared random number tables. Tippet's random number table has 10400 random numbers of 4 digits which have been arranged in an order. By giving the order number all selected with the help of the Tippet's table and samples are chosen.

3. Stratified Sample :

Under this method the units of population are divided into different groups on some basis. These groups are known as strata. Then out of these strata desired size of samples are drawn randomly from each stratum.

Other Methods :

There are some others methods of taking samples like multiphase random sampling multistage sampling, quota sampling and convenience sampling.

Important Points:

- On the basis of source data are of two types
 - i. Primary data
 - ii. Secondary data.
- Data collected by investigator directly from beginning to the end are the primary data.
- Data primarily collected by any other person and have been published are secondary data.
- Questionnaire is filled in by the informant.

- Schedule is filled in by the enumerator.
- Published source and unpublished source are the two sources of secondary data.

Question for Exercise

Objective Type Questions :

1. Primary data are:
 - (a) Original data
 - (b) Collected firstly
 - (c) Already not in existence
 - (d) All of the above ()
2. Secondary data are collected by :
 - (a) Through schedules
 - (b) Through questionnaire
 - (c) Through published and unpublished sources
 - (d) All of the above ()

Very Short Answer Questions :

1. How many types of data are from the collection point of view ?
2. What are primary data ?
3. What are secondary data ?
4. Why are primary data known as original data ?
5. What is direct personal investigation ?
6. What is meaning of questionnaire ?
7. What is random sample ?

Short Answer Questions :

1. What is difference between published and unpublished sources ?
2. State any three differences between primary and secondary data.
3. What are the primary data ? Give example.
4. What are the secondary data ? Give example.

5. Write any three merits of a good questionnaire.
6. Write any three differences between questionnaire and schedule.
7. Explain the sources of secondary data in brief.

Essay Type Questions :

1. Explain the difference between primary and secondary data and describe the methods of the primary data collection.
2. What do you understand by secondary data ? What are different sources of secondary data?
3. Critically analyse the different methods of the primary data collection.
4. Describe the methods of statistical investigation.

Answer to objective questions:

(1) d (2) c

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1. Kailash Nath Nagar- "Sankhyiki ke Mool Tatva.
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Chapter - 2.3

Classification of Data

The collected data are generally complicated and unsystematic. These data are like a huge collection of facts which are not easy to understand and thus it becomes difficult to derive the desired results. So it is necessary to present these data in the systematic order to understand them easily and to derive the proper results. These unsystematic and unrefined data are just like the store of a street hawker who moves in streets and purchases old books and note-books, empty glass bottles, plastic and iron items old news papers, etc. and at last the hawker sells these items to the whole seller. There are many street hawkers who sell such items to whole sellers. These whole sellers then divide these goods/items into different classes according to the quality and type. This process enables the traders to sell these goods in the market according to demand. Thus unsystematic and unrefined data are classified to make them systematic and statistically useful for the analysis. Classification of data enables statisticians to compare them and to get the required conclusions.

Example : A teacher presents the data of marks of 50 students of a class in Economics as below:

22, 20, 30, 26, 31, 48, 25, 14, 19, 24, 11, 45, 27, 25, 06, 40, 13, 03, 29, 11, 24, 47, 02, 09, 45, 31, 20, 12, 15, 41, 49, 01, 27, 24, 31, 07, 02, 49, 14, 19, 17, 44, 47, 26, 09, 02, 42, 35, 26 and 17.

Can we draw any conclusion from these data? Because these data are not systematic and classified, so these data have to be arranged in an order (ascending or descending) and then the data will become comparable and meaningful.

Under classification collected data are divided into different classes according to different properties and qualities. Classification is a process in which the data are arranged in different classes or groups on the basis of equality and uniformity. Classification can be real or imaginary. In this process the uniformity in diversity of data is reflected.

Objectives of Classification :

Different objectives of classification are as described below:

1. Making Simple and Brief:

The objective of classifications is to put the collected data in the simple and short form so that data can easily be understood. So, in above example, it is difficult to get the average and other information If these data are classified as 0-10, 10-20, then they can easily be understood.

2. Explaining Equality and Inequality:

Under classification data are put into different classes according to different characteristics and thus they reflect the equality and inequality.

3. **Help in Comparison :**

The comparison of data becomes easier when they are classified. If the population of two cities or villages is classified as literate and illiterate or married and unmarried or employed and unemployed then both the cities or villages can easily be compared.

4. **Logic based Arrangement :**

Classification is a logic based activity. Under this activity data are presented systematically. For example, division of census data in the classes of age, sex, caste, religion, state, urban or rural, etc. is a logic based activity.

5. **Basis of Tabulation :**

Tabulation is impossible without classification. Thus classification provides the basis for the tabulation of data. Also statistical analysis is impossible without classification.

Requirements of Idle classification :

The following elements are required for an idle classification:

1. **Clarity :** It should be clear and certain that in which class or group the collected data have to be arranged. Classes must be constructed in such a way that these classes should reflect the simplicity and clarity. Each similar item should be included in one class.
2. **Stability :** The classification should be stable so that data can be compared and the result can be meaningful.
3. **Universality :** The classes are constructed in such a way that any item could not be left without inclusion. Each and every item must be included in any of the classes. If necessary, some sub-classes under main

classes can be formed. For example, under the married and unmarried classes, sub-classes of widow, widower divorcee, etc., can be constructed. So classification must be complete and wide.

4. **Appropriate:** Classes should be objective oriented. For example, to know the economic condition or saving behavior of people, the classes should be formed on the basis of income.
5. **Flexibility :** Classification should be flexible so that different classes can be changed, modified and adjusted as per the new requirements.
6. **Uniformity :** The units of each class should be uniform. In each class or group, all the same units should be kept.

Methods of Classification :

There are two types of statistical data- (i) Descriptive or qualitative data, and (ii) Numerical or quantitative data. The qualitative data can not be measured directly. These are measured only by the presence or absence criterion. For example, literacy, marital status, employment, etc. are the qualitative variables. Quantitative data are measured directly or by assigning the numerical values, for example, income, age, weight, height, etc. These facts are known as variables also. variables are always having changing values.

On the basis of the above two types of data, there are two types of classification also – (i) Qualitative classification and (ii) Quantitative classification or classification according to class-intervals.

1. Qualitative Classification :

This classification is also known as the classification according to attributes. When facts are classified on the basis of characteristics, it is known as the classification according to attributes. This classification has two types as below :

- (i) When the facts are classified in two classes on the basis of the presence or absence of a characteristic, this is known as simple classification or biclassification. For example, the available data are classified as rural or urban and male or female.
- (ii) When facts are divided on the basis of two or more characteristics, this is known as the multiple classification. For example, the classification of census data as male and female and then these both are again classified as literate and illiterate and then further classified as employed and un-employed is the multiple classification.

These both types of classification can be shown as below :

Whole population is classified as:

Male :

- i. Literate
 - (a) Employed
 - (b) Unemployed
- ii. Illiterate

i. Literate :

- (a) Employed
- (b) Unemployed

ii. Illiterate :

- (a) Employed
- (b) Unemployed

Female

i. Literate

- (a) Employed
- (b) Unemployed

ii. Illiterate

- (a) Employed
- (b) Unemployed

2. Quantitative Classification:

This is the classification according to class-intervals. Under this classification data are

divided in different classes on the basis of some characteristics, for example, income, production, marks obtained, age, etc.

Example 2 : The marks of 100 students of a class are classified as below in the class intervals of 10-10. Marks are between 00 and 98.

Marks obtained	No. of Students
0-10	3
10-20	7
20-30	8
30-40	11
40-50	30
50-60	20
60-70	13
70-80	4
80-90	3
90-100	1

Following are the concepts related with the quantitative classification:

- (i) **Class Limits :-** Each class has two limits. The first limit is known as the lower limit (L_1) and the second limit is known as the upper limit (L_2). In the class (50-60), L_1 is 50 and L_2 is 60.
- (ii) **Class- Intervals :-** It is the difference of L_2 from L_1 , denoted by i . so, $i = L_2 - L_1$. In the above example, i is 10 for each class. The class-interval can be same or different for all classes.
- (iii) **Mid-Point or Mid-Value :** Mid-point is the value in the centre of the class. It is the half of the sum of both the limits of a class.

Thus,

$$\text{Mid-point} = \frac{L_1 + L_2}{2}$$

- (iv) **Class-Frequency :-** Class frequency is the number of items in the both limits of a

class. In the above example, number of students is 11 of the class (30-40) which is known as the class frequency. The class-frequency is denoted by 'F'.

Frequency Distribution :

A frequency distribution explains the classification of data on the basis of a measurable variable. This distribution is a table in which the values of a variable are shown in different classes along with their frequencies. Thus, frequency distribution is a systematic arrangement of classes of different values with their frequencies. Clearly, frequency distribution is a function of variable and frequency.

Variables are of two types and are denoted by 'X'. These are.

- (i) Discrete variable, and
- (ii) Continuous Variable

Discrete variables are the variables which have the definite values. They do not have range and their units can not be divided.

For Example; 0, 1, 2, 3, ... as the marks obtained in examination, number of children in the family, number of goals in a football match, etc.

Continuous variable is that variable whose value is not certain or fixed. This variable can take any value in the given class. For example, in the class (10-20) the values which can be included are any between 10.01 and 19.999.

Following table shows both the discrete and continuous frequency distribution for the purpose of comparison.

Discrete Frequency Distribution		Continuous Frequency Distribution	
No. of Children	No. of Family	Marks Obtained	No. of Students
0	5	10-20	7
1	18	20-30	12

2	35	30-40	20
3	21	40-50	40
4	13	50-60	16
5	8	60-70	5
Total	N = 100	Total	N = 100

When data are very large in number and spread in irregular way then tally marks are used for arranging the frequencies in different classes. This makes the classification simple and comfortable. For these tally marks a symbol (I) is used. If there are two values in a class then the tally marks used are (II). For five values in a class the symbol used is (HHH). After this all the tally marks are added which becomes the frequency of a particular class.

Problems of Classification according to Classes:

Under the quantitative classification, following problems are faced and thus these problems must properly be solved.

(i) Number of Classes :

There is not any fixed rule to fix the number of classes. Number of classes should properly be decided so that important characteristics of data can be reflected and important information can be included. Generally, number of classes should be in between 5 to 15.

(ii) Magnitude :

Normally the magnitude depends on two factors- (i) the maximum and minimum values in given data, and (ii) number of classes. It should be tried to keep the same magnitude for all classes as far as possible. The magnitude (i) is calculated as below:

$$i = \frac{\text{Maximum value} - \text{minimum value}}{N}$$

$$= \frac{L - S}{N}$$

where, N - number of classes.

(iii) Class Limits:

The class-limits of different classes should be clearly determined and as far as possible these limits should not be in fractions. Each and every unit of the group must be included in any class. Class-limits can be in both forms of inclusive and exclusive. But for simplicity class-limits should be in the exclusive form.

Statistical Series:

We study different series in statistics. In reality, a series is a systematic and logical order of items or facts. Statistical series are the systematic order of arrangement of statistical factors according to some fixed basis. Statistical series are of three types on the basis of their construction. These are:

- (a) Individual Series
- (b) Discrete Series
- (c) Continuous Series

(a) Individual Series :

In these series each item is individually and independently important. Each item is individually measured and thus not included in any group or class. If marks of 40 student in a class or the monthly expenditure of 25 families are shown individually this becomes an individual series.

Example: 30 students of a class obtain marks out of 10 in a monthly test as follows:

8, 2, 9, 3, 5, 8, 6, 1, 0, 5, 5, 4, 2, 9, 8, 8, 4, 5, 3, 7, 7, 2, 3, 5, 9, 3, 4, 6, 1 and 7.

In this series there is no column of frequency.

(b) Discrete Series :

The series in which each unit has its actual or real measurement is known as the discrete series. In this series the given values of a variable

are not divisible. Thus discrete series is that one which is obtained by orderly arrangement of the values of the discrete variable. The variable generally does not have the values in fractions.

For example, number of children in a family, number of pages in a book, accidents in a city, marks obtained by students, etc. are the discrete variables.

Example : The marks of 30 students (given in the above example) can be arranged in a discrete series as below:

Marks (X)	No. of Students (F)
0	1
1	2
2	3
3	4
4	3
5	5
6	2
7	3
8	4
9	3
10	0
Total	N = 30

In this series X is a discrete variable and F is the frequency.

(c) Continuous Series :

This series is concerned with the continuous variables. Continuous variables do not have fixed value, but they can have any value in the certain class or limit. Values of variables are shown in classes rather than showing individually. This type of series is known as continuous series. Each value is kept in a class and thus the real measure is not clear. There is continuity in the continuous series which means the upper limit of the

preceding class is equal to the lower limit of the next class. The continuous series is used for the continuous variables like age, height, weight, income, production, saving, consumption, etc.

Example :- By using the above data of marks of 30 students, continuous series can be constructed with the magnitude of 2-2 marks as shown below:

Class of Marks (X)	No. of Student (F)
0-2	3
2-4	7
4-6	8
6-8	5
8-10	7
Total	N=30

Difference between Discrete and Continuous Series :

The difference between discrete and continuous series can be shown as below:

- (i) **On the Basis of Structure :** In discrete series the value of units is given while in continuous series classes are given.
- (ii) **On the Basis of Measurement :** The measurement in discrete series is actual and generally not fractional. In continuous series the measurement is not actual but it is artificially constructed in terms of classes.
- (iii) **On the Basis of Discontinuity :** There is discontinuity in the discrete series and there can be a fixed difference in item-values. In continuous series there is continuity.
- (iv) **On the Basis of the Source of construction :** Discrete series is constructed by discrete variables and continuous series is constructed by continuous variables.

Methods of Classification according to Class-Intervals :

Here, there are two methods :-

- (i) Exclusive Method, and
- (ii) Inclusive Method

1. Exclusive Methods :

In this method, the upper limit of the previous class is equal to the lower limit of the next class. This method is exclusive method because the value of variable equal to the upper limit of class is not included in that class but included in the next class. If the income class in an institution is Rs. (400-500) per month then the wage of Rs. 500 is not included in this class but included in the next class of Rs. (500-600).

Example : Exclusive class-intervals can easily be understood by the two below given tables:

Table-I

Marks	
0-10	0 but less than 10
10-20	10 but less than 20
20-30	20 but less than 30
30-40	30 but less than 40
40-50	40 but less than 50

Table II

Income (Rs.)	
0-400	0 but less than 400
400-1000	400 but less than 1000
1000-2000	1000 but less than 2000
2000-5000	2000 but less than 5000
5000-10,000	5000 but less than 10,000

2. Inclusive Series :

The class in which the values of a variable between the lower limit and upper limit are

included is known as the inclusive series. In this method the value of a variable equal to the upper limit of the class has to be included in that class. This method of inclusive series is recognized by the fact that the upper limit of the previous class is not equal to the lower limit of the next class and the maximum difference between these two limits is not more than 1.

Example : The inclusive series can be understood with the help of 3 columns of the below table:

I Column	II Column	III Column
Weight of children (X)		
40-45	0-9	20-29.5
46-50	10-19	30-39.5
51-55	20-29	40-49.5
56-60	30-39	50-59.5
61-65	40-49	60-69.5

Changing Inclusive Series in Exclusive Series:

Generally inclusive series is used for the discrete variables like number of labourers, marks obtained, etc. but for continuous variables, like income, age, weight, etc. exclusive series is used. If the data are given in inclusive series it should be changed into exclusive series for the simplicity. Under this process the difference of upper limit of the previous class and the lower limit of the next class (d) is halved. This halved difference is added to the upper limits of all the classes to get the real upper limits and subtracted from the lower limits of all the classes to get the real lower limits/ So,

$$\text{Real } L_1 = L_1 - \frac{d}{2}$$

$$\text{and Real } L_2 = L_2 + \frac{d}{2}$$

In the first column of the above table the difference in all the classes is same. So,

$$d = 46 - 45 = 1$$

$$\text{Half of difference} = \frac{d}{2} = 0.5$$

$$\text{Thus, } L_1 = 46 - 0.5 = 45.5$$

$$L_2 = 45 + 0.5 = 45.5$$

In this way the data of first column of the above table are changed in the exclusive series.

To calculate statistical averages (arithmetic mean, mode, median, etc.) the frequency distribution must be normal. If the cumulative frequency distribution is given, the same has to be changed into the normal frequency distribution. With the help of examples the following two data series can easily be understood:

- (i) Changing normal frequency distribution in the cumulative frequency distribution.
- (ii) Changing cumulative frequency distribution in the normal frequency distribution.

(i) Changing normal frequency distribution in cumulative frequency distribution :

The following table shows the normal frequency distribution.

Classes (x)	Frequency (F)
0-5	4
5-10	16
10-15	20
15-20	8
20-25	2
Total	N=50

The above example can be changed in two types of cumulative frequency distributions, namely:

- (a) Less than cumulative frequency Distribution.
 - (b) More than cumulative frequency distribution.
- (a) **Less than Cumulative frequency distribution :**

By using upper limits of all the classes of

the above table, less than cumulative frequency distribution is shown as below:

‘Less than’ Cumulative Frequency Distribution

Class (x) (Less than)	Cumulative Frequency (CF)
Less than 5	4
Less than 10	20 (4 + 16)
Less than 15	40 (20 + 20)
Less than 20	48 (40 + 8)
Less than 25	50 (48 + 2)

(b) More than Cumulative Frequency Distribution:

The above normal frequency distribution can be changed in ‘more than’ cumulative frequency distribution by using the lower limits of all classes as below:

‘More than’ Cumulative Frequency Distribution:

Marks(x) (More than)	Cumulative Frequency (CF)
More than 0	50 (46+4)
More than 5	46 (30 + 16)
More than 10	30 (20 + 10)
More than 15	10 (4 +6)
More than 20	4

(ii) Changing Cumulative frequency Distribution in Normal Frequency Distribution :

In this process the classes are formed on the basis of the two nearby class-limits and then the cumulative frequencies are changed in the normal frequencies.

Example : Change the following series in the normal frequency distribution –

Marks(x) (More than)	Cumulative Frequency (CF)
Less than 5	4
Less than 10	20
Less than 15	40
Less than 20	48
Less than 25	50

Solution:

Marks obtain (X) (Less than)	CF	Class	F
Less than 5	4	0-5	4
Less than 10	20	5-10	16(20-4)
Less than 15	40	10-15	20 (40-20)
Less than 20	48	15-20	8 (48-40)
Less than 25	50	20-25	2 (50-48)

In the same way the ‘more than’ cumulative frequency distribution can also be changed in the normal frequency distribution.

Miscellaneous Question :

- The marks obtained by 50 students in an examination are given as below:

25	30	45	42	52
50	73	60	58	43
76	78	44	63	42
49	44	38	54	67
41	52	65	65	70
37	61	35	40	84
32	50	61	88	54
49	87	35	65	51
50	35			

Change the above data in a frequency distribution by taking 20-30, 30-40, etc. as classes.

Solution : In this question the first class is taken as (20-30) and with 10 as class-interval, other classes are formed as given below.

Class	Tally Marks	Frequency (F)
20-30	II	2
30-40	HHH IIII	9
40-50	IIII IIII I	11
50-60	HHH HHH III	13
60-70	HHH III	8
70-80	IIII	4
80-90	III	3
Total		N = 50

2. Put the following frequency distribution in (i) less than and (ii) more than cumulative frequency distribution.

Marks Obtained	No. of students
0-10	21
10-20	39
20-30	32
30-40	58
40-50	37
50-60	13

Solution : (i) Above distribution has been shown in less than cumulative frequency distribution as below:

Marks Obtained	CF
Less than 10	21
Less than 20	60 (21+39)
Less than 30	92 (60+32)

Less than 40	150 (92+58)
Less than 50	187 (150+37)
Less than 60	200 (187+13)

(ii) The 'more than' cumulative frequency distribution is shown as below :

Marks Obtained	CF
More than 0	200
More than 10	179 (200-21)
More than 20	140 (179-39)
More than 30	108 (140+32)
More than 40	50 (108+58)
More than 50	13 (50-37)

3. Change the following inclusive series in the exclusive series.

Class	F
1-10	5
11-20	10
21-30	15
31-40	8
41-50	7

Solution: There is a difference of 1 between the upper limit of previous class and the lower limit of the next class. The half of this difference has to be subtracted from the lower limit of each class and has to be added to the upper limit of each class. This method changes the above series into the exclusive series as below:-

Class	F
0.5-10.5	5
10.5-20.5	10
20.5-30.5	15
30.5-40.5	8

40.5-50.5	7
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4. Change the following classes of unequal intervals to classes of equal intervals.

Class	F	Class	F
0-3	5	18-20	24
3-6	8	20-24	12
6-10	12	24-25	15
10-12	14	25-28	10
12-16	16	28-30	6
16-18	16	30-36	5

Solution : In the above table the class-intervals are not equal for all classes. The class-intervals can be changed in equal class-intervals by considering 6 as the difference. Thus new classes become as 0-6, 6-12, Accordingly the frequencies will also be adjusted as shown below:

Class	F
0-6	13
6-12	26
12-18	32
18-24	36
24-30	31
30-36	05

5. Change the following series in the normal continuous series.

Mid-value	F
10.5	3
17.5	7
24.5	15
31.5	25
38.5	40

45.5	18
52.5	12
59.5	10

Solution: The mid-value of above series have to be changed in the equal class-intervals. There is difference of 7 between all the mid-value of the series. To change these data into normal continuous series the half of 7 (i.e.3.5) has to be added to the mid-values to get the upper limit and 3.5 has to be subtracted from the mid-values to get the lower limit of the classes. Thus the changed series appears as below:

Mid-Value (m)	Class	F
10.5	$10.5 \pm 3.5 = 7-14$	3
17.5	$17.5 \pm 3.5 = 14-21$	7
24.5	$24.5 \pm 3.5 = 21-28$	15
31.5	$31.5 \pm 3.5 = 28-35$	25
38.5	$38.5 \pm 3.5 = 35-42$	40
45.5	$45.5 \pm 3.5 = 42-49$	18
52.5	$52.5 \pm 3.5 = 49-56$	12
59.5	$59.5 \pm 3.5 = 56-63$	10

Important Points:-

- The objective of classification of data is to make them systematic.
- Classification is the process of arrangement of data in different classes on the basis of similarity and uniformity.
- With the help of classification the collected data are presented in brief and simple forms which become helpful in comparison and in making them similar.
- Clarity, stability, flexibility, and uniformity are the necessary elements of an ideal classification.

- There are two methods of classification (i) Qualitative Classification and (ii) Quantitative classification.
- In quantitative classification, the terms like class-limits, class-interval, mid-point, class frequency are used.
- The arranged form of values or classes and their frequencies is known as frequency distribution.
- The frequency distribution is of two types (i) discrete frequency distribution and (ii) continuous frequency distribution.
- Number of classes, class-interval and class-limits are the main issues of classification.
- There are three types of statistical series – (i) individual series, (ii) discrete series, and (iii) continuous series.
- According to classes inclusive and exclusive are the two methods of classification.
- The cumulative frequency series are known as (i) less than and (ii) more than series. Cumulative frequency distribution is changed in normal frequency distribution.

Question for Exercise

Objective Type Questions :

- In an exclusive series,
 - Both the class limits are considered
 - Lower limit is not considered
 - Upper limit is not considered
 - Both limits are not considered ()
- The frequency of each item-value in individual series is.
 - Equal
 - Unequal
 - Both above situations possible

- No truth exists ()
- Main objective of classification is,
 - To show large data group in brief.
 - To make data flexible
 - To make data stable
 - To make data mutually exclusive ()
- Name of the following series is,

X :	1	2	3	4	5
No. of Students :	20	4	2	3	1

 - Individual
 - Discrete
 - Continuous inclusive
 - Continuous exclusive ()
- The mid-value of the class of 10 as lower limit and 20 as upper limit is:
 - 15
 - 10
 - 15
 - 30 ()
- Which is not a quantitative fact ?
 - Height
 - Weight
 - Unemployment
 - Age ()

Very Short Answer Questions :

- Name the two types of qualitative classification.
- What is the classification on the basis of variables ?
- What do you mean by variable ?
- Write names of different series
- What are the class-limits ?
- How is the mid-value calculated ?
- Which limits are used in 'less than' and 'more than' while getting the cumulative frequency ?

Short Answer Questions :

- What do you understand by classification of

data ?

2. What are main objectives of classification ?
3. Write any four elements of an idle classification.
4. What is frequency distribution?
5. Differentiate the exclusive and inclusive series.
6. How is the normal frequency distribution changed in the cumulative frequency distribution ? Give Example.
7. Do you agree that classified data are better than raw data ?

Essay Type Questions:

1. Explain the exclusive and inclusive methods used in the classification of data.
2. Explain the necessary elements of an idle classification. What are the objectives of classification ?
3. Construct the discrete and continuous series by taking an imaginary example.

Answer to objective Questions :

(1) c (2) d (3) a (4) b (5) c (6) c

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Chapter - 2.4

Presentation of Data

Collected data are complicated and unsystematic. Generally data are in large quantity. Originally, the collected data are in the large groups which cannot easily be understood nor any proper logical conclusion can be derived. So there is need of making data presentable in the suitable form. It is necessary that the collected data should be simple, brief and understandable so that comparative study, analysis of data and their interpretation can become possible. To understand the collected data easily and to make them useful, there is need of the proper presentation of data. Generally, presentation of data can be of three types.

- (a) **Textual or Analytical Presentation**
- (b) **Tabulated Presentation or Tabulation**
- (c) **Diagrammatic and Graphical Presentation**

(a) **Textual or Analytical Presentation :**

Under this type of presentation data are described in the text. This is a proper method for the quantitative data. For Example, during the student strike in the city on October 25, 2015 only 12 shops were opened and 155 shops shut down and only two school run and 24 schools closed.

(b) **Tabulation :**

The collected data are firstly classified then tabulated for the purpose of their

comparison and interpretation. Tabulation makes data simple, brief and easy to understand. Thus, tabulation means the presentation of the classified data in tables for making them simple and brief.

Broadly speaking, tabulation is a process in which data are presented in rows and columns. Tabulation enable in deriving the final logical result.

Objective :-

There are three objectives of tabulation:

- (i) Presentation of data in the arranged way.
- (ii) Presentation of data in the simple and brief way.
- (iii) Making the problem simpler and more clear.

Importance of Tabulation:

Tabulation is the important process between classification of data and their interpretation. Under tabulation we arrange data for the statistical use and for taking necessary decisions.

The importance of tabulation can be explained on the basis of following points:

1. Simplicity :

Tabulation helps the understanding the necessary information easily and speedily and thus it ends the complexity of data. The incorrect

information can easily be found out with the help of tabulation.

2. Comparative Study :

With the help of tabulation, the comparison can easily be made because the comparable data are mentioned in the nearby spaces.

3. Demonstration :

Tabulation helps in presenting data in the form of diagrams and graphs with more attraction.

4. Saving of Time and Space :

The large sized facts and data use the less time and space if presented in tables.

5. Statistical Analysis :

The tabulation is used for necessary calculation of statistical values relating with dispersion, skewness, regression, correlation, etc. These measures are the statistical methods which are used to study the socio-economic variables.

Difference between Tabulation and Classification :

Tabulation and classification both are the important functions of the statistical investigation. The scattered and unsystematic data can be made simple, brief and understandable with the help of tabulation and classification. There are some difference in these two which are as below :-

1. First of all the unsystematic data are classified and then put into different categories. Thus tabulation is based on the classification.
2. Under classification the data are put into different classes or categories on the basis of their similar or dissimilar properties. Under tabulation the classified data are arranged into rows and columns.
3. Classification is a statistical method while tabulation is a process of presentation of data.

4. Under classification data are divided in classes or sub-classes while under tabulation data are shown in titles and subtitles.

Construction and Main Parts of a Table :

Before tabulating the data, it is necessary to know that what are the important parts of a good table. The simplest way of tabulating data is to adjust the data in rows and columns. Following are the main parts of a good table :

1. Table number
2. Title of the table
3. Stubs and captions
4. Main Body of the table
5. Drawing lines and keeping spaces vacant
6. Arrangement of items
7. Unit of measurement
8. Footnotes
9. Origin or sources

The brief analysis of the above parts is as below:

1. Table Number :

The table can be identified with the table number. The table number is mention on the top of the table. For Example, table 6.3 shows that it is table 3 of chapter 6.

2. Title :

The title of the table shows the subject matter of the table. This title should be clear, brief and correct and to be written with the or after the table number.

3. Stubs and Captions :

Each row of table should be given a title, which is known as stub. The stubs are mentioned in the extreme left column of the table. Similarly each column of the table are also given the title known as caption.

4. Main Body of the Table :

The facts or data are given in the main body of the table. Main body is the heart of the table. The size of main body depends on the matter and availability of data.

5. Drawing Lines and Keeping Spaces Vacant :

By drawing lines and keeping spaces vacant the tables can be made beautiful. Which line should be bold, which line should be thin and what should be colour of different lines depend on the subject matter of the table.

6. Arrangement of Items :

The table can be made more attractive and useful by arranging the items systematically and orderly. All the comparable cells should be kept near to each other in the table.

7. Unit of Measurement :

If the whole table has the same unit of measurement, the unit of measurement should be mentioned alongwith the title. The different units of measurement should be mentioned alongwith the stubs and captions.

8. Footnotes:

If any relevant information has not been given in the table or any fact needs some special explanation, it should be given in the end of the table.

9. Source :

The source of data and information should also be given at the end of the table so that the data can be shown doubtless.

The main parts of the table has been shown in the below chart:

Table 6.3
Title of Table
(in %)

Stubs/Row	Captions/Columns	Total
------------------	-------------------------	--------------

Title	Title		
	Literate	Illiterate	
Rural	Body of Table		
Urban			
Total			

Footnotes :

Source :

Kinds of Tables :

There are different bases on which the tables are constructed . The following chart shows the classification of tables:

1. Objective Based Table

- i. Common Objective
- ii. Special Objective Table

2. Origin Based Table

- i. Primary Table
- ii. Derived Table

3. Structure Based Table

- i. Simple Table
- ii. Complex Table

A. Complex Table :

- i. Two-way Table
- ii. Three-way Table
- iii. Multiple Table

1. Objective Based Table:

The common objective does not have any special objective. This is also known as the reference table. Special objective table is constructed to fulfill a special objective. The size of special objective table is limited in comparison to the common objective table. This is also known as the analysis table where we use mean, percentage, ratio, etc.

2. Origin Based Table :

The original data are shown in the primary table. This is also known as the classification table. In derived table total, percentage, ratio, multiple, etc. are shown along with the original data.

3. Structure Based Table :

When data are expressed on the basis of only one characteristic, this is known as simple table . Distribution of population according to age/sex/state is the example of the simple table.

When data are expressed on the basis of more than one characteristics, table is known as complex table. A complex table can be two-way table, three-way table or multiple table. The classification of population according to age and sex is the example of two-way table and the classification of population according to age, sex and literacy is the example of three-way table.

Example 1 : Construct a blank table showing the classification of man power data according to age, sex and rural urban domicile.

Solution : A three-way table has to be constructed for the above example.

Man Power According to Age, Sex and Rural-Urban Domicile.

Age Class (Year)	Rural			Urban			Total		
	M	F	Total	M	F	Total	M	F	Total
0-20									
20-40									
40-60									
More than 60									
Total									

Foot Note – M – Male, F- Female

Source : Census 2011

Rules for Construction of Statistical Table:

The construction of a sound table depends on the qualification and experience of the investigator. Following are the rules of constructing a good table:

1. Title :

Each table must have a clear, complete and brief title which can reflect the subject, time, and classification of the data.

2. Rows and Columns :

The number of rows and columns should initially be decided according to the objective of and the data to be presented in the table. Columns must be given the serial numbers. The columns titles must be clear along with the unit of the measurement. Numbers of columns should be not unnecessarily large.

3. Comparison :

The data to be compared must be shown near to each other. The derived values like percentage, ratio, multiple, etc. must be kept nearer to the original data.

4. Lines :

The important information should be shown alongwith the bold lines so that the reader can easily be attracted towards these values.

5. Arrangement of Items:

The different items must be arranged in the table according to importance, size, place, time etc. The data of more importance must be shown in the limited spaces in the table.

6. Special Importance:

The special information should be shown by bold letters in the table.

7. Footnotes :

Any information which needs some special attention and that has not been cleared in the table should be mentioned in the footnote at the end of the table.

8. Origin or Source:

The source of data should be mentioned at the end of the table.

9. General Rules:

An investigator must follow all the above rules of constructing the table alongwith some general rules like: size of table should be according to the size of the paper, if information or data are more, more than and table should be constructed, etc but it should be kept in mind that each table should be complete, simple, economic and that can easily be understood.

(c) Diagrammatic and Graphical Presentation :

Data are interestless and thus showing data in the form of diagrams and graphs can be understood easily. It becomes very easy to take conclusion with the help of diagrams and graphs. Thus, presentation of data in terms of diagrams and groups helps in understanding the facts without putting much burden on the mind. When data are presented by diagrams and graphs in newspapers and magazines, they can easily be understood. Here, there are two methods for the analysis: (1) Diagrammatic presentation of data, and (2) Graphical presentation of data.

1. Diagrammatic Presentation of Data :

Diagrammatic presentation means showing data with the help of simple and attractive geometric figures like bar diagram, rectangle, circle diagram, etc. One diagram is equal to many thousand words. Following are the benefits of diagrammatic presentation of data.

- A. Attractive and effective
- B. Simple and understandable
- C. Labour and time saving
- D. Helpful in comparison
- E. Wide application
- F. Source of entertainment and information.

These benefits are emplaning as below:

A. Attractive and Effective :

Diagrams are more attractive and effective so these are much popular. The matter which is not clear in terms of data can be learnt easily with the help of diagrams.

B. Simple and understandable presentation :

The complicated and unsystematic data can simply and easily be studied and understood with the help of diagrams. Diagrams give instant information about the subject. In the same way, the complicated facts related with data can easily be understood with the help of diagrams.

C. Saving of Labour and Time:

Generally more time and labour are required in deriving conclusions from the given data. It is the benefit of diagrams that these can be studied in less time and with less labour. So diagrams same time and labour.

D. Helpful in Comparison :

Different facts can easily be compared with the help of diagrams. The comparison based on diagrams is more effective than based on numerical comparison. If a table gives data of output for 8 years and on the other hand this information is shown in diagrams, then it is easier to compare with the help of diagram.

E. Wide Application :

Diagrams are widely used in every sphere of our life. Diagrams are intensively as well as extensively used to study the issues relating with trade, commerce, advertisement, education, health, etc.

F. Entertainment and Information :

Diagrams are a very good source of

entertainment and information. So there is an easy attraction of people towards diagrams.

Generals Rules for Constructing Diagrams:

Diagrams should be constructed with precautions. This is the job of expertization and qualification and that should be taken into account while constructing diagrams. The following rules should be followed to make the diagrams attractive and effective :

(1) Attractive and Cleanliness:

Diagrams are the visual aids of statistical data presentation. Diagrams are attractive to our eyes and leave permanent effect on our mind. So, diagrams must be clean, interesting and attractive. Diagrams can be made more attractive by using different types of columns, points and lines.

(2) Accuracy :

While making diagrams attractive, the accuracy should be ensured. The inaccurate and wrong diagrams give the misleading and doubtful results.

(3) Suitable Size :

There is no certain rule about size of diagrams. Diagram should neither be very large sized nor very small sized.

(4) Title and Footnotes :

There should be a clear, appropriate and brief title of the diagrams so that the facts and subject matter can be known. The required footnotes should be given below the diagram on the left side.

(5) Selection of Scale :

Selection of scale is very important in the diagrammatic presentation of data. The scale should be determined according to the size of the paper, nature of data and important characteristics of data. The scale should properly be mentioned both on vertical and horizontal axes. When two

or more diagrams are compared the scale should be same.

(6) Index :

The necessary indexes are to be given on the right corner above to explain the various used symbols (dots, lines, shades, squares, etc. so that diagrams can easily be understood.

(7) Simplicity :

The diagrams must be simple to understand so that readers should not face any doubtful situation.

(8) Choice of a Suitable Diagram :

There are many types of diagrams used to present the data. Which diagram has to be used depends on the nature of data, range of data, etc. The knowledge, experience and efficiency are also required for the selection of the proper diagram.

Kinds of Diagrams :

The statistical diagrams are mainly of 5 types:

1. One Dimensional Diagram

These are as below:

- i. Line Diagram
- ii. Simple Bar Diagram
- iii. Multiple Bar Diagram
- iv. Sub-divided Bar Diagram

2. Two Dimensional Diagram

These are of 3 types:

- i. Rectangular Diagram
- ii. Square Diagram
- iii. Circular Diagram

3. Three Dimensional Diagram

4. Pictograms

5. Cartograms

Here we study the line diagram, simple bar diagram, rectangular diagram and the circular diagram.

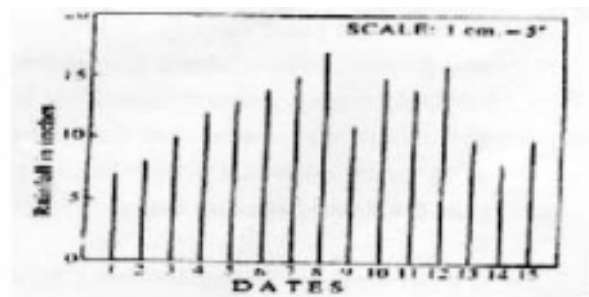
(A) Line Diagram :

Line diagram is a one dimensional diagram. When the number of item-values is large and the difference between small and large values of the data series is less then line diagram is considered to be appropriate. In line diagrams the gap between different lines is kept same and vertical lines are drawn equal to the each value of items. These lines are not bold and thus are less attractive. Thus the given values can easily to compared.

Example : The data about the rainfall of 15 days are given below. Show these data by the appropriate diagram.

Date	Rainfall
1	7
2	8
3	10
4	12
5	13
6	14
7	15
8	17
9	11
10	15
11	14
12	16
13	10
14	18
15	10

Solution : In case of the given data the line diagram is appropriate which is drawn as below :



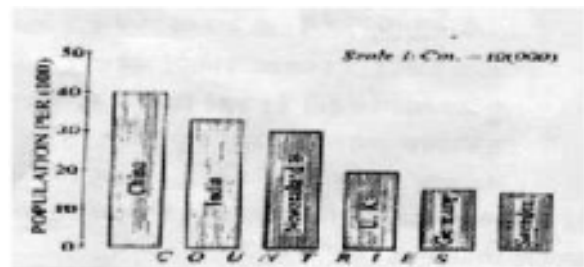
(B) Simple Bar Diagram :

This is also one dimensional diagram. Simple bar diagrams are used if the item values are small. There is a difference between line diagrams and bar diagrams that bar diagrams are constructed with certain width so that they can be more attractive. Simple bar diagrams are drawn with equal width and the height of bar is in the ratio of values of items. In these diagrams the difference among bars is kept equal. Simple bar diagrams can both be vertical and horizontal. These diagrams are more appropriate for the presentation of individual data and the time series data.

Example : The data of birth rate (per thousand) of different countries in a certain time period are given in the below table. Construct a proper diagram.

Country	China	India	Neweland	U.K.	Germany	Sweden
Birth Rate	40	33	30	20	16	15

Solution : Birth Rate (,000) in Different countries scale: 1cm=10,000



(C) Rectangular Diagrams :

These diagrams are two dimensional diagrams. In one dimensional diagrams only one dimension (height/width) is considered in the

construction. The areas of two dimensional diagrams are in the ratio of the item-values so these are also known as surface diagrams or area diagrams.

The rectangular diagrams are used to compare the two or more than two values. There are two types of rectangular diagrams.

(i) Percentage Sub-divided Rectangular Diagram

(ii) Divided Rectangular Diagram

(i) Percentage Sub-divided Rectangular Diagram :

By this diagram, family budgets of different families can be compared. In these diagrams, the total income is assumed to be 100 (%) and the expenditure on different items is changed into percentage. Now, rectangular diagrams are constructed with the equal height of 100. The width of these rectangles is kept in the ratio of total expenditure and then on different items the rectangle is divided into different parts.

Example : Present the below given monthly expenditure (in Rs.) of Two families by the two dimensional diagram.

Item of Expenditure	Family A	Family B
Food	400	500
Cloth	200	500
House Rent	160	200
Fuel	80	100
Misc.	160	400
Total Expenditure	1000	1600

Monthly Expenditure of Two Families

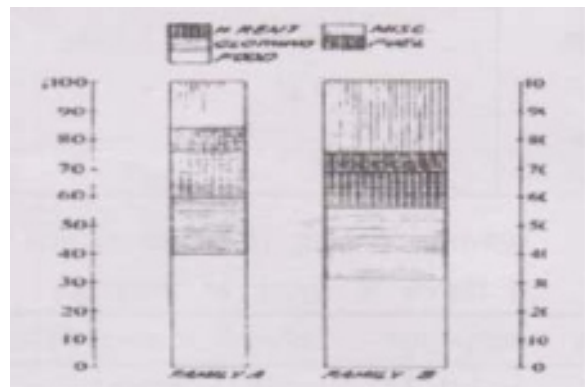
Solution : The expenditure amount can be changed in percentage according to the following table assuming income of Rs. 100 for both

families. If the spent amount on various items is less than total expenditure, it may be shown as savings of the families and then construct a rectangular diagram.

Items of Exp.	Family A			Family B		
	Rs.	%	Cum . %	Rs.	%	Cum . %
Food	400	40	40	500	31.3	31.3
Cloth	200	20	60	400	25	56.3
House Rent	160	16	76	200	12.5	68.8
Fuel	80	8	84	100	6.25	75
Misc.	160	16	100	400	25.0	100
Total	1000	100		1600	100	

(ii) Divided Rectangular Diagram:

These diagrams are used to represent the different facts which are related to each other, For example, per unit price of a commodity, quantity of sale and sales receipts are shown with the help of this type of diagram. In these diagrams, the width is taken in the ratio of per unit price and height is taken in the ratio of quantity of sale. For getting the sales value the height has to be multiplied with the width which gives the area of the rectangle. Rest of the procedure is same as followed in the percentage sub-divided rectangular diagram.



(D) Circular or Pie Diagram :

The circular diagram is constructed in the same way as the square diagram. Circular diagrams are also the two dimensional diagrams. Under the construction of circular diagrams, first of all the square roots of the given values are calculated and then radius of circles are obtained in the ratio of square roots. These radius are used for the construction of circles. The circles are constructed on the same base with equal distance. Circular diagrams are sub-divided in sub-parts so that comparison can be made. For the construction of circles the total sum of items is assumed to be equal to 360° and then angles are calculated for each item. Since the angle in the centre of the circle is of 360°, so circular diagrams are also known as the angular diagrams.

Example : Present the following data into the angular diagram:

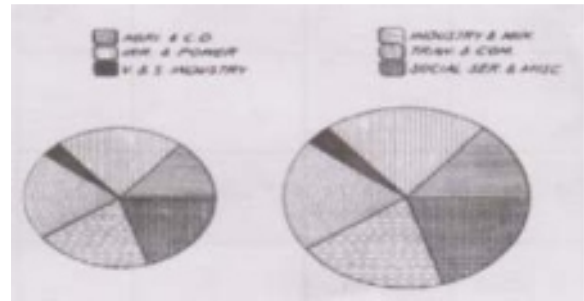
Population of India According to Work-status (2001)

Work-Status	Population (Crore)
Marginal worker	9
Main worker	31
Non-worker	62
Total	102

Solution : For all the given values above the angles are calculated as shown in the following table:

Work-Status	Population	Percentage	Angle (Degree)
Marginal Worker	9	8.8	32°
Main Worker	31	30.4	109°
Non-Worker	62	60.8	219°
Total	102	100.00	360°

With the help of the above data angular diagrams are constructed as below:



Example : Construct the blank table from the following information:

1. Distribution of population according to age.
2. Classification of population according to age and sex.
3. Classification of population according to age, sex and literary.
4. Classification of population according to age, sex, literacy and distribution in states.

1. Distribution of Population according to Age :

In this case a simple blank table is constructed as below:

Age Group (Years)	No. of Person (Million)
0-20	-
20-40	-
40-50	-
>50	-
Total	-

2. Classification of Population according to Age and Sex:

When the given data have two characteristics we construct the two-way table. The classification of population according to age and sex is shown in the following blank table.

Age Group (years)	No. of Person (Million)		
	Male	Female	Total
0-20	–	–	–
20-40	–	–	–
40-50	–	–	–
> 50	–	–	–
Total	–	–	–

3. Classification of Population according to Age, Sex and Literacy:

In the three-way table three characteristics are shown simultaneously. Following blank table shows the classification of population according to age, sex and literacy.

Age Group (Yrs)	No. of Person (Million)						
	Male			Female			Total
	Lit	Illit	Tot	Lit	Illit	Total	
0-20	–	–	–	–	–	–	–
20-40	–	–	–	–	–	–	–
40-50	–	–	–	–	–	–	–
>50	–	–	–	–	–	–	–
Total	–	–	–	–	–	–	–

4. Classification of Population according to Age, Sex, Literacy and Distribution in States:

The Following blank table is a multiple table.

State	Age Group (Yrs)	No. of Person (Million)									Total	
		Male			Female			Total				
		L i	l l	T o t	L i	l l	T o t	L i	l l	T o t		
Bihar	0-20	–	–	–	–	–	–	–	–	–	–	–
	20-40	–	–	–	–	–	–	–	–	–	–	–
	40-50	–	–	–	–	–	–	–	–	–	–	–

	>50	–	–	–	–	–	–	–	–	–	–
	Total	–	–	–	–	–	–	–	–	–	–
Rajasthan	0-20	–	–	–	–	–	–	–	–	–	–
	20-40	–	–	–	–	–	–	–	–	–	–
	40-50	–	–	–	–	–	–	–	–	–	–
	>50	–	–	–	–	–	–	–	–	–	–
	Total	–	–	–	–	–	–	–	–	–	–

Graphs of Frequency Distribution:

Generally data given in grouped frequency distributions can be presented by frequency graphs. Frequency graphs are of the following types.

- Histogram
- Frequency polygon
- Frequency curve
- Cumulative frequency curve or ogives.

In constructive the above graphs, the size and classes are measured horizontally and frequencies are measured vertically.

(a) Histogram :

Histograms are used to present data of continuous series. In histograms, rectangles are constructed in the height of the frequencies of the class-intervals. If the class-intervals are inclusive, these are converted into the exclusive class-intervals. With the help of histogram, mode can be determined.

Determination of Mode by Graph :

After construction the histogram, the highest rectangle is considered for the determination of mode and the related class-interval is known as the model class. The upper right corner of this bar is joined with the upper right corner of the preceding bar. In the same way the upper left corner of the highest bar is joined with the upper left corner of the succeeding bar.

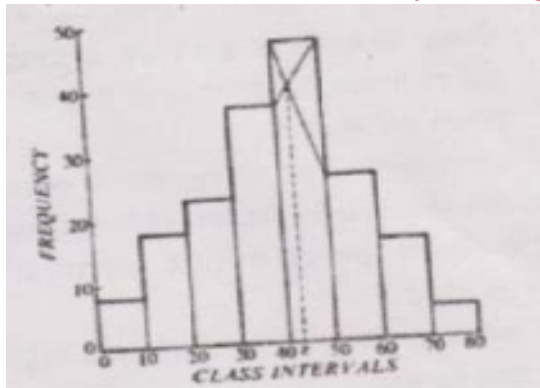
From the intersection point of these two lines a perpendicular is drawn on the horizontal axis and thus the value of mode is determined.

Example: Show the below given data by the histogram and determine the mode.

Class	Frequency
0-10	8
10-20	18
20-30	23
30-40	37
40-50	47
50-60	26
60-70	16
70-80	5

Solution : The histogram has been shown as below:

Determination of Mode by Histogram :



According to the inspection method, (40-50) is the model class in which the value of mode lies. Thus,

$$\begin{aligned}
 Z &= L_1 + \frac{F_1 - F_0}{2F_1 - F_0 - F_2} \times xi \\
 &= 40 + \frac{47 - 37}{94 - 37 - 26} \times 10 \\
 &= 40 + 3.2 = 43.2
 \end{aligned}$$

(b) Frequency Polygon :

Frequency polygon is constructed from the values of mid-points and their frequencies. In this

graph the values in discrete or continuous series are measured on the X-axis and the frequencies are measured on the Y-Axis. All the mid-points of all the bars in the histogram are joined and the figure obtained is known as frequency polygon.

(c) Frequency Curve:

The frequency curve is a smoothed figure/curve of the frequency polygon. This curve is constructed as a free hand curve by passing through the nearby mid points of the frequency polygon. It is not necessary that all the points of the frequency curve pass through the all points of the frequency polygon, but it passes through the nearest points on the frequency polygon.

(d) Cumulative Frequency Curve:

Cumulative frequency curve is constructed by measuring the upper limit of class-intervals on the X-axis and cumulative frequencies on the Y-axis. With the help of the cumulative frequency curves the values of quartiles, deciles, octiles and percentiles are determined. There are two types of cumulative frequency curves:

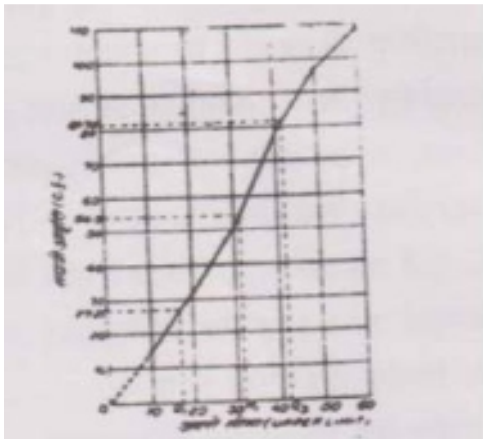
- (i) By cumulative frequencies and upper limit of the class-intervals. This curve is known as 'less than' cumulative frequency curve and has the negative slope.
- (ii) By cumulative frequency and the lower limit of the class intervals. This curve is known as 'more than' cumulative frequency curve and has the positive slope.

The point at which the two cumulative frequency curve intersect with each other determines the value of median.

Example : Construct a cumulative frequency curve and determine the median from the data given below:

Age(Less than)	10	20	30	40	50	60
No. of Person	15	32	51	78	97	109

Solution : Above data are used to construct the cumulative frequency curve as shown below:



Data in above table are given in the form of the cumulative frequency distribution. So,

$$\begin{aligned} \text{Median (M)} &= \text{Size of } \left(\frac{N}{2}\right)\text{th item} \\ &= \text{Size of } \left(\frac{109}{2}\right)\text{th item} \\ &= \text{Size of 54.5th item} \end{aligned}$$

By applying the formula, the calculated value of M is 31.3.

It is clear that the graphs are very important in economics. The positional averages can easily be determined with the help of graphs. With the help of diagrams and graphs the message can easily reach to the common people.

Important Points:

- There is need of proper presentation of data for comparative study, analysis and interpretation.
- Data can be presented in there forms:
 - (a) Textual Presentation
 - (b) Tabulation, and
 - (c) Diagrammatic and Graphical Presentation.
- Presenting data into tables for making them simple and brief is known as tabulation. Tabulation is important from the point of view of simplicity, comparative study,

presentation, saving of time and place, and statistical analysis.

- Classification is a method of statistical analysis while tabulation is a process of presentation of data.
- Tables are classified according to objective, structure and origin.
- Diagrammatic and graphical presentation of data can be understood simply and easily.
- Data can be represented by two methods:
 - (a) Diagrammatic representation
 - (b) Graphical representation
- Under graphical representation bar diagrams, rectangular diagrams, circular diagrams, etc. are constructed.
- Data of the grouped frequency distributions can be presented in the form of histogram, frequency polygon, frequency curve and cumulative frequency curves.

Questions for Exercise:

Objective Type Questions :

1. Diagrams used to compare two or more than two related data groups on the basis of quality, time and place are :
 - (a) Simple bar diagram
 - (b) Multi-bar diagram
 - (c) Sub-divided bar diagram
 - (d) Rectangular diagram ()
2. Information required to construct circle is :
 - (a) Square (b) Side
 - (c) Raddi (d) Circle ()
3. What is circle ?
 - (a) A raddi
 - (b) Two dimension

- (c) Three dimension
 (d) All of the above ()

4. What will be the angle in the circular diagram to show the ratio of 40% woman literacy in India ?

- (a) 60° (b) 72°
 (c) 144° (d) 40° ()

5. In which series the mode is determined with the help of histogram ?

- (a) Individual Series
 (b) Continuous Series
 (c) Discrete Series
 (d) Exclusive Series ()

6. Which is not a two dimensional diagram ?

- (a) Bar Diagram
 (b) Square Diagram
 (c) Rectangular Diagram
 (d) Circular Diagram ()

7. The graphical presentation is performed on :

- (a) Simple Paper
 (b) Graph Paper
 (c) Drawing Sheet
 (d) Any Paper ()

Very Short Answer Questions:

1. What is meaning of line diagram ?
2. Which diagram can be used for getting the mode?
3. Explain the tabulation.
4. Write any three bases of data representation.
5. Write any four points about utility of diagrams.
6. Write the name of two dimensional diagrams.

7. Construct a histogram.

Short Answer Questions:

1. State the difference between tabulation and classification.
2. What is difference between diagrams and graphics ?
3. What are the important points to keep noted at the time of graphical representation ?
4. Mention any four points showing the importance of diagrams.
5. What are the bases of classification of tables?

Essay Type Questions:

1. Explain the meaning of tabulation. What are the different parts of a table? What are the points to be noted while doing tabulation ?
2. Construct a blank table for the distribution of population according to education, employment and sex in a city.
3. Explain in brief the different diagrams generally used to present the statistical facts.

Answer to objective questions:

- (1) b (2) c (3) b (4) c (5) b (6) a (7) b

Reference Books :

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Chapter - 3.1

Arithmetic Mean

Primarily, there is problem in proper understanding and comparing the data. Data are presented in form of the frequency distribution via the methods of classification and tabulation so that data can easily be understood. These methods are the primary methods of the statistical analysis. These methods do not show the important characteristic of data. These important characteristics of data are briefly represented by the measures of central tendency and for this purpose we study the statistical averages.

Each data series has such a point around which the other data are having the tendency of concentration. This value lies in about the centre of the data series. This value is a representative value of the important characteristics of data and thus known as the measure of central tendency or the average.

Accordingly to Simpson and Kaphka. "Central tendency is a such value at which other numbers are concentrated."

Measures of central tendency are also known as the statistical averages or place related measures. Statistical averages are practically very useful. With the help of these averages, the complicated and unsystematic data can be presented in the simple form. This simple form represents the population. Two or more groups can be compared. These statistical averages are considered as base in other statistical techniques

and are used in the policy making process by the planners.

Characteristics of an Idle Average :

Following are the main characteristics of an idle statistical average :

1. It should be defined clearly so that its meaning can be understood easily.
2. It should be simple to understand and calculate.
3. Its value must represent all the items of the data series. If this so, the statistical average can be regarded as a representative value.
4. It must be less affected by the extreme values of the given data. Thus the minimum and maximum values must have their least effect on the value of the statistical average.
5. It must be used in the higher algebraic analysis. An idle statistical average has some special mathematical features so that it can be used in the higher algebraic analysis. For Example, if we have mean value and the frequencies of some groups, we can calculate the combined mean of these groups.

Types of Measures of Central Tendency:-

The classification of measures of central tendency can be seen as below:

Statistical averages

(a) Positional Averages

- (i) Median (m)
- (ii) Mode (Z)

(b) Mathematical Averages

- (i) Arithmetic Mean (X)
- (ii) Geometric Mean (GM)
- (iii) Harmonic Mean (HM)
- (iv) Quadratic Mean (QM)

(c) Commercial Averages

- (i) Moving Average
- (ii) Progressive Average

The analysis of arithmetic mean (\bar{X}), median (M) and mode (Z) is the subject matter of this unit.

Arithmetic Mean :

This mean is the most familiar and important among all the mathematical averages and this is frequently used by the common people in their daily life.

The arithmetic mean is that value of the data series which is calculated by divided the sum of all items or observations by the total number of items. If the weight of 6 children is 41, 48, 47, 45, 52 and 39 kilogram, then the arithmetic mean of the weight of these 6 children is 47 kilogram. The total of weights of 6 Children is 282 kilogram which is divided by total number of students which is 6 and thus we get 47 Kilogram as mean weight.

Generally arithmetic mean is denoted by \bar{X} .

Type of Arithmetic Mean :

There are two types of this mean,

- (1) Simple or unweighted arithmetic mean
- (2) Weighted arithmetic Mean

Calculation of Simple Arithmetic Mean:

Simple arithmetic mean can be calculated in individual, discrete and continuous series separately by the direct method and the short cut method.

Calculation of \bar{X} in Individual Series:

Here, \bar{X} can be calculated by direct method and short-cut method.

1. Direct Method :-

In this method, the sum of all the items (ΣX) is divided by the number of items (N) and thus arithmetic mean is obtained. If X_1, X_2, \dots, X_N are the N items. Here,

$$\bar{X} = \frac{X_1 + X_2 + \dots + X_N}{N}$$

$$\bar{X} = \frac{\Sigma X}{N}$$

Example 1 : Calculate arithmetic mean from the following data:

S.No.	1	2	3	4	5	6	7	8	9	10
Marks Obt.	58	95	100	82	85	65	79	41	50	75

Solution : In this example, this sum of marks obtained (ΣX) is 730 and $N=10$ So,

$$\begin{aligned}\bar{X} &= \frac{\Sigma X}{N} \\ &= \frac{730}{10}\end{aligned}$$

$$\text{So, } \bar{X} = 73$$

This is the average marks obtained in examination by 10 students.

2. Short-cut Method :

When the items in the data series are large, size of number is big and values are in decimals then short cut method is suitable for the calculation of \bar{X} . Under this method a suitable value is taken (either from the given values or from the outside) and this value is called the assumed mean (A). The value of A is then subtracted from all the given values and thus change of origin technique is followed. These

values are known as the deviations taken from assumed mean (d). All these deviated values have to be summed up (Σd) and the following formulae is used for the calculation of \bar{X} .

$$\bar{X} = A + \frac{\Sigma d}{N}$$

Where,

A = Assumed Mean

Σd = Sum of deviations taken from assumed mean

N = No. of items of values

Example 2 : Calculate arithmetic mean from the short cut method by considering data of example 1.

The necessary calculations required in obtaining \bar{X} have been done in the following table.

S. No. of Students	Marks obtained (x)	A = 75 X-A=d
1	58	-17
2	95	20
3	100	25
4	82	7
5	85	10
6	65	-10
7	79	4
8	41	-34
9	50	-25
10	75	-25
N = 10		$\Sigma d = -20$

$$\begin{aligned} \text{Now, } \bar{X} &= A + \frac{\Sigma d}{N} \\ &= 75 + \frac{(-20)}{10} \\ &= 75 - 2 \end{aligned}$$

$$\text{So, } \bar{X} = 73$$

It can be seen that both the methods of direct and short cut give the same value of \bar{X} .

Calculation of \bar{X} in Discrete Series :

Here, \bar{X} can be calculated by both direct and short cut methods.

1. Direct Method :

In direct method, each value has to be multiplied with the respective frequency and then the multiplied values are summed up (ΣXF). This summed up value is divided by the number of items N which is the total of all frequencies ($N = \Sigma F$). Thus,

$$\bar{X} = \frac{\Sigma XF}{N} = \frac{\Sigma XF}{\Sigma F}$$

Example 3: Calculate arithmetic mean from the below given data-series.

Variable (x)	56	60	64	68	72	76	80	84	88
Frequency (F)	10	12	16	14	10	8	17	5	4

Solution : For the calculation of \bar{X} , the below table has to be prepared :

Variable (x)	Frequency (F)	FX
56	10	560
60	12	720
64	16	1024
68	14	952
72	10	720
76	8	608
80	17	1360
84	5	420
88	4	352
Total	N = 96	$\Sigma FX = 6716$

Now,

$$\bar{X} = \frac{\Sigma XF}{N}$$

$$= \frac{6716}{96}$$

So, $\bar{X} = 69.96$

2. Short-cut Method :

Under short-cut method, following steps are taken to calculate \bar{X} :

- (i) Taking assumed mean (A) from the given values of the variable.
- (ii) Calculating deviations from A i.e. $d = X - A$.
- (iii) Multiplying d with the respective frequency and getting Fd.
- (iv) Finding Σfd i.e. summation of the multiplication of d with F.
- (v) Applying the formula,

$$\bar{X} = A + \frac{\Sigma fd}{N}$$

Where, $N = \Sigma F$

Example 4: By using example 3, calculate \bar{X} with the short cut method.

Solution : The following table is required for the computational work:

Variable (X)	Frequency (F)	A =68 d =X-A	Fd
56	10	-12	-120
60	12	-8	-96
64	16	-4	-64
68	14	0	0
72	10	4	40
76	8	8	64
80	17	12	204
84	5	16	80
88	4	20	80
Total	N=ΣF = 96		Fd=188 =-280+468

Now, $\bar{X} = A + \frac{\Sigma fd}{N}$

$$= 68 + \frac{188}{96}$$

$$= 68 + 1.96$$

So, $\bar{X} = 69.96$

Calculation of \bar{X} in Continuous Series:

There are class intervals in the continuous series. The procedure of calculation of \bar{X} in continuous series is similar as in discrete series. The only difference is that in continuous series mid-values are taken first of all. Thus after taking mid-values (m) the continuous series becomes just like the discrete series. In continuous series, the class intervals can be in form of exclusive series, inclusive series or the series of the unequal class-intervals. In these all cases, the \bar{X} is calculated in the same way by using either direct method or by using short-cut method or by using the step deviation method.

1. Direct Method :

In this method, the mid-values are obtained which have then to be multiplied with the respective frequencies. Then sum of the multiplication of mid-values and respective frequencies is obtained. This sum has to be divided by the sum of the frequencies to get the value of \bar{X} . Thus,

$$\bar{X} = \frac{\Sigma Fm}{N} = \frac{\Sigma Fm}{\Sigma F}$$

Where, m is the mid-value, and

$$N = \Sigma F$$

2. Short-cut Method:

After getting the mid-values, the same process of calculating \bar{X} is followed as done in the discrete series. The formulae to calculate \bar{X} is,

$$\bar{X} = A + \frac{\Sigma Fd}{N}$$

where, $d = m - A$

$$N = \Sigma F$$

Example 5: Find out the arithmetic mean by both direct and short-cut methods in the following distribution.

Income (X) (in Rs.)	Frequency (F)
100-110	4
110-120	16
120-130	36
130-140	52
140-150	64
150-160	40
160-170	32
170-180	11

1. Direct Method :

$$\bar{X} = \frac{\Sigma Fm}{N} = \frac{36465}{253}$$

$$\text{So, } \bar{X} = 143$$

2. Short-cut Method :

$$\bar{X} = A + \frac{\Sigma Fd}{N}$$

$$= 145 + \frac{510}{255}$$

$$= 145 - 2$$

$$\text{So, } \bar{X} = 143$$

3. Step Deviation Method :

If the continuous series has equal class intervals and a large number of classes then the arithmetic mean should be calculate with the help of the step deviation method. By this method, the short cut method becomes easier. Under this method the deviations taken from assumed mean are divided by the common factor, which is equal in all classes and thus step deviations are found.

Following are the steps to be taken to calculate \bar{X} by the step deviation method :

(i) To get mid values of all classes (m)

(ii) To take assumed mean from the mid-values (A)

(iii) To take deviations from the assumed mean $d = (m-A)$.

(iv) To divide deviations by the common factor of class-intervals and thus to get the step deviations (d'), thus $d' = \frac{m-A}{i}$

(v) To multiply the step deviations with the respective frequencies and then to get their sum ($\Sigma Fd'$).

(vi) To use the below given formulae.

$$\bar{X} = A + \frac{\Sigma Fd'}{N} \times i$$

Example 6: Calculate \bar{X} by using step deviation method in the data of example 5.

Solution: For the given data is exercises 5, the following table has to be prepared:

Calculation of \bar{X}

Income Class (Rs.) (X)	F	Mid-Value (m)	A =145 d= m-A	i=10 d' = $\frac{d}{i}$	Fd'
100-110	4	105	-40	-4	-16
110-120	16	115	-30	-3	-40
120-130	36	125	-20	-2	-72
130-140	52	135	-10	-1	-52
140-150	64	145	0	0	0
150-160	40	155	10	1	40
160-170	32	165	20	2	64
170-180	11	175	30	3	33
Total	N =255				$\Sigma fd' =$ 137-188 = -51

Now,

$$\bar{X} = A + \frac{\Sigma Fd'}{N} \times i$$

$$= 145 + \frac{-51}{255} \times 10$$

$$= 145 - \frac{510}{255}$$

$$= 145-2$$

$$\text{So, } \bar{X} = 143$$

Weighted Arithmetic Mean :

All the values of the variable are given the same importance in the calculation of the simple arithmetic mean. The reality is that the different values have their different relative importance in the practical life. So it is necessary to calculate the arithmetic mean by considering the different relative importance of the different values of the variable. This relative importance of different values is assigned with the help of certain numbers. These numbers are known as weights. Thus the arithmetic mean calculated in this way is known as weighted arithmetic mean and denoted by \bar{X}_w . For example, if a male labourer, a female labourer and a child labourer earn Rs. 200, 160 and 90 respectively as daily wage in a factory, then their daily average wage is Rs. 150 which is not a correct mean because here the number of labourers in each category has not been taken with account. If the number of labourers in all the above three categories is 50, 20 and 10 respectively then it is more important to calculate the arithmetic mean by considering the number of workers. This example can be explained as below:

Wage (x)	Weight (w)	XW
200	50	10,000
160	20	3200
90	10	900
	$\Sigma W = 80$	$\Sigma XW = 14100$

Now,

$$\begin{aligned} \bar{X}_w &= \frac{\Sigma XW}{\Sigma W} \\ &= \frac{14100}{80} \end{aligned}$$

$$\text{So, } \bar{X}_w = 176.125$$

It is clear that,

$$\bar{X}_w = \frac{X_1W_1 + X_2W_2 + \dots + X_NW_N}{W_1 + W_2 + \dots + W_N}$$

$$\bar{X}_w = \frac{\Sigma XW}{\Sigma W}$$

Properties of the Arithmetic Mean

Following are the properties of the arithmetic mean:

(i) Sum of deviations taken from arithmetic mean is always Zero, i.e.

$$(\Sigma X - \bar{X}) = 0$$

(ii) Sum of squares of deviations taken from arithmetic mean is minimum, i.e.

$$\Sigma (X - \bar{X})^2 \text{ is minimum}$$

(iii) If any two values of \bar{X} , N and Σx are given, the third value can easily be obtained, i.e.

$$\bar{X} = \frac{\Sigma X}{N}, \Sigma X = \bar{X}N, N = \frac{\Sigma X}{\bar{X}}$$

(iv) If there are two or more than two groups of values of a variable and the arithmetic means and number of items of each group are given, then combined arithmetic mean can be calculated as below:

$$\bar{X}_{12} = \frac{N_1\bar{X}_1 + N_2\bar{X}_2}{N_1 + N_2}$$

(v) If class intervals are given in the form of exclusive and inclusive series, there is no need of any correction or adjustment to calculate the arithmetic mean.

(vi) In case of unequal class intervals there is no need of adjusting the frequencies.

(vii) If a constant number K is added or subtracted to or from all the items of data series, the arithmetic mean becomes $\bar{X}+K$ or $\bar{X}-K$ respectively.

(viii) If a constant number K is used to divide or multiply all the values of the data series, then accordingly the arithmetic mean becomes \bar{X}/K or $\bar{X}K$ respectively.

Miscellaneous Questions :

1. Calculate \bar{X} from the below given data:

Class Interval (X)	46-55	36-45	26-35	22-25	18-21
Frequency(F)	20	36	54	32	8

Solution: In this example classes are inclusive and in the descending order and also the class-interval are not equal. There is no need of any adjustment to calculate the X as done below:

Calculation of \bar{X}

Class (x)	Mid-value (m)	F	A=30.5 d = M-A	Fd
46-55	50.5	20	20	400
36-45	40.5	36	10	360
26-35	30.5	54	0	0
22-25	23.5	32	-7	-224
18-21	19.5	8	-11	-88
Total				$\Sigma fd=448$

Here,

$$\begin{aligned} \bar{X} &= A + \frac{\Sigma fd}{N} \\ &= 30.5 + \frac{448}{100} \\ &= 30.5 + 2.99 \end{aligned}$$

So, $\bar{X} = 33.49$

2. Calculate the arithmetic mean of the following data series.

Income (Rs.)	No. of Persons
100-200	15
100-300	33
100-400	63
100-500	83
100-600	100

Solution : This is the case of cumulative frequency series which has to be converted into the normal frequency series as below:

Calculation of \bar{X}

Income Class (x)	F	M	A=350 d=m-a	i=100 d' =d/i	Fd'
100-200	15	150	-200	-2	-30
200-300	18	250	-100	-1	-18
300-400	30	350	0	0	0
400-500	20	450	100	1	20
500-600	17	550	200	2	34
Total	N=100				$\Sigma Fd=6$

Now,

$$\begin{aligned} \bar{X} &= A + \frac{\Sigma Fd}{N} \times i \\ &= 30.5 + \frac{6}{100} \times 100 \\ &= 350 + 6 \\ \text{So, } \bar{X} &= 356 \end{aligned}$$

3. The average rainfall in a week (except Sunday) was 4.2cm. Due to excess rainfall on Sunday, the weekly average rainfall become 7.00cm. Find out the rainfall on Sunday.

Solution: The average rainfall in the week (except Sunday) = 4.2cm

Total rainfall in 6 days = 4.2 x 6

$$= 25.2 \text{ cm}$$

In whole of the week, the average rainfall = 7cm

Total rainfall in the week

$$= 7 \times 7 = 49 \text{ cm}$$

So, rainfall on Sunday

$$= 49.00 - 25.2 = 23.8 \text{ cm}$$

4. The mean of 50 students was 40. It was found later that marks of one student were considered

wrongly as 83 instead of the correct marks 53.
Find the correct mean marks.

Solution :

Given : $\bar{X} = 40, N = 50$

$$\begin{aligned} \text{Here, } \bar{X} &= \frac{\Sigma X}{N} \quad \Sigma X = N \bar{X} \\ &= 50 \times 40 = 2000 \end{aligned}$$

So, total wrong marks are 2000.

Now correct $\Sigma X =$ Incorrect ΣX

- Wrong Marks

+ Correct Marks

$$= 2000 - 83 + 53 = 1970$$

$$\begin{aligned} \text{So, Correct } \bar{X} &= \frac{\text{Correct } \Sigma X}{N} \\ &= \frac{1970}{50} \\ &= 39.4 \end{aligned}$$

5. The average wage of 60 male workers of a company is Rs. 40 and the average wage of remaining 40 female workers (total workers in the company is 100) is Rs. 35. Find the average wage of all the workers.

Solution : Given:

$$N = 100, N_1 = 60,$$

$$N_2 = N - N_1 = 100 - 60 = 40$$

Here, Combined Mean (\bar{X}_{12}) is :

$$\begin{aligned} \bar{X}_{12} &= \frac{N_1 \bar{X}_1 + N_2 \bar{X}_2}{N_1 + N_2} \\ &= \frac{60 \times 40 + 40 \times 35}{60 + 40} \\ &= \frac{2400 + 1400}{100} \\ &= \frac{3800}{100} \quad \bar{X}_{12} = \text{Rs. } 38 \end{aligned}$$

So, the average wage of all workers is Rs. 38.00

6. Calculate arithmetic Mean of the following data:

2, 4, 6, 8, 10, 12, 17, 21

Solution : The Arithmetic Mean is

$$\begin{aligned} \bar{X} &= \frac{\Sigma X}{N} = \frac{2+4+6+8+10+12+17+21}{8} \\ &= \frac{80}{8} = 10 \end{aligned}$$

- (i) If 2 is added in each item
- (ii) If 2 is subtracted from each item
- (iii) If each item is multiplied by 2
- (iv) If each item is divided by 2.

Calculate arithmetic in above 4 cases Here the constant number is 2.

X	X+2=X ₁	X-2=X ₂	X2= X ₃	X/2= X ₄
2	4	0	4	1
4	6	2	8	2
6	8	4	12	3
8	10	6	16	4
10	12	8	20	5
12	14	10	24	6
17	19	15	34	8.5
21	23	19	42	10.5
$\Sigma X=80$	$\Sigma X_1=96$	$\Sigma X_2=64$	$\Sigma X_3=160$	$\Sigma X_4=40$

(i) By adding 2:

$$\bar{X}_1 = \frac{\Sigma X_1}{N} = \frac{96}{8} = 12$$

$$\text{So, } \bar{X}_1 = \bar{X} + 2 = 10 + 2 = 12$$

(ii) By subtracting 2 :

$$\bar{X}_2 = \frac{\Sigma X_2}{N} = \frac{64}{8} = 8$$

$$\text{So, } \bar{X}_2 = \bar{X} - 2 = 10 - 2 = 8$$

(iii) By Multiplying by 2 :

$$\bar{X}_3 = \frac{\Sigma X_3}{N} = \frac{160}{8} = 20$$

$$\text{So, } \bar{X}_3 = \bar{X} \cdot 2 = 10 \times 2 = 20$$

(iv) By Dividing by 2 :

$$\bar{X}_4 = \frac{\Sigma X_4}{N} = \frac{40}{8} = 5$$

$$\text{So, } \bar{X}_4 = \bar{X} / 2 = 10 / 2 = 5$$

In this way the 7th property of the arithmetic mean is verified.

Uses of Arithmetic Mean:

The arithmetic mean is a simpler and easier to calculate and thus frequently used to study the economic and social problems. The concepts like average output, average cost, average income average export-import, average bonus, etc. use the arithmetic mean. This mean is an idle average even after having some demerits like that it is affected by the extreme values and gives the illusive conclusions.

Important Points :

Following are the important points related with arithmetic mean:

- The characteristics of different data can be expressed in terms of measures of central tendency.
- The measures of central tendency are the values towards with other values of data series are attracted.
- Statistical averages are useful in presenting the complicated data in the simple form, in representing the population, in comparing the groups and in formulating the future policies and plans.
- There are positional, mathematical and commercial averages studied in statistics.
- Arithmetic mean, harmonic mean and geometric mean are the mathematical averages.
- Arithmetic mean is calculated as

$$\bar{X} = \frac{\sum X}{N}$$
- Simple and weighted arithmetic means are the two types of arithmetic mean.
- Arithmetic mean is calculated by direct and short-cut methods in individuals, discrete and continuous series.

- In the calculation of simple arithmetic mean all the values are given the same importance while in case of weighted arithmetic mean the values are given the relative importance.
- The sum of deviations taken from arithmetic mean is always zero.

Questions for Exercise

Objective Type Questions :

1. The value which is calculated to show the property of data in brief is :
 (a) Statically Methods
 (b) Statistical Averages
 (c) Statistical Formula
 (d) Tabulation ()
2. The objective of arithmetic mean is:
 (a) Average value of items
 (b) Equal difference of items
 (c) Mid value of items
 (d) All of the above ()
3. Which average has the algebraic analysis ?
 (a) Arithmetic Mean
 (b) Median
 (c) Mode
 (d) All of the above ()
4. If $\bar{X}_1=4, \bar{X}_2 = 5, N_1 =10$ and $N_2 = 15$, the value of combined mean is :
 (a) 4.5 (b) 4.6
 (c) 5 (d) 4.8 ()
5. In a data series the sum of deviations taken from arithmetic mean is –
 (a) Maximum Sum (b) Minimum Sum
 (C) Zero Sum (d) Infinity ()

Very Short Answer Questions:

1. Name of positional averages.
2. What is the main difference between simple arithmetic mean and weighted arithmetic mean ?
3. When is the step deviation method used to calculate the arithmetic mean ?
4. What are the first category means ?
5. Write formulae to calculate the combined arithmetic mean.

Short Answer Questions :

1. Prove with example that sum of deviations taken from arithmetic mean is always zero.
2. What will be the change in arithmetic mean of a series if a constant number is added to & subtracted from and multiplied by and divided by a constant number ?
3. Write any four properties of an idle average.
4. Explain the statistical averages.
5. What are the objectives to study the averages?

Essay Type Questions:

1. What do you mean by measures of central tendency ? Describe the properties of the idle average.
2. If the mean age of children is 11.9 years, find out the number of children in the following table for the age class (10.5-15.5).

Age (years)	No. of Children
0.5- 5.5	3
5.5-10.5	17
10.5-15.5	?
15.5-20.5	8
20.5-25.5	2

3. Calculate arithmetic mean, mode and median from the following frequency distribution.

Class	Frequency
0-5	3
5-10	4
10-15	6
15-20	12
20-25	0
25-30	14
30-35	6
35-40	5

4. Find out weighted arithmetic mean from the below given data.

Item	Expenditure (Rs.)	Weight
Food grains	940	7.5
Rent	200	2.5
Cloth	500	1.5
Fuel	250	1.0
Others	240	0.5

Answers to Objective Type Questions

- (1) b (2) d (3) a (4) b (5) c

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Chapter - 3.2

Median

Median is a positional average. It is the mid-value of the ordered data series. After arranging the data series in either ascending or in descending order, the value which is in the middle is known as median.

Median is that value of the variable in the data series which divides the ordered series into two parts in such a way that in one part all the values are more than the median and in the second part all the values are less than the median. For example, if the daily income of 7 persons is Rs. 68, 95, 101, 118, 165, 182 and 210 respectively, here median is Rs. 118. The item of Rs. 118 is exactly in the middle of the series. There are three items (68, 95 and 101) which are less than median and another three items (165, 182, and 210) which are more than median. Generally, Median is denoted by M.

Determination of Median :

(1) Individual Series :

To calculate the median in the individual series, following steps are taken:

- (i) All the given values of the variable are arranged either in ascending order or in descending order.
- (ii) Following formulae is used to get the value of median-

$$M = \text{Size of } \left(\frac{N+1}{2}\right)\text{th item.}$$

Where, N= Number of items

$$M = \text{Median}$$

It is to be noted that the above formulae gives the number of the median and not the value of median. The value of the item corresponding to this number is the median. If the number of items in the individual series is even, the serial number in the centre will not be an integer. Here, to decide the value of such serial number, the both side two integers are added and then divided by 2. The value got in this way is the median.

Example 1 : Calculate median from the following data.

31, 38, 42, 33, 35, 49, 28, 45, 39

Solution : The values have to be arranged in the ascending order as below:

S.No.	Item-Value
1	28
2	31
3	33
4	35
5	38
6	39
7	42
8	45
9	49

Here,

$$M = \text{Size of } \left(\frac{N+1}{2}\right)\text{th item}$$

$$= \text{Size of } \left(\frac{9+1}{2}\right)\text{th item}$$

$$= \text{Size of } 5^{\text{th}} \text{ item}$$

Thus the size of 5th item is 38 which is the value of Median (M).

Example 2 : Calculate the median from the following data:

15, 19, 40, 20, 18, 22, 28, 11, 15, 15, 21, 35, 30, 23, 32, 22, 11, 12.

Solution : By arranging the given data into the ascending order the following information has been tabulated.

S.No.	Item Value	S.No.	Item Value
1	11	10	21
2	11	11	22
3	12	12	22
4	15	13	23
5	15	14	28
6	15	15	30
7	18	16	32
8	19	17	35
9	20	18	40

Applying the formulae,

$$M = \text{Size of } \left(\frac{N+1}{2}\right)\text{th item}$$

$$= \text{Size of } \left(\frac{18+1}{2}\right)\text{th item}$$

$$= \text{Size of } 9.5^{\text{th}} \text{ item}$$

$$= \frac{\text{Size of 9th item} + \text{Size of 10th item}}{2}$$

$$= \frac{20+21}{2}$$

So, M = 20.5

(2) Discrete Series :

The steps to be taken to calculate the median are:

- Frequencies are made cumulative.
- Following formulae is used for the serial number of the median:
- The cumulative frequency is used to determine the value of the number. In which cumulative frequency this number is included firstly, the value related with this is the median.

(Before the solution of the question, it has to be ensured that the data series has been arranged in an order)

Example 3: Calculate the median wage in the following distribution:

Daily Wage (Rs.)	25	10	18	26	20	30	15
No. of laborer	13	18	14	10	16	6	12

Solution : The above data series has to be arranged in the ascending order as below:

Daily wage (Rs.)	F	CF
10	18	18
15	12	30
18	14	44
20	16	60
25	13	73
26	10	83
30	6	89
Total	N=89	

The median wage is determined with the following formulae,

$$M = \text{Size of } \left(\frac{N+1}{2}\right)\text{th item}$$

$$= \text{Size of } \left(\frac{89+1}{2}\right)\text{th item}$$

$$= \text{Size of } 45^{\text{th}} \text{ item}$$

In the above table size of 45th item has to be associate with the cumulative frequency of 60 which is related with the daily wage of Rs. 20. So,

$$M = \text{Rs. } 20$$

(3) Continuous Series :

Following are the steps to be used for the calculation of median:

- (i) Cumulative frequencies are calculated
- (ii) The median-number is found with the help of the below given formula:

$$M = \text{Size of } \left(\frac{N}{2}\right)\text{th item}$$

In continuous series, the median is the value of the size of $\left(\frac{N}{2}\right)$ th item and not of $\left(\frac{N+1}{2}\right)$ th item. It is so because the value of median must be same both in ascending order and in descending order. In both these situations the value of median is same when $\frac{N}{2}$ is in the centre point.

- (iii) The class of the cumulative frequency along with the median number is associated firstly is selected as the median class.
- (iv) After the determination of the median class, the value of median is calculated with the help of the below given formulae.

- (a) When data series is in the ascending order:

$$M = L_1 + \frac{i}{f} \left(\frac{N}{2} - c\right)$$

where, M - Median

i - class interval of the median class

$$(L_2 - L_1)$$

f - Frequency of the median class

N - Total frequencies

c - Cumulative frequency of the class

preceding to the median class.

L₁- Lower limit of the median class.

- (b) When data series is in the descending order :

$$M = L_2 + \frac{i}{f} \left(\frac{N}{2} - c\right)$$

Where,

L₁ = Lower limit of the median class

L₂ = Upper limit of the median class

Example 4 : Calculate median from the following data :

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	110	125	86	45	18	12

Solution : Median is determine in the following table :

Class	F	CF
10-20	110	110
20-30	125	235
30-40	86	321
40-50	45	366
50-60	18	384
60-70	12	396
Total	ΣF = N = 396	

Here,

$$M = \text{Size of } \left(\frac{N}{2}\right)\text{th item}$$

$$M = \text{Size of } \left(\frac{396}{2}\right)\text{th item}$$

$$M = \text{Size of } 198^{\text{th}} \text{ item}$$

From the column of cumulative frequency, the value 198 is associated with CF of 235 and thus the corresponding class (20-30) is the median class in which the value of median is found.

The median is now calculated with the below formulae:

$$\begin{aligned}
M &= L_1 + \frac{i}{f} \left(\frac{N}{2} - c \right) \\
&= 20 + \frac{10}{125} \left(\frac{396}{2} - 110 \right) \\
&= 20 + \frac{10}{125} (198 - 110) \\
&= 20 + \frac{10}{125} (88) \\
&= 20 + 7.04 \\
&= 27.04
\end{aligned}$$

So, $M = 27.04$

Example 5: Find the value of median from the below given data :-

Class	50-60	40-50	30-40	20-30	10-20
Frequency	4	8	15	10	7

Solution: Above data are in the descending order. So median is calculated as below:

Class	Frequency (F)	Cumulative frequencies (CF)
50-60	4	4
40-50	8	12
30-40	15	27
20-30	10	37
10-20	7	44
Total	$\Sigma F = 44$	

Here,

$$\begin{aligned}
M &= \text{Size of } \left(\frac{N}{2} \right) \text{th item} \\
&= \text{Size of } \left(\frac{44}{2} \right) \text{th item} \\
&= \text{Size of } 22^{\text{nd}} \text{ item}
\end{aligned}$$

Clearly, the median class is (30-40)

Now,

$$M = L_2 - \frac{i}{f} \left(\frac{N}{2} - c \right)$$

Here,

$$L_2 = 40, L_1 = 30, F = 15, N = 44, C = 12, i = 10$$

Putting the values in the formulae.

$$M = 40 - \frac{10}{15} \left(\frac{44}{2} - 12 \right)$$

$$M = 40 - \frac{10}{15} (22 - 12)$$

$$M = 40 - \frac{2}{3} (10)$$

$$= 40 - 6.67$$

$$\text{Thus, } M = 33.33$$

Merits of Median:

Following are the merits of median.

- (i) Median is a clear and well defined average.
- (ii) Median is easy to calculate and understand.
- (iii) As mode, median can also be determined by the inspection method.
- (iv) Median is not affected by the extreme values.
- (v) Median is more suitable for qualitative variables.
- (vi) Median can be determined by graphical method also.

Demerits of Median :

The below given are the demerits of median:

- (i) It is difficult to calculate median when the data are not arranged in ascending or descending order and when number of observation are even.
- (ii) Median ignores the extreme values of the variable.
- (iii) Because median lacks the algebraic qualities, so it is not useful in higher statistical methods.
- (iv) Median is affected by sampling fluctuations.

Uses of Median:

Practically median is very useful because of the simple and easy method of calculation. Median is used to study the distribution of wealth and property. Social problems can also be studied with the help of median. It is very useful in measuring the attributes like health, poverty, intelligence, etc. It is proper to use median where the values are unweighted. The partition values (specially quartiles) are used in the study of dispersion and skewness.

Important Points :

- Median is a positional average.
- Median is the mid-value of the data-series after arranging it in either ascending or in descending order.
- Median is determined in individual, discrete and continuous series.
- When data series is in ascending order, the median in continuous series is determined by :
 $M = L_1 + \frac{i}{f} \left(\frac{N}{2} - c \right)$ and when data series is in the descending order, median is calculated by
 $M = L_2 - \frac{i}{f} \left(\frac{N}{2} - c \right)$
- Median is used in the analysis of wealth and property distribution, qualitative aspects, etc. Median is very important in the analysis of social problems.

Questions for Exercise

Objective Type Questions:

1. The best average for the facts which can not be assigned numerical value is:
(a) Arithmetic Mean
(b) Median
(c) Mode
(d) Harmonic Mean

2. Median in the below given data is:

8, 11, 12, 13, 15, 18

(a) 12.5 (b) 13 (c) 12 (d) 14

3. If $Z = 18$ and $\bar{X} = 20$, the median (M) is:

(a) 29.33 (b) 19.33 (c) 18.66 (d) 9.33

Very Short Answer Questions:

1. What do you mean by median?
2. What is the formulae to calculate median when the number of items is even in the individual series ?
3. When is the best use of median?
4. Which average is more suitable for the open-ended classes ?

Short Answer Questions :

1. The median of four observations (3, 4, x and 8) is 5. What is the value of X ?
2. Why do we use $\left(\frac{N+1}{2}\right)$ in discrete series and $\frac{N}{2}$ in continuous series to calculate median ?
3. If $\bar{x} = 75$ and $Z = 60$, calculate the value of median.
4. State any four uses of median.
5. Write the formula to calculate Q_1 and Q_3 .

Essay Type Questions :

1. Calculate Mode and Median from the following table :

Class	F
0-10	10
10-20	3
20-30	7
30-40	15
40-50	5

2. Critically analyse the merits and demerits of the important measures of central tendency.

Answer to objective type questions :

(1) b (2) a (3) c (4) b (5) b

Reference Books :

1. S.C. Gupta & V.K. Kapoor: Fundamentals of Mathematical Statistics, Published by Sultan Chand and Sons
2. S.P.Singh: Sankhyki : Sindhant Avam Vyavhar, S. Chand
3. K.N. Nagar: Sankhyki ke Mool Tatva, Minakshi Prakashan.

Chapter - 3.3

Mode

The English word "Mode" has been taken from the French word "La Mode" which means fashion or custom or which occurs most. The commodity, which is more fashionable or under custom, is used more by people. So mode is the item of data-series which has the maximum frequency. Mode is the value which comes maximum times in the data i.e. which has maximum frequency. It shows that point where most of the items are concentrated. This point has the maximum density or the concentration of the values so mode is a positional average. For example, a shoe manufacture wants to know about the size of the shoe which has its maximum demand in the market. If Rs. 400 per month is the model wage in a factory, it means that the maximum labourers get Rs. 400 as the monthly wage.

Determination of Mode :

Determination of mode is studied in the individual, discrete and continuous series.

1. Individual Series:

Mode is the value which comes maximum times in the data series. Following are the methods to find out the mode in the individual series.

- (i) By changes individual series in the discrete series.

- (ii) By changing the individual series in the continuous series, or
- (iii) Finding the mode with the help of the arithmetic mean and medium.

(a) By changing Individual series in the Discrete Series:

When values in the individual series appear twice or more than twice this series should be changed into the discrete series. The values are arranged in ascending order and their frequencies are written. Now with the help of the inspection method, the maximum frequency is observed and its value is known as the mode. Mode is symbolized by 'Z'.

Example 1 : Calculate the mode in the following series. 40, 44, 46, 50, 44, 34, 38, 44, 46, 42, 44

Solution:

Value (x)	34	38	40	42	44	46	50
Frequency (F)	1	1	1	1	4	2	1

It is clear by the inspection method that the value of 44 has the maximum frequency as 4. So mode is 44. Thus, $Z = 44$

(b) By Changing Individual Series in Continuous Series :

If any individual value does not have more than one frequency, the individual series should

be changed into continuous series. Changing individual series into the discrete series (in this situation) does not help in the determination of the mode because all the values have the same frequency. Thus individual values should be changed in the continuous series and then the class of the maximum frequency should be found which is known as the model class. After this the mode is calculated by using a formulae which is explained next.

(c) Finding Mode with the Help of Arithmetic Mean and Median:

If arithmetic mean, Median (M) and mode (Z) are calculated in the individual series, Z can be calculated with the help of their mutual relationship as explained below:

$$(\bar{X} - Z) = 3(\bar{X} - M)$$

Or $Z = 3M - 2\bar{X}$

This formula should only be used if specially asked in the examination or if there is abnormal situation.

Example 2 : Calculate Arithmetic Mean (X), Median (M) and Mode (Z) from the following data.

4, 13, 9, 25, 17, 20, 10

Solution : By arranging above data in the ascending order –

4, 9, 10, 13, 17, 20, 25

$$(\bar{X}) = \frac{\sum X}{N} = \frac{4+9+10+13+17+20+25}{7} = \frac{98}{7} = 14$$

So, $\bar{X} = 14$

M = Size of $(\frac{N+1}{2})$ th item

= Size of $(\frac{7+1}{2})$ th item

= Size of 4th item

= 13

So, M = 13, and

$$Z = 3M - 2\bar{X}$$

$$= (3 \times 13) - (2 \times 14)$$

$$= 39 - 28$$

$$= 11$$

So, Z = 11

2. Discrete Series :

Under discrete series, there are two method to calculate the mode.

(a) Inspection Method

(b) Grouping Method

(a) Inspection Method :

When frequencies in the discrete series have the regular nature (in the beginning frequency should increase frequency must be maximum in the middle of the series and after this, frequencies must decrease continuously). In this type of series, the maximum frequency can be seen clearly. This is the inspection method of finding out the mode.

Example 3 : Calculate mode in the following series :

Weight (x) Kg.	50	52	55	58	64	70
No. of person (F)	4	10	20	11	3	2

Solution : In the above series, the frequencies are regular. So, mode can be calculated with the help of the inspection method. The maximum frequency is 20 whose corresponding value is 55 Kg. So, Mode weight is 55 Kg. Thus,

$$Z = 55 \text{ Kg.}$$

(b) Grouping Method :

The grouping method is to decide the concentration point of frequencies in the distribution of the irregular frequencies.

Process of Grouping :

In the grouping method, a table has values of the variable (x) with 6 columns of frequencies as shown below :

Column	Value of X
1.	Frequencies (F)
2.	Total of 2-2 frequencies
3.	Total of 2-2 frequencies ignoring first frequency
4.	Total of 3-3 frequencies
5.	Total of 3-3 frequencies ignoring first frequencies
6.	Total of 3-3 frequencies ignoring first two frequencies

After grouping the frequencies as above, the maximum frequency in each column is selected and the analysis table is prepared. The value of the variable (x) having maximum frequency is the value of mode.

Example 4 : Find out the mode size of the collar of the shirt from the following data –

Collar Size (cm)(x)	30	31	32	33	34	35	36	37
No. of Persons (F)	2	9	3	4	8	7	8	5

Solution : Although the inspection method shows that the maximum frequency is 9, so X=31 is the mode but the frequencies are not regular, so grouping method should be used to calculate the mode so as to keep ourselves away from the doubt.

Determination of Mode by Grouping Method:

Collar Size (cm) (x)	F (I)	(II)	(III)	(IV)	(V)	(VI)	No. of maximum Frequencies/Analysis Table

30	2							0
31	9	11		14			I	1
32	3		12		16			0
33	4	7				15	I	2
34	8		12				III	3
35	7	15		19	23		III	5
36	8		15			20	III	3
37	5	13					I	1

According to the analysis table (last column) The maximum number is 5 whose corresponding value of X is 35, So Z = 35 cm.

3. Determination of Mode in Continuous Series:

Here, the model class in which the value of mode lies has to be determined first. The model class is determined by either the inspection method or by the grouping method (the two methods explained above). It is advised to use the grouping method to determine the model class to keep ourselves safe from the situation of doubt.

After determination of the model class, following formulae is used to calculate the value of mode. The value of mode must come within the limits of the model class.

$$Z = L_1 + \frac{F_1 - F_0}{2F_1 - F_0 - F_2} \cdot xi$$

Where, Z – Value of mode

L₁ – Lower Limit of the model class

i – Class interval of the model class

(where i = Upper limit – Lower limit)

F₁ – Frequency of the model class

F₀ – Frequency of the class preceding to the model class.

F₂ – Frequency of the class – succeeding to the model class.

Example 5: Calculate mode from the following frequency table.

Class (x)	Frequency (F)
20-40	6
40-60	9
60-80	11
80-100	14
100-120	20
120-140	15
140-160	10
160-180	8
180-200	7

Solution : In the above example the frequencies are regular, So inspection method can be used for the determination of the model class. The maximum frequency is 20 which relates with the class of 100-120. So 100-120 is the model class in which mode lies. Applying the formula,

$$\begin{aligned}
 Z &= L_1 + \frac{F_1 - F_0}{2F_1 - F_0 - F_2} \times i \\
 &= 100 + \frac{20 - 14}{40 - 14 - 15} \times 20 \\
 &= 100 + \frac{6 \times 20}{11} \\
 &= 100 + \frac{120}{11} \\
 &= 100 + 10.9 = 110.9, \quad Z = 110.9
 \end{aligned}$$

Merits of Mode:-

Following are the merits of mode:

- (i) It is easy to calculate mode. Mode can be calculated by the general understanding. Mostly the mode can be calculated by the inspection method and the formula to calculate mode is not required.
- (ii) It is a publically accepted query. It is frequently used in daily life.
- (iii) Mode is not affected by the extreme values because the maximum frequencies are calculated generally in the middle of the series and not near the extreme values.

- (iv) Mode can also be determined with the help of the graphical method.
- (v) Mode is the best representative average. Mode is the value having maximum frequency which is among the given values of the variable. So mode is assumed as the most representative average.

Demerits of Mode :-

Following are the demerits of mode:

- i. Mode is a unclear, uncertain and undetermined average. When all the items of the data series have same frequencies or the data series has two or more than two modes then the determination of mode becomes difficult.
- ii. If mode is not determined with the help of the inspection method, the grouping method becomes more difficult.
- iii. Mode ignores the extreme values which is the ignorance of the mathematical rules.
- iv. The algebraic analysis of mode is not possible.
- v. Mode is not an actual and representative average.

Uses of mode:

Common people can use mode in the everyday life. Mode is an useful average to use in the studies related with business, science of seasons, biology, preference of consumers, etc. Mode is frequently used specially to determine the maximum concentration of the values like average size of collar, average monthly expenditure of student, daily average number of telephone calls, number of words in the average pages of a book, average number of children to per couple, etc.

Mode can be useful in business forecasting. The forecasting regarding rainfall, wind speed, etc. is done with the help of the mode. In this way, mode is very useful in our practical life.

Miscellaneous Exercises:

Example 6 : If mode of the following series is 24, find out the missing frequency of the class(30-40).

Class	0-10	10-20	20-30	30-40	40-50
Frequency	14	2	27	?	15

Solution : Suppose unknown or missing frequency is X.

Class	Frequency
0-10	14
10-20	23 (F ₀)
20-30	27 (F ₁)
30-40	X(F ₂)
40-50	14

Because mode is 24, so (20-30) is the modal class. Here,

$$Z = L_1 + \frac{F_1 - F_0}{2F_1 - F_0 - F_2} \times i$$

Given, Z = 24, L₁ = 20, F₁ = 27, F₀ = 23, F₂ = X, and i = 10

So, putting values in above formulae,

$$24 = 20 + \frac{27 - 23}{54 - 23 - X} \times 10$$

$$24 - 20 = \frac{40}{31 - X}$$

$$4 = \frac{40}{31 - X}$$

$$31 - X = \frac{40}{4}$$

$$31 - X = 10$$

X = 31 - 10 = 21 So, unknown or missing frequency (F₂) is 21.

Example 7 : Calculate arithmetic mean (\bar{X}) and mode (Z) from the following data:

Class Interval	Frequency
10-20	4
20-30	16
30-40	56
40-50	97
50-60	124
60-70	137
70-80	146
80-90	150

Solution : Cumulative frequencies given is the example which have to be changed into the class frequencies.

Calculation of \bar{X} : Following table shows the calculation for \bar{X}

Class Interval	Frequency (F)	Mid-Value (m)	d ¹ = $\frac{m-a}{i}$	Fd ¹
10-20	4	15	-4	-16
20-30	12	25	-3	-36
30-40	40	35	-2	-80
40-50	41	45	-1	-41
50-60	27	55	0	0
60-70	13	65	1	13
70-80	9	75	2	18
80-90	4	85	3	12
Total	N=1500			-130

Here, A = 55, $\sum Fd^1 = -130$, i = 10 and N = 150

Substituting the values in the below formulas.

$$\bar{X} = A + \frac{\sum Fd^1}{N} \times i$$

$$= 55 - \frac{130}{150} \times 10$$

$$= 55 - \frac{26}{3}$$

$$= 46.33$$

Calculation of mode (Z):

In the above example, the maximum frequency is 41 and thus the model class is (40-50) Now,

$$Z = L_1 + \frac{F_1 - F_0}{2F_1 - F_0 - F_2} \times i$$

The relevant values are:

$$L_1 = 40, i = 10, F_1 = 41, F_0 = 40 \text{ and } F_2 = 27$$

Thus,

$$Z = 40 + \frac{41 - 40}{N82 - 40 - 27} \times 10$$

$$= 40 + \frac{1}{82 - 67} \times 10$$

$$= 40 + \frac{10}{15}$$

$$= 40 + 0.67$$

$$= 40.67$$

So, $\bar{X} = 46.33$ and $Z = 40.67$

Example 8 : Calculate mode in the following table.

Class (x)	1-9	11-19	21-29	31-39	41-49	51-49
Frequency (F)	14	31	54	69	28	24

This is the example of inclusive series which has to be changed into the exclusive series. Because there is difference of 2 in the serial classes, so the series has to be adjusted by subtracting 1 from the lower limit and adding 1 to the upper limit of all the classes. The mode has to be calculated by using the grouping method as below:

Collar Size (cm) (x)	F (I)	(II)	(III)	(IV)	(V)	(VI)	Analysis Table
0-10	14						I(1)
10-20	31	45		99			III(3)
20-30	54		85		154		IIII(6)
30-40	69	123				151	III(3)
40-50	28		97				I(1)

50-60	14	42		111			
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It is clear that the maximum frequency is 6 which shows that model class is (20-30), so the value of mode will be in the class (20-30).

The following formula has to be used for the calculation of mode.

$$Z = L_1 + \frac{F_1 - F_0}{2F_1 - F_0 - F_2} \times i$$

Here, $L_1 = 20, i = 10, F_1 = 54, F_0 = 31, F_2 = 69$

$$\text{Now, } Z = 20 + \frac{54 - 31}{108 - 31 - 69} \times 10$$

$$= 20 + \frac{23}{108 - 100} \times 10$$

$$= 20 + \frac{230}{8}$$

$$= 20 + 28.8$$

$$= 48.8$$

Because the value of $Z = 48.8$ which goes out the model class, so alternative formula has to be used which is,

$$Z = L_1 + \frac{F_2}{F_2 + F_0} \times i$$

$$= 20 + \frac{69}{69 + 31} \times 10$$

$$= 20 + \frac{690}{100}$$

$$= 20 + 6.90$$

$$= 26.90$$

So, $Z = 26.90$

Example 9 : Find out the model value in the following example.

Central Size	F
15	5
25	9
35	13
45	21
55	20

65	15
75	8
85	3

Solution : In the example mid-values of the variable are given. In all the items the difference is of 10 each. So the limits of the classes have to be determined by $L_1 = (m - \frac{i}{2})$ and $L_2 = (m + \frac{i}{2})$ In this case grouping method has to be used as explained below:

Collar Size (cm) (x)	F (I)	(II)	(III)	(IV)	(V)	(VI)	Analysis Table	
10-20	5							-
20-30	9	14		27			I	1
30-40	13		22		43		II	2
40-50	21	34				54	III	5
50-60	20		41	56			III	5
60-70	15	35			43		III	3
70-80	8		23			26	I	1
80-90	3	11						-

It is clear that this is the bi-modal case because both classes of (40-50) and (50-60) have the 5 as the maximum frequency. In this case the following method has to be used for the determination of mode.

Class	40-50	50-60
Frequency		
F ₀	13	21
F ₁	21	20
F ₂	20	15
Total	54	56

Clearly the class (50-60) has the maximum total of F₀, F₁ and F₂ as 56, so model class is (50-60) applying the formula.

$$Z = L_1 + \frac{F_2}{F_2 + F_0} \times i$$

$$\begin{aligned}
 &= 50 + \frac{15}{21+15} \times 10 \\
 &= 50 + \frac{150}{36} \\
 &= 50 + 4.17 \\
 &= 54.17
 \end{aligned}$$

So, Z = 54.17

It is to be noted that if the original formula is used to calculate the mode, its value comes out of the class (50-60). So alternate formula has to be used.

Important Points :-

- Generally, Mode is the item of the data series which has the maximum frequency.
- Mode is the value of maximum density or the point of concentration of values. So mode is a positional average.
- Mode is determined in individual, discrete and continuous series.
- Mode can also be calculated with the help of X and M ($Z = 3M - 2X$). —
- There are two methods – inspection method and grouping method – to determine mode both in discrete and continuous series.
- When frequencies are not regular in data-series, grouping method should be used.
- In continuous series, the model class is firstly determined followed by the use of the formula ($Z = L_1 + \frac{F_2}{F_2 + F_0} \times i$) to calculate the mode.
- Mode is based on the assumption of the equal class intervals. If the class intervals are not same in the data series, these have to be made equal before the solution.
- Mode is a useful average in the study of business, weather science, biology, preference of consumers, etc.

Question for Exercise

Objective Type Question :

- Which is the most uncertain average ?
 - Mode
 - Arithmetic Mean
 - Median
 - Harmonic Mean
- That value of the item which has the maximum frequency is known as –
 - Arithmetic Mean
 - Median
 - Mode
 - All of the above
- The proper average for the average size of the readymade garments is:
 - Median
 - Mode
 - Arithmetic Mean
 - None of the above
- What will be the lower limit of the modal class in the following data series ?

X	F
0-9	2
10-19	5
20-29	16
30-39	12
40-49	4

- 19
 - 19.5
 - 20
 - 29.5
- In which average the extreme value have the minimum effect ?
 - Arithmetic Mean

- Geometric Mean
- Median
- Mode

Very Short Answer Questions:

- 'An average Rajasthani' person puts on the shoe of number 7. To which statistical average, this statement is concerned ?
- Write the general formulae to calculate the mode in the continuous series.
- Define mode.
- What are the methods to calculate the mode?
- Write the alternative formulae of mode.

Short Answer Questions :

- If $M = 21$ and $\bar{X} = 20$, Calculate Z.
- In what circumstances the 'density test' is performed in the mode ?
- If modal class is (50-60) and $F_1=40$, $F_0=25$ and $F_2= 20$, then calculate mode.
- Explain the grouping method.
- Explain the uses of mode.

Essay Type Questions:

- Calculate the mode from the following table by the grouping method.

Mid Value (m)	F
15	5
25	9
35	13
45	21
55	20
65	15
75	8
85	3

- Find the mode from the following data.

Size	F
8	3
10	7
12	12
14	28
16	10
18	9
20	6

3. Calculate mode, Q_1 and Q_3 from the following data series.

Income (Rs.)	No. of Persons
100-200	15
200-300	33
300-400	63
400-500	83
500-600	100

Answers to objective type questions:

(1) a (2) c (3) b (4) b (5) d

Reference Books:

1. S.C. Gupta and V.K. Kapoor. Fundamentals of Mathematical Statistics, Published by Sultan Chand and sons.
2. S.P. Singh: Sankhyiki : Sidhant aivm Vyavhar, S. Chand.
3. Kailash Nath Nagar: Sankhyiki ke Mool Tatwa, Minakshi Prakashan.

Chapter - 4.1

Ancient Indian Economic Concepts

The general view of western thinkers is that there is no systematic tradition of economic thinking in India. Indian thinking is basically social, spiritual and to some extent political and thus no place of economic aspects. They consider Arthashastra only a book of economic thinking while Arthashastra of Kautilya is the last book of Indian economic thinking. Economic thoughts have very important place in ancient books. Economic thoughts are found mainly in four vedas, brahmin granth, upanishad, puranas, smritiyan, epics, nities (Chanakya niti, Vidur niti, Shukra niti, etc.) Boudha and Jain Philosophy, etc. Vedas are the oldest books and thus, the tradition of economic thinking in India is the oldest. In this chapter concepts related with want, consumption, environment and wealth earning have been analyzed as described in ancient literature.

(a) Concept of Wants:

Human being feels some want in the life every moment. A want is always present in our life from birth to death. Human being makes efforts to satisfy these wants and thus wants give birth to economic activities.

Meaning of Wants :

In modern economics "effective desire" is known as want. Three things are necessary for the effective desire –

- (i) desire to get some good,

- (ii) sufficient resources to satisfy want, and
- (iii) being ready to use resources. On the basis of this concept of want the need of food of a person can not become want if the person does not have resources (wealth) to get food. The need of food, cloth and house of a hungry person is real but according to modern Economics the need of resourceless person is not want. According to Indian thinkers a resourceless person also has want.

In ancient Indian thinking "aggregate happiness" is expected. Complete happiness of body, heart, mind and soul is the "aggregate happiness ". Pt. Deen Dayal Upadhaya calls it the 'Chaturvidh Sukh'. Due to the desire of this 'sukh' (happiness) people do effort and work and then the desire of 'Sukh' becomes want. Human being is always engaged continuously in economic activities to get the work done. It has been said in Yajurveda that there is nothing more than 'sukh' (happiness). There is tendency of religion and wealth only for the happiness. All the activities are performed for the happiness. Happiness is the first and best thing. Religion, wealth, labour kama and moksh are the four wants of human being.

Desire and Wants:

According to lord Mahaveer, desire is infinite as sky. It is true on the ground of religion and Economics. Scope of want is more than that of demand and desires can not be wants but all

wants are desires. Desires are natural while wants are determined by geographical, social, physical, religious and economic factors. The scope of desire, want and demand is shown in the below figure.

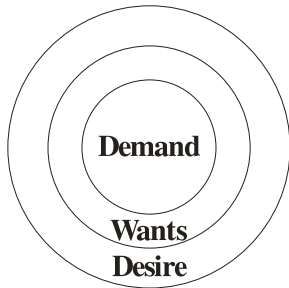


Figure -1

Factors Affecting Wants:

Following are the factors affecting wants:

1. Economic Condition of People:

First of all want is determined by the economic condition. Wants of poor are less than rich. Poor can fulfill only primary wants while rich fulfills primary and luxurious wants also.

2. Religious Causes:

Wants are affected by religious spirits also. Moral idles which are considered by people are the factors affecting the wants. Wants of a religious person are balanced and wants of a materialistic person are more.

3. Spirit of Selfishness :-

This factor also affects the wants. According to Mahaveer Swami benefit increases the selfishness.

4. Level of Economic Development:

After becoming rich, people have the desire of becoming king and then desire to become god and then to become Indra. Thus want increases with the economic development.

Primary Wants :

In all the ancient literatures primary wants –

food, cloth, house, medical and education have been described. The want of wealth is direct for getting energy in the body. Existence of civilization is governed by wealth. In all the basic wants of human being food is at the first place. In Manusmriti and Shukraniti, first with the consumption of foodgrains, cloth, house, education, etc., over consumption is considered unhealthy, age reducing and publically criticized. While having wealth, dirty and torn clothes should not be put on and the house should be owned at that place where there is no shortage of grains, fruits, trees, etc. and sources of earning living (agriculture, trade, etc.) are easily available. In Mahabharata and Ramayana it has been described that it is duty of the king to make available the goods required to satisfy the primary wants of public.

General Characteristics of Wants:

According to modern economics human wants are unlimited and resources to satisfy these wants are limited. Due to scarcity of resources in comparison to wants and unsatisfied nature of some wants human being is under sadness. This concept has been mentioned in Indian ancient literature or books before thousand years. According to Ishopanishada, being free and having unsatisfied wants due to non-availability of required resources are the causes of sadness. If want satisfying resources are available there will be satisfaction. It has been written in Kathopanishada that with the help of more wealth wants are not satisfied and thus more the wealth more the wants. Owner of 100 wants 1000 and then 100000 and then the owner of crores. Wealth is not want but it is desire which is never completed. Desire of consumption is not satisfied by consumption. When ghee is added to fire, it becomes more immaflable. In the same way desire becomes more intensive with more consumption. Hitopadesha describes that desired commodity is itself responsible for its more desire. Desires increase just like lines of circle

and thus never satisfied. Desires of people are like sea which never fulfills. There is no good in the world that can satisfy human wants. Wants are not only unlimited but when one want is satisfied then other want is created. According to Vishwamitra human wants are never satisfied. The above description depicts the following properties of wants in the ancient Indian thinking:

1. Wants are unlimited.
2. Resources used to satisfy wants are limited.
3. Want can not be satisfied by the available resources and thus human being faces sadness.
4. Some of the wants are of the repetitive nature and thus created after getting satisfied.
5. Wants are affected by social, economic and religious spirit. Want of poor and religious person are less but more for materialistic person and rich person.
6. Wants increase with development.

Satisfaction of Wants and Maximum Satisfaction :

When wants are satisfied , people get maximum satisfaction, according to Vedic literature wealth earned by self and by pure and justified way gives happiness by satisfying wants. According to Vedas, satisfying wants by different types of wealth people get happiness and as result poverty is controlled and we get foodgrains, cloth, houses, chariot, gold, etc. Under poverty wants can not be satisfied so there should be sufficient wealth. Getting material happiness is only possible by the wealth. Satisfaction gives happiness.

(b) Concepts of Consumption:

Meaning of Consumption:

Consumption is the activity by which any want is satisfied. The direct and ultimate use of goods and services to satisfy human wants is

known as consumption. Actually, consumption is the base of economy. Demand for goods and services is arised due to the desire of consumption. This demand results into the production. The activities of exchange and distribution of goods and services take place due to demand. In ancient literature demand for produced goods in the society is directly related with consumption. Consumption of good depends on its demand. According to Shukra the expenditure on gold, stones, silver, place of keeping coins, chariot, horses, cow, elephant, camel and place to keep them, grains, books and the places of ministers, doctors, chef, artisan, etc., is known as the consumption expenditure.

Different Concepts of Consumption:

In ancient Indian literature balanced consumption, co-consumption and equal consumption are the various concepts of consumption.

1. Balanced Consumption:

According to the ancient literature, the minimum and balanced use of self earned wealth to satisfy wants is the consumption. One should eat food as required for the body. All the human wants can not be satisfied so balanced consumption is a good strategy. Consumption of goods and services according to desire should be substituted by consumption according to want. Thus keeping consumption at minimum is justified. It is mentioned in Mahabhartta that for editing of 'Purushartha Chatushtya', households should collect wealth but the right of people should be only on that wealth which is sufficient for them to satisfy wants. One who keeps more property, he or she is a thief and is to be punished. Earning and collection of wealth is not wrong but earning by wrong means and collecting wealth more than necessity are wrong. Collection of foodgrains is immoral and should not be done by non-religious activities. Same thoughts can also be seen in the Skandapurana. Shukra advices

that the person who collect more wealth should be sent out from the state. According to Kautilya it is duty of king to check people who misuse the expenditure of wealth. Thus following points are explained in relation of the balanced consumption:

- i. All the human wants can not be satisfied.
- ii. Consumption should be need based and not should be desire based.
- iii. The self earned wealth should be used for consumption. It is not correct to consume by borrowing.
- iv. Right of society on goods should be accepted rather than the right of individuals.

2. Co-Consumption:

People have been given instructions in ancient literature to divide and consume the goods among them. Wealth and prosperity are given by God so their consumption should be based on the mutual distribution. One who consume goods alone is a sinful activity. It has been described in Mahabhart, "whatever is there on the earth I owned nothing and the right I have on these is the equal right of all." The earned wealth should be used for our people, capital formation, religious and other welfare activities. The balance remained should be used for own purpose. Atharvaveda writes that we should earn by 100 hands and use it by 1000 hands. This spirit of human being helps, in getting maximum satisfaction and results into the increase of happiness of whole nation. According to Dharmasutras of Manu, Shukra, Vishnu and Yagavalkya we should feed first to guests, servants, disabled people, birds and animals and after it we should consume. Kautilya talks one step ahead and says that people, who do not feed first the children, parnts, widows and daughters; should be punished. The real progress is the progress of whole community and not the progress of individuals. Atharvaveda instructs for the equal consumption. All the people should

have the same food pattern and all should have foograins, wealth and proper protection which leads progress of all.

The thoughts like 'this is mine' and 'this is of others' are the thoughts of inferior people. The high character people consider whole world as their own family. The mantra of 'Vasudhaiva kutumbakam' teaches about world brotherhood. Instruments of balanced, limited, according to need and co-consumptions are the concepts of 'dan' (donation) and 'yagya'. Under the system of 'varnaashrama' only the 'grihastha aashrama' earns living for all people. As the shelter of mother keeps all creatures alive, in the same way all the residents in aashrama are alive with the support of grihastha aashrama. A real owner of property is said to be one who gives donation to good and real people. Donation protects the wealth but hoarding not. Over donation is always prohibited because it creates many problems in family and society. The donator must look into own needs and should donate according to his/her ability.

Main Points on Consumption :

Ancient economic thinkers suggested code of conduct on consumption so as to keep it balanced, justified and limited. In this regard, following are the main points:

1. Consumption of Wealth Earned by Justified Resources-

Wealth earned by justified efforts should be consumed only. The basic objective of activities of agriculture, trade and commerce is to remove the shortage and thus making people happy. It is wrong to consume wealth which is earned by wrong resources.

2. Prohibition of Consumption by Self :

People should not consume alone. First of all poor people should get goods for the consumption.

3. Balanced Consumption Good for Health:

According to Kautilya and Manu balanced consumption is good for health and beneficial age-wise.

4. Morality in Consumption:

According to Manu the place of morality in consumption is important. Theft of consumer goods should be punished. Shukra says that consumption of wine etc. is wrong.

5. Prohibition of Over-Consumption:

According to Shukracharya, people who are habitual of over-consumption always feel shortage of goods even after getting all the goods produced on this earth. So balanced consumption is the best. Poverty and begging are assumed to be equal to death.

6. Prohibition of Debt based Consumption:

Ancient economic thinkers instruct that we should make expenditure of self-earned and self-owned wealth as per rules like medicine. According to Rigveda we should not tell our poverty story to others and we should never be puzzled by the shortage of wealth. We should live under debtless conditions. It does not mean that we should not take debt. At the time of any problem we should take debt but it is necessary to repay the same in time.

7. Prohibition of Misery :

In ancient Indian thinking misery has been prohibited and balanced consumption is promoted. Misery makes human being naked. Wealth in hands of a miser becomes useless and non-beneficial. Wealth of miser is just like foodgrains collected by mice and thus the earner of it does not get happiness from it. Misery reduces the effective demand in society, increases unemployment and damages the objectives of justified distribution of resources.

8. Collection of Foodgrains versus Consumption:

Collection of foodgrains should not be more

than our needs and this collection is appropriate for the limited period only. If this collection is more than our needs, it should be distributed among needy people. The water in sea can not be used for drinking but sea water through clouds (rainfall) is very useful. Collection creates many problems because king, thieves and relatives have their eyes on this collected wealth. Collection is allowed by the king who uses it to feed servants and the public when suffered from draught, famine and flood.

(c) Code of Conduct of Earning Money:

Keeping in view the human efforts in the direction of happiness Indian economic thinkers divide human efforts into four categories (to keep human life disciplined). These four efforts are-dharma, artha, kama, and moksha. Dharma, Karma and artha are related with social life of human being. Because moksha is the ultimate goal and free from all bounds. Efforts are used for wealth. Dharma and kama can not be proved without artha. The chariot of life can not be run without artha (wealth). According to Kautilya, dharma is the root of happiness and artha is the root of dharma.

Meaning of Wealth:

Wealth is that which makes life dynamic. Both wealth and artha have the same meaning. According to Yaskacharya, the great learner of veda, "wealth is that which makes all satisfied and happy. Wealth is medium of exchange of all goods so artha is also called 'vitta' (finance)." In Vedas wealth means property, prestige and money. In ancient time coins of all metals, precious stones, animal, grains, etc. come in the definition of wealth.

Sources of wealth:

In Indian Vangmaya land, agriculture, commerce, occupation and industries are assumed to be main sources of wealth. World land (Vishvadhara) is the land of work where all activities are wealth oriented. In Mahabharata

Arjuna tells that agriculture, commerce, animals, etc. are the sources of wealth. Shukracharya suggests any work to be done to earn wealth. Wealth should be earned by people by means of education, bravery, agriculture, interest on debt, shopkeeping, music, etc. While earning wealth five things should be noted. These are:

- i. Nobody should suffer from the activities.
- ii. Body should not be puzzled.
- iii. No use of wrong resources.
- iv. Earning always by self-earned resources.
- v. Should be no problem in the self study.

Objectives and Importance of Earning:

Wealth is the basic need of human life, without wealth human being can not live. All social duties of human being are dealt by wealth. The demerits of rich person become the merits. Having more wealth means having more friends. Brothers leave wealthless person. It is said in Mahabharata, "wealth is the supreme religion, every good depends on wealth, wealthy people are always happy and poor persons are like dead ones. The importance of wealth can be proved on the basis of following facts:

1. Place of Wealth in Life:

Wealth is a source of completeness of any work. Without wealth any industry is just like drilling in soil for oil. Bheem tells Yudhishtira, "human being is a slave of wealth, wealth is not slave of any body." Wealth is the result of labour. All quality depend on money. Human problems are solved by wealth. Living is not possible without wealth.

2. Wealth-Life Approach:

Wealth came first in life and after this dharma came into existence to control wealth. Thus dharma is the controller of wealth. In Indian religious books earning of pure and justified wealth is only recommended. Dharma and Kama are the two elements of wealth.

3. Wealth and Its Functions:

All human activities are governed by wealth and the basic source of wealth is labour. Agriculture, commerce, etc. are the sources to get wealth which is possible by labour. Without wealth dharma, kama, divine death (moksh) etc. of people are not possible in the world.

4. Material and Spiritual Happiness:

With the help of material wealth spiritual wealth (moksha or divine death) and other works and efforts are completed. Wealth increases dharma. Sources of dharma are created with the help of wealth because wealth is required in religious activities.

5. Defence and Prosperity of Country:

Defence and prosperity also depend on wealth. According to Mahabharata, "the main thing in hands of king is the wealth," because with the help of wealth the king does all his works. Treasury is the base of military and military protects all religions. In Agnipurana wealth is the source of prosperity and security of the king.

Types of Wealth :

Brihaspati, Narad, Vishnu, etc. classify the wealth (money) in three parts:

1. White Money:

Wealth earned through education, bravery, religious activities and other proper methods and its growth is the white money.

2. Brinded Money:

Wealth earned through agriculture, commerce, art, service, and other such activities is the brinded money.

3. Black Money :

Wealth earned by cheating, adulteration, theft, gambling, decoity, interest, etc. known as black money. Black money is assumed to be punishable.

Bribery and Corruption:

In Indian economic thinking bribery has been considered a strange way in which black money is used. All the transactions are secret and fearless. There is no proper measurement system. Jain writer Somdev writes, "bribery is the gate of all sins. Those who are engaged in bribery are purchased by rich people. The state in which such persons are sheltered, no citizen can be happy and prosperous there.

Utilization of Wealth:

Proper utilization of wealth is necessary along with its earning otherwise wealth becomes insignificant which is harmful for both individual and society. According to Bhrituhari, "consumption and loss are the aims of donation of wealth. If a person neither consumes nor donates to others, his wealth goes to loss.

There are five uses of wealth according to Mahabharata. There are:

1. Use for Religious Activities :

Real wealth is that which is used for social benefit otherwise that prosperity is useless which is used by individual alone. Thus use of wealth for religious activities is significant.

2. To Satisfy Wants :

Consumption should be balanced. Sacrifice oriented consumption of wealth is only best wealth. According to Rigveda prosperity and property are given by God so these should be used on distributive basis.

3. For capital formation and investment.
4. To get honour and for welfare activities.
5. For family and other self persons.

Code of Conduct of Earning Wealth:

Code of conduct for earning wealth means the rules to be followed by every person while earning. Thus things to be followed while earning wealth are the code of conduct which are as

below:

1. Earning by Religious way:

According to ancient Indian economic thinkers wealth earned by justice oriented ways only is proper. Wealth earned in this way is durable and the basic rule of prosperity. One paise earned honestly is better than one thousand rupees earned by theft and other wrong means. According to Yajurveda, the wealth we want to earn should be earned by correct means and this is only the appropriate wealth. According to Maharshi Dayanand Saraswati, "both economics and ethics should completely be coordinated. If economics talks about earning of wealth then ethics teaches about proper use of wealth."

2. Balance in Wealth Collection:

According to Manu, human being should be balanced and be satisfied with wealth. Human being should desire wealth only for purpose of satisfying want of family, for security of family and for religious activities like 'yagya'. Thus desire of more wealth is not correct because satisfaction causes happiness and dissatisfaction causes unhappiness. More the wealth more the desires.

3. Wealth Earning According to Needs:

Wealth should be earned according to the want satisfaction. Earning wealth more than necessity is not required. In vedic culture wealth earning according to needs is assumed to be idle in which world brotherhood and mutual cooperation are supposed to be first duty.

4. Non-attachment to Earning of Wealth:

It is not correct to become slave of wealth and thus being owner it is good. So, in the tradition of ancient thinking there should be spirit of sacrifice. World is the mean of consumptions. Only that consumption is significant where there is spirit of sacrifice. Thus limited consumption is the part of religion.

5. Following of Desire-Quantity Rule in Wealth Earning:

According to Geeta, available resources on earth like foodgrains, gold, animal, etc. are not sufficient to satisfy human wants. So there is no need to think over this issue. According to Mahaveer Swami, we should not use the wealth of others and begging is wrong to run the family by households. So he suggested to limit the quantity of over desires. This is the Desire-Quantity Rule. Human being is a social animal and thus wants can not be ended. So as a medium path wants should be limited and we should keep necessary wants satisfied and luxurious wants ended.

6. Less Expenditure than Income:

According to Shukra, it is a matter of knowledge that should make expenditure less than income. An intelligent person should not use more wealth on the small work.

7. Wealth Earning by Own Labour and Efforts:

The fact emphasized more in Indian ancient literature is that people must earn wealth by own labour and efforts to satisfy wants of family, society and religions affairs. This device keeps us self reliant without any dependence on foreign debt.

8. Environmental Protection :

In present time economic growth is taking place at the cost of animals and trees. These are clear instructions in Mahabharat and Manusmriti that we should earn our living by means where there is no loss to animals and trees. Thus, earning of wealth should be based on religion oriented methods. This is the basic formulae of prosperity. This type of wealth earning is durable and always gives happiness.

(d) Vedic Concept of Environment:

Problem of environmental pollution has created a new danger for the existence of the

world. People do not know how much cost can be paid for the modern way of living. We are ignoring all the systems of nature and thus creating problems for the future of our coming generations. In present time we have been pressurizing to take certain steps for the protection of environment. Vedic literature instructs us not to harm the environment and to make efforts for its protection.

Environment and Economic Development :

Natural atmosphere and clean environment is a necessary want for the living agents in the universe. Thus making environment polluted is just like cutting that branch of tree on which we are sitting. Our all the human activities rest along with the environmental conditions. At present, in the process of economic growth land, water and air have not only been polluted but the balance of ecology has also been disturbed. Blindfoldly use of resources, ignorance of environmental aspect of development programs, modernization, increasing population, etc. are the causes of imbalanced environment. As result, increase in temperature (green house effect), damage of ozone layer, disappearance of species, acid rainfall and increasing water & land pollution are the effects of the imbalanced environment. There is no conflict between development and environment but objection is on the issue of environmental pollution and the increasing activities for economic growth. Today the concept of growth ignores religion, kama and moksha and gives importance to wealth. Development is multi-dimensional process in which necessary adjustments are required in environment. So process of growth should not affect the environment negatively.

Nature and Environment :

Both nature and environment are complementary to each other. To some extent both are same. Human being is closely related with climate, soil, sun light, forest, mountains, air, plants, etc and always surrounded by these factors. According to Atareya Upanishada, this

world is made of five elements- earth, water, sun, air and sky. When there is change in natural balance of these five elements, environmental pollution takes place. Thus, difference in fixed ratio in quantity and quality of these five elements becomes more and this is known as environmental pollution.

Sensitivity Towards Environment :

According to vedic approach when there is any types of defect in earth, water, air, etc. it becomes harmful for living creatures. In Yazurveda it is said that whole of the universe is in the equilibrium if there is balance in air, water, plants and animals. When the balance of these elements is disturbed trees, animals and human being are adversely affected. So these elements of environment should be kept in balance. Unlimited exploitation of natural resources should not be allowed. Nature itself corrects the imbalance in these elements. All the natural forces are assumed to be God. There are different gods relating with air, water, light, etc. Without forest Indian culture's existence is not possible because 1/3 life of ours is spent in the forest. According to vedic culture life is there where there is forest. Atharvaveda describes that it is wrong to cut the root of trees. People who cut the forests should be punished. Matsyapuram also talks about importance of forests in the life. The importance of ten dams is equal to the importance of one son and importance of 10 sons is equal to that of one tree. Governed by this spirit, a movement, led by Amrita Devi was started in Khejari Village of Jodhpur by the people of Vishnoi community. The aim of this movement was to protect trees.

Types of Pollution & Conservation of Environment :

In Indian ancient literature there are five types of environment pollution –

- i. Land Pollution
- ii. Water Pollution

- iii. Air Pollution
- iv. Sky Pollution
- v. Time Pollution

Other types of pollution are:

- vi. Direction of Pollution
- vii. Mind Pollution and
- viii. Heat Pollution.

Below given is the description of land, water and air pollutions as shown in our Vedic thinking.

(a) Land Pollution

Ancient Indians assumed land as mother because many types of medicines, foodgrains, trees, etc. are produced on land. Human life depends on land. From utilization to misutilisation of land is known as land pollution. We should not destroy and make dirty the surface of land because it makes field, water, etc. defective. With this cut hair, nails and other wastage should not be put into fields, gardens, sources of water, and open air. Atharvaveda says that learned, intelligent and powerful people should protect land so that they can get the love of mother land. Land gives us medicines which are essential for our life.

(b) Water Pollution :

Story of development of human civilization and origin of earth is not complete without water. Imagination of living world is impossible without water. In the present time water is being polluted due to paper, cloth, printing and dyeing, chemical, food manufacturing, chemical fertilizers, pesticides, detergents and other industries. Polluted water causes diseases to people along with fall in the land productivity. Water has its utility and due to this people started living with banks of rivers, dams, lakes, etc. Ancient civilizations were developed along with the banks of rivers. Without water agriculture is not possible. In Vedas water is assumed welfare

oriented and life saving. So water should not be polluted. According to Manu any, water should not be polluted by dropping dirty things in it like poison, impure goods and other wastages. In Vedas the purity of both rainfall water and underground water is emphasized. It has been mentioned in Rigveda that sky water should be made clean by religious activities like 'yagya'.

(c) Air Pollution :

Human being can not live without air. We have 79% nitrogen, 20.09% oxygen, in rest proportion there are other gases in our atmosphere. For our healthy life a fixed ratio of all these gases is necessary. Imbalance in this fixed ratio is the air pollution which results into impurity of air. Ancient Indian scholars were vigilant about air pollution. Pure air, good health and happiness are the sources of long life. Pure air protects people from diseases and gives energy to body. In Vedas air is considered as the main base of life.

In ancient time population, industrialization, transport means, etc. were not the agents of air pollution as they are at the present time. At that time human produced pollution was less. When climate changes bacteria affect our health. When these bacteria come on earth from air, the air becomes polluted. In Vedas, air can be kept pollution free by 'yagya'. Yagya is considered as sources of spiritual exercise (Upasana). In the way of Indian culture values of life are assumed to be necessary and good and due to this these values have been added with religion. According to Yajurveda, as result of yagya the harmful elements of air, water and sky are damaged. Yagya is assumed to be a science. Yagya reduces the pollution of air, water, earth and sky.

Tree is our good friend. Like Shiva, tree itself takes away the poison (pollutants) and gives us the honeydew (oxygen). Yajurveda recommends plantation of trees to control the air pollution. These are very beneficial so they

should not be cut. To protect environment trees and rivers are recognized as gods and thus these are worshipped. According to Atharvaveda, if we cut trees, nature creates the problems of rainlessness and heavy rainfall. In Durga Saptashati it has been described that when earth becomes without trees and jungles it stops to nourish human being and other living creatures. In vedic literature exploitation of nature is prohibited and exploring of nature is acceptable.

Important Points :

- **Concept of wants :** We have many wants in life from birth to death. We make efforts for satisfying wants.
- **Meaning of wants :** Complete happiness of body, heart mind and soul is known as 'Aggregate happiness'. We work due to the desire of happiness. Dharma, artha, Kama and Moksha are the four wants of human being.
- **Factors affecting wants :** Economic condition of people, religion, spirit of profit and economic growth are the factors affecting wants.
- **Primary needs :** Food, cloth, house, medicine and education are the primary wants.
- **Characteristics of wants :** Wants are unlimited and resources are limited. So all the wants cannot be satisfied and thus people are unhappy. Some wants are created again and again.
- **Maximum satisfaction :** According to Vedic literature pure, justified, and self earned wealth should be used to satisfy wants so as to get maximum satisfaction or happiness.
- **Various concepts of consumption :** Balanced and co-consumption are the two concepts of consumption. According to balanced consumption, it should be

according to want and not according to desire. Under co-consumption people should consume goods not lonely but in a joint way because property and prosperity are given by god.

- **Code of conduct of consumption :** Code of conduct of consumption includes :
 - i. Consumption of wealth earned by justified means.
 - ii. Consumption done lonely is prohibited.
 - iii. Balanced consumption is healthy.
 - iv. Morality in consumption.
 - v. Prohibition of over consumption.
 - vi. Prohibition of debt based consumption .
 - vii. Prohibition of being miser.
- **Wealth and Code of conduct of wealth :**
 - (1) **Meaning of wealth :** Wealth keeps all happy and satisfied. Wealth is medium of exchange.
 - (2) **Sources of wealth :** Agriculture, land, commerce, trade industry, animals and art are the services of wealth.
 - (3) **Types of wealth :** White money, brineded money and black money are the types of wealth.
 - (4) **Uses of wealth :** Wealth is used for religious activities, want satisfaction, exchange, welfare activities and family members.
 - (5) **Code of conduct of wealth :** Wealth should be earned by correct means. Wealth hoarding should be balanced. Wealth should be earned according to need. Rule of desire-quantity to earn wealth should be followed. Expenditure should be less then income. Wealth should be earned by own labour and efforts. Wealth should be earned by protecting the environment.

- **Nature and Environment :** Both nature and environment are complementary. The imbalance in elements of environment is the environmental pollution where these elements are not formed in the fixed proportion.
- **Concioussness towards environment :** In vedic literature uncontrolled exploitation of natural resources is not allowed. All the natural powers should be considered as good. To protect environment water should not be polluted and forests should be conserved.
- **Types of pollution and Environment :** Land pollution, water pollution and air pollution are the types of environment pollution.

Questions for Exercise :

Objective Type Questions :

1. Amrita Devi, Who sacrificed for the safty of trees, was related with –
 - (a) Jaipur (b) Khejari (Jodhpur)
 - (c) Udaipur (d)Kota ()
2. The oldest books of the world are –
 - (a) Veda (b) Bible
 - (c) Kuran (d) Upanishada ()
3. Which is not the characteristic of wants according to ancient Indian economic thinking ?
 - (a) Wants are unlimited
 - (b) Resource to satisfy wants are limited
 - (c) Wants are created again and again
 - (d) All wants can be satisfied ()
4. Who earns living for all people in the system of Varnashrana ?
 - (a) Brahmachari (b) Grihasth (Household)

- (c) Wanprasthi (d) Sannyasi ()
- According to Vedic Vanhmaya the consumption should not be of the type –
 - Balanced consumption
 - Justified consumption
 - Co-consumption
 - Unlimited consumption ()
 - From the point of view of public welfare the importance of 10 well is equal to –
 - Pond (b) Dam
 - Son (d) Tree ()

Very Short Answer Questions :

- What is 'aggregate happiness' ?
- Name the primary wants of human being.
- When does human being find maximum satisfaction ?
- What is the root of religion according to Chanakya ?
- What is the name of woman who scarified for protection of trees ?
- Write two measures to control environmental pollution as explained in Vedas.

Short Answer Questions :

- What are the main characteristics of wants described in ancient Indian thinking ?
- Why the sadness has been opposed in ancient Indian literature ?
- Why should people not collect goods more than their want?
- What are the points to be noted while earning wealth ?
- According to Mahabharata what are the uses of wealth ?

- What is the code of conduct of consumption as described in ancient Indian literature ?
- What is air pollution ?
- What is the Vedic relationship between nature and environment ?
- Why has much importance been given to trees in ancient books ?

Essay Type Questions :

- Explain the concept of balanced consumption.
- Explain the concept of co-consumption.
- Describe in brief the code of conduct of earning wealth as shown in ancient Indian thoughts.
- Write on essay on environmental protection as described in ancient Indian literature.
- "The Vedic nature of environment is relevant to control environmental pollution in the present time." Explain.
- Clarify the sensitivity towards environment as described in Vedas.

Answer to Objective Type Questions :

- (1) b (2) a (3) d (4) b (5) d (6) a

Chapter - 4.2

Economic Ideas of Kautilya

For economic ideas of Kautilya is wellknown among the economic thinkers. Kautilya is also known by Chanakya and Vishnugupta as names. Thought of Kautilya emphasizes the materialism against the traditional idleness. Materialism was not considered to be proper so its supporters named Kautilya (a name given to him due to his cunningness). After the end of Nanda dynasty, Chandragupta became the king with the support of Kautilya. Kautilya thought a lot on the economy and economic problems of that time. No thinker was there as intelligent as Kautilya. The logic he used and explained in making economic laws are still applied in the present circumstances. Ideas of Kautilya on different subjects of economics are mentioned below:

Kautilya's Arthashastra:

Kautilya's Arthashastra is the representative book of ethical tradition of the ancient thought. Kautilya wrote his book between 321 and 300 BC according to Jain literature and Puranas (Bhagawat Puran, Vaya Puran, Matrisya Puran and Brahmana Puran). Kautilya was originally not economist but he was a philosopher, thinker and strategist. His Arthashastra informs us about the economic systems and concepts of that time which can presently be used also. In this book there are 150 chapters, 15 sections, 180 subjects and 6000 shlokas.

Definition of Wealth and Economics :

Kautilya calls branches of knowledge as 'Vidhya'. According to him 'Vidhya' is the concept which explains that what is correct and incorrect and what is duty-what is not duty. According to him there are four branches of knowledge – Trayee, Vartta, Aanvixiki and Dandniti. In Vartta, the activities of agriculture, animal husbandry, industry and commerce are important which help in earning of property and material achievement. Aanvixiki is that branch of knowledge by which the efforts, which are made for the political and material objectives, can be balanced.

Kautilya divides human life on the basis of artha, dharma and kama and among these three artha is dominant one because without artha (wealth) no activity is possible. According to Kautilya artha dominates dharma. According to him, "the root of happiness is the dharma and the root of dharma is the artha and the root of artha is the state." In Kautilya's Arthashastra the activities of both dharma and kama depend on artha. Kautilya says, "in the world only wealth is the good, wealth dominates both dharma and kama." According to him, as knowledge is the result of training, in the same way wealth should be obtained slowly. Getting wealth is always beneficial if it is got for upbringing a good wife, good son or good friend or for religious purpose.

Thus Kautilya considers that wealth justified which is earned by proper means.

According to Kautilya agriculture, animal husbandry and commerce are included in Vartta. He defines Economics as, "the behavior or living of people is artha. Land with people is artha. Economics is that branch of study which is concerned with the measures which are used to get and to develop the land." No thinker in world gave such type of definition of Economics so far. Kautilya further writes that this Economics includes and protects dharma, artha and Kama.

Public Finance :

According to Kautilya it is duty of the king to increase the income more and more for making various arrangements in different circumstances created time to time because all the functions of the state depend on the funds. If the treasury of the king becomes empty, he starts to puzzle the people living in cities and villages. The system of public finance of Kautilya is correctly associated with the concept of welfare state. According to Kautilya, there are four objectives of state except maintaining peace and justice. These are:

1. Earning that which has not yet been got
2. Protect which has been got,
3. Increasing the protected
4. Using the increased for the welfare of the public. It means using the income for the welfare of society.

Kautilya says that finance protects dharma. So treasury of the state should not be kept vacant without which state can not take over developmental work for the social progress.

(a) Public Income :

According to Kautilya, dandniti (policy of punishment) is responsible for the proper implementation of trai, vartta and aanvixiki.

Sources of Public Income : These sources, according to Kautilya are:

- i. Land revenue of different types, house tax in cities, etc.
- ii. Goods tax when sold and bought in market, import-export tax.
- iii. Path tax, canal tax, tax on loaded heavy vehicles
- iv. Tax on artists, tax on fish.
- v. Tax on liquor, wine and opium.
- vi. Property tax, tax on forest products, mining tax, tax on salt, monopolistic tax on goods.
- vii. Tax on labourer.
- viii. Tax on sudden income.
- ix. Tax on loan
- x. Inheritance Tax
- xi. Punishment
- xii. Profit of state
- xiii. Tax on horses, wool, elephants, fruits and trees.

Some of the taxes are described as below:

1. Land Revenue :

Agriculture was the main source of income of state. Farmer had to pay 1/6 of the output as tax to the king. Officers of state (Samahartta, gop, Sthanik, etc.) got income from the state. All the officers had their own areas. Tax was paid in the form of cash or kind.

2. Fee :

Fee was imposed on both outgoing and incoming goods. There were stations to collect fee. The officer who collected fee was known as 'fee officer' who constructed the fee-houses, collected the fee with the help of assistants and then deposited the collected fee in the treasury. Kautilya made three departments for fee – Brahya, Abhyantar and Aatithya. 'Brahya' was the fee collected on goods produced domestically. Fee collected on goods produced in forts and

capital was the 'abhyantar' and the fee on foreign goods was 'aatithya'.

3. Income from Mining:

According to Kautilya state owns its own land. So it is right of the king to collect income from products which are under the earth. President of mining arranged the production and sale of all the mining products like shankh, vajra, mani, mukta, etc. The salt imported from foreign countries should be taxed as 1/6. In case of theft of metals, the thief had to pay 8 times punishment. In case of theft of precious stones death punishment was given.

4. Path Tax :

Security guards on border were to collect the path tax from the traders. In case of fully loaded cart 1¼ pana, an animal ½ pana, on small animals ¼ pana and if the luggage was loaded on the shoulders of person then 1 masha were the rates of path tax.

5. Animal Tax :

Persons having the occupation related with hen and pigs had to pay ½ part of their income as the animal tax. In case of sheep and goat 1/6 part, and in case of cow, buffalo, donkey and camel 1/10 part of total income was the tax to be paid to the state.

6. Emergency Tax :

In case of any emergency Kautilya made some laws about the tax. According to him the king could impose tax on rich persons when the treasury became vacant. In case of emergency the king could impose tax on traders, animal owners, etc.

Canons of Taxation :

There are many canons of taxation described in the Kautilya's Arthashastra which explain the tax rate, tax amount, way of collection of tax and way of tax imposition. These canons are :

1. Tax Collection at Proper Time:

According to Kautilya tax on agriculture should be collected when crops are harvested. The King should not collect tax if the time is not proper.

2. Proper and Justified Taxation :

The king should not impose improper and unjustified tax. In emergency king should collect tax from public in justified amount and at proper time. King should collect tax in the humanitarian way.

3. Taxation according to Ability :

People should be taxed on the basis of their ability to pay.

4. Priority of Financial Discipline :

According to Kautilya expenditure should always be less than income. According to him all the tax amount collected should be deposited in the treasury. Kautilya talked about the honesty of the servants of the state. According to him, there are frequent chances and possibilities of taking bribery by the officers of the state, so honest officers should be appointed by the king to collect various taxes.

(b) Public Expenditure :

Acharya Kautilya discussed the public expenditure in his Arthshastra. Main items of public expenditure suggested by Kautilya where – religious work, salary and pension of officers, organization of military power, management of factories, salary payment of labourers, expenditure on agriculture, establishment of educational institutions, construction of roads and canals, safety of forests, expenditure on animals, etc.

(c) Concept of Savings:

Kautilya also talked about the concept of saving. According to him saving is the unspent amount of the public income known as 'nivi'. Saving is of two types: (i) real saving (prapt)

which has been deposited in the treasury, and (ii) expected saving (anuverit) which has to be deposited in treasury.

(d) Accounting of Income and Expenditure:

According to Kautilya it is necessary for the king to keep the public expenditure and income accounted. The treasurer must account the income being received from cities and janpadas very well. If he is asked about the income account of 100 years back, the treasurer must have its complete information. Balanced income should be shown in the treasury. The king must look into the treasury affairs first of all. He should establish the office of accountants and develop the regular accounting of income and expenditure. Public must regularly be informed about the income, expenditure and surplus of the state. The chiefs of all the offices should visit the head office with their complete accounts at the end of the financial year and should tally the accounts. The income-expenditure should properly be maintained by mentioning the time, day, month and names of concerned persons. Kautilya proposed the system of punishment to the corrupt accounts officers. According to him non-mentioning of income in register, making non-expenditure even after having the income and not disclosing the surplus are the activities for which the responsible person should be punished. Persons or officers who put treasury into losses should be punished by the penalty of twelve times of the total loss. It is clear that the system of Kautilya had the merits of diversity, equality, justification and flexibility with the provisions of making expenditure of the tax income on the welfare oriented activities.

Agriculture System :

Kautilya, in his book, gives more importance to agriculture. According to him the king must appoint a good agriculture officer who should collect good quality seeds of food grains, fruits, vegetables, cotton, etc. The land on which agriculture is not possible should be used for

animal fodder. According to Kautilya seeds should be used according to weather conditions. To increase agricultural production ghee, honey, milk, etc. should be used in fields with the manure as suggested in the epics. Seeds of cotton, mango, etc. should be sown after mixing them with dung. The dirty manure should not be used in farming.

Irrigation :-

State should construct dams on rivers for the irrigation purpose. When rivers, lakes, dams and wells are used for irrigations, one fourth of the yield should be paid to the state as irrigation tax. He proposed punishment to those people who damage the rivers, canals and dams.

Agriculture Loan and Assistance :

Kautilya instructs the king to extend loan facilities to farmers for seeds, bullocks and grains and the same has to be repaid to the state after harvesting the crops. King should subsidize the loans for the honest and labourish farmers so that they can get some incentives. King should also give small loans to farmers for their health facilities at the time of disease so that they can maintain their health and thus society can get more agricultural production. This will also increase the income of the state.

Animal Husbandry:

Cow officer should be appointed by the king to look after cows, buffaloes, etc. It has been described in 'Arthashastra' of Kautilya that wages should be fixed for people who look after animals. For each animal a 'pana' should be the remuneration. Kautilya proposed some laws against those people who harm the animals.

Wage Determination System and Social Security :

Kautilya enacted many laws about wages and welfare of labourers engaged in different occupations. He divided these labourers into two parts –

- i. Efficient labourer,
- ii. Inefficient labourer.

These both types of labourers should be paid salary according to the work done. Kautilya proposed different rates of remuneration for doing the work on silver and gold. For trained artisans he proposed double wages. Workers whose salary is not already fixed should be paid according to their work and time. Female workers should be paid wage according to their work quality.

Theories of Wage Determination :

In Kautilya's Arthashastra there are many theories of wage determination. Concept of wage determination of Kautilya was a dynamic concept and thus he advocated different laws on the basis of different occupations, works and productivity of labour. Following are such theories of wage determination.

1. Cost of Living Theory of Wages:

According to Kautilya the wage to be paid to workers should be sufficient in the sense that they can manage their physical facilities properly and can render their service to their owner with complete honesty and devotion. In this type of situation workers can be free from selfishness and dissatisfaction.

2. Ability Theory of Wages:

For different wage levels different qualifications are required. Wage for efficient and inefficient workers can not be same. Kautilya suggests to the King that government servants with special qualification should be given wages and allowances on the basis of their knowledge and specialization.

3. Productivity Theory of Wages :

Kautilya clearly mentions that the salary of worker should be based on their production and the time used. Wages should be paid only for that work which has been done. He says that salary of

government servants can be more or less according to their qualifications and work efficiency.

4. Customary Theory of wages :

There were some occupations where there was no rule of wage determination. In such occupation wage should be paid according to the custom in cash or kind. According to Kautilya artisan, doctor, advocate and servant should be paid salary as much as paid elsewhere or the salary decided by any expert. Except this Kautilya also emphasizes the work culture. According to him if any worker does not work even after taking salary he or she must be punished. Wage or salary is not paid only for attendance. The wage of 7 days should be kept as reserved for those workers who do not work properly.

If a worker is continuously ignoring duty that worker must be removed from the work.

5. Share Theory of Wages:

In some occupations where the wage can not already be determined there has been such tradition that a certain share of output was paid to worker. Thus the servant of farmer should take the share in food grains, servant of cow owner in ghee and the servant of shopkeeper should take the 10th share of sold goods provided their salary would have not already been decided. According to Kautilya some factors like need of the state, religion and morality, salary as per the service, devotion to state, quality of servant, etc. should be considered by the state while salary determination. The state should never use more than ¼ part of the income for the salary item.

Provisions of Social Security :

Kautilya proposed many schemes for the welfare and security of workers. Some of such schemes are as given below:

1. Pension Scheme:

According to Kautilya if any government

servant dies during doing the work his/her salary should be paid to his/her son/daughter in the form of pension. Except pension children, old persons and sick persons of the family of the servant should be given the economic help at the time of death, disease and some other occasions. According to Kautilya such provisions indicate that government is having the spirit of help to the workers.

2. Rules of Leaves:

According to Kautilya if female workers are engaged on work in the days of leave they should be paid extra wages with food, pulse and items. Workers can take leave at the time of sudden work, disease, etc or can send other person to work in his/her place.

3. Preference to Poor in Employment:

Kautilya had the provision that widows, disabled women, artists, etc. should be given employment by the kind in the work of weaving and knitting. For this work there was provision of over time also. Servants must get justified salary. Permanent and temporary workers should get salary according to qualification and work efficiency. King should look such type of issues very seriously.

Labour Unions :

According to Kautilya there should be provisions of labour unions in the system and these unions should be more powerful. Labour unions were known as 'Shreni', 'kul', 'gana' or 'sangh'. With the help of these unions economic and non-economic activities were discussed and required decisions were taken. These unions worked for the benefits of their members. These unions can be seen as the modern trade unions. According to Kautilya following are the main types of trade unions.

1. Weavers' Union
2. Mining Workers' Union
3. Stone age Artists' Union

4. Carpenters' Union
5. Phrohits' Union
6. Singers' Union
7. Buyers'-Sellers' Union
8. Service Union, etc.

Trade and Commerce :

Exchange System:

According to Kautilya both barter system and many exchange system should be used. Exchange of goods is known as barter system. According to him exchange of grain is a beneficial exchange of goods known as 'Parivartak'. Kautilya described money exchange also. Kautilya described four types of money –

1. Coins of gold
2. Coins of silver (Karshapana or Pana or Dharma),
3. Standard copper coin, and
4. Copper kankni.

Kautilya divided all money in two categories :-

1. Kosh Preveshya :

These were the moneys which were used in all the government related works, and

2. Applied Moneys :

These were used in the works of general public but these moneys could not enter in the government treasury. Money creation was done in government mint only. Any person could approach the government mint with own metal and could get moneys made from it with giving some fee. 'Souvarnik' and 'lakshanadhyax' were the names of the mint officers.

For the trade facilities proper money and measurement systems were developed. According to Kautilya there are two functions of money:- (i) Medium of exchange and (ii) legal medium to

deposit money in treasury. There were 16 types of measuring machines (taraju). Kautilya described the measurement activities of gold, silver, heavy goods, measurement of length, measurement of cloth, etc. King appointed 'poutavadhyax' as the government officer to look into the affairs of measurement and weighing.

Price Determination of Goods and Services:

Kautilya suggested a proper and justified system of price determination of goods and services. In justified price he includes cost and proper profit. The justified price neither harms the incentives of producers like in socialism nor exploits the consumers like in capitalism. If price remains less than cost, producers will shut down resulting into increase in unemployment. On the other hand if price is high, consumer demand for goods decreases. In both the situations production falls and unemployment increases. According to Kautilya price determination is the duty of the officers known as 'panyadhyax' and 'sansthadhyax', appointed by king. It is duty of 'panyadhyax' (president of commerce) to find out whether there is demand of goods or not. According to Kautilya, fluctuations in prices is the result of changes in demand and supply. If demand increases price increases and if supply increases price decreases. In this way, Kautilya described the role of demand and supply in the price determination along with the role of government control. Price of goods is affected by many factors. According to Kautilya price of goods should be determined keeping in view the society, salary, transport outley, rent etc. Kautilya says that 'Sansthadhyax' (market president) should consider society keeping in view the other factors. He suggests that perishable goods like milk, vegetables, etc. should be sold as early as possible at any price and at any place. According to Kautilya if the prices are increased by traders and workers, it is opposite to the theory of ethics. Thus prices of goods should be determined

according to country and time.

Market systems and their Regulations :

Kautilya was the first thinker of world who presented a wide and wellplanned scheme to regulate the market. He suggested the appointment of the following officers to deal with the activities of adulteration of goods, blackmarketing, forward trading, etc.

1. Panyadhyax :-

This officer looked into the affair of price determination and the quality of goods. He also noticed the activities of traders.

2. Shulkadhyax :-

This officer was concerned with the work of cess collection, sealing the product and sale and weighing the goods.

3. Sansthyadhyax:

To control adulteration and sale of interior goods and giving punishment on less weighing were the works of this officer.

4. Poutvadhyax :

This officer was dealing the activites related with measurement and weighing systems.

5. Antahpal:

This officer looked into the issue relating with the internal and foreign trade. Kautilya proposed heavy punishment to control the adulteration. According to him only authorized persons can trade and store the foodgrains and goods should be sold only in the market and not at the place of production. Kautilya talked about the protection of producers under a system in which if there is the situation of excess supply, the market president should store and sell the goods. Kautilya says that if traders jointly sell or buy goods at improper prices then they should be punished of one thousand 'panas'. The profit should be controlled and taken away from traders if they earn it by speculative and profiteering

activities. According to him it is wrong to earn profit more than 5% on domestic goods and 10% on foreign goods. If the earned profit is more than this limit, then they should be punished by 200 'panas'.

Trade :

According to Kautilya the domestically produced goods should be sold under the specific management system at the fixed place while foreign goods should be sold at many places so that there is no problem to the public. There will be same price of goods sold at different places. Traders must be protected by the state. Only those goods should be imported which are necessary. Kautilya says that there should be tax concessions on foreign trade and state should provide loans for this purpose Kautilya names 'samanpath' to the sea routes and 'pravahan' to sea ships.

Kautilya gave more importance to state trading but said that state trading should be welfare oriented with supporting the imports and exports Kautilya said to restrict the exports of some goods. According to him exports of horses, foodgrains etc. should be restricted and the import of these goods should be free from fee and tax. According to him state should promote the trade and for it water routes, land routes, big market and mandhies should be constructed. State should protect traders on the trade routes. The selling and buying of goods should be managed by the state by collecting the salable goods and by constructing the big cities. Kautilya fixed the profit earned from trade. He gave an important direction to the activities of buying and selling and price determination so that general public could feel ease. The necessary good should be available to public at reasonable prices.

Important Points:

- Kautilya, also known as Chanakya, Vishnugupta, etc., is the propounder of Economics. He wrote 'Arthashastra'.

- The period of writing of 'Arthashastra' is assumed to be in between 321 and 300 BC.
- Kautilya emphasizes the branch of varitta (economics) more among the four branches in which dominant role is of agriculture, animal husbandry, industry and trade.
- Kautilya says the 'artha' plays dominant role among dharma, artha and kama.
- Canons of taxation are: collection at proper time, justification, ability to pay and financial discipline.
- Agriculture was main force of state income. 1/6 of the production was given as rent to state.
- Officer who took the fee was known as 'shulkadhyax'. Kautilya divides fee into three parts – bhahya, abhyantar and aalithya.
- Items of public expenditure are religious work, salary of officers, expenditure on agriculture, construction of roads and canals, safety of forests, expenditure on animals, etc.
- Agriculture system includes appointment of agriculture officer, food grains, irrigation, agriculture loan and assistance and subsidy on loans.
- Determination of wage and social security includes theories of wage determination, theory of productivity, theory of customary wage and theory of sharing wage.
- Provisions of social security are pension scheme, law of leaves and priority of employment to poor.
- Commerce and trade include exchange system, determination of prices of goods, appointment of commerce president and market president and state controlling system.

- Appointment of officers to regulate markets as panyadhyax, poutavadhyax, antahpal and shulkadhyax.

(c) 15% (d) 20% ()

Questions for Exercise

Objective Type Questions :

- The branch of knowledge, described by Kautilya, in which economic subjects are studied is –
 - Trayee
 - Vartta
 - Aanvixiki
 - Dandniti ()
- According to Kautilya the root of religion is–
 - Artha
 - Kama
 - Moksha
 - None of above ()
- The state system of assistance to be given to able and good farmers is –
 - Irrigation system
 - System of good seeds
 - Subsidy on loan
 - System of good animals ()
- In the administrative system of Kautilya the officer who looks into adulteration, state of inferior goods and defects in weighing is known as –
 - Panyadhyax
 - Anthpal
 - Pouvadhyax
 - Sansthadhyax ()
- According to Kautilya the cess part of cost of the product on imported goods to be taken is–
 - $\frac{1}{4}$
 - $\frac{1}{5}$
 - $\frac{1}{6}$
 - $\frac{1}{8}$ ()
- The rate of profit fixed on produced goods by Kautilya was –
 - 5%
 - 10%

Very short Answer Questions :

- What are the economic activities Kautilya included in varta ?
- Write name of three departments of fee according to Kautilya.
- What is the meaning of saving (nivi) according to Kautilya ?
- Explain the provisions of pension scheme according to Kautilya.
- What should be the amount of cess of the cost of imported goods according to Kautilya ?
- When should the subsidy be given on agriculture according to Kautilya ?
- What make the different officers according to Kautilya to be appointed to regulate the market systems ?

Short Answer Questions:

- Name the factors affecting price of goods according to Kautilya.
- Explain the rules of trade described by Kautilya in 'Arthashastra'.
- Explain the definition of Economics given by Kautilya.
- What are the sources of state income according to Kautilya ?
- Explain the canons of taxation in the tax system of Kautilya.
- What is the meaning of 'apahar' in view of Kautilya ?
- Explain the rules of leave of workers according to Kautilya.
- What are the main types of labour unions described by Kautilya ?

Essay Type Questions:

1. Explain the system of public finance of Kautilya.
2. What is fee according to Kautilya ? Explain the rules of fee given by Kautilya.
3. Explain the theories of wage determination and provisions of social security according to Kautilya.
4. Clarify the ideas of Kautilya about public expenditure and income.
5. What do you think about the measurement and weighing system and market organization of Kautilya ?
6. What are the provisions for the regulation of markets according to Kautilya ? Explain.

Answer to Objective Type Questions :

(1) b (2) a (3) c (4) d (5) b (6) a

Reference Book :

1. Kautilya's Arthashastram : Gairola Chokhambha Prakashan, Varanasi.
2. Vedic Sahitya Men Arthpurusharth : Rana Amar Granth Publications, New Delhi.

Chapter - 4.3

Economic Ideas of Pt. Deen Dayal Upadhaya

Pt. Deen Dayal Upadhaya was a live devotee of simple life, high thinking and easy behavior. He was born in Dhankiya village on the Jaipur-Ajmer railway route in Rajasthan in the house of his maternal grand father, Shri Chunnilal Shukla. Shri Chunni Lal Shukla was station master of the Dhankiya railway station. Both father and mother of Pandit Ji died in his childhood and he was cared by his maternal father, Shri Radharaman Shukla. Pandit Ji passed high school examination from Kalyan high School, Sikar and got gold medal by passing this examination with first division and with first position in the Ajmer Board. After this he passed B.A. with first division from the Birla College and got two gold medals. Pandit Ji passed his M.A. examination in first division from Sanatan Dharam College, Kanpur.

Pandit Ji gave the theory of integrated human philosophy to world suffered from the systems of capitalism and communalism. This theory is not only the complete thought from individual life to complete human being but also a thought to search the aggregate form beyond the human nature.

In his short life span Pandit Ji wrote many articles and books relating with national life and national problems. His important writings are -

1. Chandra Gupta Mourya
2. Jagadguru Shankaracharya

3. Jansangh Sidhant and Niti
4. Akhand Bharat
5. American Anaz P.L. 480
6. Bhartia Airthniti
7. Problem and Solution of Unemployment
8. Integrated Humanism
9. Tax or Loot
10. Problems of National Life
11. Unfaithfulness

Pt. Deendayal thought upon many subjects like integrated humanism, integrated money policy, capitalism, socialism, decentralized economy, prohibition of mechanisation, prohibition of cooperative farming, foreign capital, money, culture, etc. Before the discussion of integrated money policy it is necessary to understand the thought of 'integrated human philosophy', which was given to the world by Panditji.

Integrated Human Philosophy:

Integrated human philosophy means the philosophy of integrated relations of human life and complete nature. This is that philosophy of life that shows that the thought of human being is not only a single approach of "economic human being" but it explains the complementary

integrated relations between human being and the world beyond human being where a direction of prosperous and happy life can be observed. This philosophy is the philosophy of Indian culture which is the centre point of teachings of 'Chaturvidh Purushar-thas' of body, soul, mind, religion, money and work. Human being with these 'Chaturvidh Purusharthas' is the complete human being and the center point of integrated human philosophy.

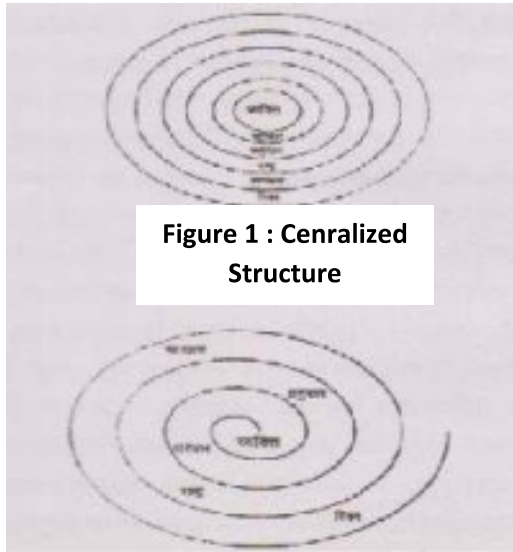


Figure 1 : Cenralized Structure

Figure 2 : Undivided Global Structure

The family institution is very important in integrated human philosophy because the first lesson of life is taught in the family and lesson is about taking from 'I' to 'We'. According to Upadhyaya Ji we can not imagine the aggregate with individual and without aggregate an individual. As for individual, earning of income or money is necessary for society. Without sufficient earnings of money society can not be run successfully. When the lack of money becomes aggregative many problems are created for the aggregate society. In our culture the existence of society, sadness-happiness, and profit-loss are not only connected with each other but depend on each other also. Here the systems of 'Ashramas' and 'Varnas' were created for the mutual balance of individual life and the aggregate life i.e. social life.

Integrated Philosophy :

There is a big controversy about relation between individual and aggregate in the Indian life philosophy and Western life philosophy. Western thoughts have been mostly developed as reaction. As an reaction of the Roman school of religion democracy arised and as the reaction of capitalism socialism and communalism were born. Western people separated the thoughts about individual life and also about the aggregative life of human being, world, nation and family. Figure-1 shows the centralized circle groups – created by western thoughts.

Centralized Structure :

This figure has one point in the center which can be assumed as a human being and the circle around this point is the family circle, out of this the big circle is the caste society, further circle represents the nation and then humanity and then the circle of world human being. In this centralized information individual is the center point and all circles are separate to each other but in reality it is not so. All are related with each other. It is the result of the method of thinking of human life in pieces that today the communalism has indeed in the world and the family system in capitalism has disappeared.

Crisis of moral values has arised and due to unlimited consumption and centralized industrialization in whole of the world environmental problem has been created. Only the Indian culture has thought upon the human unity. We have not only thought upon the human unity but also upon the whole living things and their creation. This is the main lesson of unity in diversity. Indian culture has integratedness which is known as the global structure. In this global structure each structure is developed by having relations with other structures and thus human being is followed by family, community, nation, humanity and the world and further the god element. All these structures lie in the structure of

god element. The god element itself is found in all structures because god element is universal, found every where and every time. This God element is the soul of integrated human philosophy. Thus integrated human philosophy is a complete life philosophy as shown in below Figure-2.

Undivided Global Structure

Integrated Economic Policy : A Third Choice

Each economic system has the main objective of providing facilities of prosperity and happy life to all the people. To achieve economic prosperity all the economic systems try their best. There have been many innovations due to this responsibility of economies and thus many sources of economic resources have been found and multifold growth of production has emerged. In the race of economic prosperity many economies have become advanced while others have become backward. Both of these economies are suffered from their different problems. For the solution of these problems capitalism and communalism developed in western countries. Capitalism, in its original form, is not seen today and by changing its form with time communalism and socialism have about disappeared from the world. Capitalism stood on four theories.

1. Struggle for existence
2. Survival of the fittest
3. Exploitation of nature
4. Individual rights

According to upadhaya capitalism was developed on the basis of these four theories. Thoughts of Adam Smith and Keynes contributed in the development of capitalism. Adam Smith writes, "Never do good for others, do good for others if there is something good for you." According to Keynes, "in coming of at least 100 years if there is no truth and untruth is appropriate, we should accept truth as lie and lie as truth. The hunger to earn more and more

wealth, competition to earn more and more profit and the efficiency used for it are good for some time to come." According to Adam Smith and Keynes survival of the fittest and struggle for existence have made the life more competitive in capitalistic countries. Each person worked day and night as a machine due to the fear lest he or she remained backward in compassion to others and as result highblood pressure, stress, heart diseases, and many other problems created. People take pills for sleeping. Incidents of murder, rape, divorce and suicides have been found more in capitalistic countries than in other countries. Thus Marxism economic thought emerged as reaction of the defects of capitalism. After the Russian Revolution of 1917 it was said that Marxism is a highly scientific thought way which will end all the thought ways and a society will be constructed which will be free from all types of exploitation and will be equity oriented. But after the period of 70 years, the building of communalism collapsed and about disappeared from the world map.

Even after the 68 years of independence the problems of poverty, unemployment, inequality, inflation, imbalance of payments, etc. in India are not only seen but these are being more intensive with the time also. According to Deen Dayal Ji, world is at the cross road of sever illusion. Is there any third alternative which can solve this problem ?

Pt. Deen Dayal says with high confidence that under the integrated human philosophy of Indian culture integrated economic policy can be that third alternative. Today western economics with more and more thinking accounts only the material prosperity of human being. Along with the economic policy there are some uneconomic issues to be thought upon. But it seems that most of the western economists do not think upon these uneconomic issues. According to J.S. Mill, "It can not be said that all the economics questions get the answer on the basis of economics only. Some

of the economic questions have the important political and moral aspects which can not be ignored." Today there is need of such medicine which can give mental health and satisfaction along with the material prosperity. Such medicine can be any one out of the integrated human philosophy and under it the integrated economic policy, as suggested by Pt. Deen Dayal . In his book 'Indian Economic Policy. A Direction of Development' he analyses the economic policy and by explaining the economic dimension of integrated human being he writes that, 'removing the shortage and effect of money from the society and by arranging it properly is known as "the economic dimension". Thoughts of Pt. Deen Dayal on economic policy are as below:

1. Meaning of Economic Policy in Indian Culture :-

The place of religion is always considered very important in Indian culture and the religion is required as base for the economic development. In the description of Vedas, among the 12 properties of religion, work is considered as the first property. Giving right to work is the fundamental duty of the state. So right to work is the constitutional right of people. It is the first duty of the state to give opportunity of work to every citizen according to the eligibility and capacity. On the basis of this approach, Pt. Deen Dayal always emphasized that in the reference of five year plan formulation 'work to all' should be declared as the planning objective. In doing so state should always try not to discriminate the society on the basis of caste, colour and sex. Each plan of reconstruction of nation should have the objective of work availability for all.

2. Psychology of Wealth :-

According to Pt. Deen Dayal lack of wealth makes people thief and is responsible for the loss of religion. So there is need of making such social criteria so that each commodity should not be purchased with money. If value is measured in

terms of money only then weak persons will not be protected and thus people will earn money by wrong means like theft, bribery, etc. Measuring the value of labour in money terms is not possible. Labour and remuneration both are closely related with each other even though formulation of the best and publically accepted value theory is neither simple nor useful. Importance of labour is not due to the money received for it but it is due to the element of religion present in it. Thus, the remuneration given to a person is not assumed due to the labor given by the person.

3. Question of Ownership :

The conflict between thoughts under individualism and socialism has given birth to a new dimension whether property is owned by an individual or by the state. According to Pt. Upadhaya, it is wrong to own property either by individual or by society. According to him each person is a representative of society so the person is 'trusty' or 'guardian' of a part of the social property. An individual is itself a part of society, thus the individual itself is the property of the society and in this way society has its undoubted right on the property. In view of Pt. Deen Dayal, concentration of property in hands of some people of society (to the name of private property) or concentration of property in state (to the name of social property) both are equally wrong. Upadhaya does not accept the unlimited right on property either of individuals or of state. He is against the ownership concentration and thus he is supporter of the decentralized state or decentralized economy. The happiness of humanity lies only in the partnership of both micro and macro. Thus partnership right on property is the philosophy of integrated humanity.

4. Prohibition of Capitalism and Socialism:-

Upadhaya forcefully opposed the concentration of unlimited production in few hands. Under capitalism financial power is concentrated in few hands. This tendency of

concentration has developed the industrialisation in the western countries. Capitalistic assumptions of economic man and consumerism have divided economic life and human being. Thus a deep ditch has been created between labor and happiness. An independent weaver is now not seen and has joined large factories. Bazar has been replaced by departmental stores and tailor by readymade garments. This is a type of dictatorship in the economic sector. Producers have snatched the rights of common persons with the help of communications system and the gained power. So capacity of production should be determined which is only possible through the decentralization. Capitalism creates reactions in the society, does not plan true life, damages the cultural values of society and thus attracts the people towards the vicious circles of consumerism. Now human being has become a part of machine rather than an assistant of it.

Socialism prohibits the excessness of individualism. According to Upadhaya all the defects of centralized capitalism are present in socialism. Tendency of centralization. Damages the work spirit of human being and increases the spirit of human being and increases the spirit of being 'labourer'. The spirit of wage is the spirit of pressure where there is no happiness of respect and duty.

5. Economic Democracy :

Upadhaya says that democracy should not only be related with political life but should be related with economic democracy also. Thus, as 'Vote of each' is the conclusion of political democracy, in the same way 'work to each' is the measurement of economic democracy. On one side, the work should earn living and on the other side, there should be freedom to people of choosing the work. If people do not get a justified part of national income, being employed in the work is unaccounted and useless. Thus, there should be surety of minimum salary, justified distribution and social security. According to

Upadhaya, the controversy on private and Public sector of capitalism and socialism is wrong. Both of these have damaged the self employed sector. Thus development and expansion of self employed sector is necessary and for this decentralized system is required.

6. Prohibition of Heavy Industrialization:-

Big industries become dictatorship oriented and inhuman due to the governance of demand-supply mechanism and concentration of output of these industries. Upadhaya opposed heavy industries due the following facts.

1. It is not favorable to the Indian social equality.
2. These industries are not complementary to artisans because they damage them.
3. These industries are opposite to the objective of 'work for all' and thus increase the technological unemployment.
4. They use more capital and less labour which is beyond the capacity of Indian producer.
5. They are more import dependent and thus the burden on balance of payments emerges (as result of more imports).
6. Their social cost is very high. Due to urbanisation many problems of health, residence, water supply, sanitation, etc. are created.
7. They have completed production and management system.
8. Big industries give birth to exploitative and broker systems between agriculture and industries.
9. Due to concentration at our place the problems of imbalanced regional development and extensive development are created.
10. The lobby of big industries becomes so strong in capturing the politics of country.

11. Big industries create inequality in society. The gap between rich and poor is enlarged and this results into the class struggle. Also, the big industries have their relations with foreign industrialists which can also have their wrong effects on the domestic economy.

So, according to Upadhaya, There should not be any role of foreign capital in the development. The social and economic effects of foreign capital can not be favorable to the country. Investment of foreign capital exploits the labor of the self country.

7. Over Self-reliant Industrial Policy :

Although Upadhaya opposed heavy industrialization he supported the development of healthy industrialization. Thus, according to him, we should adopt such industrial policy under which we should try to produce some more output that is required for the self reliance. A healthy policy should have the following merits:

- i. It should give work to all.
- ii. It should be helpful in decentralization instead of concentration of output.
- iii. It should be complementary to agricultural rural system of India.
- iv. It should not support the rural migration of talent.
- v. It should support the moral values.
- vi. It should support labour intensive technique rather than capital intensive technique.
- vii. Its development should be based on equipments of artisans.

8. Decentralized Economy :

According to upadhaya the base of economy should be villages and janpads. The economic planning destroying villages will destroy the India. Economies which once adopted heavy industrialization and centralization were

trapped into vicious circles and it became difficult to return back. According to him big industries should prepare productive or capital goods and small industries should produce consumer goods. Upadhaya is not agree with the fact that small industries are not economic. Truth is that economies are not the result of large scale production but are due to more production. If we go through the history we know that Indian cloth was cheaper in England in comparison to the cloth in Britain produced at large scale. The Japanese product, which keep out the product at big factories, are made in houses. If the facilities are given to small industries and additional facilities are not given to large industries small industries will win the game. Thus Upadhaya says that :

- (1) big industries are not economical due to proper competition but are due to the forced commercial activities.
- (2) Big industries mostly exploit the labor.
- (3) Once they authorize the market their incentive of industrial efficiency completely damages.
- (4) These industries are so big that they can not be run economically.

In decentralized economy small and cottage industries are the back bone of the economy. But big industries should not be ignored at once, according to Upadhaya. In this way he accepts the big industries compulsorily but there should not be concentration of economic power. He was not agree with the fact that small industries are not economical. According, to him being big industries economical is an illusion, real economies are seen there in the small industries.

9. Agriculture :

According to Pt. Deen Dayal Updhaya India is an agricultural country. Agriculture has its about 60% contribution in national income of India and about 70% population earn living from

it. So, according to him, without agricultural development industrialization is not possible because Indian farmers not only produce foodgrains and raw material for industries but they are the big buyers of the finished goods of industries also. We should be self reliant in the production of food grains it is only possible by given priority to agriculture. Agriculture has the capacity of giving employment to many people with the investment of less capital. Upadhaya gives more emphasis to the construction of small dams in comparison to big dam projects. According to him the 95% water of small dams can be used in irrigation while only 55% water of big dam projects is used for the purpose of irrigation. Except this, the big dam projects are capital intensive and depend on the imported material, technique and resources. Water drainage system of these big projects is not proper. In his book, "Indian Economic Policy", he presented the statistical information about increase in the agricultural production due to big dam projects in the period of 1951-56. It is clear from this information that we spent 92% of the sanctioned amount of the budget on these big dam projects and got only 47% increase in agricultural production. In the same period 63% was the expenditure of the sanctioned budget on small dam projects which resulted into 91% increase in agriculture production. According to Upadhaya, by using chemical fertilizers continuously the fertility of land has reduced so these fertilizers should be used in limited quantity along with the dung etc. Dung should not be burnt but should be used for fuel and manure with the help of dung gas plants. By doing so, villagers will solve their problem of fuel and the decreasing level of land fertility will be controlled. Pt. Deen Dayal opposed the cooperative farming. He believed that cooperative farming at last will change into the community agriculture and thus today's land owner will become landless labour with strengthening the tendency of dictatorship rather

than democracy. Cooperative farming will also go against our objective of more production.

According to Upadhaya, farmers must get proper price of their products. Prices of agricultural products and industrial products are not equal and due to this small industries and laborers should not be pressurized to sacrifice.

10. Foreign Capital and Devaluation of Rupee:

In our country we have raw material and labour force in abundance but we lack capital for industrial development. Foreign capital can be achieved by below given three ways:

- i. By individual relations with foreign capitalists.
- ii. From international financial institutions, and
- iii. From foreign governments.

This foreign capital can be obtained in terms of capital loans or in terms of partnership in industries.

When our rupee is devalued under internal pressure, its effect is not limited upto imports only but it has long lasting effects on production, prices, industrialization and economic inequalities. According to Upadhaya, rupee devaluation in June, 1966 was done under the foreign political pressure.

With the foreign capital we are pressurized to accept the foreign production system also. As result of foreign production system and resource material domestic science and research activities have become backward and thus dependence on other countries has increased.

11. Economic Culture:

According to Upadhaya, the activities of production, distribution and consumption control the economic life of human being. Uncontrolled or unlimited consumption increases distributional

inequality and loot and thus there is no limit to production. This is uncultured life. The theme of economic culture of Upadhaya includes three concepts some more output than self reliance level (higher quantity output), equal distribution and controlled consumption.

Output sufficient for need of consumption and expected savings is the higher quantity output. This is the limit of output. Distribution should be of the type that food, cloth, house, education and medicine these five needs can be satisfied for each person. The justified ratio of maximum and minimum income should not be deteriorated. Controlled consumption means the consumption favorable to healthy body. Thus economy should be such that can fulfill the economic requirement of life.

Important Points :

- Upadhaya gave the world the principle of integrated human philosophy which not only relates with the thought from individual to the aggregate human being but also with the issues beyond the humanity in its aggregate form.
- Integrated human philosophy means the philosophy of integrated relations of complete nature and human life.
- Under the integrated human philosophy of Indian culture the integrated economic policy is the third alternative to the capitalism and communalism.
- In Indian culture, religion plays important role in human life. A structure is needed to construct economically new objective.
- Uncontrolled consumption is the base of consumerism, competition and class struggle.
- Upadhaya does not accept not only the unlimited ownership of property nor the unlimited right of state. He supports the

decentralized state and decentralized economy.

- As 'each for vote' is the result of political democracy, 'work for each' is the measurement of economic democracy.
- Opposing heavy industries Upadhaya supports the healthy industrialization.
- Our villages and janpads should govern the economy. Small and cottage industries is the back bone of the decentralized economy of Upadhaya.
- Small dam projects are more useful than the big dam projects and earn more profit from less capital.
- Activities of production, distribution and consumption control the economic life of human being.
- Investment of foreign capital exploits the domestic labour.
- Economic culture of Upadhaya includes higher quantity output, equal distribution and controlled consumption as base.

Questions For Exercise

Objective Type Questions:

1. According to Upadhaya the live philosophy of Indian culture is –
 - (a) Capitalistic philosophy
 - (b) Integrated human philosophy
 - (c) Communalistic philosophy
 - (d) None of the above ()
2. Consumerism, competition and class struggle is the base of –
 - (a) Uncontrolled consumption
 - (b) Higher quantity output
 - (c) Unequal distribution

- (d) Socialism ()
3. Upadhaya opposed heavy industries because-
- These are against the objective of each big business
 - Complicated system of production and management of them
 - These are of capital abundant
 - All of the above ()
4. Which of the following is not related with capitalism ?
- Struggle for existence
 - Survival of the fittest
 - Exploitation of nature
 - Happiness for all ()
5. Why Pt. Deen Dayal gave special importance to agriculture in his ideas ?
- 60% portion of our national income we get from agriculture
 - Availability of raw material for industries
 - Self-reliance in food grain production in our country
 - All of the above ()
6. Which is the base of economic culture of Upadhaya ?
- High quantity output
 - Equal distribution
 - Controlled consumption
 - Unequal distribution ()
7. According to Upadhaya which activity does not control the economic life ?
- Production
 - Distribution
 - Consumption
 - Public finance ()

Very Short Answer Questions :

- What is the theory given to world by Pt. Deen Dayal which is the thought of the complete human being ?
- What is meaning of integrated human philosophy ?
- Write the name of four principles on which capitalism works .
- Write the cause showing why Pt. Deen Dayal opposed the cooperative agriculture.
- What is the high quantity production ?
- What is the formula of economic culture of Upadhaya ?

Short Answer Questions:

- Explain the integrated philosophy in reference of the west and India.
- Explain the ideas of Upadhaya about ownership of property.
- Explain the high quantity production based industrial policy of Upadhaya.
- Why does Upadhaya give more importance to small dam projects than big dam projects?
- Explain the formula of 'economic culture' given by Upadhaya.

Essay Type Question ;

- Explain the causes why Pt. Deen Dayal Upadhaya considered the heavy industries having the nature of inhumanity and dictatorship.
- Describe the concept of decentralized economy of Upadhaya.
- Describe the integrated human philosophy of Upadhaya.
- Explain the integrated economic policy of Upadhaya.

5. Describe the main characteristics of economic policy of Pt. Deen Dayal Upadhaya.

Answer to Objective Type Questions

(1) b (2) a (3) d (4) d (5) d (6) d (7) d

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5. Deen Dayal Upadhaya : Devaluation - A Disaster.

Chapter - 4.4

Economic Ideas of J.K. Mehta

The world famous Indian Economist and the follower of Indian philosophical tradition, J.K. Mehta was born on December 25, 1901 in Village Rajnand of Mumbai. His full name was Jamshed Ker Khushro Mehta. J.K. Mehta got his primary education in Rajnand. After passing high school examination he did his graduation from Allahabad university with Mathematics, English and Economics as optional subjects. After doing M.A. in 1925 from Allahabad university J.K. Mehta joined his research work there. In 1927 he started the teaching profession in department of Economics in the Allahabad University. J.K. Mehta took over the work of studying and teaching in whole life and engaged in writing work for the complete period. J.K. Mehta is remembered among famous economists for his thoughts on the subjects of definition of economics, representative firm, micro and macro economics, public finance, economics of development, etc.

Prof. J.K. Mehta wrote many books on Economics. His famous books are:

1. Ground work of Economics
2. Public Finance
3. Studies in Advanced Economic Theory
4. Economics of Growth
5. Principles of Exchange
6. Foundations of Economics

7. Macro Economics

Prof. J.K. Mehta established Indian theoretical economics. His thinking is original and according to Indian traditions, He has both supporters and criticsers of his thoughts. The wantlessness approach of Prof. Mehta can be explained as below.

Definition and Scope of Economics :

Prof. Mehta tried to give a new approach to Economics which is different from the western economists and favourable to the Indian culture and tradition. He considered thoughts of Indian Philosophy, saints and historical persons as the base to explain the definition of Economics. Prof. Mehta says that according to Indian saints, munis and great souls the true happiness lies in keeping the human wants minimum. Our great personalities have taught us to lead a simple and truth oriented life because true bliss can only be obtained by reducing the wants not by increasing the wants.

Explaining this approach Prof. Mehta clears that human welfare, which is the subject matter of Economics, is the imbalanced state of mind. The reason behind this imbalanced status of mind is the effect of external forces on the mankind. There is a big gap between human wants and want satisfying available resources. Mental imbalance is the result of this gap. Human mind does not like this imbalance. So people go

through struggle to get the mental balance. This state of imbalance is sadness and stepping up towards balance is happiness. Thus removal of sadness is the happiness and to achieve maximum happiness it is necessary to keep the sadness minimum.

According to Prof. Mehta sadness is experienced due to mental imbalance and by removal of this imbalance the happiness is experienced. In this way achieving the balance is our basic need. There are two methods of achieving this balance-

- i. Changing atmosphere as per the desire of mind. This is really related with the use of resources, and
- ii. Setting the mind in such a way that it should not negatively be affected by the atmosphere. According to Prof. Mehta the second method is a better one due to the philosophical approach. Prof. Mehta is of the view that with the proper use of resources the imbalance of mind can be controlled for some time but achieving complete balance by it is not possible because the process of removal of imbalance by first method creates new imbalances and thus satisfaction of one want creates another want.

According to Prof. Mehta economists, under all basic rules, use human resources in such a way that maximum satisfaction can be achieved. Prof. Mehta recommends the second method and emphasizes happiness in place of achieving maximum satisfaction or bliss. Human being experiences happiness when there is neither any misery, nor any want nor any type of imbalance. This is the state of freedom from all wants and real aim of human behavior for wantlessness.

The main points of this approach of Prof. Mehta are:

1. Human behavior is the result of mental imbalance.

2. The balance in mind can be established by mental teachings.
3. The ultimate objective is to get bliss.
4. Maximum bliss is the state of absence of wants.
5. State of wantlessness can be obtained slowly.

Definition of Economics by Prof. Mehta

Prof. Mehta's definition of Economics is based on the Gandhian concept of "Simple Living High Thinking". According to Robins problem of choice is the economic problem while according to Mehta keeping wants minimum is the economic problem. Mehta defines Economics as – "Economics is the science which studies that human behavior which tries to approach the aim of wantlessness state."

It is clear from the Mehta's definition that Economics is the study of human behavior which aims to achieve the wantlessness state. It shows the way of freedom from wants to the man kind. Freedom from wants can not be achieved at ones. For this high level wants are first of all satisfied than the low level wants. There is neither sadness nor happiness in the state of wantlessness but there is only the happiness. This state shows us the way of approaching the haven. Getting haven is a basic aim of life.

Principle of Wantlessness :

Wants are infinite, unlimited and we satisfy one want another want is faced at once. So by following the basic pillar of Indian culture "Santosham Parmum Sukham" Prof. Mehta says that wantlessness is the last aim of the life. This state of satisfaction is known as the state of wantlessness in Economics by Prof. Mehta.

State of wantlessness of Prof. Mehta is not the state of actionlessness. According to Prof. Mehta wantlessness does not mean actionlessness. When we follow the wantlessness policy economic activities are not stopped. The

use of goods and services in the production and consumption is changed according to the norms of wantlessness. This state does not mean that we stop eating and drinking or we should stop earning of income. All the works which are necessary should be done without selfishness.

Prof. J.K. Mehta presents wantlessness in the reference of Gandhian principle of trustiship also and it is the end of all the problems. According to the words of Mehta if we follow the correct way of happiness then the functioning of the state will become limited and less. There will be no need of tax imposition on rich for the welfare of poor. It will also be not necessary to stop somebody to earn more wealth. Gandhiji wanted that rich persons should be used for self and for the welfare of poor.

Philosophy of Wants:

According to Prof. Mehta, There are two universally accepted facts emerged in the reference of wants-

- i. Satisfaction of want removes the sadness, and
- ii. The process of satisfying one want creates new want. This is the state of changing non-living wants into the living wants. The following two titles present the Prof. Mehta's philosophy of want.

1. Live and Non-Live Wants:

According to Prof. Mehta when a want is satisfied we certainly get satisfaction. This is the process of removal the sadness of getting the happiness. It becomes possible because when the want is not satisfied we are not happy which is an action of mind. According to Prof. Mehta, this is the live want.

There are some wants which are felt by us but sadness is not removed because these wants are not present in the live state of mind. These are non-live wants which come into existence when live state of mind is completed. According to

Mehta the sudden satisfaction of non-live wants give happiness. A person never heard about film and never seen it then to see the film is not his live want. The man never feels sadness in the absence of the film. But, however, the person sees the film he gets happiness. Thus satisfaction of non-live want gives the positive contribution. But when a non-live want is satisfied it again comes in front of us as a live want. Thus both types of wants should be included under the wantlessness.

2. Rich and Poor wants:

It is said that an average poor person is not equally happy as an average rich person. So we show pity on the poor person. Prof. Mehta rejects this fact. According to him there is no any scientific justice of the negative relation between distribution of mercy and wealth. In other words, there is no scientific or justified base of saying that a poor person should be shown mercy. According to Prof. Mehta a poor person has less wants in comparison to a rich person and he is capable to satisfy his less wants with the help of less income. He has his few wants unsatisfied. On the other side, wants of poor persons are more which remain unsatisfied and thus rich person remains unhappy. This is the cause of sadness of the rich person although it is true that the satisfied wants of a poor person are less than a rich person but intensity of his wants is high.

Prof . Mehta really compares the living standard of rich and poor. According to him both poor and rich do not have the wants in the same number. Rich persons have higher living standard even though they have many wants unsatisfied (because they have a large number of wants) and thus they feel sadness. The wants of the poor class are in the non-live state and thus they are not the cause of sadness.

In this reference Prof. Mehta says that for both poor and rich marginal utility of wealth is not equal. It is more for the poor than rich in all circumstances. The level of happiness of poor

person is higher than that of the rich person. But it does not mean that the poor should be taxed more than the rich. The tax burden should be more of the rich. Two facts are responsible for it.

- i. Marginal utility of wealth for rich is comparatively less and
- ii. After tax the intensity of unsatisfied wants for rich person is in comparison to that of the poor person.

According to Prof. Mehta, tax should be determined according to the quantity of sacrifice and thus above both facts say that rich persons should be taxed more. In this way Prof. Mehta propounded the theory of tax determination to achieve maximum social welfare and to establish the social justice. This is the philosophical interpretation of wants according to Prof. Mehta.

Prof. Mehta says that the real happiness lies not in increasing the desires or wants but it is in reducing them. People have limited resources which are not sufficient to satisfy all wants. When wants or desires are not satisfied we get unhappiness. So, maximum happiness can be obtained by reducing the wants. According to Prof. Mehta the cause of sadness is the continuous occurrence of wants. When wants become zero, human being will not face sadness and thus real happiness will be experienced and there will be balance in mind.

Mehta says that the main objective of Economics is to show the path of approaching the state of wantlessness. The ultimate aim of human behavior is to get happiness. To understand this thought properly it is necessary to understand the difference between satisfaction and happiness. Satisfaction is that experience which is obtained after the completion of want or desire but there is no happiness. So according to Mehta, the wantless state is the happiness when mind is under the perfect balance. The objective of Economics is to achieve this happiness.

Maximum happiness is in reducing the wants and not in increasing them.

In this contest Mehta suggests that people should reduce their wants slowly and should sacrifice those wants which can not be satisfied. As result, people will be having only those wants which can be satisfied. Thus wants should be limited according to the availability of resources. This is the first step to get fulfilled the ultimate objective and to approach the state of wantlessness. The ultimate objective is the state in which no want is experienced and people should make efforts slowly to achieve this objective.

Pure and Applied Economics:

Prof. Mehta presents Economics as pure Economics and applied Economics. In words of Mehta, it will be sufficient to say that under pure science we study the general theories while under applied science we verify and test these theories under the given circumstances. Because the subject matter of Economics is the study of human behavior, the pure Economics studies the theories governed by the human behavior. Pure Economics studies the human behavior under the definite approach of "scarcity of resources". In applied Economics we observe that how these theories are applied in the specific area of human activities.

According to Mehta, under pure Economics we find ourselves more in the area of welfare while under applied Economics we find ourselves in the area of world. Thus it can be said that under pure Economics mind plays the important role. The study of applied Economics aims to achieve the ultimate goal and it should be so. It uses the general theories and observes how the work is done under certain applied areas.

According to Prof. Mehta, to achieve ultimate goal is the state of wantlessness and this goal indicates the happiness. The objective of

applied Economics is to achieve this goal and pure Economics is the source of achieving this goal. Study of both pure and applied Economics is necessary to achieve this ultimate goal. Thus according to Prof. Mehta "Pure Economics includes the theories and applied Economics includes the laws."

Micro Economics and Macro Economics:

According to Prof. Mehta, there are many units in a society. Economics science is associated with the behavior of these units. In view of Mehta, technically laws of consumption and production are studied in Economics. If an economist has the full knowledge of the behavior of a person and has the full information about atmosphere then the economist can tell that how much work will be done by a person, how much production the person will do, how much will be sold by the person, how much will be bought, how much will be saved and how much will be consumed, etc.

Under the above description the study of behavior of one unit is known as micro economics. It is known as micro economics because one unit is so small in comparison to the group of all the units and this one unit informs about that situation in which one unit is in the equilibrium. The simultaneous study of all units comes under macro economics.

According to Prof. Mehta, people live in society so Economics can not ignore the study of macro Economics. Thus Economics must study all the individuals.

Static, Developmental & Dynamic Economics

The analysis of these concepts is as below :

1. Static Economics :

By the state of equilibrium we decide that what will be the share of each factor of production, what will be the price of all the produced goods and how much of the goods and services will be consumed. When we expect the

equilibrium condition under price system and we study that condition it is known as static Economics. This study is related with point of time.

2. Dynamic Economics :

When primary data do not change, the last situation can be achieved by the process of adjustments and if we want we can choose that path which can give the complete equilibrium. This study is known as the dynamic Economics under which the process of time based adjustment is described. This study is related with period of time.

3. Developmental Economics:

Under developmental Economics we study the situation of equilibrium achieved continuously in the given period of time. This situation of equilibrium is to achieve the last situation of disequilibrium which is achieved at the end of the time period. Thus the development Economics of Prof. Mehta is same as the dynamic Economics of Tinbergen.

4. Measurement of Utility:

According to Prof. Mehta Economics is a science. So we should analyse the quantitative nature of utility. He emphasized the quantitative measurement of utility and presented the below given facts about measurement of utility:-

- i. Utility is a spiritual concept.
- ii. Utility is not constant and changes time to time.
- iii. Satisfaction can be measured by money. It is wrong to say that utility can not be measured.

According to Prof. Mehta utility can be measured either by cardinal approach (approach of Marshall) or by ordinal approach (approach of Hicks and Allen).

Welfare Economics :

According to Prof. Mehta Economics of

welfare is actually the Economics of social welfare. Group of individuals is the society so social welfare is certainly related with individual welfare. Social welfare lives in the mind of individuals. Human welfare is the quantity of satisfaction in the given time which is measured by the happiness the human being enjoys. Social welfare is a mental and psychological concept and due to this it does not have any subjective measurement but social welfare in a situation can be compared with social welfare in another situation and thus we can say that in which situation social welfare is more. The policy makers require this type of knowledge which is very important for them.

Rent :

Prof. Mehta does not consider rent as income. According to him, rent is a surplus over the cost. In his view when a factor of production has only one specific use, it gets some surplus over the cost or price. According to him it is impossible that a factor is absolutely put in only a specific use. So it is necessary to understand the difference between specificness and over specificness. This difference is associated with a factor of production being specific or overspecific.

Profit :

According to Prof. Mehta, profit is a return on risk bearing capacity of an entrepreneur. It can be achieved in only dynamic situation. Profit can be achieved only against risk bearing capacity or abnormal or unexpected situation, not in static position. Profit is generated in short-term or long-term period of dynamic situation and it is always uncertain and unexpected.

Interest :

Prof. Mehta defines the interest as earnings of the capital which is determined by its marginal productivity. The earning of capital is determined by the productivity of last unit of capital invested.

The amount of capital is determined by available supply of capital, available supply is determined by cost of capital formation or cost of waiting and cost of sacrificing of time preference.

Public Finance :

Along with the definition of public finance Prof. Mehta discussed its each part. This analysis is as given below:

1. Definition of Public Finance:

According to Prof. Mehta, public finance is related with the financial relations of any public institution. Mehta clears that public means the state. Public finance studies the financial resources of the state and its uses.

2. Public Revenue or Income:

According to Prof. Mehta income is a means while Public good is an end. Public revenue is required for public expenditure. Public expenditure is certainly beneficial for the society and public revenue reduces the consumption of people. So, if it increases the welfare then this work of the State is justified. Prof. Mehta classifies public revenue in 4 parts – (i) Tax, (ii) Fee, (iii) Duties, and (iv) Others, e.g. gifts, fine, etc.

3. Public Expenditure:

According to Prof. Mehta, the place of public expenditure in public finance is same as the place of consumption in the study of Economics. It is a source in terms of services provided to society by the state. State uses its income as expenditure in the same way as a person uses the income. Prof. Mehta classifies public expenditure in two parts:

(a) Constant Expenditure:

It is that expenditure which is not reduced when people reduce the consumption of the public services and is not increased when public increase the consumption of the public service. Its best example is the expenditure on defence which

is not determined on the basis of the individual consumption.

(b) Variable Expenditure:

It is that expenditure which is affected and determined by consumption of public service by people. If more of the public service is consumed the expenditure increases and if the consumption of public service is reduced the public expenditure is also reduced. Expenditure on postal services, civil courts, public enterprises are the examples of the variable expenditure.

4. Public Debt :

According to Prof. Mehta, when a person takes debt it becomes the habit. The person does so without any consideration of the economic condition. The state also goes through this type of exercise which is known as the public debt. Government takes loans and it becomes its habit which is a serious danger.

According to Prof. Mehta, public debt of a nation affects its economy in two ways-

- (a) When government takes debt for income generation, the public adjusts its budget. When public is taxed by the government, public reduces own expenditure and pays tax but when the same amount is collected as debt by the government the public generally does not reduce own expenditure and uses the old and present savings for issuing the debt. This is the first and urgent effect of public debt.
- (b) The second effect of public debt is far reaching. This effect depends on the fact that in which use the public debt is put. If public debt is used in the productive works, the effect of public expenditure is possibly beneficial.

Limitations of Mehta's Approach

Thoughts of Prof. Mehta seem to be favourable according to the approach of Indian

culture and civilization. However, his approach has been criticized in the materialistic era. These criticisms are:

1. The acceptance of Prof. Mehta's approach ends the existence of Economics. If all persons minimize wants and reach in the state of wantlessness, there will be no economic activity in the economy. Thus, Economics will end due to absence of economic activities.
2. Mehta's thoughts are based on imagination – it is not under control of a simple person to get complete freedom from wants. In the normal life, a person never thinks that the maximum happiness is achieved by reducing wants. A person thinks that sadness and happiness are the two necessary aspects of life.
3. Prof. Mehta considers Economics as a normative science which is not correct because Economics is both positive science and normative science.
4. It is a great mistake of Prof. Mehta to consider desire and want same. Both desire and want have the different meaning. For a sick person medicine is want whether the person has the desire to take medicine or not.
5. Definition of Economics given by Prof. Mehta is not itself a definition but it describes the religious statement. It is not possible for a practical and social person to achieve the state of wantlessness.

Important Points :

- Prof. Mehta is the supporter and propounder of Indian theoretical Economics. His thinking is original and according to the Indian traditions.
- True happiness lies in reduction of wants and not in increasing wants. There is a very big gap between human wants and want

satisfying resources. Mental disequilibrium is the result of this gap.

- Root cause of sadness is the want. There is sadness when there are unsatisfied wants and the process of removal of this sadness creates satisfaction.
- State of wantlessness is not the state of actionlessness.
- According to Prof. Mehta, wants are of two types- live wants and non-live wants. The wants, when unsatisfied, give sadness are live wants and there are some wants at present, to which we have feeling, but sadness is not removed, are the non-live wants.
- Wants of a poor person are less than wants of a rich person. A poor person satisfies less wants with the less income. Rich person has more wants and some of these wants remain unsatisfied and this is the cause of sadness of the rich person.
- The main objective of Economics is to show the path which leads the state of wantlessness. Ultimate objective of human behavior is to get happiness.
- Theories are included in pure Economics and laws are included in applied economics.
- Study of behavior of one unit is Micro Economics while study of all units is Macro economics.
- Static Economics relates with point of time while dynamic Economics relates with period of time.
- Prof. Mehta emphasizes the quantitative measurement of utility and utility can be measured by money.
- Rent is surplus over the cost. Higher the specificity of a factor more the surplus over cost and thus the rent.

- Rent is the result of the specificity of a factor.
- Profit is the return to the entrepreneur for bearing the risk. Profit is earned in the dynamic situation.

Questions For Exercise

Objective Type Questions :

1. According to Prof. Mehta person gets true happiness.
(a) By increasing wants
(b) By keeping wants constant
(c) By keeping wants at minimum
(d) None of the above ()
2. According to Prof. Mehta, when is the human mind in balance ?
(a) In wantless state
(b) In less wants state
(c) In more wants state
(d) By satisfying some wants ()
3. According to Prof. Mehta, which is the economic problem ?
(a) Problem of choice
(b) Keeping wants minimum
(c) Resource mobilization to satisfy wants
(d) Increase in wealth ()
4. According to Prof. Mehta the study of behavior of one unit is known as –
(a) Micro economics
(b) Macro economics
(c) Welfare economics
(d) Developmental economics ()
5. According to Prof. Mehta the study of economics relating with period of time is known as-

- (a) Micro economics
- (b) Welfare economics
- (c) Macro economics
- (d) None of the above ()

6. According to Prof. Mehta which is not a property of utility ?

- (a) Utility is related with object.
- (b) Utility is not constant
- (c) Utility is measured with help of money
- (d) Utility can not be measured ()

Very Short Answer Questions:

1. What is the main cause of sadness ?
2. What are the live wants according to Prof. Mehta ?
3. According to Prof. Mehta how should the taxes be determined ?
4. According to Prof. Mehta which unsatisfied wants are responsible for sadness ?
5. According to Prof. Mehta which unsatisfied wants are responsible for sadness ?
6. What is welfare according to Prof. Mehta ?
7. According to Prof. Mehta how is interest determined ?

Short Answer Questions:

1. Show the main point of the wantlessness approach of Prof. Mehta.
2. Explain the state of wantlessness of Prof. Mehta in reference of the Gandhian trustiship principle.
3. According to Prof. Mehta explain the difference between wants of rich and poor persons.
4. Explain the difference between pure economics and applied economics according to Prof. Mehta.

Essay Type Questions:

1. Critically describe the wantlessness approach of Prof. Mehta.
2. Explain the definition of Economics given by Prof. Mehta and explain his approach of wantlessness.
3. Explain the live and non-live wants according to Prof. Mehta.
4. Explain the thoughts of Prof. Mehta about pure and applied Economics.
5. Explain thoughts of Prof. Mehta on Micro and Macro Economics.
6. Write the thoughts of Prof. Mehta on profit, interest and rent.
7. Explain Prof. Mehta's thoughts on public finance.

Answer to objective Type Questions:

(1) c (2) a (3) b (4) a (5) d (6) d

Book for Reference :

1. J.K. Mehta: Advanced Economic Theory
2. J.K. Mehta: Lecturers on Modern Economics
3. J.K. Mehta: Fundamentals of Economics.

SECTION - II

Chapter - 1.1

Indian Economy on the Eve of Independence

Position of Agriculture, Industry and Infrastructure:

The main objective of this chapter is to keep you known about the changes in the economic development in the Indian economy. In this chapter, we have to study the characteristics of the Indian economy before the independence and at the time of independence.

Before the British rule, India had its own independent economy. Each village was prosperous and self-sufficient in political, social and economic areas. Although agriculture was the main source of government revenue and livelihood for public, there were many different types of manufacturing activities in the country. There were three classes in villages- farmers, craftsman and servants. In these classes farmers were at the top. Artisans did all types of work of farmers for whole of the year and in turn they were given the food grain after the harvesting the crops. Servants collected the rent for the government. At that time Indian agricultural was sufficiently developed, farmers were most happy in agriculture and agriculture productivity was very high (means land produced gold in terms of foodgrains). India exported cotton and silk cloths, rice, jute, sugar, spices and other agricultural commodities and in turn received gold.

There was development of industries also with the agriculture. India was very well

recognized in the world as a good centre of art and crafts related with cotton and silk clothes, metal based goods and gems. Indian goods had become famous in the world market and India received gold, silver and precious stones from the exports of these goods. India was considered as the richest country in the world in the 17th country. At this time the land-labour ratio was favourable to labour, size of land holding was large, per capita production and productivity with was higher and the Indian economy was known as the golden bird. Due to this reason, foreign traders visited India continuously. In this order of business, the East India Company started trade with India. But the trade policies of this company were defective and exploitative. With the trade, the East India company made India a colony by the intervention in the political activities. The main objective of the British government was to make India an exporter of raw material for the rapidly growing Industries in England. As result, the Indian economy was being exploited and the Indian economy became underdeveloped and poor upto the achievement of independence.

Indian Economy on the eve of Independence:

The past of India has been glorious. Before the British rule Indian economy was progressive and prospers best the defective British policies of exploited the country and duty the drains of resources the downfall took place in Indian

economy. The objective of the British economic policies was to protect and enlarge the economic interest of England. These policies resulted into the change in the main mode of the Indian economy. Now India became the exporter of raw material and the importer of the manufactured goods of England which diverted the industrial growth of India. As a result, the growth rate of national income in India decreased upto less than 2% in the starting of the 20th century.

Due to the above defective economic and political policies Indian economy became poor, stagnant, backward, inactive, agricultural based, and underdeveloped.

At the time of independence, the position of India in the following sectors can well be explained.

(a) Position of Agriculture:

In the British era, Indian economy became agriculture dominated. 80% of the rural population of the country was dependent directly or indirectly on agriculture. But agricultural development was stagnant and the productivity decreased.

There was no technical improvement in agriculture and agriculture was dependent on human labour and animals. Irrigation facilities were not improved which resulted into famine and draught. Under British period, rulers did not improve agriculture and thus the Indian agriculture became stagnant. This can be explained as below:

(1) Land System:

British government implemented zamindari system, zagirdari system and mahalwari system in India which developed the middle class.

This middle class people, intermediaries, charged Part of the crop production as rent from farmers.

Ownership of land was in hand of

intermediaries who took land from British government on high rent and asked other people to get the work of agriculture done. Rent rate was very high which left nothing to farmers to eat. Thus farmers became weak economically and health wise. There were no incentives of farmers.

Land Holding Systems:

There were three land holding systems in British period. These were:

(i) Zamindari System:

Before this system farmers were owners of land. Governor general of East India Company, Cornwallis, declared zamindars as the land owners and gave the right to collect rent.

Defects of Zamindari System :

Following were defects of the zamindari system:

- Numbers of zamindars were very large.
- Zamindari system was based on exploitation. Zamindars charged rent at their own will. Rent rate was from 34% to 75%.

Zamindars took free labour services of farmer, gifts, etc. Farmers were treated as slaves on taking loans from zamindars.

(ii) Mahalwari System:

This system was implemented by William Bentinck in Madhey Pradesh, Punjab, Agra and Avadh. Whole village was the unit from the point of view of rent. It was duty of village head to deposit rent to the government. Village head collected rent from all the land holders. Under this system land was the property of whole of the society.

(iii) Raiyatwari System:

In this system farmer was the owner of land and there were no intermediaries between farmers and government. There were different rent-rates on different land holdings. In this system, condition of farmers was not good also.

(2) Low Level of Technology:

Agriculture technology was weak and backward. There was lack of high quality seeds, chemical, fertilizers new instruments and equipments, insecticides, irrigation sources and agriculture credit. Due to all these factors, levels of agriculture production and productivity were very low.

(3) Revenue System:

Due to the revenue conditions farmers were over exploited. Each farmer was to pay rent according to these conditions. If the rent was not paid by zamindars, their rights were snatched. This situation was also responsible for backwardness of agriculture.

During British period production of food grains decreased but there are evidence of increase of the production of non-food crops. Indian farmers did not receive the profit of this increased production. Production of commercial crops and cash crops was used as raw material for British industries.

(b) Position of Industrial Sector:

During British era, position of industries was also not good. The art of craft was destroyed. British rulers did not develop modern industries in India. British government wanted that India should export raw material to British industries and India should provide market for finished products produced in British industries. Old domestic industries were destroyed in India and modern industries were not developed. Due to this unemployment became a big problem.

In post 19th century, some modern industries were developed in India but their progress was very slow. Cotton and jute industries were developed. Cotton industries were developed in Maharashtra and Gujarat and jute industries were limited upto West Bengal.

In beginning of 20th century, iron and steel

industries were developed. In 1907, Tata Iron and Steel Company (TISCO) was established. After second world war sugar, cement, paper etc. industries were started in India.

But there was no step taken to develop the capitalist industries which were necessary for the future industrialisation. Thus, industrial growth was backward in India due to below given reasons:

1. Indian crafts were destroyed and obstacles were created in industrial development.
2. Indian artisans were tortured and they were made labourer.
3. Import duty was imposed on Indian goods and Indian exports were reduced.
4. Cotton industries were discouraged by imposing 5% excise duty. There were many obstacles in the development of iron and steel industries.
5. There were no incentives for industrial development in India.
6. There was 'free trade policy' in India and 'policy of protection' in England.
7. Shipping industry was also discouraged.
8. There was lack of capital goods industries in India. Some consumer goods industries were established.
9. Industrial structure of India was imbalanced, underdeveloped and unfavourable.
10. There was downfall of world famous crafts and small industries were closed.
11. Modern and big industries were not established.
12. Industrial finance and development institutions were not established.
13. There was no effort for making industrial policy.

(c) **Position of Infrastructure:**

If infrastructure facilities are developed in the country, economic development takes place. Infrastructure has two categories:

(1) **Economic Infrastructure:**

Irrigation, transport, energy, communication, banking, technical knowledge, etc. are included in economic infrastructure. During British period, economic infrastructure was developed in India. Roads, railways, ports, water transport and post-telegraph were developed. Objective behind this development was only the British interest. Britishers developed roads for the military movements and to approach the nearest railway stations and ports to send Indian raw material to England. These roads were also aimed to send the finished goods into the Indian local markets. Rural roads were not at all developed and thus the life of rural people was not easy.

Railways were developed in India in 1850 which was the most important contribution of Britishers. To finance the development of railway, tax were increased on Indian farmers. Objective of British government behind railway development in India was only to serve the interest of the Britishers. This railway development affected the structure of Indian economy in two ways.

- (i) People got opportunity to travel long distances, and
- (ii) It increased the commercialization of agriculture.

Along with roads and railways, British government also developed the sea routes but these efforts were not satisfactory because internal waterways were not proved profitable. Services of post and telegraph were also developed.

Upto 1870, there were only two joint capital banks in India which increased upto 9 at the

beginning of 20th century. There were not banking credit facilities to Indian people and thus no contribution of banking in economic development. Under the R.B.I. Act, 1934, Reserve Bank India was established on April 1, 1935.

(2) **Social Infrastructure:**

Human resources are included in social infrastructure. Human resources include population, education, health and housing.

Population of India in 1881 was 25.4 crore when first census was conducted. Upto 1921, population in India was not so large and population growth rate was not high.

Indicators of social development were not in good position. Literacy rate was less than 16%. Female literacy was only 7%. Public health facilities were scarce and insufficient. Thus there were infectious diseases and due to this gross death rate was very high. Infant mortality rate was very high (218 per thousand). Life expectancy was only 32 years. Problems of poverty and unemployment were more intensive.

British rulers did not make any efforts for the solution of problems of high birth and death rates, high infant mortality rates, low life expectancy, low literacy rate, insufficient health facilities, etc.

Under Development of India during British Rule:

For economic development of country both national income and per capita income should increase. Economic development can also be studied on the basis of occupational distribution of population, technical improvement in agricultural, expansion of poverty, nature of poverty, real wage, industrial development etc. During British rule economic development was not experienced in India. Conclusions of underdevelopment can be derived on the basis of following facts.

1. National Income:

Before independence data on national income were not collected systematically because British rulers wanted to keep unknown about the stagnancy of economy. Some of economists tried to collect these data. First of all data on national income in India were estimated by Dada Bhai Noroji who gave data for 1976-68 in 1876.

2. Nature and Extent of Poverty:

Large extent of poverty indicates underdevelopment. In India, there was no economic development due to poverty. Some of the publications of that time proved this fact in India. data were not available on poverty estimates.

3. Level and Trends in Real Wages:

These data were also not available in the British period. Radhakamal Mukharji prepared real wage indices for 1600 to 1938 period at his own by collecting historical information which ever was available. These indices shows that in 1938, in comparison to 1807, the wages both of efficient and inefficient workers were very low.

4. Occupational Structure:

Experience of production function shows that productivity of labour in agriculture is less than that in industry and service sectors. Thus on the basis of occupational distribution of population estimates of economic development are obtained. Countries, in which agriculture is main occupation, are said to be the underdeveloped countries. When population is transferred from agriculture to industry, service, trade, etc. it is supposed that economic development is taking place. Many economists have conducted research work on the relation between occupational distribution of population and economic development and found that during 1881 to 1951 most of the population was engaged in agriculture in India. According to the estimates

61% population was working in agriculture in 1881. This proportion became 72% in 1951 This is a concrete proof of the underdevelopment of Indian economy during the British rule.

5. Lack of Technological Improvement in Agriculture:

In British period no technical reform was undertaken in agriculture. Most of people earned living by working in agriculture. Farmers used wooden plough and bullocks in the agriculture. No commercialization of agriculture took place. Irrigation facilities were not improved and some canals were constructed by British rulers. Thus there was not historical change in agriculture sector.

6. Weak Industrial Structure:

Before British rule handcraft work was very progressive but during British rule in India this work of handcrafts was destroyed due to defective policies. This happened so because goods produced in British industries captured the Indian market. Cloth industry also became victim of defective policies of British government. In the same way iron work had also been badly affected. In 19th century cotton and jute industries were developed to some extent but no suitable industrial process was started.

It is clear that during the British rule of about 200 years, Indian economy remained underdeveloped and thus resulted into stagnant per capita income, increase in poverty, traditional nature of agriculture, lower wages, downfall of handicrafts and insufficient industrial development.

Characteristics of Indian Economy at the Time of Independence:

At the time of independence Indian economy was stagnant, backward and agriculture based one. Following were the characteristics of Indian economy at that time:

1. Underdeveloped Economy:

At the time of independence Indian economy was underdeveloped. Level of per capita income was very low and industrial development was also very low. Infrastructure facilities were less developed. Economy was import dependent. Poverty, unemployment and illiteracy were the social challenges.

2. Stagnant Economy:

Growth of India was completely disappeared at the time of independence. Agriculture production and productivity were very low, growth rate decreased, exploitation tendency increased and there was downfall of Indian industries. There was no technological development.

3. Semi-feudalist Economy:

British government introduced zamindari, zagirdari and mahalwari land systems and adopted capitalism in India which developed intermediaries who exploited farmers. Thus, efficient artisans, farmers and salaried labourers became slaves.

4. Backward Economy:

Due to excessive exploitation of resources, productive capacity decreased. Modern industries became less developed and socio-economic infrastructures were underdeveloped.

5. Effect of Partition:

On August 15, 1947 country was partitioned as India and Pakistan. As result of partition India got 77% land area and 82% population. This partition was not favourable to India from the point of view of agriculture but was favourable from point of view of industries.

Causes of Underdevelopment of Indian Economy in British Period:

These causes were as below:

1. Anti development economic and political

policies of land system and rent in British period.

2. Downfall of industries.
3. Defective trade policies.
4. Development of pro-British infrastructure.
5. Backwardness of social indicators of education, health, etc.

Conclusion :

British rule of about 200 years destroyed every sector of Indian economy. Excess labour, low productivity and lower technological level were found in Indian agriculture. There was shortage of industrial development and public investment. Foreign trade fulfilled the British objective only. There was need of expansion of infrastructures and effective policies to tackle problems of poverty and unemployment.

Important Points:

- Before British rule Indian economy was rich in socio-economic sphere.
- Economic and trade policies of British period were not favourable to India.
- Objective of British economic policies was to protect interest of England.
- Indian economy was changed into agricultural economy.
- Indian agriculture became stagnant and agriculture productivity decreased.
- Land systems of zamindari, zagirdari, etc. were introduced in Indian agriculture.
- Dual objectives of British trade policies to make India an exporter of raw material and an importer of finished goods.
- Indian famous handcraft industries were destroyed because of British defective policies and modern industries were not developed.

- There was no development of social infrastructure.
- British government developed railway, road, water transport, post and telegraphs, etc. but only for own purpose and interest.
- In British period, Indian economy became stagnant, semi feudalistic and backward.

Questions for Exercise

Objective Type Questions:

- Before British rule Indian economy was:
(a) Prosperous/rich (b) Backward
(c) Semi feudalistic (d) Undeveloped ()
- Main source of living before independence was:
(a) Agriculture (b) Trade
(c) Cottage industries (d) Service ()
- In which century India was the richest country ?
(a) 15th (b) 16th
(c) 17th (d) 18th ()
- At the time of independence most of the land was owned by-
(a) Farmers (b) Zagirdars
(c) Labourers (d) All of the above ()
- In which period the work of railway lines started in 1853 ?
(a) British colonial period.
(b) Mughal Rulers period.
(c) Kings' Period
(d) After independence ()

Very Short Answer Questions:

- How was the condition of farmers before independence?

- What was the material of which India became exporter in British period ?
- Where were the cotton mills started in 19th century ?
- What was the number of joint capital banks in India upto 1870?
- In which year the first census of India took place in British period?
- Name the land systems of India at the time of independence.

Short Answer Questions:

- Explain the position of Indian industries at the time of independence.
- Explain the position of economic infrastructure in India at the time of independence.
- Clarify the position of export-import of India in British period.
- Explain the position of social infrastructure in India at the time of independence.

Essay Type Questions:

- Discuss the British Policy regarding development of agriculture and industry at the time of British era.
- Describe the main characteristics of Indian economy at the time of independence.

Answer to Objective Type Questions:

- (1) a (2) a (3) c (4) b (5) a

Reference Books :

- Development of Indian Economy (2013), N.C.E.R.T.; Rajasthan Pathya Pustak Mandal, Chapter-I.
- Mishra-Puri: Indian Economy, Himalaya Publication House, Ed. 14, 2002, Chapter-4.

Chapter - 2.1

Economic Planning

The thought of economic planning was foremost accepted by Soviet Union in the world. After independence, the Indian national leaders adopted the economic planning as a tool for the development of the nation on democratic pattern.

Meaning of Economic Planning:

Economic Plannings is a technique in which the central planning officer maintains a conscious awareness of national resources to execute the programmes & policies of the nation for achieving predetermined objectives in a prescribed period.

In other words, the central authority should plane control and direct the economy so that targets & objectives should be achieved in a prescribed period.

In other words the central authority should skillfully plan, control and direct the economy so that the targets and objectives should be achieved in a prescribed period.

According to the planning commission economic planning means to utilize the national resources in various developmental activities according to accepted national priorities.

In India, the model of mixed economy was adopted in which the features of ownership and open activities of market forces were put together.

In this system, the public sector along with private owned properties and democratic system were made powerful.

Development of Planning in India:

1. First of all, M. Vishveshwaraia made ten years plan in India in the year 1934. He in his book, 'Planned Economy for India,' explained about economic planning that is why he is called father of Indian planning. In 1944 eight industrialist of Bombay prepared a fifteen year Bombay Plan which is also called Tata-Birla Plan. In addition to it revolutionary leader M.N. Rai made Jan-Yojana (1944) and socialist leader Jai Prakash Narain started SARVODAYA YOJANA in the year 1950.
2. Before independence, in the chairmanship of Mr. Jawahar Lal Nehru National Planning Committee was constituted in the year 1938. The committee suggested that over all infrastructural industries there should be control of the state. The committee targeted that in coming 10 years the living standard of the public should go up two times better.
3. After independence in order to take India on the path of development plan, in 1950 Planning Commission was constituted which was given the task of evaluating the

available natural and physical resources in India.

In Indian planning along with five years targets, 20 years long-term targets were also determined. This long-term plan is also called perspective plan.

Objectives of Economic Planning:

Under the economic planning, economic development should be at such a pace that common man can experience its results. In other words, the aim of the planning is to enhance the speed of development. In order to achieve this, Indian planners divided the objectives in two parts:

(a) Long-Term or Common Objectives:

To achieve these objectives, a period of about 20 years has been decided. These objectives include primarily growth, employment, equality, self reliance and modernization. Let us know these objectives in detail-

1. Growth :

By growth we mean increase in the capacity to produce goods and services in the country. This means increasing production stock of produced goods and services. For example- to extend machines, tools, banking and transportation etc. In economic vocabulary growth means constant increase in gross domestic product (GDP). Gross Domestic Product means the total monetary value of all finally produced goods and services in a year. Gross Domestic Product is achieved through production in different sectors of an economy. These different sectors include primary sector, secondary sector and tertiary sector. In the economy along with development, Gross Domestic Product reduces the share of primary sector and the share of secondary sector and tertiary sector go on increasing.

2. Full Employment:

In the economic planning of India full employment is a very important long term

objective. Full employment is the condition in which all those capable people who are ready to work should get work. This is one of the social objectives of five year plans. This means that in the development rich and poor should have equal participation.

3. Equity :

If only a few people get the benefit of the economic growth then this growth will be meaning less. In such a condition there will be disparity between the rich and poor and this will give rise to state of conflict. That is why in the planning economic equity has been made an important objective. The objectives of growth, self reliance, modernization can be achieved through economic equality.

4. Self Reliance :

At the time of adopting economic planning, India in spite of being agricultural intensive country, it used to import foodgrains. Because of the negligible infrastructural industries, it used to import transport tools, electric tools, machineries, engineering goods and capital goods. The well developed countries by using their strong bargaining powers, used to take heavy prices from underdeveloped countries. In order to increase the growth and modernization of a country, it is necessary to be self-reliant in the field of foodgrains and machineries as well as it will be required to take minimum aid from foreign countries.

In Indian economy self reliance was adopted as a main objective. Self reliance means to import minimum and gradually to stop completely those things which can be produced in own country.

5. Modernization :

The main objective of Indian economic planning is to replace the traditional technology with modern technology. The immediate need of modern technology was felt in agriculture and

dairy sector. In order to achieve this emphasis was laid on research and development in the country. In the 6th five year plan, the objective of modernization was chiefly indicated and was mentioned also that modernization means multiple infrastructural and institutional changes in the form of economic activity. This will bring change in the structure of production and will also bring variety in production activities and will lead to technological development and institutional change. With all these Indian economy will change from feudal economy to modern and independent economy.

In this way many objectives were determined in economic planning out of which above mentioned objectives were determined as long term because they needed more time to achieve. These objective could not be achieved through any five year plan.

Introduction of Five Year Plans:

First Five Year Plan-

The period of this plan was from 1951 to 1956. The objective of this plan was to remove the imbalance in economy which resulted out from partition and second world war. The first priority in this plan was to increase agriculture production. To achieve these objectives more emphasis has laid on the extension means of transport and communication as well as on irrigation system. In this plan maximum resources were made available to transport and communication system which was 26.4% of the total plan expenditure.

The first five year plan was successful to a great extent in achieving its objectives. Economy became very strong and stable. There was improvement in the condition of foodgrain production and decrease in price level.

Second Five Year Plan :

The period of this plan was from 1956 to 1961. In this plan efforts were made to adopt a

system which could lead to a socialist system. In this plan more attention was given to the development of infrastructure and heavy industries. In this plan 20.1 percent of total resources was spent on industry and mining. Among other objectives in plan was to increase employment opportunities at a high speed and to decrease income and property inequality. In this plan more emphasis was laid on the development of iron and steel, non iron metal, coal, cement and heavy chemical and other industries. The strategy that was adopted in this plan made this plan to be called, 'Economic Constitution of India.' The model of this plan was prepared by Prof. P.C. Mahalanobis and it was four sector development model.

Third Five Year Plan:

The time period of this plan was from 1961 to 1966. The chief strategy of this plan was to build self-reliant and self economy so that the objective of consistent development could be achieved. The immediate objectives of this plan were:

1. To achieve more than five percent growth rate in national income.
2. To achieve self-reliance in foodgrains sector and to increase agriculture production to fulfill the requirements in the field of industry and export.
3. To increase infrastructural industries and
4. To increase employment opportunities and lessen inequality.

In this plan expenditure on agriculture sector was made double in comparison to other plans in order to double agriculture production. In this plan also maximum % of expenditure was made on transport and communication which was 24.6 percent of the total expenditure of the plan. The reason for maximum expenditure in this head was infrastructure development so that sustenance could be given to agriculture and industry sector.

Three Annual Plans :

During third annual plan India had to face China war in the year 1962 and Pakistan war in the year 1965. Not only that, in the last years of three annual plan, because of draught and money devaluation, the fourth annual plan could not be started on time. Because of the above mentioned reasons, we had to make one year plans which is called plan holiday in the history of Economic Planning which was for 1966-96.

Fourth Five Year Plan :

The time period of this plan was determined from 1969 to 1974. Due to lack of resources, this plan could not be executed in time. The working strategy of this plan was to achieve stability alone with development and self-reliance. In order to achieve this, following objectives were to be determined.

- (1) Stability in price.
- (2) Self reliance and lesser dependence on foreign countries.
- (3) Availability of jobs to lower strata of society.
- (4) Extension in industrial sector
- (5) Development of infrastructural setup.
- (6) To encourage the equality and social justice activities in this plan also. Maximum expenditure was done on transport and communication facilities. Recognizing the need of energy, energy sector was given the second place.

Fifth Five Year Plan:

The time period of this plan was determined from 1974 to 1979. The main objective of this plan was to achieve self-reliance and eradication of poverty. To achieve this it was determined to elevate the living standard of the weaker section of the society. In 1975, under 20 point programme, Indira Gandhi gave the slogan, 'Gareebi Hatao'. In this plan maximum

expenditure was determined on industrial sector and was given the first priority. In this plan, priority was also given to achieve control over inflation and economic stability. One of its objectives was also to achieve 5.5 percent annual growth rate. The fifth five year plan could complete only four annual plans. After that it was decided that the fifth plan should be closed with the completion of the annual place of 1978-79.

One Year Plan :

In 1977, Janata Party Government came into power and it started one year rolling plan. In this plan, three plans were made for every year. One for the current year, second of intermediate nature and the third long term plan. But the Janta Party Government could not complete its full term and the new government closed this plan in 1980.

Sixth Five Year Plan:

The time period of this plan was from 1980 to 1985. The main objective of this plan was the eradication of poverty. The main strategy of this plan was to make powerful the basis structure of both agriculture and industry. The emphasis was laid on better arrangement, better efficiency and intensive vigilance in every sector so that the interrelated problems could be solved in systematic way. Along with this, emphasis was laid on the active participation of the public in the making of special schemes at local level and execution of these schemes in effective way. In this plan 28.1 percent of total expenditure was aspect on energy sector. Another important sector was transport and communication. In this plan average growth rate was determined as 5.2%.

Seventh Five Year Plan :

The time period of this plan was from 1985 to 1990. The chief strategy of this plan was to increase jobs, production and fertility. In this plan the emphasis was laid on policies and programmes. The objectives of these policies and

plans were to increase foodgrain production, employment opportunities, modernization and self-reliance under the basic principles of social justice. During this plan foodgrains production increased by 3.23 percent which was greater than earlier years. The reason of this was good weather, execution of different determined programmes and the joint efforts of govt. and farmers. To eradicate unemployment and poverty, Jawahar Rojgar Yojana had also been started along with other already started programmes. In this plan also maximum expenditure that was 30.5% kept for energy sector.

Annual Plans :

Due to changing political conditions in the centre 8th five year plan could not be started on time. Newly formed govt. in center decided that the 8th five year plan will be started from 1st April 1992 and for the year 1990-91 and 1991-92 different annual plans would be started. Keeping in view, be 8th five year plan, the main emphasis was laid on employment opportunities and social causes in these annual plans.

Eighth Five Year Plan :

The period of this plan was from 1992 to 1997. The main objective of this plan was to make available job opportunity. This plan was started first after the commencement of long term policies. The need of these policies was felt due to the deteriorating conditions of balance of payment and inflation. In eighth five year plan, the alternation was paid to these policy based reforms. Maximum resource were made available to energy sector which was 26.6 percent of total outlay and the growth rate at aimed was 5.6 percent but the achievement was 6.5 percent. In the eight five year plan, more emphasis was laid on human development and to achieve this, priority was given to employment creation, population control, literacy, education, health, drinkable water and food supply in sufficient quantity.

Ninth Five Year Plan :

The period of this plan was from 1997 to 2002. The main working strategy of this was economic growth along with social justice. The objective of this plan was to achieve 6.5 percent growth rate of gross domestic production every year. In this plan emphasis was laid on seven basic services. For these services provision was made to get aid from the centre so that benefits of services could be given to masses in time. The following objectives were determined in these services.

1. Pure drinkable water
2. Availability of first aid
3. Houses for the destitute
4. Nutritive food for children
5. Road for all villages and locality
6. Primary education for all
7. Improvement in public distribution system.

Tenth Five Year Plan :

The time period of this plan was from 2002 to 2007. The main working strategy of this plan was to increase the quality of life. In this plan growth rate was aimed at 8 percent. In order to achieve this, it was determined to double per capital income in ten years. In this plan a few specific targets were also determined like.

- i. To decrease ratio of poverty from 26 percent to 21 percent by the year 2007.
- ii. To make available profitable jobs for increasing manpower.
- iii. To decrease by 50 percent gender inequality in literacy and labour.
- iv. Literacy rate 75 percent by the year 2007.
- v. To decrease infant mortality rate from 72 to 45 percent by 2007.

- vi. To decrease maternal mortality rate from 4 percent in 1999-2000 to 2 percent in 2007.
- vii. To make available drinkable water in all villages.

Eleventh Five Year Plan :

The period of this plan was from 2007 to 2012. The working strategy of this plan was rapid and all encompassing development. During the plan 8 percent development rate was targeted which was to bring to 10 percent towards the completion of this plan. To achieve this 27 main objectives were determined which were distributed in six sections (i) poverty (ii) education (iii) health (iv) women and children (v) basic infrastructure and (vi) environment.

In this plan new priorities were determined for public sector. These priorities were primarily concerned to give new life to agriculture sector and build basic infrastructure in rural area, also to facilitate rural people with health and educational facilities and improve the living conditions of the weaker sections of society and to achieve these,

various programmes were started. In this plan more faith was expressed in Panchayati Raj institutions. In the 11th plan out of total outlay maximum expenditure (32.6%) was done on social services

Achievement of Five Year Plan :

In the history of 62 years of economic planning, we begged achievements in a few sectors. At the same time we had to face failures and other new problems emerged. During economic planning, our achievements can be explained on the basis of following points:

1. Growth in National Income :

During the plan economic growth rate accelerated as per targets as shown in the table.

Plan	Target	Actual
First plan	2.1	4.2

Second plan	4.5	4.2
Third Plan	5.6	2.6
Fourth Plan	5.7	3.2
Fifth Plan	4.4	4.9
Sixth Plan	5.2	5.4
Seventh Plan	5.0	5.5
Eight Plan	5.6	6.7
Ninth Plan	6.5	5.5
Tenth Plan	8.0	7.5
Eleventh Plan	9.0	7.8

From the above table this is clear that during these five year plans the average growth rate remains from about 3% to 5% to which Prof. Rajkrishna gave the name 'Hindu Growth Rate' which remained stable according to the old traditions of Hindu religion. After sixth five year plan, growth rate increased which was good indication of development but it again decreased in the ninth five year plan. In the eleventh five year plan we achieved maximum growth rate which was 7.8 percent.

2. Development in Agriculture Sector-

During the sixty two years of five year plans, 20 percent of the total outlay was spent on agriculture and irrigation. In 1950 the production of food grains which was 40 crore ton increased to 26 crore 48 lakh ton in 2013-14. In this way food grains production increased five times. On the 11th five year plan the target was 4 percent growth rate in agriculture sector but actual achievement has 3.3 percent. During five year plans, there was improvement in almost all sectors like agriculture irrigation sector, use of minerals, use of good hybrid seeds, modernization in agriculture, etc.

3. Growth in Industries:

During economic planning, a huge amount of total outlay was spent on industries. During

the period of planning, industrial growth rate was better than towards the end. During the five year plans, the production of iron and steel, aluminum, engineering goods, minerals and petroleum increased.

4. Balance of Payment:

During the plans, more finance was needed for developmental policies therefore deficit budget had started. This deficit went on increasing which was compensated through devaluation of currency which laid adverse effect on balance of payment. Business in India had poor in those years except 1972-73 and 1976-77. During these five year plans foreign exchange reserves increased which came to 351.62 billion dollar in December 2015.

5. During planning, life expectancy which was 32 years in 1951 increased to 65 years in 2001.
6. In addition to all these, during planning period, basic infrastructure increased and an elaborate educational system developed in India and also the saving and investment growth rate increased.

Short comings of Planning:

1. Failure in Eradication of Poverty :

During planning the socialist developments main strategy was to make available minimum living standard for the masses. In order to achieve this various programmes were started, for example in the fifth five year plan 'Eradicate Poverty' programme was started and the slogan 'Eradicate Poverty' was given. But till today, one fourth population is below poverty line. Various economists have evaluated this. According to NSSO's 61st round in 1999-2000, 26.1 percent population was below poverty line. According to Suresh D. Tendulkar's committee report in the year 2004-05, 37.2 percent population was below poverty line. In this way poverty is still a very big problem.

2. Slow Growth Rate of Employment :

During planning unemployment grew with development, though many programmes were run to eradicate unemployment but all programmes proved to be failures. Therefore skill development programmes and self employment programme run by the government could have been meaningful in this direction.

3. Increment in Income and Wealth Inequality:

In order to remove anomalies in income various efforts were made during planning but various studies found out that during planning such people became richest and economic power became centralized in a specific section of society. 10 percent of the population in the country enjoy 90 percent resources while 90 percent population has only 10 percent resources. This gulf of inequality is increasing consistently.

4. Insufficiency of Industrial Development:

The basis of economic progress of any country is industrial development. In the second five year plan, most improvement was given to the development of primary industries but gradually the percentage of total outlay on industries sent on decreasing with the result that the development of industries got obstructed. Moreover, the country still lacks raw material, technology, machinery and basic infrastructure which are necessary for the development of industries. During planning the domain of black economy also got extending in 2008, it was evaluated 640.7 billion dollar which was fifty percent of gross domestic produce of that year.

In the end we can say that during planning the country had to face lots of problems and therefore desirable objectives could not be achieved. But at the same time during this period there was notable growth in gross domestic product per capita income, living standard, literacy rate, etc.

Twelfth Five Year Plan:

The time period of this plan is 1 April, 2012 to 31 March 2017. The strategy of this plan is faster, sustainable and more inclusive growth. In the 12th plan it has been accepted that the main objective of development is the comprehensive change in the economic and social condition of the masses. To achieve the faster, sustainable and more inclusive growth, the following 15 main points were determined which are as follows.

1. To achieve the growth rate of 8% in gross domestic product.
2. To achieve 4.0% percent growth rate in agriculture sector.
3. To achieve 10.0 percent growth rate in reconstruction sector.
4. By the end of 12th five year plan, to reduce by 10 percent per capita consumption poverty.
5. To determine average growth rate for every state which should be more than 11th five year plan.
6. To create five crore new job opportunities in non-agriculture sector.
7. To increase average school education to seven years by the end of the plan.
8. To reduce infant mortality rate and maternal mortality rate.
9. To improve child sex ratio to 950.
10. To bring to the ratio of 2:1 the total fertility rate by the end of the plan.
11. Investment in primary infrastructure to bring it to 9 percent of gross domestic produce.
12. To bring total irrigated area from 90 million hectare to 103 million hectare by the end of the plan.
13. During plan, to increase growth of green area by 1 million hectare per year.

14. Bank services to 90 percent families by the end of the plan.
15. In the 12th five year plan 32.6 percent of total outlay was allocated to social services. Agriculture sector was kept on second priority. Adopting the concept of inclusion, emphasis had laid on equality in all fields in this plan. Attention was also given to climate changes due to environmental pollution and green house gases.

Planning Commission :

After independence the need for a local body was felt which could take the responsibility related to planning like the availability of resources, execution and evaluation. For this planning commission was established on 15 March, 1950 in the form of both constitutional and non-constitutional body. This is an advisor body which gives advice to Indian govt. on various issues and its ex-officio chairman is the prime minister. In addition to chairman, there is the vice chairman and a member secretary in this commission. The number of members can be increased.

National Development Council (NDC) :

This is a non-constitutional body which acts as a connecting chain between planning commission and different states. Constituted in the chairmanship of K.C. Niyogi, planning advisory council recommended the constitution of an organization in which there could be representation of welfare of different states and princely states. In the draft of first five year plan, it was mentioned that in the federal structure where states enjoy autonomy, there is the need of an organization which could give opportunity to the prime minister and chief ministers for evaluation the plan.

The govt. constituted National Development Council on 6th August, 1952 whose ex-officio chairman is the prime minister and the secretary of the planning commission is also the secretary of

development council. National Development Council does the following works:

1. To decide the guiding principle for the determination of the national plan and its means.
2. To deliberate on the national plan prepared by the planning commission and give it final shape.
3. To deliberate on the important questions related to social and economic policy which affect national development.
4. Re-inspection of the execution of plans from time to time.

National Institution for Transforming India(NITI):

According to changing global economic environment the need to provide greater autonomy to the states was felt so the states can also build development plans as per their policies. The centre govt. took the step in this regard by

replacing Planning Commission with NITI. It was constituted on 1 January 2015. NITI is the think-tank which takes policy related decisions and makes the states equal participants in the making of policies and giving decision.

Government before coming into power called for from planning to NITI on its agenda because in India there have been political, social, economic and technical changes on large scale in the past 65 years. India is a variegated economy and its different states have different development stages which have their own strengths and weaknesses. In this context single perspective economic planning has no meaning. That is why planning commission has been replaced by NITI.

The ex-officio chairman of NITI is the prime minister. There is one vice chairman and all members are for the full time. Full time members include chief ministers of the states and

deputy governors of federal area and members of regional council.

We can explain the works to be done by NITI through following points-

1. To establish an administrative system in which the role of the govt. is that of an Enabler.
2. NITI will work on the principle of co-operation and competitor complete federalism.
3. NITI will solve different challenges through coordination between the center and the states and coordination among different ministries.
4. To ascertain the important and effective participation of India in global conferences.
5. Maximum exploitation of entrepreneurs capacity and developing the intellectual skills of the country.
6. To eradicate gender equality, inequality on the caste bases and economic inequality.
7. To give advice to centre and states in the designing of policies and programmes.
8. To keep vigilance and also to evaluate govt. regulated policies and programmes.
9. To provide every citizen of India opportunities to live a respectable life and also eradicate poverty.

In this way NITI lays emphasis on cooperative federalism. This will play the role of think tank which will be capable of giving unbiased advice to government.

Conclusion:

After independence, inspired by Soviet Union, economic planning was adopted in India. Under this, it was decided to achieve pre-determined objectives in time bound period on the basis of the resources. In India, during

economic planning, long term and short term objectives were determined which were tried to achieve through five year plans.

Through these plans growth was registered in agriculture, industrial and service sectors, though we faced a few failures like poverty, unemployment, inequality.

Important Points :

1. By economic planning, we mean the way in which central planning officer keeping in view the resources of the country calculate economic programmes and policies to achieve predetermined objectives in time bound period.
2. Under economic planning growth, full employment, equality, self-reliance and modernization were determined as long term objectives.
3. First five year plan was started in India on 1 April, 1951.
4. In the first five year plan, agriculture sector, in the second five year plan industrial sector and in the third poverty eradication were adopted as main working strategies.
5. During 1966-69, there were one year annual plans made which were called plan holiday.
6. For the year 1978-1983, Janta Party Govt. started Rolling Plan.
7. In the ninth five year plan emphasis was laid on seven basic minimum services.
8. 12th five year plan which was from 2012-17 had its main working strategy faster, sustainable and more inclusive growth.
9. To prepare five year plans was constituted planning commission in 1950 which was replaced by NITI on 1 January 2015.
10. NITI works on the principle of cooperative federalism.

Questions for Exercise

Objective Type Questions :

1. Chairperson of National Planning Committee was-
 - (a) Sir, M. Vishvaishvareya
 - (b) Deendayal Upadhyay
 - (c) Jawahar Lal Nehru
 - (d) Firoz Shah Mehta ()
2. The year in which Planning Commission was organized is –
 - (a) 1950
 - (b) 1949
 - (c) 1951
 - (d) 1952 ()
3. Period of planning holiday was-
 - (a) 1965-68
 - (b) 1966-69
 - (c) 1967-70
 - (d) 1964-67
4. Chairperson of NITI Aayog is –
 - (a) President
 - (b) Prime Minister
 - (c) Finance Minister
 - (d) Commerce Minister ()
5. Period of 8th Five Year Plan was-
 - (a) 1990-95
 - (b) 1991-96
 - (c) 1992-97
 - (d) 1993-98 ()
6. Wrong matching is –

Plan	Year
(a) Jan Yojana	1944

- (b) Sarvodaya Yojana 1950
- (c) Bombay Plan 1945
- (d) Planning Committee 1938

Very Short Answer Questions:

1. Who is called the father of Indian Planning ?
2. Who is the author of the book “Planned Economy of India”?
3. What is meaning of growth ?
4. What is perspective plan?
5. On which model the 2nd five year plan was based?
6. In which plan the slogan of poverty removal was given ?
7. What was the title sentence of 11th five year plan?
8. What is complete name of NITI Aayog?
9. Who was the first deputy chairperson of NITI Aayog ?
10. Write the long term objectives of Indian planning.
11. In which plan the state-wise objective of growth were decided?

Short Answer Questions

1. What is meaning of economic planning?
2. Explain the historical aspect of Indian planning ?
3. Discuss 11th Five Year Plan in brief.
4. Which basic minimum needs were emphasized in 9th Five Year Plan ?
5. What do you mean by ‘plan holiday’ ?
6. What is ‘rolling plan’ ?
7. What is mixed economy ?
8. Explain the functions of National Development Council.

9. Why was the NITI Aayog established in place of Planning Commission ?

Essay Type Questions

1. Describe the 12th five year plan.
2. Explain the NITI Aayog in detail.
3. Explain the long term objectives of economic planning.
4. Introduce the five year plans launched before 1990.
5. Describe the achievements and failures of economic planning.

Answer to Objective Type Questions:

- (1) c (2) a (3) b (4) b (5) c (6) c

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Chapter - 2.2

Agricultural Development

India has been agriculture dominant country since ancient period. India exported agricultural products. Indian agricultural products were famous all over the world due to the quality like spices, jute, cloth, etc. about 85% population earned living from agriculture before independence.

Indian agricultural prosperity attracted traders and business persons of western countries. Different countries came over to India for trade but most of them could not succeed. Britishers succeeded in their colonial policy and ruled over India for more than 200 years. As for as agriculture sector is concerned, it became backward due to defective and selfishness oriented British policies. Indian farmers as well as agriculture were exploited and thus agriculture became a source of earning living only.

Importance of Agriculture in Indian Economy:

Even after the organized efforts for industrial development after independence in India agriculture is still main source of living for 65% population. Role of agriculture in Indian economy can be explained as below:

1. Importance of Agriculture in National Income:

According to Central Statistical Organization, in 1950-51, share of agriculture in gross domestic product was 56.6% in 1950-51

which decreased upto 15.2% during 11th five plan. This decreasing share of agriculture in national income is a symbol of economic growth. This share of agriculture is 2-3% in U.S.A., 7% in France, and 7% in Australia.

2. Contribution of Agriculture in Employment :

About 65% working population of India is still found in agriculture directly or indirectly. Due to employment opportunities in fisheries, animal husbandry, poultry, etc. and thus a large share of population depends on these agriculture related activities for living.

Dependence of population on agriculture for living is more but here average income is less than that in non-agriculture sector.

3. Importance of Agriculture in Industrial Development:

In India, industries of tea, cotton cloth, jute, sugar, etc. get raw material from agriculture. Handicraft weaving, soap making, food item and many such activities indirectly depend on agriculture. Presently, food processing industry is growing rapidly which is completely based on agriculture.

4. Importance of Agriculture in Foreign Trade :

India exports many agricultural products like tea, tobacco, dry fruits, spices, oil seeds, etc.

which brings foreign exchange and thus increases foreign exchange reserves.

5. Importance of Agriculture in Economic Planning:

Agriculture is the main base of Indian transport system because most of the agriculture products are transported by railway and road. If crops are good, income of farmers increases and thus demand for industrial products increases which results into progress of industries.

It is clear from above analysis that the prosperity of Indian economy depends on agriculture growth. Agriculture is main source of employment in rural sector of India.

Land Reform:

During colonial rule Indian farmers were exploited and agriculture became backward sector of the economy. The land systems of zamindari, raiyatwari and mahalwari were responsible for the poverty of farmers and backwardness of agriculture in India.

After independence many efforts were made to improve the position of both farmers and agriculture. These efforts are known as land reforms under which following steps were taken.

1. Abolition of intermediaries.
2. Tenancy reforms
3. Consolidation of holding
4. Reorganization of Agriculture

Detailed analysis of these steps is as given below:

1. Abolition of Intermediaries:

Before independence Indian economy was stagnant because agriculture was stagnant and main reason of this was the zamindars who were agents of the British government. After independence abolition of zamindars was thought to be necessary. Some states enacted laws before first five year plan but took action during first five year plan. In states where land records and

administrative machinery were available, permanent settlement was not difficult but in states where land records were not available it was difficult to take any action like Bihar, Orissa, West Bengal, Rajasthan etc. In these states zamadari, raiyatwari and mahalwari systems were abolished. As result tenants and government came with direct relationship.

2. Tenancy Reforms:

Under this step tenancy reforms were followed. Tenancy system is the system in which landowners do not do agriculture themselves but lease out land to tenants. Under this system following reforms were done.

(i) Regulation of Rent:

In British period there was heavy burden of rent on tenants. The rent was 30% to 80% of the total production. After independence it was recommended that maximum rent should not be more than 1/5 or 1/4 of the total production.

(ii) Security of Tenancy Rights:

Many laws were enacted to stop eviction of tenants from land. These laws aimed to stop eviction of tenants, to return land to owner only for self cultivation and to leave some land with tenant on returning land to owner.

(iii) Ownership Right to Tenant:

Under this reform the farmers who cultivated land were given ownership right of land and thus farmers became owner of land. States of West Bengal , Karnataka and Kerala were more progressive in this regard.

3. Consolidation of Holdings:

Under this reform maximum size of holding was fixed and thus that maximum quantity of land was fixed beyond which no individual or family could hold land. Size of holding was very small before independence. In India marginal land holdings are found more on which crop production is less then cost of cultivation.

Due to right of private property, inheritance law, heavy pressure of population, division of joint family system and role of Mahajan and moneylenders etc. land was divided into small pieces and thus problem of fragmentation and sub-division of land holding was created. For the solution of this problem the way of consolidation of holding was adopted. Consolidation of land holding means making land available at one place instead of the scattered small pieces of land at different places. Table-1 shows the definition and availability of land holding in India in 2010-11.

Table -1

Types and % of Total Holdings

Holding	Definition	% of Total Holdings (2010-11)
Marginal Holding	Less than 1 hectare	67.0
Small Holding	1 to 2 hectare	17.9
Semi-medium Holding	2 to 4 hectare	10.1
Medium Holding	4 to 10 hectare	4.3
Large Holding	More than 10 hectare	0.8

4. Reorganization of Agriculture:

Under this reform system of consolidation was adopted for the solution of the problem of fragmentation and subdivision of land holding and thus land was made available at one place instead of scattered pieces of land here and there.

Under land reforms partial success was achieved through the implementation of various laws. Due to shortcomings of laws zamindars declared themselves owner of land or challenged the laws of land reforms in court and got lease deed to the self name or name of relatives. These

laws were not implemented equally in whole of the country.

Agricultural Productivity:

Development of agriculture is necessary for the development of Indian economy. For this agriculture should be given the first priority because motivations of growth of industries are less in developing countries. So, there is need to make efforts for increasing production and productivity of agriculture.

Agriculture productivity is the per hectare production. Table -2 shows the production and productivity trends of different crops in India.

Table – 2

Crop	1950-51		2015-16	
	Production	Productivity	Production	Productivity
Rice	206	668	1043	2404
Wheat	64	665	935	3093
Jowar	55	353	44	925
Millet	26	288	81	1164
Pulses	84	441	165	652
Food Grains	508	552	2522	2056
Oil Seeds	62	481	254	868
Cotton	30	88	301	432
Jute	33	1043	99	2399

Source : Sixth Five Year Plan, GOI, Economic Survey: 2016-17, Vol. II, GOI, Economic Survey : 1980-81

Note :

- (1) Production in 'lakh tonnes'. Production of cotton and Jute in 'lakh bales'. Cotton: 1 bale = 170 kg. Jute: 1 bale = 180 Kg.
- (2) Productivity in kg per hectare.

Table shows that both production and productivity of the referred crops have increased

in the period 1950-51 to 2015-16. Production of rice was 206 lakh tones in 1950-51 which increased upto 1043 lakh tones in 2015-16. In the same period production of wheat increased from 64 lakh tones to 935 lakh tones i.e. about 15 times. Total food grains production increased about 5 times i.e. from 508 lakh tones to 2522 lakh tones.

In non-food items production of oil seeds increased by 5 times and that of cotton by 12 times in the period from 1950-51 to 2015-16. Productivities of all food grains was 552 kg which increased upto 2056 kg. in the period of 1950-51 to 2015-16. This increase was due to new agriculture strategy adopted in the decade of 1970s. In this period productivity of wheat was 665 kg. which increased 3093 kg. and that of rice was 668 kg which increased upto 2404 kg. In the same way productivity of cotton which was 88 kg. in 1950-51 increased upto 432 kg. Productivity of pulses increased on an average by 1%. Thus in the period of these 64 years productivity of food grains, oil seeds, rice, and cotton increased by 4 times, 3 times, 4 times and 2 ½ times respectively. Tendency of productivity of all crops showed unevenness.

Causes of Low Productivity:

Following causes are responsible for low productivity of crops in India.

1. There is very high pressure of population on agriculture. This pressure is continuously increasing due to lack of sufficient opportunities of employment in non-agriculture sector.
2. Agriculture productivity is low because rural atmosphere in India is suffering from stress, fatalism, superstitious ways and ignorance.
3. In India, size of land holding is small and thus cost of production is higher with lower productivity levels. 85% holdings are marginal.

4. Indian farmer have not been benefitted much by laws of land-ownership system. We see zamidars, mahajans, etc. even today.
5. Farmers use old and backward agricultural technique even today.
6. Even after 67 years of independence 53% land still depends on rainfall. Thus there is lack of irrigation facilities in our country.
7. Crop value in India is not inspirational and due to this farmers are not ready to increase the production.

Government should make necessary efforts to increase productivity in agriculture. For this, implementation of land reforms, use of agriculture inputs in proper quantity, availability of credit and marketing facilities, proper price-policy for crops, etc. steps are required. In 12th five year plan it was experienced that due to scarcity of cultivated land it is necessary to emphasize the productivity in agriculture in future. Keeping this objective in view the National Food Security Mission (NFSM) was implemented in 11th five year plan.

Agriculture Inputs:

Agriculture production and productivity depends on agricultural inputs. Developing and backward countries lack these inputs for agriculture development. Agricultural production and productivity can be increased by correct management and using in proper quantity of the agriculture inputs. Agricultural inputs include irrigation, fertilizers, high yield variety seeds and pesticides.

1. Fertilizers :

Use of fertilizers is necessary for rapid growth in agriculture production. Land in India has diversity and is appropriate for production of crops in different areas. Soil in India lacks nitrogen and phosphorus elements. If carbonic manure is used with these elements, crop

production increases rapidly. So use of fertilizers should be increased to increase the production of food grains. Use of fertilizers has been increased after green revolution. We produce nitrogen (N) and phosphorus (P) in India but we import potash (K) completely.

2. Irrigation:

Indian agriculture depends on monsoon. Irrigation is the most important input which affects agricultural production. If crops get sufficient water at the right time, productivity can be increased.

(a) Small Irrigation Project:

Irrigation projects having agriculture command area less than 2000 hectare are included in small irrigation projects.

(b) Medium Irrigation Project:

If agriculture command area is between 2000-10000 hectare these projects are the medium irrigation projects.

(c) Big Irrigation Project:

Irrigation projects having agriculture command area above 10000 hectare are the big irrigation projects.

Modes of Irrigation:

Ponds, tube-wells, wells, canals, johad, etc. are the different modes of irrigation in India being used since ancient time. Modes of irrigation are divided in mainly three parts as discussed below:

(a) Irrigation by Canals:

In 2010-2011, 24.6% part of net irrigated land area was irrigated by canals. Canals are used for irrigation mainly in Punjab, Haryana, Uttar-Pradesh, Bihar and some states of southern India. Main canals of India are Sharda canal, Upper Ganga canal, Lower Ganga canal, Sarhind canal, Indira Gandhi Canal, and canals of Kaveri, Krishna and Godavari rivers.

(b) Irrigation by Ponds:

Ponds are used for irrigation in Tamilnadu, Andhra Pradesh, Kerala, Karnataka, etc. share of ponds in net irrigated area was 31% in 2010-11.

(c) Irrigation by Wells:

Wells include both surface wells and tubewells. Wells are used for irrigation mainly in Uttar Pradesh, Gujarat, Maharashtra, Madhya Pradesh and Haryana. Contribution of wells in net irrigated area was 61.4% in 2010-11. Thus wells and tube wells had maximum contribution in net irrigated area.

3. High Yielding Varieties of Seeds (HYVS):

These seeds were used intensively during green revolution. Government of India was trying for improvement in high yield variety seeds since planning period but success was got in kharif crop in 1966 when these seeds were adopted. This programme was adopted as 'Package Programme'. HYVS of wheat were imported from Mexico. This programme was implemented for rice, millet, jawar, maize, etc. except wheat.

Success of HYVS was reported in the crop of wheat while other crops reported very lower success. Pulses, oilseeds, fruits, vegetables were the items for which nothing was done regarding HYVS.

4. Pesticides and Insecticides:

In India, about 10-15% crops are destroyed due to lack of plant protection. So there is need of safety of crops from diseases and insects. In India, maximum pesticides and insecticides are used in cotton and paddy crops. After green revolution the use of pesticides and insecticides has increased rapidly.

5. Farm Mechanisation :

In India, agriculture is done with the help of traditional means (plough, bullock, horse, pond, etc.) which result into less production and lower productivity. Agriculture production and

productivity can be increased with the help of new techniques and machines. Mechanisation means using modern methods in place of traditional methods of agriculture. Due to lack of capital complete mechanization would have not been possible in agriculture in India and thus only partial mechanization could have been adopted.

Agriculture production can be increased by using agricultural inputs in proper quantity and systematic way. This will create income for farmers and will increase industrial development indirectly. Except these inputs farm-machinery, agricultural credit and proper arrangement of electricity can also be used to increase the agricultural production.

Green Revolution :

In initial years of 1960s new technique and HYVS were used in agriculture and as result crop productivity increased rapidly. This was called 'green revolution'. In 1958 total production of wheat increased in India firstly by 50 lakh tone (from 120 lakh tone to 170 lakh tone) and this phenomenon was called 'Green Revolution' by American scientist, William God. But green revolution in India, in real sense, started in 1966 (kharif crop) when the then Prime Minister Smt. Indira Gandhi and agriculture minister Shri C. Subrahmanyam talked to adopt the new strategy.



Maxican agriculture scientist and researcher, Norman E. Barlaug, discovered improved variety seeds of wheat which could increase productivity by 200 to 250 times. These seeds were used first of all in Maxico and Taiwan. In India, in Kharif crop of 1966 the improved variety of rice 'Tychung Netiv' and in rabi crop of 1966 the improved variety of wheat

'Larma', 'Roza 64-A' and 'Sonara-64' were used. Agriculture scientist Dr. M.S. Swaminathan improved maxican wheat variety and this new wheat varieties were named as 'Sharbati Sona' and 'Pusa Larma'. Thus, Dr. M.S. Swaminathan is called the father of green revolution in India and in reference of the world Norman E. Borlaug (who got noble prize in 1970) as father of green revolution. This new strategy is also known as 'Seed-fertilizer Revloution'.

Green revolution strategy in Inida is divided in two stages:

First Stage:

This stage is concerned with the period of mid 1960s to mid 1990s and is known as the 'stage of centralization'. This stage was mainly concerned with wheat and rice crops and limited upto states of Punjab, Haryana and Western Uttar Pradesh. In this stage productivity of wheat increased rapidly and thus known as the centralized stage on wheat crop.

Second Stage:

At this stage, group of five crops was included. These five crops were we wheat, rice, millet, jawar and maize. This stage was implemented in other parts of country also. So, this stage is known as 'stage of decentralization'.

In this stage, main emphasis was given to increase the production of rice, pulses, cereals and edible oil. Here emphasis was also given to increasing the dry farming, reducing regional disparities, balancing ecology, maintaining fertility of soil, increasing the use of organic fertilizers and using techniques of water management.

Impact of Green Revolution :

1. Increase in Total Production and Productivity of Crops:

Green revolution resulted into rapid growth of foodgrains. Production of wheat was 1 crore tones in 1965-66 which increased upto 9 crore 59

lakh tones in 2013-14. In this period, productivity of wheat increased from 851Kg. to 3075 Kg. Due to this many experts called it 'wheat Revolution'. Total foodgrains production was 810 lakh tones at the end of 3rd five year plan which increased upto 264.8 million tones in 2013-14. Both production and productivity of pulses remained negative in first stage of revolution. C.H. Hanumant Rao claimed that there were imbalances in growth of various crops in initial years of the green revolution but these imbalances were reduced with the time.

2. Use of Fertilizers Increased Rapidly:

In 1952-53, use of fertilizers was of only 66000 tones which increased to 239.6 lakh tones in 2013-14.

3. Irrigation facilities expanded rapidly. Irrigation potential was 2.26 crore hectare in 1950-51 which approached to 11.32 crore hectare in 2011-12.
4. Use of machines and equipments were widely promoted and due to this Indian agriculture was changed from traditional form to modern form.
5. Use of pesticides, insecticides and HYVS increased widely.

Failures or Problems of Green Revolution:

1. The maximum effect of green revolution was on wheat. In case of rice, green revolution was seemed to be less effective. But in case of cereals (maize, jawar and millet) pulses and oilseeds green revolution was ineffective.
2. Green revolution was failed in production of commercial crops.
3. Under food security production of pulses did not increases and thus share of pulses in foodgrains decreased.
4. Impact of green revolution was limited to some areas and thus the process of

imbalanced growth in agriculture started.

5. Benefit of green revolution went only to educated and prosperous farmers. Green revolution was not beneficial for marginal and small farmers.
6. Green revolution created effects on ecology. Soil pollution, fall in soil fertility, lack of biodiversity, decreasing underground water level, problem of water lodging, soil erosion, increase in soil salinity, etc. are the ecological effects.
7. Only big farmers took the benefit of agricultural concessions given by government.
8. Due to blind fold use of chemical fertilizers concept of sustainable agriculture suffered.

As result of green revolution India became self-relient in production of food grains and thus our imports decreased. Green revolution was limited upto some areas and big farmers. So, we can say that green revolution did not have more effects on Indian economy. Thus, we think that there should be one more green revolution in India.

Agriculture Finance :

One of reasons of backwardness of Indian agriculture is the lack of financial facilities. Finance facilities are easily available for organized sectors like industry and business but agriculture is an unorganized sector and thus there is lack of finance facilities for it. Farmers need finance for purchasing seeds, equipments, marketing, animal husbandry, etc. Availability of agricultural finance at proper interest rate and in sufficient quantity plays important role in increasing agricultural production and productivity. Agriculture finance is divided in below given parts:

1. On the Basis of Period:

Here, finance is of three types:

- (a) Short Run Loan
 - (b) Mid Term Loan
 - (c) Long Term Loan
2. On the Basis of objective
- (a) Productive Loan
 - (b) Unproductive Loan

These different types of loans have been discussed as below:

Short Term Loan:

This loan is taken by farmer to purchase fertilizer, seed, manure and other commodities of domestic use. These loans are given for period of less than 15 months and by cooperative societies, mahajans and money lenders.

Mid Term Loan:

This loan is taken for making improvements on land, to purchase agricultural equipments, bullock, etc. Period of these loans is from 15 months to 5 years.

Long Term Loan:

Period of these loans is more than 5 years and taken for leveling the land, to dug walls, to purchase new land, to repay old loans, to purchase heavy machinery and to develop small irrigation system.

Productive Loan:

Loans which are used by farmers for productive works are the productive loans. With the help of this loan fertilizer, seed, agriculture equipment, bullock, etc. are purchased, permanent improvements are done on land and wells are dugged.

Unproductive Loan:

Loans which are taken for unproductive activities like marriage, death ceremony, other social customs, etc. are the unproductive loans.

Sources of Agricultural Finance:

Agricultural finance plays important role in

development of agriculture. Sources of agricultural finance are divided as below:

1. Non-Institutional Sources:

These are:

- (a) Mahajan and Money Lender
- (b) Relatives
- (c) Zamidar
- (d) Broker and Trader

2. Institutional Sources :

These are:

- (a) Cooperative societies
- (b) Land development bank
- (c) Regional rural bank
- (d) Commercial bank
- (e) NABARD

These sources are analysed as below:

1. Non-Institutional Sources:

Mahajan, money lender, relative, zamidar, etc. are the non-institutional sources of agricultural finance. These are known as 'local bankers.' Taking loan from these sources is easy and simple. At the time of independence 71.6% contribution was of mahajans and moneylenders in agriculture finance. In case of non-institutional sources, there were many ways of exploitation like higher interest rates, non-maintenance of loan accounts, changing details in accounts, taking thumb impressing on blank paper, etc. If farmers did not repay loan, they had to work as servant for the moneylender and zamidars. Sometimes farmers were evicted from land also.

After independence government made many efforts to make farmers free from these unhealthy practices of moneylenders. There were laws to restrict the moneylenders and zamidars for these malpractices like keeping accounts made compulsory, proper maintenance of accounts,

giving receipt to farmer on payment of loan, etc.

Some states made provisions of punishments for disobedience of laws by mahajans and money lenders. Some of the restrictions imposed by different states on money lenders and mahajans are as given below:

1. Restricting compound interest.
2. Money lenders can charge only those amounts, except loan amount, which are mentioned clearly in laws.
3. Restriction on false claims under principal amount.
4. Restriction on payment related provisions on other states.

2. Institutional Sources:

After independence the need of institutional finance was recognized and thus efforts were started in this direction. As result of these efforts the share of non-institutional sources in agriculture finance was 92.7% in 1951 which decreased to 40% in 2013. In this period, the contribution of institutional finance increased upto 60%. Contribution of non-institutional finance is more still today. R.B.I. organized a committee 'Advisory Committee on Flow of Credit to Agriculture and Related Activities from the Banking System' under the chairmanship of Prof. V.S. Vyas. This committee submitted its report in 2004 with 99 suggestions of which 32 suggestion had been accepted by R.B.I.

Institutional credit includes following sources:

(a) Cooperative Credit Institutes:

These institutes were started in 1904 with slow progress before independence and with rapid growth after independence. Share of these institutes in total institutional credit was 30% in 2013-14. Cooperative credit institutes fulfill specially short term credit needs. These institutes have three tier system. These are :

(i) Primary Credit Societies:

These are organized at village level. At least 10 persons of an area or village can organize primary credit society. These societies give loan for productive activities.

(ii) Central Cooperative Bank:

These banks are organized at district level with the main work of giving loans to primary credit societies. These banks work as intermediary between state corporative bank and primary credit societies. Central cooperative banks extend loan for 1 to 3 years.

(iii) State Cooperative Bank:

Organised at state level, these banks give long term loan to District Cooperative Banks. State Cooperative Banks control activities of district cooperative banks also. This bank is financed by R.B.I.

(b) Land Development Bank:

These banks were established in India in 1929 and now are known as agriculture and rural development bank. Some states have single organizational system and some other states have double organizational system of land development Banks. Under this system primary agriculture development bank at village level and state agriculture and rural development bank at state level were established.

(c) Regional Rural Banks (RRBs):

RRBs were started in those areas in which the system of institutional finance is not sufficient and there are many possibilities of agriculture development. RRBs provide loan to small and marginal farmers, agriculture laboureres, artisans, etc. RRBs were started on October 2, 1975 with 5 such banks. After some years their number increased upto 56. In 2013-14, contribution of RRBs in total institutional credit was 11.6%. 90% of the total loans of RRBs were given to weaker sections of rural areas.

(d) Commercial Bank:

At the time of independence, share of commercial banks in agriculture credit was very low. It was only 0.9% in 1950-51. 14 main commercial banks were nationalized in July, 1969 for increasing their contribution in agriculture credit. In 1980, 6 more banks were nationalized. With this these banks were given instructions to extend 40% credit to priority sectors (agriculture, small industries, small business, etc.). Share of commercial banks in agricultural institutional credit was 26%.

National Bank for Agriculture and Rural Development (NABARD):

NABARD was established in July, 1982 as per the recombination of CRAFTICARD committee with B. Shivraman as president. NABARD is the apex institute of rural credit (agriculture credit). Agriculture Refinance Commission was established in 1963 which changed into Agriculture Refinance and Development Corporation (ARDC) in 1975. All the activities of ARDC and Agriculture Credit Department of RBI were handed over to NABARD. Primary paid up capital of NABARD was 100 crore.

Functions of NABARD:

Following are the functions of NABARD:

1. It is the apex institution of rural credit.
2. NABARD gives short term, midterm and long term loans to cooperative societies, cooperative banks, land development banks and RRBs.
3. NABARD is responsible for coordination, integration and control of all activities related with agriculture and rural area.
4. NABARD keeps its eyes on activities of cooperative sector through its agriculture credit department.

5. NABARD extends short term loan to cooperative banks for reasonable agriculture activities, distribution and purchasing of fertilizers, selling of agriculture production and working capital of cooperative sugar factories.
6. NABARD gives mid term loan to state cooperative banks and RRBs for agriculture purpose (leveling of land, purchasing of agriculture equipments, etc.) and extending loan period in areas affected from natural calamities.
7. NABARD gives longterm loan to state cooperative banks, RRBs and commercial banks for large scale improvements in agriculture sector.
8. NABARD gives long term loans to state governments to contribute in cooperative credit institutions.
9. NABARD has fund for research and development purpose which helps in formation of projects according to different areas and to promote agriculture and rural development programmes.

Agricultural Development without Pollution/Second Green Revolution :

Using pollution free resources and ecology favourable techniques in agriculture development is the second green revolution. According to Mr. M.S. Swaminathan, Dr. A.P.J. Abdul Kalam and P.S. Pitroda following processes should be adopted for this revolution :

- (i) Using bio-fertilizers in place of chemical fertilizers.
- (ii) Using bio-insecticides and pesticides in place of chemical insecticides and pesticides.
- (iii) Adopting proper and balanced pattern of crops and water conservation.

Ex President Dr. A.P.J. Abdul Kalam emphasized second green revolution to increase the supply of foodgrains for solution of crisis of foodgrains for increasing population and this revolution should include all the elements of 'from field to market'.

A conference entitled 'Knowledge Agriculture' was held in December, 2006 in New Delhi for the second green revolution. In this conference it was concluded that this revolution is capable to fight with the challenges of World Trade Organization and sustained agriculture development. Following efforts were made under this revolution:

1. This revolution was implemented for all agricultural products (food grains, animal products, commercial crops, fisheries, silk farming product, etc.) to increase agriculture production. So, this revolution is known as 'Rainbow Revolution'. In this revolution crop management, use of bio-inputs, etc. were emphasized.
2. For value addition processing of agriculture products and developing them as drinking industries were emphasized.
3. Strengthening infrastructure in agriculture was emphasized, improving agriculture finance system, agriculture products, improving transport system for marketing of agriculture products, developing mandies (markets), arranging communication facilities, arranging sufficient irrigation in agriculture, etc. steps have been undertaken.
4. All the crops and agricultural activities have been included in National Agriculture Insurance Yojana for providing security of crops to farmers.

More emphasis was given to second green revolution in 11th five year plan so that targeted growth rate of agriculture can be obtained (which was 4%). Growth rate really achieved in 11th plan was 3.3%. If pollution free policies of agriculture

development will be implemented properly, the targeted growth rate of agriculture in 12th plan (which is 4%) will be possible to achieve.

Important Points:-

- Indian economy is agriculture based economy. It is source of living of 65% population.
- Agriculture contributes in national income employment, export, industrial growth, etc. land reforms were adopted for agriculture development through abolition of intermediaries, tenancy reforms, consolidation of holding and reorganization of agriculture, etc. measures.
- Per hectare production is agriculture productivity. Agriculture inputs were mainly used during green revolution. Improved seeds, chemical fertilizers, irrigation system, etc. are the agriculture inputs.

Questions for Exercise

Objective Type Questions :

1. Main food crop of India is-
(a) Rice (b) Wheat
(c) Jawar (d) Maize ()
2. National Food Security Mission was implemented in the five year plan-
(a) 8th five year plan
(b) 10th five year plan
(c) 11th five year plan
(d) 12th five year plan ()
3. Green Revolution in India was adopted in-
(a) Rabi Crop 1965
(b) Rabi Crop 1966
(c) Kharib Crop 1966
(d) Kharib Crop 1965 ()

4. Which one is not the commercial crop-
 - (a) Jute
 - (b) Collon
 - (c) Sugarcane
 - (d) Rice ()
5. NABARD was established in the year-
 - (a) July 1988
 - (b) July 1982
 - (c) July 1984
 - (d) July 1986
6. State using maximum fertilizers per hectare is –
 - (a) Haryana
 - (b) Punjab
 - (c) Uttar Pradesh
 - (d) Madhya Pradesh ()
7. Which one is not the non-institutional source of agricultural finance ?
 - (a) Mahajan
 - (b) Relatives
 - (c) Money lender
 - (d) Cooperative societies ()
8. Regional Rural Banks were started in the year.
 - (a) October 2, 1975
 - (b) October 2, 1976
 - (c) October 2, 1977
 - (d) October 2, 1978 ()
3. What is idle ratio of nitrogen (N), Phosphorus (P) and Potash (K) ?
4. What is irrigated and unirrigated area in India ?
5. In which states of India ponds are used for irrigation ?
6. Who is father of 'green revolution' in India ?
7. What is 'Local Banker'?
8. Write complete name of NABARD.
9. What is rainbow revolution ?
10. What was the main theme of conference organised in November, 2006 for second green revolution ?

Short Answer Questions :

1. Explain the three tier cooperative system of agricultural financé.
2. Give brief description of NABARD.
3. Explain reforms undertaken under land reforms.
4. Write brief note on agricultural productivity .
5. On what basis and in how many parts irrigation projects are divided?
6. Explain the causes of low productivity of agriculture.
7. Explain the classification of agricultural credit system on the basis of period.
8. Write a note on pollution free agriculture development.

Essay Type Questions:

Very Short Answer Question:

1. What percentage of population in India depends on agriculture ?
2. What was per hectare productivity of foodgrains in 2013-14 ?
1. Write an essay on importance of agriculture in Indian economy.
2. What is meaning of green revolution ? Evaluate the green revolution.

3. What are agricultural inputs. ? Describe main agricultural inputs.
4. Describe sources of agricultre finance.
5. Explain the role of NABARD in rural credit system.

Answer to Objective Type Questions:

- (1) a (2) c (3) c (4) d (5) b (6) b (7) d
(2) (8) a

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Chapter - 2.3

Industrial Development

Role of Industrial Sector in Indian Economy:

Economists accepted that increasing share of industrial sector in national production is an indication for a developing economy to step up towards well developed economy. In other words, to increase industrial sector is an indication towards development. Indian economy is an agricultural dominant economy. Industrial backwardness and slowdown have been inherited in the economy. India has been remained only raw material exporter since British ruling time. They had established negligible industries in India to fulfill their self-centered interest. These industries were not capable to provide sufficient infrastructure for the development. Indian textile industry, jute industry, sugar industry, coloured utensils industry etc. were well known in the world for their excellence before coming of Britishers.

Industrial development is known as a base for any economy. Other sectors are inspired from industrial development so that overall development of the economy is possible. The importance of industries is more and more in Indian agricultural dominating economy because we can go ahead on the path of development along with industrial development. We can understand the role of industrial sector in Indian economy through the following points.

1. **Rapid Growth in Income :** According

to economists, rapid growth will be in gross domestic product due to fast industrialization. Per capital income of the citizens will be increased along with industrial development. The productivity of industries remains more than the productivity of agriculture sector. Industries are basically the results of man made efforts but due to dependence of agriculture on the nature, the situation of agriculture is not exist like that. The level of development can be achieved through industrialization. The share of industries has been increased in national income along with industrialization in the country and per capita income of the people has also been increased. The share of industrial sector in gross domestic product of the country has been increased upto 26.2% in 2013-14 from 16.6% in 1950-51.

2. Role in Employment:

Industrial sector has an important role in employment generation. Employment opportunities will be increased alongwith industrial development. Industrial sector of India is a large employer of the organized sector. The employment has been increased due to establishment of industries in different areas of the country. Agriculture sector can not solve the problem of unemployment due to rapid growth of population so in this context the role of industries will remain more to solve the problem of

unemployment.

3. Development of Infrastructure:

Industrial development is not possible without infrastructure facilities. At the time of independence Indian infrastructure was underdeveloped. Government developed infrastructure facilities rapidly which helped in rapid development of industries. For rapid industrialization rapid development of infrastructure was necessary.

4. Utilization of Resources:

Industries have more capacity to utilize resources instead of agriculture sector. Inefficient resources are trained by industrial units which increases their productivity. Industries also use raw material produced by industries.



5. Development of Agriculture:

Industrial development develops the agriculture equipments and machines, medicines, chemical fertilizers etc. which increase agriculture production. Thus, agriculture development depends on industrial development to a large extent.

6. Balanced Growth:

Development in India was of the imbalanced nature. Development of India was mainly based on agriculture. By developing industries the dependence of development on agriculture can be reduced. Industrialisation is the back bone of any economy and gives energy to it.

7. Self Sustained Growth:

Rapid industrialization increases self sustainability. Industries promote agriculture, transport and communication. Role of industries is very large in producing consumer goods and making available these goods to every sector of economy.

8. National Security:

Development of industries make available the national security equipments (weapon, etc.) and other machinery and thus we save foreign currency because of reduction in imports. This increases our self confidence and economic freedom.

As result of industrialization India has become self sustainable in growth. Role of industrialization in development becomes more important.

Problems of Industrial Development:

At the time of independence Indian industries were in the backward position. After independence we tried to develop industries through many industrial policies and thus industries started developing in India. Now, India has both ability and capacity of producing high quality and technical goods but Indian industrial sector still faces some problems. These problems are as discussed below:

1. Gaps between Fixed Targets and Achievements:

Fixed targets regarding industrial development in India could not be fulfilled under planning period. Industrial targets were fulfilled only in the decade of 1980. Before liberalization industrial growth rate was less than targeted growth rate by 20% each year on the average basis. In this reference Rakesh Mohan says that in the period of 35 to 40 years industrial growth rate remained about 6.2% while it was targeted as 8%.

2. Underutilization of Capacity of Industries:

During plans industries could not utilize their full capacity. There were many reasons responsible for it e.g. government policies, labour dissatisfaction, lack of raw material, lack of electricity supply, etc.

3. Performance of Public Sector:

After independence industries in public sector developed rapidly but many economists raised many questions on their performance. Public sector industries were established for social equality rather than earning profit. These industries could not fulfill the objective of social equality and thus failed in their performance.

4. Industrial Sickness:

If industrial units are unable to complete their financial liabilities, this situation is known as industrial sickness. It was mentioned in the 6th five year plan that "structure of industrial development was not determined by the cost criterion. No proper attention was given to cost at the time of establishment of industries due to their protection from foreign competition. Improvement in techniques and variety of goods were also not considered seriously. Due to these reasons some industries became unhealthy.

5. Infrastructural Constraints:

This is the main problem of industrialization. Lack of modern technology and increase in cost of energy and transport increase the cost of production. About 55% is the contribution of coal in the supply of energy in India and this supply is less than its demand. Rail transport could not be developed more, there is lack of proper roads and these roads have heavy burden of transportation, there was less development of inter-state express ways and four-lane highways, and other many causes were responsible for the insufficient development of infrastructural facilities.

6. Emerging Problems of Industrial Development:

As a result of economic reforms since 1991 Indian industries are facing competition from foreign industries and if our industries are failed in this competition they will be closed down. It has become difficult for specially the small industries to compete with foreign industries. Final consumer goods industry is completely under danger because these final consumption goods are exported by foreign countries as these goods are cheaper and qualitative. It has been mentioned in 12th five year plan document that Indian capital goods industries have been badly affected in the competition with Chinese industries. Presently our electronics industry is facing strong competition with China.

It is clear from the above discussions that Indian industries are facing many problems and due to this their development has been blocked. If we want to develop our industries there is need to develop the infrastructure facilities and the power of competition.

Efforts being made to motivate Industrial Development:

Presently following efforts are being made by our government to give incentive for the industrial development:

1. Ease in Doing Business:

The place of India is very low in the index of ease in doing business. Thus, all the indicators of this index have to be improved. These indicators include starting business, action regarding taking permit, registration of property, supply of electricity, payment of taxes, implementation of tenders etc. Positive and accelerated efforts are being made in this direction.

2. Make in India:

This programme aims to increase

investment, to motivate innovation, to promote skill development, to protect intellectual property and to build better infrastructure. Information about 25 sectors has been provided on the web portal. This portal has the information about F.D.I. policy, national manufacturing policy, industrial estate rights, Delhi, Mumbai industrial corridor, etc. A director facility center has been established in 'Invest India' for giving guidance, assistance and help to investors.

3. E-Biz Project :

Under this project 'Government to Business-G2B' portal is being established which will work of 'One Stop Shop' for giving services to investors. This portal will complete all the necessities, from beginning to end, during the whole life cycle of the business. Whole of the process is available on-line and now this service is available all the time on the E-Biz website.

4. Skill Development:

To promote skill and entrepreneurial activities a new ministry of 'skill development and entrepreneurship' has been established and now the work of criteria fixation for skill development training is being done. Now 31 Sector Skill Councils (S.S.C.) are being run in the leadership of employee/industry and these 31 S.S.Cs have been integrated with 25 sectors of 'make in India'. National commercial of vocational Training, school boards and University Grants Commission are equally making efforts for skill training.

5. Making Effective the Environment and Forest Related Sanctions:

Process of on-line applications of environment, Coastal Regulation Zone (C.R.Z.) and forest related sanctions have been started. In this regard, the decision taking process has been decentralized. To ensure industrial/educational development condition of taking environment related sanction has been relaxed to construct

industrial sheds where there are plants, machinery, educational institutions and hostels.

6. Labour Sector Reform:

A labour facility portal has been started to enable on-line registration of units, self attestation by units, submitting simplified single online return, starting of transparent labour inspection plan through computerized system according to risk based criteria and uploading inspection reports within 72 hours and thus complaints can be settled with time. A universal account number has been started for provident fund of workers or servants. Trainees Act, 1961 has been modified to make it more flexible and attractive for youths and industries.

New Industrial Policy:

New Industrial policy was adopted in 1991. Before the study of this industrial policy, previous industrial policies have to be studied first so that the new industrial policy can be compared.

Industrial Policy 1948:

The first industrial policy of the independent India was declared on April 6, 1948 by the then central industry minister Shyama Prasad Mukharjee. This policy divided industries in to 4 categories-

- (a) These were the industries under the government control. These were- defence, atomic power and Railways.
- (b) There were 6 industries in the mixed category. These were- coal, iron and steel, aeroplane manufacturing, water ships manufacturing, telephone and telegraph, and mineral oil.
- (c) In this category there were 18 industries to be established by industrialists under the control and regulation of government. These industries were-heavy chemical, sugar, cotton and woolen cloth, paper, cement, etc.

- (d) Rest of the industries were to be establishment by private sector.

Industrial Policy 1956:

This policy was designed by keeping in view the socialistic objective of Indian constitution. This policy is also known as the 'Economic Constitution of India or 'Megnakarta of Industrial Policy' because this policy of 1956 gives a base for all the future industrial policies. Under this policy all the industries were divided into three parts:-

- (a) These industries were to run under the monopoly sector of government and put under schedule-A Industrial Policy Proposal. There were total 17 industries as logistics, atomic energy, railways, air transport, etc.
- (b) Industries in the co-existence of both public and private sectors (mentioned in schedule-B) were in this category. These were 12 industries as- chemical, fertilizers, road transport, etc.
- (c) All of the rest industries were left for private sector to get them established and developed. Government will not take direct part in these industries.

Other Industrial Policies Declared Before 1991

In industrial licensing policy of 1970, a list was issued for main industries. This policy issued the reservation policy for small industries.

In industrial policy, 1977 decentralization of industries was emphasized and for this District Industry Centers were established. This policy defines small and cottage industries firstly. The new concept of very small industry (tiny industries) was introduced.

In industrial policy, 1980, establishment of rural industries was emphasized. It was experienced that public sector should be implemented effectively to reduce the regional disparities.

New Industries Policy 1991:

This policy was a big change in Indian industrial structure and industrial policies adopted so far to strengthen the industrial base. There was need of this policy due to many reasons as described below:

- (i) Due to growth in non-development expenditure fiscal deficit was increasing and became 8.4% of gross domestic product in 1990-91. In 1990-91, interest payment increased 36.4% of total public expenditure.
- (ii) Deficit in balance of payment was increasing and burden of foreign debt became 23% in 1990-91 from 12% in 1980-81.
- (iii) Main reason of this policy was the Gulf crisis in which crude oil prices increased in world market and thus inflation rate in India increased upto 17%.
- (iv) In 1990-91, we looked at doors of world Bank and International Monetary Fund due to our economic crisis which resulted into constrained debt agreement. Due to this agreement we left away our 50 years old policies of License, Permit and Quota and adopted new policies of liberalisation, privatization and globalisation.

Thus to establish coordination between these national and international schemes, India declared New Industrial policy with following proposals.

(a) Abolition of Industrial Licensing:

Under this policy licences of all industries were abolished except 18 industries. Presently only 5 industries take licence which is mandatory. These are- air, sky and defence related electronics; gun powder and industrial explosives; dangerous chemicals; tobacco, cigarettes and other restricted products; and Alcoholic drinks.

(b) Public Sector's Role Diluted:

Number of industries in public sector

reduced to 5 under this new policy which was 17 in industrial policy of 1956. Presently, only 3 industries (atomic energy, minerals listed in 1995 list, and railways) under the control and ownership of government.

(c) Monopolies Restrictive Trade Practices (MRTP)

Under MRTP Act, permission of government was to be taken to establish, merge and expand the industrial units. This provision was modified in 1969 and abolished in 2002 and MRTPs were controlled. MRTP act was also abolished and Competition Act was enacted according to which now there is no requirement for taking permission from the government for establishment, expansion, merging, amalgamation and undertaking.

(d) Incentives of Foreign Investment:

In previous policies foreign investment was discouraged. Under New Industrial Policy, there was no need of taking government permission for upto 51% foreign investment in case of high investment requirement industries. Limit of foreign investment increased from 51% to 74% and further to 100% industries in the service sector. These were the industries of more export possibilities. Presently, foreign direct investment is prohibited in some areas like retail trade, atomic energy, lottery business, gambling and speculation.

(e) Foreign Technology Promotion:

Foreign technology was promoted for rapid growth of industries.

(f) Independent Small Industrial Policy:

To strengthen small industries independent small industrial policy was declared on August 6, 1991.

Successes of New Industrial Policy :

1. After this policy industrial growth rate increased. This growth rate was 7.8% in

1980-90 and became 13% in 1995-96 and 5.2% in 2016-17.

2. Due to this policy foreign capital investment increased. Both F.D.I. (Foreign institutional investment) and F.I.I. (Foreign Institutional Investment) increased. According to UNCTAD Report (2010) on investment, this investment in India was 34.6 billion dollar in 2009.
3. Foreign technology was promoted and thus Indian industrialists were recognized in world markets. Imports of foreign technology increased productivity of industries.
4. There was increasing trend in the foreign exchange resources. As a result of this industrial policy, Indian foreign exchange reserves increased so much that IMF (International Monetary Fund) included India in the list of debtor countries.
5. Public sector industries got the competitive atmosphere which improved their performance.
6. Rate of return increased as result of the industrial policy of 1999.

Failures of New Industrial Policy:

Many economists criticized this industrial policy. These criticisms are:

1. This industrial policy did not get success in reducing the unemployment significantly. Both rate and quantity of unemployment increased.
2. Many industries became sick or closed down. These industries could not mobilise resources to adopt foreign technology.
3. Indian industries could not compete with foreign industries and thus many industries became out of the competition.
4. Dependence of Indian industries on foreign technology increased which was named as

‘economic colonialism’.

5. Some sectors remained untouched by the foreign investment. Only profit earning industries got it. Infrastructure did not develop as per expectation.
6. Small and cottage industries could not compete with foreign industries and thus private sector was opened for the items reserved for these industries. Many of the small and cottage industries had been closed down.
7. Monopolistic tendencies were promoted in the economy which was not a healthy sign.

Under new industrial policy many reformative macro stabilizing efforts were made. Indian industries could demonstrate their capacity globally. But Indian small and cottage industries faced downfall and dependence on foreign capital. This policy increased unemployment in the economy.

Role and Problems of Cottage and Small Scale Industries in India:

Small industries were defined on the basis of investment limit first of all in Industrial Policy proposal, 1977. Thus those industries were the small industries in which investment in plants and machines was less than Rs. 10 lakh. Investment limit for ancillary units was Rs. 15 lakh and that for tiny units was maximum of Rs. 1 lakh. Under redefinition of investment limit in 1991, Rs. 60 lakh, Rs. 75 and Rs. 25 lakh were the investment limit for small industries, ancillary units and tiny units respectively, In 2006, Micro, Small and Medium Enterprises Development (MSME) Act was passed and these investment limits were again redefined. Under this Act manufacturing and service sector enterprises were defined separately as given below:

(a) Manufacturing Enterprises:

- (i) Rs. 25 lakh was the investment limit for micro units.

- (ii) In small enterprises investment limit in machinery and plant was more than 25 lakh but less than Rs. 5 Crore.
- (iii) Maximum and minimum investment limit for medium enterprises were Rs. 10 crore and Rs. 5 crore respectively.

(b) Service Sector Enterprises:

- (i) Maximum investment limit will be Rs. 10 lakh for micro units.
- (ii) More than Rs. 10 lakh but less than Rs. 2 crore will be the minimum and maximum investment limits for small enterprises.
- (iii) Investment limit for medium enterprises will be Rs. 2 crore as minimum and Rs. 5 crore as maximum.

This above information has been shown in Table-1

**Table -1
Investment Limits (in Rs.)**

Unit	Investment Unit	
	Manufacturing Sector	Service Sector
Micro	Maximum 25 lakh	Maximum 10 Lakh
Small	>25 lakh < 5 crore	>10 lakh < 2 Crore
Medium	> 5 crore <10 crore	>2 crore <5 crore

Small scale units generally includes :

Small Industrial units, ancillary industrial units, tiny enterprises, small scale service enterprises, artisans, rural and cottage industries and female dominance industries, etc.



Role of Small Scale and Cottage Industries:

Both agriculture and small and cottage industries are the base of Indian economy. These both sectors are the base particularly of the economy of rural population. Small and cottage industries have very important contribution in Indian economy as clear from the following analysis:

1. Share in Industrial Output:

Share of small and cottage industries in industrial output is continuously increasing. These industries produce about 6000 goods from traditional goods to highly technological and qualitative goods. Following Table 2 shows this information:

Table – 2

Share of Small and Cottage Industries in GDP

Year	Total value of output (Rs. Crore)	Share in GDP (in %)
2006-07	1198818	35.13
2011-12	1788584	37.97
2012-13	1809976	37.54

Source : GOI, Ministry of MSME, Annual Report 2015-16, Table 2.2, P.16.

It is clear from the above table that total value of output of MSME was Rs. 1198818 crore in 2006-07 which increased upto Rs. 1809976

crore in 2012-13. Share of MSME in gross domestic product was 35.13% in 2006-07 and 37.54% in 2012-13. It watch 28.77% in 2015-16.

2. Expansion of Small Scale Sector:

Activities of small scale sector increased in Indian economy as result of many concessional policies of the government. Table – 3 shows the number of MSME.

Table-3

Number of MSME (in Lakh)

Year	No. Of MSME
2006-07	361.8
2012-13	467.54
2015-16	633.88

Source: GOI: Ministry of MSME, Annual Report 2015-16, Chart 2, P.17

3. Contribution in Employment:

Small scale industrial units are labour intensive in which more people are employed. These units are the main source of rural employment along with urban employment. In India small scale sector is the second largest sector for proving employment after the agriculture sector. Table-4 proves this fact:

Table-4

Employment in MSME (in lakh)

Year	Employment
2006-07	805.23
2012-13	1061.40
2015-16	1109.89

Source: GOI, Ministry of MSME, Annual Report 2015-16, Table 2.1, P.15

Table show that in 2006-07, total employment in MSME was 805.23 lakh which increased upto 1109.89 lakh in 2015-16. Rate of

providing employment in MSME is more than rate of total employment in India. MSME is related with the non-agricultural sector which has many employment opportunities. Employment opportunities in large scale industries in urban area is limited, So development of MSME can increase employment in urban areas also.

4. Efficiency of Small Scale Industries:

To study efficiency of small scale industries, these are compared with large scale industries. Experts have different views on this issue. Some experts are of the view that small scale industries are more efficient in comparison with large scale industries while other experts say that large scale industries are more efficient. First of all Dhar and lydall studied this issue and concluded that modern small industries are capital intensive, pay less slary to labourers and concencetrated in cities. These are less efficient that large industries. Same result was also derived by Goldar on the basis of relative labour productivity, relative capital productivity and relative total factor productivity.

According to some other experts small scale industries have less capita. having higher productivity and are labour intensive. So small scale industries are more efficient than large scale industries. Ram singh K. Asher proved that by investing one rupee of fixed capital in small industries maximum labour employment is created and one rupee investment in small industries gives three times more value added than large industries. In the third census of small industry sector it was found that 0.20 employment was created by investing one lakh rupees in large industries in 2001-02 while if this investment was done in small industries it created 1.39 employment. Thus Rs. 5 lakh investment is required in big industries to give employment to one unit of labour while in small industries investment of Rs. 5 lakh gives employment to 7 labour units. So, on the basis of employment, small industries are more efficient.

5. Decentralizations of National Income:

Small industries promote decentralization of income, and property and thus make distribution of national income justified. Ownership of small industries is larger and have more capacity to increase employment than large scale industries. Under MSME sector people contribute large share in national product.

6. Contribution in Export:

After independence small industries grew rapidly and their share in exports increased continuously. Total exports of MSME were of Rs. 155 crore in 1971-72 which increased upto Rs. 6,77,318 crore in 2012-13. Thus share of MSME in export income was 9.6% in 1971-72 which increased upto 41.4% in 2012-13.

7. Regional Dispersal of Industries:

Big industries are concentrated in cities where their growth is uneven. Most of the big industries have been concentrated in Maharashtra, West Bengal, Gujarat and Tamilnadu. This is not the case with small industries because small scale industries are developed in all areas or sectors according to local demand. Today Punjab is more prosperous than Maharashtra due to small industries.

8. Less Industrial Disputs:

Industrial disputes are found less in small industries than in big industries. Labour owner relationship in small industries is healthier. The cases of lockouts, strickes etc. have been observed less in small industries.

9. Utilization of Local Resources :

Small industries utilize local capital and resources. MSME use local savings, raw material and artisan properly which increase their income.

10. Through small and industries traditional and artistic goods are protected which are parts of our cultural heritage.

11. MSME sector depends less on imports and thus saves our foreign exchange. MSME use local techniques of production and their imports are least.

It is clear from above analysis that small industry sector is very important in Indian economy. They play important role in solution of the problem of unemployment which is created by growing population. These industries improve income distribution in economy in the justified way and thus try to reduce the economic inequalities. Contribution of these industries is continuously increasing and thus they are earning foreign exchange.

Problems of Small Scale Industries:

Small and cottage industries are facing many problems. Sickness of small units is increasing day by day. In March, 2014 total number of sick small units was 456771 and in these units bank money of Rs. 27622 crore was stuck. Many small units have been closed down and some are struggling for their existence. Following are the main problems faced by small and cottage industries in India:

1. Problem of Raw Material:

Small industries depend completely on local raw material. Handicraft industry does not get cotton in sufficient quantity and at reasonable price. Weavers are exploited in two ways-on one side traders charge higher prices for raw material from weavers and on other hand these traders purchase cloth and thread from weavers at lower prices.

Many small industries import raw material from foreign exchange reserves. Presently, MSME are facing losses due to lack of raw material and increasing prices of the raw material.

2. Lack of Capital :

It is a main problem of small and cottage industries. These industries require long term

debt-capital for purchasing machines and equipments and short run capital for purchasing raw material and to pay wages to workers. Small artisans and entrepreneurs go to money lenders and mahajans to take loan at higher interest rates

3. Lack of Modern Technology:

Small and cottage industries use old and traditional technique. Machines in these industries have become old and these machines are not cost saving. The output produced by old machines is not quality oriented and thus this output is not according to the change in fashion, interest and preference of consumers.

4. Problem of Marketing & Standardization:

Small and cottage industries face many problems in marketing their product. Carpets, cloths, saris and many other artistic goods were exported but their demand has decreased both in domestic and foreign markets. To assist small and cottage industries in marketing of their product Trade Development Authority and State Trade Corporations have been established. In 1995, National Small Industries Corporation was established for searching market and taking orders for the product of these industries.

Government has adopted the system of standardization for selling the small products. After standardization of small products, these will be exported to Australia, Canada, America, Japan and other countries of the world.

5. Problem of Sickness:

Sickness of small and cottage industries is becoming more intensive. Industrial sickness means that situation in which these industries cannot fulfil their financial liabilities. According to R.B.I. "that industrial unit is said to be sick unit if the unit faces cash loss in one year and there is possibility of loss in coming two years and thus there is imbalance in the financial structure of the unit."

According to the published report "Inter-ministerial Committee for Accelerating Manufacturing in Micro, small and medium enterprises sector" in September, 2013 at the end of March, 2013 there were 249903 sick, small and tiny units in India in which Rs. 12800 crore of bank money was stuck. Out of these total sick units, 232525 unit cannot now be started again. 98% are the small units in all the total industrial sick units.

Lack of raw material, lack of managerial efficiency and experience, lack of capital, power cut and problem of energy, problem of choice of technique, etc. are the factors responsible for industrial sickness.

6. Lack of Infrastructure:

This is also an important problem of small sector. Not getting supply of electricity on time increases the operating cost of this industrial units. Lack of development of sufficient roads is also a big hurdle. In establishment of new units of small and cottage industries paper action is followed unnecessarily. There are many other problems associated with banks, electricity corporation, pollution control board, directorate of industries, etc.

7. Unavailability of Data:

Data on small and cottage industries are made available by two institutions namely, (i) Small Industries Development Organization, and (ii) Central Statistical Organisation. These both institutions do not have sufficient data about these industries, nor the data are collected regularly. So due to lack of data, process of policy making suffers a lot.

8. Delay in Payment:

Small and cottage industries do not get payment of their product in time. Products of these industries are purchased mostly by government departments and large units and these purchasers do not make payment in time.

9. Other Problems:

Lack of managerial and technical skills, lack of market knowledge, unorganized and unsystematic nature of working, etc. are the other problems of small and cottage industries. Government policies are also not proper for the development of these industrial units. There is lack of proper cooperation and coordination among different agencies also.

10. Effect of Economic Reforms:

Under process of economic reforms certain steps were undertaken by government like abolition of industrial licencing, reduction in tariff, removal of quantitative restrictions etc. These measures affected small and cottage industries negatively. Some of these industries faced dearer imports of raw material. Indian market has rapidly been captured by China products. Indian toy and electronics industries are not in healthy condition and thus 40% units of them have already been closed down. Chinese products are being sold in Indian markets at the price which is even less than the cost of production. This is known as dumping.

To give finance and refinance facility to small business persons of unorganized sector 'MUDRA' Yojana has been started by Government.

New Small Enterprises Policy 1991:

For promoting the development of MSME new small enterprises policy has been declared by government in August, 1991. Following are the provisions under this policy:

1. Investment limit of tiny sector increased upto Rs. 5 Lakh from Rs. 2 lakh (which further increased upto Rs. 25 lakh in 1997). Local restrictions were also removed for this sector. In new policy commercial activities associated with service sector were also included in these industries.

2. A package was declared for tiny units under the new policy according to which assurance of assistance has been given to these units.
3. According to new policy other industrial units have been allowed to invest in upto 24% equities in small units. By this way both the industrial extremes were tried to come nearer to each other and these big units could be helpful in the development of small units.
4. A new legal system of business-organization has been started by the name of 'limited partnership' under which liability of at least one partner would be unlimited and liability of other partners was kept limited upto their invested capital.
5. 'Sufficiency of credit' has been emphasized in place of 'cheap credit' in the new policy.
6. For government purchasing tiny sector will be given preference.
7. Cooperative institutions, public institutions and other commercial institutions were committed for search of new market for small and tiny sectors.
8. More emphasis had to be given to the establishment of small and tiny industrial units in rural and backward areas.
3. The rebate limit in excise duty was increased from Rs. 3 crore to Rs. 4 crore for small sector.
4. Credit Guarantee Fund Scheme was started.
5. To strengthen the competitiveness of small sector, the policy of non reservation was adopted in 2015. Now no item was reserved for the small industries.
6. Facility of finance and refinance was proposed for tiny, small and medium industries.
7. Legal recognition to the concept of 'entrepreneur' was given under MSME Act, 2006 by integrating the tiny, small and medium industries.
8. Under the New Purchasing Policy of the government at least 20% of the purchasing of goods and services by government departments and public enterprises will be done from MSME during three year in which 5% goods will be of SC and ST. This policy has been implemented from Nov, 2011.

'Make in India' Yojana:

This yojana was formally started by Prime Minister Shri Narendra Modi on September 25, 2014 for making India a 'Manufacturing Hub' by increasing investment for getting rapid industrial growth. Logo of this Yojana is lion. International economists recognize Indian economy as an elephant that has 'dull move'. To break this way of thinking, lion has been chosen as logo of the 'make in India' Yojana. It has been estimated that if the policies of this yojana will be implemented properly, employment will be created in next 10 years by 9 crores.

Recent Measures of Development of Small Scale Industries.

1. Investment limit for small industries was increased in 2006 from Rs. 1 crore to Rs. 5 crore so that these industries can increase their competitive strength.
2. Credit Linked Capital Subsidy Scheme has been launched for technologies improvement. Under this scheme 15% capital assistance will be given on the loan upto Rs. 1 crore.



Registered manufacturing or services sector can be the transformational sector. Increasing skill will be as important as improvement in circumstances for manufacturing. Revolutionary changes can be brought in Indian economy if manufacturing and service sectors are tackled properly. Theory of growth indicates that the transformational sectors should be evaluated on the basis of inherent characteristics and not in the form of traditional manufacturing service. In this work five characteristics have been identified:

1. High level productivity to increase income.
2. Rapid growth rate of productivity at both domestic and external fronts.
3. Capacity to attract resources.
4. Increase in capacity of non-skilled resources available in country.
5. Adjusting skillless resources with resources of country.

Some subsectors of telecommunication and finance are highly productive and dynamic but these sectors did not succeed in attracting more non-skill labourers and thus the benefits of these sectors have been very limited. In other words, dynamic sectors should be skill abundant. Thus there is need to give high priority to the objective of 'Skill India' alongwith the implementation of 'Make in India'.

For the success of 'Make in India' programme India should use correct resources. These resources (means) are given as below:

- (a) Following steps should be taken to increase domestic and foreign private investment.

- (i) Simplification of rules or laws.
- (ii) Reduction of taxes and rates.
- (iii) Preparation of infrastructure.
- (iv) Improvement in labour laws.

If all the above means or resources are made available simultaneously, it will lower the commercial cost and increase the profit. These measures will benefit all the sectors of the economy.

- (b) These means or resources are called 'industrial policy' under which following efforts have been suggested to increase the output-

- (i) To reduce capital cost.
- (ii) To increase concessions and their availability.
- (iii) To establish special economic zone in all manufacturing activities.

- (c) This last category of means or resources has been called 'protected'.

- (i) To give export related benefits to domestic producers.
- (ii) To give protection to domestic industries by increasing custom duties.
- (iii) To pressurize foreign companies to supply local goods.

But this type of policy will be against the provisions of World Trade Organization which can be harmful to the credit of the country. 'Make in India' programme can play important role in industrial development. Industrial growth rate can be increased by making 'Make in India' programme a success through transformation changes in manufacturing sector.

Important Points:-

- Industrial development is assumed as the

backbone of any economy.

- There were many problems in economic development of India and for their solution government is making efforts. Lack of raw material, lack of demonstration, non-utilisation of capacity of industries, industrial sickness, lack of infrastructure facilities are such problems.
- Many industrial policies were declared for the industrial development. Under Industrial Policy, 1956 industrial development was given higher priority and in Industrial policy, 1977 decentralization of industries was emphasized.
- New industrial Policy was declared on July 24, 1991 in which policies of licensing, permit and quota were sacrificed and policies of liberalisation, privatization and globalisation were adopted.
- Importance of small industries was experienced since ancient period. After independence, efforts were made for the development of small industries. These industries face the problems of old technology, lack of raw material, capital shortage, marketing, non-availability of markets, etc.
- 'Make in India' programme has been started on September 25, 2014 for bringing changes in Indian industries by skill development.

Questions for Exercise

Objective Type Questions:

1. New Industrial policy was declared on –
(a) July 21, 1991
(b) July 24, 1991
(c) July 24, 1990
(d) July 21, 1990 ()

2. 'Economic Constitution of India' is the name given to industrial policy of –
(a) Industrial policy, 1991
(b) Industrial policy, 1997
(c) Industrial policy, 1956 ()
(d) Industrial policy proposal, 1948
3. For how many industries lacking license is necessary ?
(a) 4 (b) 5 (c) 6 (d) 3 ()
4. 'Make in India' programme was declared by Prime Minister in-
(a) July, 2014
(b) October, 2014
(c) August, 2014
(d) September, 2014 ()
5. Share of small and cottage industries in Gross Domestic Product in 2012-13 was-
(a) 37.54% (b) 37.84%
(c) 36.54% (d) 36.84% ()
6. Concept of tiny industries was adopted in the industrial policy of-
(a) 1948 (b) 1977
(c) 1956 (d) 1980 ()
7. Micro, Small and Medium Enterprises Development Act was enacted in the year-
(a) 2006 (b) 2007
(c) 2008 (d) 2005 ()
8. The year in which MUDRA scheme was launched is –
(a) March 2015 (b) April 2015
(c) May 2015 (d) June 2015 ()

Very Short Answer Questions:

1. In how many parts industries were classified in first industrial policy of independent India?

2. Where are the main characteristics of Industrial Licensing Policy, 1970 ?
3. What is complete name of MSME ?
4. What is complete name of LPG ?
5. When was the list of reserved goods for small industries cancelled ?
6. What is meaning of dumping ?
7. What is shown by logo of 'Make in India' programme.
8. What is complete name of MUDRA?

Short Answer Questions:

1. Write any four problems of industrial development.
2. Write short note on 'Make in India' programme.
3. What were the reasons to adopt new industrial policy ?
4. Define industrial sickness.
5. Write any four contributions of small sector in Indian economy.
6. Write name of those industries for which taking license is compulsory.
7. Write short note on Industrial Policy, 1956.
8. Define small and cottage industries.
9. Write name of reserved industries for public sector.
10. Why is Indian Economy compared with elephant ?

Essay Type Questions:

1. Explain role of industrial sector in the development of Indian economy in detail.
2. Write detailed note on 'Make in India' programme.
3. Explain the importance of small and cottage industries in Indian economy.
4. Critically analyse the industrial policy.
5. Explain the problems in the development of small and cottage industries.

Answer to Objective Type Questions:

- (1) b (2) c (3) b (4) d (5) a (6) b (7) a (8) b

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Chapter - 3.1

Foreign Trade of India

Every country exports and imports with other countries of the world. This mutual trade is beneficial for both countries. By mutual trade countries are benefited through division of labour, specialization, large scale production and big markets. According to mercantilists a country should export only because it gives precious metal which makes country powerful and prosperous. According to Adam Smith, a country should export that commodity in which it has absolute advantage and should import that commodity in which there is absolute disadvantage. By doing so, both countries are benefited. According to Ricardo a country should export that commodity in which the country has comparative advantage and should import that commodity in which the country has comparative disadvantage. Policy of protection of developed countries limits the benefits of free international trade.

India has been attached with international trade since ancient period. There was heavy demand of Indian garments, handcraft and spices in foreign countries. There was important change in it in colonial ruling period. In colonial period Indian handicraft and garments industries were completely destroyed. Britishers developed India as exporter of raw material and importer of finished goods as a big market. At the time of independence India was exporter of raw material and minerals. After independence India imported

foodgrains, other necessary goods and techniques and capital equipments for development. Thus imports increased rapidly and exports did not increase which resulted into deficit in balance of payments.

Size of exports and imports in India:

During planning period size of Indian foreign trade increased very much due to increase both in exports and imports. If value of exports becomes more than value of imports, the trade balance is surplus (positive) and if value of exports is less than that of imports, trade balance becomes in deficit.

In 1950-51, value of merchandise exports of India was 1269 million dollar which increased upto 8486 million dollar in 1980-81 and 314405 million dollar in 2013-14. Table – 1 shows this information.

Table-1
Value of Indian Exports and Imports in Planning Period

(Million US Dollar)

Year	Export	Import	Trade Balance	% increase of exports	% increase in imports
1950-51	1269	1273	-4	24.9	-1.5
1980-81	8486	15869	-7383	6.8	40.2
2000-01	44560	50537	-5976	19.8	0.6
2013-14	314405	450200	-135795	4.7	8.3
2015-16	262290	381007	-118717	0.14	-10.59

Source : RBI, Handbook of Statistics on Indian Economy.

In 1950-51 value of Indian imports was 1273 million dollar which increased upto 450200 million dollar in 2013-14. Thus Indian imports increased about 350 times in the period of 1950-51 to 2013-14. Trade balance was negative in all the years except in 1972-73 and 1976-77. In 1950-51, trade balance was negative by 4 million dollar which became of 135795 million dollar in 2013-14. Table -1 shows that size of Indian trade increased with time. Increase in imports was more than increase in exports. Due to this reason size of negative trade balance continuously increased during whole planning period.

At the time of independence India imported jute due to partition of the country. In 2nd five year plan imports of capital equipments, machinery and technique increased rapidly because of more emphasis given to development planning of industrialization. But, these imports increased competitive capacity in Indian industries and thus exports increased. Due to increase in oil prices, Indian imports increased rapidly. After liberalization tariffs were reduced which increased imports rapidly. Import of precious metals is also a main item of Indian imports. Due to all these reasons Indian trade balance experienced deficit.

Composition of Foreign Trade:

Composition of foreign trade shows the items of exports and imports of a country. Composition of trade reflects the level of development of a country. Developing countries export mainly raw material, minerals and agriculture products because in these countries structure of manufacturing is weak. Structural changes in foreign trade take place along with development and thus share of manufacturing products in exports increases instead of raw material. Below given is the analysis of export composition and import composition.

1. Composition of Exports:

Before planning process jute, tea, cotton, garments, mica and manganese were the main export items of India. In planning period share of agriculture and mining product in total exports was decreased and that of manufacturing goods increased rapidly. In 1960 share of agriculture and related products in total exports was 44.2% which decreased to 13.7% in 2013-14. Share of alloy and minerals in total exports of India was 8.1% in 1960-61 which decreased to 1.8% in 2013-14. Share of manufacturing goods in total exports was 45.3% in 1960-61 which increased to 61.3% in 2013-14.

Table-2
Composition of Exports of India

(in %)

Good	1960-61	1980-81	1990-91	2013-14
Engineering Goods	3.4	12.33	11.9	19.8
Petroleum Product (with coal)	1.1	0.4	2.9	20.6
Precious Stone and Ornament	0.1	9.2	16.1	13.2
Chemical related product	1.1	3.3	6.5	13.2
Readymade Garments	0.1	8.2	12.8	4.8
Total Export (million dollar)	1346	8486	18143	314405

Source : R.B.I Handbook of statistics on Indian Economy.

Table-2 shows the share of different product groups in total exports of India in different years. Share of petroleum products in total exports was 1.1% in 1960-61 which increased to 20.6% in 2013-14. This happened due to petroleum refinery capacity of India. Share of engineering goods was 3.4% in 1960-61 which became 19.8% in 2013-14. Similarly, share of precious stones and ornaments also increased in the period of

1960-61 to 2013-14 from 0.1% to 13.2%. In 1960-61, shares of exports of jute and tea were 21% and 19.3% respectively which is 0.5% of both at present in total exports of India.

In 2013-14, category-wise main export items were as below:

- (a) Share of agriculture and related products was 13.7% in total exports of India and the main items of export were tea, coffee, foodgrains, spices, cashew nut, fruits, vegetables, sea products, cotton etc.
- (b) Share of manufacturing goods was 63.3% and items were leather and leather products, precious stones and ornaments, medicines, product of chemical metals, machinery and equipments, transport equipments, electronic goods, readymade garments, etc.

2. Composition of Imports:

Main import items of India at the time of independence were machinery, oil, foodgrains, pulses, cotton, vehicles, iron goods, equipments, chemicals, medicines, colour, cotton, cotton cloth, paper and writing material. Table-3 Shows the composition of imports of India.

Table-3

Composition of Import (in %)

Commodity Group	1960-61	1980-81	1990-91	2013-14
Petroleum Oil and Lubricants	6.1	41.9	25.0	36.6
Non-iron metals	4.2	3.8	2.5	8.6
Electronic Goods Non-electric Machinery	18.1	8.7	9.8	5.2
Pearl and Precious stones	0.1	3.3	8.7	5.3
Total Imports (million dollar)	2353	15869	24075	450200

Source: R.B.I., Handbook of Statistics on Indian Economy.

Table-3 shows structural change in share of main import items of India. The share of petroleum and lubricants was 6.1% in 1960-61 which became 36.6% in 2013-14. This is the main import item of India at present. Share of import of non-iron metals (mainly gold and silver) in total imports of India was 4.2% in 1960-61 and decreased continuously upto 1990-91 and then increased upto 8.6% in 2013-14. Share of electronic goods and non-electric machinery was 18.1% in 1960-61 and decreased upto 5.2% in 2013-14. In 2nd plan model we implemented Mahalanobish development model and due to this India imported machinery but after it India produced these items at home and these importers of this item group showed a fall in 2013-14.

According to item-groups following are the import items of India.

(a) Food items and related product:

Here foodgrains, pulses, cashew nut and edible oil are the import items and its share in total imports was 2.1% in 2013-14.

(b) Fuel

It includes the import of coal and petroleum.

(c) Capital goods:

Electric machinery and other machines, transport equipments, etc. are the main import items.

(d) In other items chemicals, pearl, stones, iron and steel, gold and silver, business equipments and electronic goods are the import items of India.

In planning period import of food items decreased continuously which was 16.1% in 1960-61. At present India does not import food items. Imports of raw material, intermediate goods and manufacturing goods were increased

rapidly due to petroleum, stones and pearl, etc. Import of capital goods was 31.7% in 1960-61 which decreased to 12.1% in 2013-14.

Direction of Foreign Trade:

Britain was the main trade partner of India before independence. India was a colony of Britain. Pattern of trade with Britain was decided with India in view of the British advantage. In 1950-51, America and Britain were the main trade partners of India. 42% of total exports and 39.1% of total imports of India were with these two countries. Trade partner countries of India are divided into 4 groups:

(i) Economic Cooperation and Development Organisation (OECD):

This group of countries includes European Union, America, Japan, Switzerland, etc.

(ii) Organisation of Petroleum Exporting Countries:

United Arab Emirat, Saudi Arab, Iran, etc. are the countries of this group.

(iii) Countries of Eastern Europe –

In this group Russia and other countries are included.

(iv) Developing countries:

This group includes China, Hongkong, South Korea, Singapore, Malaysia, etc.

Table – 4

Direction of Indian Exports (in %)

Country Group	1960-61	1990-91	2012-13
O.E.C.D. Countries	66.1	53.5	34.2
OPEC	4.1	5.6	20.8
Eastern Europe	7.0	17.9	1.3
Developing Country	14.9	17.1	41.5

Other Countries	8.0	2.9	3.5
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Sources : R.B.I., Handbook of Statistics on Indian Economy

Direction of Indian Exports:

Share in total exports of India with OECD countries continuously decreased. This share was 66.1% in 1960-61. OECD countries were main partner of India in trade in 1960-61 but presently these countries are not the main trade partners of India. Share of OPEC in total exports of India was 4.1% in 1960-61 and in 1990-91 it became 5.6% but in 2012-13 it increased to 20.8%. Share in total exports of eastern European countries was 7.0% in 1960-61 which decreased upto 1.3% in 2012-13. Share of developing countries in total exports of India was 14.9% in 1960-61 which became 41.5% in 2012-13. After 1990-91, share of developing countries in exports increased very rapidly. 18.6% was the share of European countries in exports of India in 2013-14. In this year, 17.5% was the share of American continent in total exports of India. Contribution of Asian countries in total exports of India was 49.4. United Arab Emirat, China, Singapore, Hongkong, Saudi Arab, Iran and Japan were the countries of Asia. In 2013-14, America (12.5%), United Arab Emirat (9.7%), China (4.7%), Hongkong (4%) and Singapore (4%) were the main trade partners of India in exports.

Direction of Indian Imports:

Table-5 shows the direction of imports of India with the different country groups.

Table-5

Direction of Imports of India (%)

Country Group	1960-61	1990-91	2012-13
O.E.C.D. Countries	78.0	54.0	27.8

O.P.E.C.	4.6	16.3	38.6
Eastern Europe	3.4	7.8	1.8
Developing Countries	11.8	18.6	31.33
Other Countries	2.2	0.0	0.5

Source : R.B.I., Handbook of Statistics of Indian Economy

Direction of Indian imports have changed a lot according to 4 main country groups. 78% was the share of OECD countries in total imports of India in 1960-61 which decreased upto 27.8% in 2012-13. This share of O.E.C.D. countries decreased significantly. This share of O.P.E.C. was 4.6% in 1960-61 which increased upto 38.6% in 2012-13. The main cause behind this was the increasing bill of oil imports. Dependence on oil for energy and increasing international price of oil increased the oil imports rapidly. Share in total imports of India in 1960-61 was 3.4% of Eastern European countries which increased upto 7.8% in 1990-91 and after it this share decreased to 1.8% in 2012-13.

Share of European Continent in Indian imports in 2013-14 was 15.8% where Germany, Belgium, U.K. and Switzerland were the main exporting countries. Share of African continent in Indian imports in 2013-14 was 8.1% and that of American continent was 12.8% where U.S.A. and Venezuela were the main trade partners of India. Thus, it is clear that share of Asia continent in Indian import had been maximum as 60.7 in 2013-14 where China, Saudi Arab, United Arab Emirat, Iraq, Kuwait, Indonesia, Korea and Japan were the main trade partners of India.

Current Trends of Foreign Trade of India:

Due to economic reforms through liberalization and globalization imports and exports of India have been widely affected. After

W.T.O. import tariffs were reduced and policy of liberalization was adopted. Trade interaction of Indian economy with world economy changed significantly. In last year, Indian imports and exports had increased rapidly. Following are the recent trends in foreign trade of India.

(a) Increase in Size of Foreign Trade of India:

In 2004-05, foreign trade of India (merchandise) was 195.1 billion US dollar which increased upto 764.6 billion US dollar. Place of India among main importing countries was 23rd in 2004 which became 12th in 2013. In the same way the place of India among main exporting countries of world was 23rd in 2004 which became 19th in 2013. According to W.T.O., share of India in total world imports was 1% in 2004-05 which became 2.5% in 2013-14 and the share of India in total world exports was 0.8% in 2004-05 and 1.7% in 2013-14. As ratio of gross domestic product foreign trade of India was 29% in 2004-05 and 41.8% in 2013-14.

(b) Increase in Exports:

Value of Indian exports was Rs. 375340 crore in 2004-05 which increased to Rs. 1905011 crore in 2013-14. Exports increased by 27.9% in 2004-05, by 28.2% in 2008-09 and by 34.5% in 2010-11. As ratio of gross domestic product Indian exports increased by 12.1% in 2004-05 and 17% in 2013-14. Main export items, of India have been petroleum products, precious and semi-precious stones, gold and precious ornaments.

(c) Increase in Imports:

Total value of imports was Rs. 51065 crore in 2004-05 and Rs. 2715434 crore in 2013-14. Imports increased rapidly after 2004-05. Among these 10 years, imports increased by more than 30% in last 5 years. 39.5% was the growth of imports in 2004-05 and 39.3% in 2011-12. Main import items had been petroleum oil and lubricants, gold, precious gems and semi-precious stones. In 2013-14, due to devaluation of rupee

and restriction on gold import imports increased by only 1.7%.

(d) Increase in Trade Deficit:

According to Table – 6 trade deficit of India was Rs. 125725 crore in 2004-05 which became Rs. 1034844 crore in 2012-13. Size of trade deficit increased due to more growth in imports than growth in exports.

Table – 6
Size of foreign Trade of India
(Rs. Crore)

Year	Export	Import	Trade Balance	% Change in Exports	% Change in Imports
2004-05	375340	501065	(-) 125725	27.9	39.5
2005-06	456418	660409	(-) 203991	21.6	31.8
2006-07	571779	881515	(-) 309736	25.3	33.5
2007-08	665864	1012312	(-) 356448	14.7	14.8
2008-09	840755	1374436	(-) 533681	28.3	35.8
2009-10	845543	1363736	(-) 518202	0.6	-0.8
2010-11	1136964	1683467	(-) 546503	34.5	23.4
2011-12	1465959	2345463	(-) 879504	28.9	39.3
2012-13	1634318	2669162	(-) 1034844	11.5	13.8
2013-14	1905011	2715434	(-) 810423	16.6	1.7
2015-16	1716278	2490198	(-) 773810	-9.49	-9.02

Source : Economic Survey, Finance Ministers, GOI : 2015-16

(e) Change in Direction of Trade:

It is clear from Table-7 that in 2013-14, as compared with 2004-05 share of Europe decreased both in exports and imports. Share of Europe in exports was 23.3% in 2004-05 and decreased to 19.0% in 2010-11. In the same way share of Europe imports was 21.6% in 2004-05 and decreased to 18% in 2011-12. Share of African countries in exports and Imports

increased. Similarly share of Asian countries both in imports and exports of India increased.

Table -7
Direction of Trade of India (in %)

Area	Export		Import	
	2004-05 to 2007-08	2010-11 to 2013-14	2004-05 to 2007-08	2010-11 to 2013-14
Europe	23.3	19.0	21.6	18.0
Africa	7.8	8.9	6.3	8.5
America	18.9	16.6	10.3	11.0
Asia	48.5	50.2	48.9	60.2

Service Trade of India:

In the trade of commercial service share of India in world export in 2012 was 3.4% with 6th place as the largest exporting country and this share in world import was 3% with 7th place as the largest importing country. From 2003-04 to 2007-08 service export growth rate was 35.4% and was 8.3 in the period 2008-09 to 2012-13.

Table-8 shows the service trade of India.

Table- 8
Service Trade of India (in %)

Commodity Group	Share (%)		CAGR 2002-04 to 2013-14
	2002-03	2013-14	
Travel	16.0	11.8	16.6
Transport	12.2	11.5	19.1
Insurance	1.8	1.4	17.2
GNIE	1.4	0.3	4.8
Miscellaneous	68.6	75.0	20.8
Software Service	46.2	45.8	19.7
Non-Software Services	22.4	19.1	22.7
Business Services	3.9	18.8	38.3
Financial Services	3.3	4.4	23.1

Communication Services	3.9	1.6	10.4
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Source : Economic Survey : Finance Ministry, GOI : 2013-14

State-wise Exports in India :

Table-9 shows the state-wise exports in India in 2013-14.

Table-9

State wise Exports in India (million US dollar)

State	Value of Exports 2013-14	Share in (%)
Gujarat	73498	23.5
Maharashtra	71661	22.9
Tamilnadu	26937	8.6
Karnataka	17821	5.7
Andhra Pradesh	15353	4.9
Uttar Pradesh	13309	4.3
Haryana	10657	3.4
West Bengal	10496	3.4
Delhi	9329	3.0
Punjab	7063	2.3
Rajasthan	5915	1.9
Madhya Pradesh	4374	1.4
Kerala	4285	1.4
Orissa	4005	1.3
Total Export	313610	100

Source: Economic Survey, Finance Ministry, GOI: 2013-14.

Among states of India, Gujarat is on the top in exports value of Rs. 73498 million US dollar followed by Maharashtra, Tamilnadu and Karnataka are at the 3rd and 4th places. On the basis of share in total exports of India in 2013-14, share of Gujarat is 23.5% and that of Maharashtra is 22.9%. The least share in exports has been recorded of Orissa as 1.3%.

Foreign Trade Policy of India:

The best situation of trade policy of a country is that one in which exports earn sufficient foreign currency to finance imports of the country. For this purpose trade policies are classified as import restrictions, import substitution, import liberalisation and export promotion. Under the policy of import restriction, imports of non-necessary goods are restricted so that availability of foreign currency can be maintained. India started extensive industrialization programme. For this capital machinery and techniques were imported. Foreign currency was limited so total imports were classified into 3 categories:

- (i) those goods whose imports were completely prohibited or restricted. These goods could not be imported.
- (ii) those goods which could be imported by government agencies only (as State Trade Corporation, etc.)
- (iii) those goods which could be imported under open general license.

Policy of import substitution means that policy in which imported goods from foreign countries are substituted by the domestic production. Thus policy of import substitution results into reduction of imports and thus saving of foreign currency. This policy develops self reliance. This policy was implemented in three stages :

- (i) Import substitution of consumption goods,

- (ii) Import substitution of capital goods, and
- (iii) Import substitution of technology. As result of this policy, the emphasis was given to domestic production of metals, machines and vehicles. As result of import restriction and import substitution policies imports were unnecessarily delayed, imports were delayed due to licensing process and there was complicated administrative process also. Due to all these causes cost of production was high and thus competitive capacity of industries decreased. Exports could not increase in sufficient quantity.

Since the decade of 1980, import liberalization policy was adopted. Under this policy quantitative restrictions on imports were removed. Open general license schedule was expanded and concessions were given for export promotion. Import liberalization and export promotion were recommended by Alexander Committee (1978), Tondon Committee (1982) and Hussain Committee (1984).

1. Efforts for Import Liberalization:

Following steps were undertaken in the direction of import liberalisation:

- (a) Imports were liberalised for exports and concessions were given to exporters for providing raw material. Concessions were given in license to registered exporters. Under Advanced Licensing Policy those exporters were given permission for imports for one year who earned foreign currency more than Rs. 10 crore in one year.
- (b) For industrialization supply of raw material and capital goods were supposed to be necessary. Thus for importing these capital goods these were included in open general license. Except this, permission to import raw material was also given.
- (c) Import facility was liberalized for export house, trade house, star trade house and

super star trade house. Exporters who exported goods of Rs. 12.50 crore per year in last three year were named as export house. If the value of total exports was upto Rs. 62.50 crore per year in last three years, those exporters were named as trade house and for exports of Rs. 312.5 crore per year in last three years the exports were named as star trade house. Exporters whose value of exports was Rs. 925 crore per year in last three years were names as super star trade houses.

- (d) Import of technology was liberalised. Technology Development Fund was generated to assist in the work of imports of technology and services of exports. In this fund foreign currency was provided for the imports of technology.
- (e) Conditions were removed for imports through government agencies. List of goods to be imported through government agencies was made short.

2. Efforts for Export Promotion :

In the initial years of development it is not possible to increase exports rapidly. According to economists demand for exports of developing countries is inelastic and terms of trade are not in favour of these countries. Due to these factors the exports of developing countries do not increase rapidly. High production cost, inferior quality, increasing domestic demand and lack of suitable export policy were the reasons that India could not increase exports in first three five year plans. In 1966, rupee was devalued by 36.5% in relation to gold which reduced imports and increased exports of India.

In mid of 1980s, there were two important changes in export policy (i) many concessions and incentives, were declared, and (ii) efforts were made to make exports production and industrial structure oriented. Thus, before this export policy whatever was produced was

exported and after this policy those goods had to be produced for which there is export demand.

Following were measure adopted for export promotions:

(a) Establish Organizations for Export Promotion :

For different aspects of increasing exports different organizations were established so that exports could be increased. These were:

(i) Establishing Boards:

Board were established according to goods for coffee, tea, rubber, spices, tobacco etc. for development and export purposes.

(ii) Export Promotion Councils:

Presently there are 10 export promotion councils in India which work a self governed institution.

(iii) Central Advisory Council:

This council advises government on export-import policies and their implementation.

(iv) Indian Export Organisation Union:

This union aims to coordinate and make adjustments in the working of different export organizations.

(v) Agriculture and Related Food product :

Export Development Authority:

This institution works related with exports of agriculture products and food products.

(vi) Indian Export Promotion Organization :

This organization coordinates between different goods, their exports, their markets and their buyers. It organizes fairs and exhibitions in foreign countries to increase Indian exports.

(vii) Exports house, trade hosue, star trade house and super star trade house were established.

(viii) Indian Packaging Institute :

This institute takes certain steps regarding packing of exportable goods so that the product remains safe and in attractive packing.

(ix) Indian Export Credit and Guarantee Corporation :

This corporation gives guarantee, credit and insurance facilities to exporters.

(x) Export Investigation Council had been established to pre investigate the goods being exported.

(xi) Government agencies were established for exports. State Trade Corporation and Mineral and Metal Trading Corporation were established. State trading corporation works for export of garments, manufacturing products, coffee, cement, salt, etc. Mineral and Metal Trading Corporation looks after the export of minerals and metals.

(b) Schemes for Export Promotion:

Following policies were implemented for better condition of production for increasing exports, tax concessions, better infrastructure, export credit, etc.

(i) Cash Compensatory Scheme:

This scheme was launched in 1996. Under this scheme cash compensation is given to exporters for tax paid on raw material used in the production of exportable goods.

(ii) Duty Drawback Scheme:

Under this scheme tax on imported raw material used in the production of exportable goods are returned to exporters. This is the step to be taken to maintain the competitive capacity of exports.

(iii) Import Replenishment Scheme :

This is the scheme in which imports, which are necessary for exports, are made available easily. Under this scheme exporters are permitted

to import which are prohibited. Exporters can also import that goods which are not available in country.

(iv) Export Promotion Zones and Export Oriented Units:

Aim behind establishment of these zones was to provide atmosphere of free trade for production of exportable goods so that these production units can increase their competitive capacity. Total production of 100% export oriented production units is exported. These units got many exemptions in many taxes. These units could import raw materials, capital goods, techniques without import duty.

(v) Blanket Exchange Permit Scheme :

This scheme was implemented in 1987 for export promotion under which there is a concession to exporters that they can use a fixed percentage of export income for export promotion.

(vi) Fiscal Concessions for Exports:

Here, tax paid on inputs used in the production of exportable exports are returned back. Less tax is paid on export income also and in some cases tax on export income is exempted.

(vii) Rupee Devaluation and Convertibility:

Rupee was devaluated by government of India in 1991. This devaluation was 18-19% in relation of 5 main currencies. In 1992-93 liberalized exchange rate system was implemented. Under this system 40% of export income had to be given to government at the government exchange rate by the exporter and balance 60% export income could be converted at the market exchange rate. Since 1994, convertibility was also implemented for current account.

(viii) Agriculture Export Zones:

These zones were established in 2001 for export promotion of agricultural products. Here

arrangements were made to decide that which good was to be exported and which good was not.

(ix) Handicraft Special Economic Zones:

These zones were aiming to promote the exports of handicraft products.

(x) Important zones were selected for 5 exports of agriculture, handicraft, gems, leather and footwear.

(xi) Free Trade and Warehousing Zone:-

In Export Import Policy of 2004-09 free trade and warehousing zone was established in Rs. 100 crore and 5 lakh square meter area so that necessary infrastructure can be established for exports in this area.

(xii) Process Simplification :

In 2004-09 Export-Import Policy following steps were taken for the process simplification –

- Number of forms to be filled in by exporters reduced.
- Service tax on exportable goods removed.
- Exemption of bank guarantee to exporters whose total sales were upto Rs. 5 crore.
- Import of old machines were allowed.

(xiii) Concessions and Exemptions:

Import duty reduced to 10% for infrastructure development at seaports and airports. Many concessions were given to entertainment, communication and information technology. For developing infrastructures in special economic zone, exemption in tax was given for 10 years.

(xiv) Special Economic Zones (SEZ):

The policy of establishment of SEZ was formulated in 2000 to promote exports. In these zones, exporters were made available the world level infrastructure facilities, there was interferenceless atmosphere, permissions had

been given for direct foreign investment, permission of foreign commercial borrowing was given and producing units in these zones were exempted from sales tax and income tax. In 2012-13, SEZ area exported goods of Rs. 476159 crore and 1074904 employment opportunities were created. Total 3589 productive units were working in SEZ. The establishment of SEZ was mainly aimed to provide free economic atmosphere to exporters like in China. Problems in land acquisition, administrative complications, lack of proper spirit and objective by SEZ founders, etc were the main problems concerned with SEZ.

All the above measures adopted for export promotion are important. Promotion of development of domestic technology for sustained growth in exports, availability of world level infrastructural facilities and strong macro economic situation of economy are the conditions for success of SEZ.

Foreign Trade Policy 2009-14:

The objective of this policy was to double the exports of goods and services. Short run objectives of this policy were: to control the decreasing tendency of exports, to provide additional help to export areas affected by depression and to reestablish the export growth. Its long run objective was to double the Indian share in world trade (1.64% in 2008 to 3.28% in 2020). Following were the main provisions of this trade policy:

- (a) 26 new markets were included in Focus Market Scheme when 16 markets are in Latin America and 10 in Asia Osiana.
- (b) Focus market incentive was increased to 3% and focus product scheme incentive increased to 2%.
- (c) Permission of import (without fee) of capital goods for engineering, electronic, chemical, garments, plastic, handicrafts and

leather product under Export Promotion Capital Goods Scheme.

- (d) Permission of sale in domestic tariff area upto 90% of total production to export oriented units.
- (e) To reduce cost of process and to simplify the process.
- (f) Implementation of single window scheme for exports of perishable agricultural products.
- (g) Organsiation of Inter Departmental Committee from the point of view of availability of dollar credit to exporters.
- (h) Concession to exporters to carry goods of value of upto 5 lakh dollar with then for taking part in exhibition in foreign country.

A complementary policy of the foreign trade policy 2009-14 was declared in 2013 in which the required land area for SEZ was decreased upto 500 hectare. Under Zero Tariff two schemes were implemented –

- (i) Merchandise Export of India Scheme and Service Export of India Scheme, (ii) Percentage Interest Concession Scheme was implemented for textile and engineering areas.

Foreign Trade Policy 2015-20 :

Foreign Trade Policy 2015-20 provides growth of export of goods and services, employment creation and availability of infrastructure to increase value addition in country. This policy aims to increase the present value of exports (Rs. 466 billion dollar) to 900 billion dollar upto 2019-20. The aim regarding share of exports, the policy proposes to increase the share of Indian exports in world exports from 2% to 5%. This policy reflects the 'Make in India', 'Digital India' and 'Skill India' of Prime Minister, Shri Narendra Modi. Main conditions of the New Trade Policy are as below:

1. The 'Service Export Scheme' is for increasing exports of special services. These both schemes (Merchandise Export of India Scheme MEIS and Service Export of India scheme- SEIS) have been substituted for previous many plans. Benefits of these both schemes, MEIS and SEIS will be available in SEZ also. E-commerce of handicraft, books etc. will also get the benefits of these both schemes.
2. For increasing domestic manufacturing export obligation has been reduced by 25% under the new trade policy.
3. Under MEIS, support will be available to agriculture and rural industries by 3% and 5% respectively and high level support will be issued to processing and packaging of agriculture and food products under MEIS.
4. Campaign will be organized for increasing branding exports of goods in which India has traditional efficiency.
5. Benefit of SEIS will be applicable on "service providers located in India" rather than Indian service providers.
6. Duty Credit Script will independently be transferable and it will be used in payment of custom duty, excise duty and service tax.
7. Under Export Promotion Capital Goods Scheme (EPCGS) export obligation has been reduced to 75% for domestic recovery.
8. Online process will be for digital signature.
9. Interdepartmental consultation will be online for issuing different licences.
10. Legal period for export authorization will be 24 months in place of 12 months.
11. State governments will be consulted for export promotion continuously.
12. There will be high level support to exports of defence products, agriculture products and environment friendly products.

Suggestions for Exports Promotions:

Trade deficit of India was Rs. 125725 crore in 2004 which increased upto Rs. 1034844 crore in 2012-13. For trade deficit rapid growth of exports is required. Main challenges of India in reference of export growth at present are weak demand for importable goods in developing countries, rapid growth of manufacturing capacity of China, political instability in Iran and middle east and growing concern for climate changes (Economic Survey 2011-12). India still has weak infrastructural facilities in comparison of countries of world and due to this cost of exports is higher which makes India's competitive strength weak. On the other hand, paper process for exports in India is still very complicated which delays the exports. India should make following efforts for increasing exports.

1. Need of Better Infrastructural Facilities –

Road, railway, waterways, electricity, etc. need to be structured properly. This needs more investment. These facilities produce more in less time and with lower levels of cost.

2. Better Availability of Inputs for Export Industries:

Raw material, intermediate product, and labour. capital inputs should be supplied in time and at lower cost. Interest rates on capital should be lower as in developed countries. Complicated labour laws, high interest rate, higher cost, delay in availability of raw material, etc. affect Indian exports adversely.

3. Search of New Markets for Indian Goods:

It is not suitable to depend on some countries for exports. For example, 90% software export of India go to America and European Union. There is need to advertise Indian goods in new markets and to diversify exports (according

to good and area) so that exports can increase and uncertainly can decrease.

4. Removal of Trade Restriction by Developed Countries:

Developed countries should not adopt the protectionist view towards exports of developing countries. Dispute settle down system of W.T.O. even could not solve this problem. Anti dumping action of U.S.A. and visa related restrictions of U.K. are some examples since last some time. This behavior of developed countries should be changed in favour of developed countries.

5. Better Credit Facility:

There should be the system of better credit facilities and imports product fee. These measures can promote exports. Tax reforms should also be implemented in the country.

6. Increasing Production Rapidly :

Production of primary and manufacturing products should be increased. This increase should be export based. Domestic consumption of exportable should be controlled so that export surplus can be available. Export surplus is the excess of production over consumption. Bilateral trade agreements should be preferred with W.T.O. and regional trade organizations. These all efforts will increase exports.

Concepts of 'Swadeshi':

Today the word swadeshi is generally used only for swadeshi product or use of domestic production is swadeshi. In the period of globalization where countries are coming nearer to each other the use of the word 'swadeshi' in this sense keeps its meaning limited. This is so because this concept has not been understood properly. To understand the meaning of 'swadeshi' we have to concentrate our attention on these lines of Gandhiji who described in 'Mere Sapano ka Bharat' (India of My Dreams). These lines are, "meaning of the spirit of ' Swadeshi' is our that spirit which teaches us to use and serve

our nearby area by leaving the distant ones. For example, according to this definition it will be said about the religion that I should follow the religion of our ancestors. In this way we will use our adjacent religious atmosphere. If I get any defect in it, I should remove that defect and thus should serve it. In the same way, in the area of politics I should use the local institutions and these should be served by removing any defects of these institutions. In case of wealth, I should use those goods only which have been produced by neighborhood or locally and by removing the defects of there local industries I should make them more perfect and capable them and, in this way, should serve them. I feel that if we adopt swadeshi in our practical life, the golden period of humanity can be achieved."

In this sense, swadeshi is a way of working in which the spirit of selfness is associated with every aspect of life. It is not a fixed way of working of ours but it has its changing nature according to the favourable changes in circumstances of country and society. It is not a reaction against the imitation of the west but it keeps us with precautions from this imitation. According to Pandit Deendayal Upadhyay, way of Western countries about standard of living, conversation, eating drinking and other ways of life came from the western knowledge. We have to decide that what is correct and what is wrong. If this is not suitable for us, it is better to abandon its attachment.

During freedom movement swadeshi became not only a symbol against foreign ruling but it appeared as an effort for the solution of the bad economic condition of the country also. After the publication of the book 'Economic History of India' by R.C.Dutt, Swadeshi was considered as the solution of bad economic condition of our country. Under swadeshi contains the interest of individual, society, and country. Maharishi Arbindo says that swadeshi means the recognition of the will power and the honor of our nation.

Readiness of sacrifice by society for the nation is reflected into swadeshi.

According to Gopal Krishna Gokhale thought of swadeshi teaches us to sacrifice for the motherland, country becomes prosperous and the spirit of brotherhood increases. This concept of swadeshi is prevailing in India since very ancient period.

Self reliant was our objective under five year plans but its sense was the freedom from foreign assistance. Due to this objective India is self-reliant today in foodgrains and machinery.

In the era of globalisation, global impact is increasing rapidly. International institutions are also contributing in it. It is necessary to adopt swadeshi to keep our nation and society safe from the effects of globalization.

Important Points:

- Export and import of a country are necessary with other countries in present time. It increases the rate of growth. Countries are benefited by trade through division of labour, specialization and benefits of big market.
- Size of merchandized exports and imports of India continuously increased with countries of the world but after independence in most of time, value of merchandise imports increased more than the value of merchandise exports. Due to this size of deficit in trade balance of India increased continuously.
- Share of manufacturing goods in merchandise exports of India has increased and that of agriculture and minerals has decreased. This change is according to the characteristics of growth.
- In merchandise imports of India, import of petroleum product increase most rapidly. Due to import liberalization, rapid increased in prices of imported goods than prices of

exported goods the trade deficit increased rapidly.

- In Indian imports the share of oil exporting countries is more and in exports the share of developing countries is more.
- Many plans and policies were implemented to increase exports in which new trade policy (2015-20) has been declared as the latest new policy.

Questions For Exercise

Objective Type Questions:

1. The correct statement in reference of foreign trade of India in 2013-14 is –
 - (a) Price of merchandise exports was more than that of imports.
 - (b) Price of merchandise imports was more than that of exports
 - (c) Price of merchandise imports was equal to that of exports
 - (d) None of the above ()
2. In 2013-14, the total value of Indian exports (billion U.S.Dollar) was
 - (a) 314
 - (b) 450
 - (c) 135
 - (d) 270 ()
3. Main item of Indian imports at present is,
 - (a) Electronic Goods
 - (b) Pearl and precious stones
 - (c) Petroleum products
 - (d) Non-electrical machinery ()
4. The product group having largest share in Indian exports at present is-
 - (a) Agricultural Products
 - (b) Mineral Products
 - (c) Manufacturing Goods

- (d) None of the above ()
5. The main import partner country group at present is-
- (a) OECD countries
 (b) O.P.E.C
 (c) Eastern European Countries
 (d) Developing Countries ()
6. The country group to which India exports most is-
- (a) O.E.C.D Countries
 (b) Eastern European Countries
 (c) Developing Countries
 (d) O.P.E.C. ()
7. According to W.T.O., the share of India in world exports in 2013-14 was-
- (a) 0.8% (b) 1%
 (c) 1.7% (d) 2.5%
8. The export promotion scheme of India was –
- (a) Cash compensatory scheme
 (b) Duty Drawback Scheme
 (c) Import Replenishment Scheme
 (d) All of the above ()

Very Short Answer Questions:

- Write the value of merchandise import, export and trade balance of India in 2013-14.
- Write name of 5 top importing goods of India at present according to value.
- Write name of any two country groups that are the main import partners of India.
- Write name of any two country groups that are the main import partners of India.

Short Answer Questions :

- What is meaning of Cash Compensatory Scheme ?

- What is Merchandise Export of India Scheme (MEIS) ?
- What is Export Promotion Capital Goods Scheme ?
- Name the main schemes of export promotion.

Essay Type Questions:

- Write the change in structure of merchandise export and import of India.
- Write the direction of merchandise export and import of India.
- Write an article on trends of foreign trade at present in India.
- Give the details of main provisions of New Trade Policy (2015-20) of India.
- What is the concept of Swadeshi. Write an article.

Answer to Objective Type questions:

- (1) b (2) a (3) c (4) c (5) b (6) c
 (7) c (8) d

Reference Books:

- Economic Survey : 2014-15.
- Indian Economy, Mishra and Puri, Himalaya Publication.
- The Indian Economy, I.C. Dhingra, S.Chand and Sons, New Delhi.
- Indian Economy, L.N. Nathuramka.

Chapter - 4.1

Poverty

Meaning of Poverty :

Poverty is the situation in which people do not get sufficient food, housing facility, education, necessary consumer goods and better health facilities. Due to lack of income people do not satisfy their necessary wants. In each country a proportion of population faces this problem. Thus, it is an important part development efforts of a country to satisfy the wants regarding necessities.

Measurement of Poverty:

To estimate poverty that level of income is fixed which is necessary to satisfy the basic needs of human being. Such level of income is known as poverty line. People below this level of income are assumed to be poor. Due to inflation poverty line is modified time to time. In India "calorie consumption" is associated with poverty and people with lower calorie consumption to that standard are said be poor. According to Planning Commission, people getting calorie below 2400 in rural areas and below 2100 in urban areas are considered as poor. For this minimum calorie consumption of Rs. 49.63 per month per capita rural area and Rs. 56.64 per month per capita in urban area was considered necessary in 1973-74. In 1977-78 this amount decided was as Rs. 56.84 for rural area and Rs. 72.50 for urban area. At 2004-05 prices Rs. 359.9 for rural area and Rs.

523.2 for urban area were the amounts of expenditure decided by Planning Commission in this regard. In 2011-12, Rs. 27.20 per capita per day in rural area and Rs. 33.33 per capita per day in urban area were the levels of poverty line determined by the Planning Commission.

Ratio of number of poor persons to total population is known as poverty ratio of 'head count ratio'. Poverty percentage is calculated by multiplying head count ratio by 100 which shows that what percent of population is below poverty line. This approach of poverty measurement is defective because it considers all people below poverty line equal and thus it does not show the real condition of poor people. So, according to A.K. Sen, two stages should be used to measure the poverty. In the first stage, it should be found out that what is the income of different persons then a criterion should be used in terms of per capita income to estimate the poverty. Under second stage, the intensity of poverty should be estimated which shows poor are how much poor. Ozalar, Dutt and Ravelian used 'poverty gap ratio' and 'squared povert gap ratio' to estimate the poverty. These measures estimate the intensity of poverty. In Human Development Report, poverty is assumed to be the multidimensional phenomenon in which three factors should be considered (i) no longer life span, (ii) less education, and (iii) lower living

standard. Humane poverty index has been prepared on this basis. According to World Bank, if the per capita per day consumption expenditure is less than 1.25 American dollar, that person should be considered poor.

Capability measurement of poverty is also a measure of poverty in which three indicators are used. (i) ratio of low weight children aged less than 5 years, (ii) ratio of female illiteracy.

Report of Expert Group of Planning Commission on Poverty:

Due to different views on poverty measurement, Planning Commission appointed a committee in the headship of Suresh Tendulkar. who recommended the following points about the estimates of poverty line:

1. N.S.S.O. data on private consumption expenditure of families should be used to measure the poverty.
2. Real consumption pattern should be used instead of 'calorie consumption' to estimate the poverty line.
3. Committee recommended mixed recall period in place of uniform recall period for the information of consumption expenditure. (like cloth, shoe, education, health, etc.)
4. Nonfood items (as cloths, shoes, permanent articles, education and health) should also be used along with food items.
5. Efforts have been made by the committee to provide group of commodities in consumption to the rural and urban population of the states which was proposed for the people of all India urban poverty line.

Types of Poverty:

According to relative and absolute poverty, poverty is of the following types:

1. Relative Poverty :

In relative poverty income distribution is used to measure it. People have income less than per capita average income in the country are said to be poor. This approach shows the degree of inequality in the income distribution. Relative poverty is measured by loreng curve and gini ratio. It is used in developed contries to measure the poverty.

2. Absolute Poverty:

Under this method minimum consumption level is fixed and thus number of poor persons is estimated. The concept of 'minimum calorie consumption' used in India, is the absolute measure of poverty.

Estimates of Poverty:

First of all estimates of poverty in India were given by B.S. Minhas, V.M. Dandekar, N.K. Rath, P.K. Vardhan and M.S. Ahluwalia. These economists prepared their on measures and estimated the poverty. According to B.S. Minhas 37.1%, P.K. Vardhan 54.0%, Dandekar and Rath 40.0% and Ahluwalia 56.5% was the poverty in India. These differences in poverty are due to difference in the definition of poverty given by these economists. According to Minhas, poverty in India decreased in 1956-57 to 1967-68 but according to, Ojha and Verdhan it increased in this period. According to Dandekar and Rath poverty decreased in 1960-61 to 1967-68. These estimates showed that poors were more in rural areas (particularly small and marginal farmers and agricultural labours). Rural poverty is in terms of low productivity and urban poverty is outflow of rural poverty. Planning Commission estimated poverty on the basis of consumption expenditure data collected by N.S.S.O. In 1973-74, rural poverty ratio was 56.4% and urban poverty ratio was 49.0%. In 1983-84, the poverty ratio decreased upto 45.7% and 40.80% in rural and urban areas respectively and further

decreased to 37.3% and 32.4% respectively in 1993-94. By new methodology of Tendulkar committee, 50.1% and 31.8% was the poverty ratio in rural and urban India in 1993-94. Clearly, rural poverty was more according to Tendulkar estimates than the estimates of Planning Commission. Table-1 shows the estimates of poverty according to Tendulkar methodology.

Table-1
Poverty Estimates in India (%)

Year	Rural	Urban	Total
1993-94	50.1	31.8	45.3
2004-05	41.8	25.7	37.2
2009-10	33.8	20.9	29.8
2011-12	25.7	13.7	21.9

Source: Planning Commission, GOI.

Table shows that rural poverty was 50.1% in 1993-94 which decreased upto 25.7% in 2011-12. Urban poverty was 31.8% in 1993-94 which decreased to 13.7% in 2011-12. In aggregate 45.3% was the poverty in India in 1993-94 which decreased to 21.9% in 2011-12.

It is also clear that rural poverty was more than urban poverty in all the referred years. Rural poverty decreased more rapidly than the urban poverty. Under Tendulkar methodology, mixed recall period was used for non-food items.

Table-2 shows the estimates of poverty in terms of poverty line and number of poors according to the Tendulkar methodology.

Table-2
Poverty Line and Numbers of Poor

Year	Poverty Line (in Rs.)		No. of Poor (in million)		
	Rural	Urban	Rural	Urban	Total
2004-05	446.8	578.8	326.3	80.8	407.1

2011-12	816.0	1000.0	216.5	52.8	269.3
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Source : NITI Ayog

In 2004-05, poverty line was defined as Rs. 446.8 per capita per month in rural area and Rs. 578.8 per capita per month in urban area. In 2011-12 this amount of Rs. was Rs. 816.0 and 1000.00 for rural and urban areas respectively.

According to this definition of poverty, number of poor in rural area in 2004-05 was 326.3 million and in urban area it was 80.8 million. In 2011-12, no. of poor in rural area was 216.5 million and in urban area it was 52.8 million.

In period 2004-05 to 2011-12, rural poverty decreased rapidly due to rural development strategy under which various programmes were implemented. In this period poverty ratio increased in North-East states which shows the fact of imbalanced development. Poverty ratio decreased in rural areas and poverty became more skewed between urban and rural areas.

Regional Distribution of Poverty in India :

Different poverty ratios are there in different states of India. According to Tendulkar estimates, Table-3 shows the poverty in different states.

Table-3
Poverty Rates in Different Sates (%) : 2011-12

State	Rural	Urban	Aggregate
Bihar	34.06	31.23	33.74
Chhattisgarh	44.61	24.75	39.93
Jharkhand	40.84	24.83	36.96
M.P.	35.74	21.00	31.65
U.P.	30.40	26.06	29.43
Orissa	35.69	17.29	32.59

Source : Planning Commission : GOI

Table shows that Chhattisgarh is the poorest state. In this state rural poverty was 44.61% and urban poverty was 24.75%. Urban poverty was maximum in Bihar as 31.23% and rural poverty is maximum in Chhattisgarh as 44.61%.

Poverty ratio increased in North-East states in 2004-05 to 2011-12 which shows the unequal development. In this period, poverty ratio decreased upto 32.6% from 57.2% in 2004-05 in Orissa. In Bihar, this ratio was 54.5% in 2004-05 which became 33.7% in 2011-12. In 2004-05 to 2011-12 percentage of poverty decreased by 15.3%.

Expert Group on Poverty: Rangrajan Committee:

Expert group, headed by Rangrajan, was organized in 2012 in the background of conflicts about poverty line. This group was given two assignments:

- (i) To determine poverty line and to estimate poverty in India, and
- (ii) To examine differences in consumption estimates of National Accounts Statistics and N.S.S.O. The group suggested a method to estimate poverty. This method had following main points:
 1. Fixation of non-food expenditures (nutrition, cloth, house rent, transport, etc.) in poverty line should be based on criteria.
 2. In 2011-12, people who fulfill the standards of nutrition to estimate the expenditure on nutrition come into minimum 25-30% in rural area and into minimum 15-25% in urban area.
 3. Rs. 1407 per capita per month in urban area and Rs. 972 per capita per month in rural area was the poverty line.
 4. In 2009-10 the poverty in India was 38.2% and in 2011-12 it was 29.5%

Task Force on Poverty Estimation :

In 2015, Government of India appointed Dr. Arvind Pangariya as chairperson of the Task Force. This Task Force was aimed to –

- (i) Suggest the method to estimate poverty, and
- (ii) Suggest poverty removal programme according to the poverty.

Causes of Poverty:

Poverty is mainly associated with weak resource base and lack of employment. Small and marginal farmer, daily wage earners and casual workers are poor due to lack of land. Rural artisans have shortage of resources and lack of regular employment and this results into poverty. Following are the causes of poverty in India-

1. Population Growth and Weakness of Development Strategy:

India has 2.4% land and 17% population of world which shows the pressure of population on resources. Initially we gave more importance to large and capital intensive industries instead of agriculture and labour intensive activities. The strategy resulted into less employment opportunities.

2. Low Work Participation Rate:

39.9% was the working population in 2011 in India. It was lower in India than in Japan, Germany and England. Thus dependence ratio is high in India. The dependence ratio in India in 2011 is 55.5% which is 28.2% in China and 38.6% in Russia.

3. Unequal Distribution of Land:

In 2010-11, total agricultural areas owned by marginal farmers was 22.2% while that owned by big farmer was 10.9%. It is clear that distribution of land in India is very uneven.

4. Lack of Successful Land Reforms in the Country:

India has suffered from the subdivision of

land holdings due to inheritance and thus size of working land holding is decreasing. 30% workers are daily wage earners. Ceiling law has been failed completely.

5. Low Increase in Agricultural Production and Side Effects of Green Revolution:

Agriculture productivity increased at low rate in India. Labour productivity is very low. The labour which would have shifted to industrial and service sectors could not have shifted and still working in agriculture sector. On the other hand, due to green revolution inequalities have increased between rich and poor farmers.

6. Job Less Growth:

After economic reforms in India, growth rate has increased but employment rate has not increased accordingly. The employment elasticity shows, decreasing trend in each sector.

7. High Increase in Food Grain Price:

In planning period, prices of agriculture products have increased 46 times. This price increase has affected the consumption levels of poor sections of the society. Public distribution system is not working properly in both rural and urban areas.

8. Social Backwardness and Lack of Mobility of Labour:

In rural areas there is social backwardness and lack of labour mobility which results into low labour productivity and thus lower income levels. Thus, alternative employment opportunities are less.

Policy and Effects for Poverty Eradication:

Poverty is a big challenge to the country. Poverty eradication was the main objection of 5th five year plan followed by implementation of many programmes directly to fight with the problem of poverty. Efforts were made to increase income of poor people through wage

employment programmes and self employment programmes. Balanced and inclusive development programmes and growth of infrastructure facilities were the steps taken for the purpose of poverty eradication.

The poverty eradication strategy of India can be described as below:

1. Economic Development and Poverty Alleviation :

In the beginning of planning it was imagined that economic growth will increase the income and this increased income will reach to poor through trickle down effect. Economic growth will increase employment which will eradicate poverty. But due to slow growth rate in India sufficient employment and income could not be increased and thus poverty could not be alleviated.

2. Implementation of Wage Employment and Self Employment Programmes for Poverty Alleviation

It was experienced in the decade of 1960 that economic growth could not alleviate the poverty and thus there is need of the direct attack on it. The studies of Dandekar and Rath, Minhas and Vardhan also suggested such steps to be undertaken. As result in the decade of 1970 Marginal Farmer and Agricultural Labourer Development Agency, Small Farmer Development Agency, Food for Work Yojana and such other programmes were launched.

After this some big programmes were launched for poverty removal in India.

IRDP(1978), Employment Assurance Scheme (1993), PMRY (1993), Jawahar Gram Samridhi Yojana (1999) and Annapurna Yojana (1999) were started for different objectives. As a mix of many programmes, Swarna Jayanti Gram Swarozgar Yojana was launched in 1999. Antyodaya Yojana (2000), SGRY (2001),

Valmiki Ambedkar Aawas Yojana (2001), MGNAREGA (2009) and other such programmes were started to alleviate poverty.

Above mentioned wage employment programmes mainly provided supplementary employment to casual labour. Under self employment programmes assistance and loans were given.

3. Social Assistance Programme :

On August 15, 1995 National Social Assistance Programme was launched to provide social security to poor persons. Old age pension, widow pension, disabled pension and family benefit are the four ways of assistance under this programme.

4. Area Development Programme and Infrastructure Development :

Problem of poverty is severe in some parts of country due to natural reasons. For these areas programmes have been launched to increase the income. Draught Prone Area Development Programme (1973), Desert Development Programme (1997), Hill Area Development Programme, and Command Area Development Programmes (1975) were launched.

Under area development programmes animal husbandry, water conservation & plantation works were done. Infrastructure of road construction, education and health, rural housing, etc. were developed.

5. New Strategy for Poverty Alleviation:

In 11th plan, it was accepted that only wage employment (MGNAREGA) programme can not alleviate the poverty in long run and thus there is need to create employment opportunities in organized and labour based manufacturing sectors so that labour can be mobilized from lower productivity agriculture sector to higher productivity non-agriculture sector. In 11th plan steps taken for poverty alleviation are: (i) wage

employment in rural sector, (ii) expansion of social security, and (iii) demand induced talent development.

Main Programmes for Poverty Alleviation-

Following programmes were launched in India for poverty alleviation:

1. Integrated Rural Development Programme (IRDP):

Under IRDP farmers were provided productive assets like irrigation sources, seed and fertilizers, animals for dairy, equipments for cottage industries, etc. so that the income of poor people can increase. This programme was launched in 1978 and 1.82 crore families were benefitted in 7th plan. As a result, 40% people crossed up the poverty line. In this programme, beneficiaries were not properly selected. In 1999 IRDP was merged in Swarn Jayanti Gram Swarozgar.

2. Jawahar Gram Samridhi Yojana (JGSY):

This programme was implemented in 1999 as central sponsored yojana with the cost ratio of 75:25 between center and states. Durable productive community assets were constructed in rural areas under this plan.

3. Swarn Jayanti Gram Swarozgar Yojana (SJSY):

SJSY was a single programme of IRDP, 100 wells plan and many other plans of rural self employment. It was launched in April 1999 with objective to promote micro enterprises and to assist poor in self help group.

4. Employment Assurance Scheme :

This programme was implemented on October 2, 1993 in 1772 backward blocks situated in draught prone, desert, tribe and hilly areas and later it included 5448 blocks. Main objective of programmes was to create additional

wage employment for poor families below the poverty line. Cost divisions between center and states was 75:25.

5. Pradhanmantry Gramodaya Yojana (PMGY)

With the budget allocation of Rs. 5000 crore this yojana was implemented for rural area for the development of five important sectors of health, primary education, drinking water, housing and rural roads. In 2001-02, Rs. 2500 crore was the total expenditure in this programme.

6. Swarna Jayanti Shahari Rozgar Yojana (SJSRY):

In 1997 SJSRY was started by merging many programmes of poverty removal in urban areas. This programme had two parts: (i) Wage employment in urban area, and (ii) Self employment in urban area. With 75:25 ratio of cost of center and states, total expenditure in 1997-98, 1998-99 and 1999-2000 were of Rs. 102.51, 162.28 and 123.07 crore respectively .

7. Sampurn Gramin Rozgar Yojana (SGRY):

This programme was started in 2007 by merging Jawahar Gram Samridhi Yojana and Employment Assurance Yojana with the objective of creation of additional wage employment, food security and construction of durable community socio-economic assets. The cost distribution ratio was 87.5:12.5, between center and states.

8. National Food for Work Programme:

It was launched in 2004 in 150 most backward districts to create supplementary wage employment. This was completely centre sponsored plan in which food grains were given to states. In 2004-05, total expenditure was of Rs. 2020 crore and total 20 lakh tones food grains were allocated.

9. Valmiki Amberkar Aawas Yojana (VAMBAY):

It was started in 2001 to provide houses to poor people living in urban slums. 50% was the subsidy. 1.6 lakh houses were constructed with the help of Rs. 211 crore in 2003.

10. Pradhanmantri Gram Sarak Yojana (PMGSY):

Amining at road construction in rural areas this programme was launched in 2000 as completely center sponsored plan. 60024 km rural roads were constructed with Rs. 7866 crore upto the end of 2004.

11. National Rural Employment Guarantee Scheme:

This scheme was implemented in 2006, after enacting an Act, initially in 200 districts. Under this programme the guarantee was given to provide 100 days per year insufficient wage employment to rural families. Sampurn gramin Rozgar Yojana and National Food for Work Programme were merged into it. In 200-09, this programme covered whole of the country and total 4.51 crore families were benefitted in 2008-09. In 2009, it was named as MGNREGA. Average wage was increased from Rs. 65 to Rs. 132 in 2013-14. This programme increased insufficient wage employment in rural areas.

12. National Rural Livelihood Mission:

This mission aimed to organized rural families and to assist them upto the complete removal from poverty. Under this programme one woman from each family is included in self help group on the basis of qualification. This mission was started in 2011 with the objective to make available the self employment and efficient wage employment opportunities by training and skill development. Sc, ST, women, disabled person and minority families are given preference. Cost distribution between centre and state in 75:25

ratio. In 2012, the scope of this programme was increased upto non-poor families. In 2013-14 Rs. 22121.2 crore were given as loan to self help groups.

13. National Urban Livelihood Mission (NULM) :

To make available the profitable employment to urban unemployed and under employed people, this mission was launched in 2013. This programme will organize urban poor into self help groups. Skill will be developed according to need of market. The main objective of this mission is to reduce urban poverty, to improve living standard of urban poor people, to make available the profitable employment and urban housing. This programme ensures talent and enters preneurship development and availability of credit. Cost allocation ratio between centre and state is 75:25. In 2013-14, Rs. 720.43 crore were issued, 683450 persons were trained and 106250 people were assisted in self employment.

Remedy/Suggestions for Poverty Eradication:

Poverty can be eradicated by increasing employment opportunities and income levels. Following are some important suggestions in this regard:

1. Higher Economic Growth Rate:

Economic growth should increase employment in agriculture, small and cottage industries and handicrafts. This will increase income levels.

2. Efforts to Increase Social Justice:

Food security and public distribution system should be improved. Supply of public goods and services should be increased. Basic services should be increased in rural and backward areas. Assets distribution should be in the favour of poor persons. Education and health services should be improved in rural and urban areas.

3. Population Control and Family Planning:

Poor families consider children as social securities so social security should be expanded. Infant mortality rate, which is higher, should be controlled so that attraction of big-size family can be reduced. Birth rate should also be controlled to get the population growth decreased.

4. Expansion of Wage Employment, Self-employment and Social Assistance:

Wage employment creation should be more in rural and urban areas so that additional labour can be used productively. Oldage pension, widow pension and other such social assistance oriented programmes should be expanded.

Important Points:

- Problem of poverty is associated with the problem of lack of supply of basic needs. Poverty line is defined in terms of calorie consumption and consumption expenditure.
- According to Tandulkar estimates 26.93 crore people were poor in 2011-12 in which 21.65 crore people were poor in rural area and 5.28 in urban area. In some states (Chhattisgarh, Jharkhand, Bihar and Orissa) the poverty is more intensive.
- Rapid population growth, less work participation rate, unequal distribution of land, less development of small and cottage industries etc. are the constrains in the solution of the problem of poverty.
- For poverty alleviation rapid growth process was emphasized and for it many programmes were launched.
- The intensity of poverty can be reduced by expansion of education and health facilities for poor, control of population, increasing employment opportunities and increasing scope of social assistance.

Questions for Exercise

Objective Type Questions:

1. The minimum calorie measure to define poverty in rural area is-
(a) 2100 calorie (b) 2400 calorie
(c) 2250 calorie (d) 2500 calorie ()
2. According to Tendulkar estimates percentage of poverty in India in 2011-12 was
(a) 25.7% (b) 13.7%
(c) 21.9% (d) 37.2% ()
3. According to Tendulkar estimates in which state the poverty ratio was maximum in 2011-12 ?
(a) Bihar (b) Chhattisgarh
(c) Jharkhand (d) Kerala ()
4. Which is the definition of poverty on the basis of supply of minimum consumption need ?
(a) Relative measure of poverty
(b) Absolute measure of poverty
(c) Both above (d) Not both above ()
5. Which standard is found in definition of poverty according to capacity measurement of poverty ?
(a) Proportion of children aged below 5 years
(b) Proportion of inefficient deliveries.
(c) Proportion of female illiteracy
(d) All of the above ()
6. According to World Bank the measure of poverty is:
(a) Per capita per day 1 US dollar
(b) Per capita per day 1.25 US dollar

- (c) Per capita per day 1.5 US dollar
(d) None of the above ()

7. Which is not the wage employment programme to remove poverty ?
(a) NREP (b) JRY
(c) TRYSEM (d) Food for Work Yojana

Very Short Answer Questions-

1. What is calorie measure need to define poverty ?
2. What was poverty ratio in India in 2011-12 in rural and urban areas according to Tendulkar estimates ?
3. Name any two self employment programmes launched for poverty alleviations.
4. Write names of 5 states of India along with their poverty ratios in which poverty is maximum.
5. What are the main parts of social Security Assistance Programme ?
6. Define capacity measure of poverty.
7. What is definition of poverty given by Planning Commission in 2011-12 ?
8. What is trickle down effect ?
9. Write any three names of Indian economists who contributed in study of poverty in India.
10. Write complete name of N.R.E.P.

Short Answer Questions:

1. What are different standards to measure poverty ?
2. What are the shortcomings of calorie consumption method and poverty line method to measure poverty line ?
3. Define relative poverty.
4. Write three causes of high poverty in India.

5. How economic developed is helpful in poverty removal ?
6. Explain that poverty is a multi mantioanl concept.
7. Who are included in poor section in rural areas in India ?
8. What is National Rural Livelihood Mission ?
9. Write main objectives of National Urban Livelihood Mission.

Essay Type Questions:

1. Write measurement of poverty and its problems.
2. Explain the size and regional distribution of the problem of poverty in India.
3. Describe the causes of poverty in rural areas in India.
4. Describe the strategy adopted by government for poverty alleviation.
5. In your opinion, what can be done to remove poverty in India ? Explain.

Answer to Objective Type Questions :

(1) b (2) c (3) b (4) b (5) d (6) b (7) c

Reference Books:

1. Economic Survey : 2014-15,
2. Indian Economy: Mishra & Puri Himalaya Publication.
3. The Indian Economy, Ishwar Chand Dhingra, S.Chand & Sons, New Delhi.
4. Indian Economy : L.N. Nathuramka.

Chapter - 4.2

Unemployment

Labour is a factor of production. Size and efficiency of labour force play important role in a country and the level of development of a country determines the planning of the labour force. If a person has both ability and desire to work and the person does not get work, the person is said to be unemployed. Labour is employed in the form of self employment. According to classical economists, there is always full employment in the long run. If there is unemployment for some time, the wage rate decreases and situation of full employment is reached. According to Keynes, when aggregate demand is short, it results into low level of production in comparison to capacity and thus unemployment occurs. In developing countries unemployment can occur due to improper technique and shortage of factors of production other than labour. Labourer does not get employment for some months in a year due to seasonal nature and dependence of agriculture on monsoon. In developing and agriculture based economies there is disguised unemployment. In these economies more labour is employed in the family based agriculture which seems to be employed but it adds nothing to production. There are changes always in the organic structure of the economic system. Some new industries are started and some old are closed. Thus there is some unemployment even in the situation of full employment. Condition of unemployment is

sadness oriented and it wastes the resources of country. So it is necessary to study the nature, causes and remedies of unemployment.

Meaning of Unemployment:

Unemployment is that situation in which people do not get work (employment) at the prevailing wage even though they have ability and desire to work. Thus a person who is unable (child, old, etc.) to work and does not have desire to work is not considered under unemployment. If people get employment for some time and below the capacity then it is the situation of under employment which also considered under unemployment.

Kinds of Unemployment:

On the basis of nature and causes unemployment is of the types as described below:

1. Structural Unemployment:

It is long run unemployment and caused by backward economic structure of economy. It is associated with the growth process of the country. When rate of capital formation is slower than labour this unemployment takes place. This unemployment is caused by the structural disequilibrium in the economy. For the solution of structural unemployment supply of capital goods, entrepreneur, management and other factors should be increased.

2. Disguised Unemployment:

This is the situation in which unemployment can not be seen clearly. In developing countries people work in family based agriculture in which people are put into work more than requirement. They are seemed to be employed but they do not add anything to production. For example, if a farmer owns 2 hectare land on which two people can do work but all the 6 members of his family are put into the work. If these extra 4 people are removed from the work, there would be no impact on the total production. They can be used in other work in which production can be increased. Thus these 4 people come in to the disguised unemployment. Disguised unemployment is a source of probable saving in developing countries. This unemployment is seen in cities also in cases of self employment and results into less productivity and low income. There are 4 shops in a locality where only one shop is sufficient. Clearly, removal of disguised unemployment does not reduce the level of production.

3. Seasonal Unemployment:

People do not get work in agriculture for whole of year because of its dependence on monsoon and seasonal nature. This unemployment is seen in festival seasons also. This unemployment can be controlled in rural areas with the help of development of non-agricultural activities. Seasonal unemployment is also the situation of underemployment.

4. Open Unemployment:

Under this unemployment people, who want work and have ability and capacity to work, do not get work and thus people are fully unemployed. People who do not get work in rural areas and come to urban areas for employment are considered under open unemployment.

5. Cyclical Unemployment:

This unemployment is created by trade

cycles particularly in capitalistic or market system based economies. During depression aggregate demand decreases which results into low production and unemployment. Due to the efforts of depression control employment is increased again. This type of unemployment is seen in developed countries. According to Keynes, this unemployment can be controlled by increasing aggregate demand in the economy. Thus, lack of aggregate demand is the cause of unemployment in developed countries while it is there in developing countries due to deficiencies on the supply side where productive capacity and development level are lower.

6. Frictional Unemployment:

Some unemployment can also be seen under the situation of full employment. Organic structure of economy always changes. Some industries close down and some industries start-up. When industries are closed labour becomes unemployed for some time up to which new work is reached. This type of unemployment is the frictional unemployment. This unemployment is seen always and in every type of economic system.

Measurement of Unemployment:

When a person gets work for 273 days in a year according to 8 hours daily, it is known as standard person year. There are three concepts to measure unemployment according to national sample survey. These are:

1. Usual Status Unemployment:

This is the number of people who are not under any employment in previous one year before the survey. It shows the long term or open unemployment in which it is seen whether people are generally in employment or unemployment or out of the labour force.

2. Weekly Status Unemployment:

Under this the employment of people in previous one week of the survey is found out. If

people do not get employment for even one hour on any day in these seven days then they are supposed to be unemployed for that week.

3. Daily Status Unemployment:

Under this status employment per day of the previous week is seen. If a person gets employment for one to four hours in any day that person is supposed to be employed for half day and if a person gets employment more than 4 hours, the person is supposed to be employed for one day. Daily status unemployment is the ratio of per week labour days of unemployment to per week total labour days. It is measured in time rate of unemployment. This concept of measurement of unemployment is very wide and includes all types of unemployment.

Size of Unemployment in India:

Data on unemployment in India are available in four sources. These are:

1. Census report of India.
2. National Sample Survey Organisation report on status of employment and unemployment.
3. Registered data in employment offices of employment and training directorate.
4. Annual survey of labour bureau on family employment and unemployment.

Due to differences in objectives and methodology there is difference in data of all the sources. In cities there is mainly industrial and educated unemployment while in rural areas there is open, disguised and seasonal unemployment. At present the latest data on unemployment in India are available for 2011-12 provided by N.S.S.S.O. in its 68th round. These data are shown in Table – 1.

Table-1
Employment and Unemployment Status in India

Status	1999-2000	2004-05	2011-12
Total Labour Force (million)			
(a) U.S.	407.00	469.0	483.7
(b) C.D.S.	363.3	417.2	440.2
Employed Person and Man Days (million)			
(a) U.S.	398	457.9	472.9
(b) C.D.S.	336.9	382.8	415.7
Unemployment Rate (%)			
(a) U.S.	2.2	2.3	2.2
(b) C.D.S.	7.3	8.2	5.6

Source : Various surveys of N.S.S.O.

Notes : U.S. (Usual status) measures individual employment while C.D.S. (current daily status) measures man days.

- (a) Table-1 shows that total labour force in India was 407 million in 1993-2000 which increased upto 483.7 million in 2011-12 according to usual status. According to C.D.S. total work force was 363.8 million in 1999-2000 became 440.2 million in 2011-12. Clearly, according to both status the labour force shows increasing trends in the period of 1999-2000 to 2011-12.

According to usual status 398 million persons and man days were employed in 1999-2000 which increased upto 472.9 million in 2011-12. C.D.S. related estimates show that total employed person and man days were 336.9 million in 1999-2000 which increased upto 415.7 million in 2011-12.

As for as rate of unemployed is concerned it was 2.2% in 1999-2000 at U.S. and again 2.2% in 2011-12. As per C.D.S. this rate was 7.3% in 1999-2000 and decreased to 5.6% in 2011-12. Thus, in brief following conclusion can be derived from Table-1:

- (i) Total labour force continuously increased in the period 1999-2000 to 2011-12.

- (ii) Number of employed persons and man days have shown increasing trends in case of both U.S. and C.D.S. in the period 1999-2000 to 2011-12.
- (b) Structural changes in employment in India may be seen from the following description

Table-2
Employment Distribution according to
Economic Activities

(in %)

Area	2004-05	2011-12
Primary Sector	58.4	48.9
Secondary Sector	18.2	24.3
Service Sector	23.4	26.8

Sources : N.S.S.O. Report – 2011-12, 68th Round.

Share of primary sector in employment was 58.4% in 2004-05 which decreased to 48.9% in 2011-12 while share of secondary sector increased in 2011-12 upto 24.3% which was 18.2% in 2004-05. It is also clear that the share of service sector was 23.4% in 2004-05 which became 26.8% in 2011-12. It is clear that share of primary sector is still high. The second place in employment share is of the service sector where its contribution in state domestic product is 61%.

- (c) Share of self employment in total employment is 52.2% in which a big portion of daily wage earners is associated with low income earning activities. According to structure of employment, employment is classified as,

- (i) Self employment,
- (ii) Regular salary employment
- (iii) Casual employment.

In India working conditions of regular salary employment are better, security is more and salary is higher. For casual labour there is lower salary, lack of facilities and working conditions are not good. Presently, 52% labour is in self employment, 18% is in regular salary employment and 30% is in casual employment. In 1977-78, 58.9% labour was engaged in self employment, 13.9% labour was in regular salary employment and 27.2% was in casual employment. Trends show that share of both regular salary employment and casual employment has increased but that of self employment has decreased.

Employment in organized and unorganized sectors should also be looked in. Organised sector includes that labour which gets, employment of 10 or more persons in public and private sectors. Wage is higher in organized sector than in unorganized sector. In 2009-10, 64% of total employment in organized sector was in public sector while it was only 36% in private sector. In 2011-12, 82.7% of total labour was in unorganised sector and 17.3% was in organised sector.

- (d) In India, long term casual unemployment is 2% while C.D.S. unemployment was 7.3% in 1999-2000, and 5.6% in 2011-12. In period 2004-05 to 2011-12 employment increased less and 'however' unemployment decreased. The main cause behind this can be the increasing levels of enrollment in higher education.

- (e) In 2011-12, 55% rural men, 25% rural women, 56% urban men and 16% urban women were in the labour force. 39% were the daily wage earners. Daily wage earners were 40% in rural sector and 36% in urban sector. 54% rural men and 25% rural women were the daily wage earners. Similarly, 55% urban men and 15% urban women were daily wage earners.

In urban area in male daily wage earners, 26% were registered in commerce and hotels, 22% in manufacturing sector, and 21% were registered in service sector. In urban area, in female daily wage earners 40% were registered in other service sector, 29% in manufacturing sector and 13% were registered in commerce and hotel sector. Thus, in urban area the main activity for male was commerce and hotel while for female it was other service sector'.

For the 15-59 age group workers daily wage in rural sector was Rs. 299 and in urban sector was Rs. 450 while in this same age group the daily wage of casual workers in rural area was Rs. 127 for male and Rs. 111 for female. Thus regular wage was higher than casual wage. Wage in urban area was higher than in rural area and wage for male was higher than wage for female.

Educated Unemployment :

Education helps in human development. Education and training increase efficiency of labour. But in our country educated unemployment is widely observed and thus there are no returns on the investment on education and educated labour is being wasted due to unemployment. Person who has passed secondary and higher education and the person who has completed diploma and certificate course is the educated one. Unemployment rates for educated adults (15-29 years age group) in rural male, rural female, urban male and urban female are 8%, 16%, 12% and 20% respectively.

The educated unemployment rate in rural and urban areas is higher for those people who have passed secondary and above level examinations in comparison to people who have passed the less than secondary level examinations. Educated females are having more unemployment rate both in rural and urban areas in comparison to educated males. In the period 1999-2000 to 2011-12, educated unemployment

has decreased and this fall has been found more in case of females than males. In rural males educated unemployment in 1999-2000 was 5.6% which has decreased to 3.6% in 2011-12. In rural educated females unemployment rate in 1999-2000 was 14.6% which has been declined to 9.7% in 2011-12. Educated unemployment is caused by slow economic growth, defective education system, lack of technical training and disequilibrium in the demand and supply of educated people. Unemployment rate is found higher in people who have obtained higher education. So there is need to change the education system according to the requirement of economic development so that educated persons could not face the problem of unemployment.

Causes of Unemployment :

Following are the main causes of unemployment:

1. Employment growth not Coping with Development pattern and Underdevelopment:

Under structural change labour force is got transferred from agricultural to non-agricultural activities. Non-agricultural sector has not created much employment opportunities in India to use the labour which comes from agriculture. There is disguised unemployment in agriculture. If employment opportunities would have been developed in non-agricultural sector, the extra labour in agriculture would have been used. Our small and cottage industries are also underdeveloped and do not have much employment opportunities.

After independence, the planned development strategy aimed to develop the large industries with capital intensive technique. This was not proper effort in a labour abundant country like India. After independence the gap between growth rate and rate of employment creation increased. After 1980, growth rate

increased rapidly but this growth rate could not generate employment and thus it was the employmentless growth.

Rate of employment growth also decreased due to fall in employment elasticity. In period 1983-1988, the employment rate was 0.68% which became 0.16% in 1993-94 to 1999-2000. In agriculture this rate became 0.01% from 0.87% in this same period of time. The percentage change in employment is divided by percentage change in output which gives the value of employment elasticity.

2. Increase in Population and Labour Supply:

After independence birth rate was high and death rate became low and this resulted into the rapid increase in population in India, In 1951, population of India was 36 crore which increased to 121 crore in 2011. Our growth rate was not sufficient to provide employment to the increasing labour force. About 80 lakh people are added to labour force each year.

3. Incorrect Planning:

At the beginning of the planning it was thought that employment will automatically be created in the economy with economic development and thus unemployment was kept associated with the growth. Industrial unemployment is due to migration towards cities, lack of industrial development and slow growth rate of industries while educated unemployment is due to defective system of education. Our education is not employment oriented. Our planning system could not create sufficient employment opportunities both in rural and urban sectors and thus it could not promote labour intensive technique in the production. Interest rates were kept lower to promote the capital intensive technique. Our planning system also failed in creating job opportunities in small and cottage industries also.

4. Defective Education System :

Education system should be prepared according to the requirements of the economic development. According to Gunnar Myrdal, the objective of Indian education system was not to develop the human resources. Here the education system can produce clerks and low level administration offices for government and commercial enterprises. Expansion of such type of educational institutions resulted into increase the unemployment. Modern education system does not develop human resources and can not provide employment to unemployed people.

Government Policy for Unemployment Reduction:

When planning was started it was thought that sufficient employment opportunities will be created and increasing labour force will get employment. But in fifth five year plan it was noticed that dependence on growth rate only for increase in employment is not sufficient and there is need to launch some addition programs for it in public and private organized sectors. Thus, objective of 6th five year plan was taken to reduce the problem of unemployment and thus efforts were made to increase self employment in agriculture and small or cottage industries. In 7th plan under the development planning strategy high preference was given to generate employment by producers. In 8th plan, 2.6% to 2.8% increase in employment per year was the objective so that in coming ten years the problem of unemployment could be solved completely. Diversification in agriculture development of unused land, expansion of non-agriculture activities in rural areas, rapid development of unorganised and service sector and development of small and decentralised industries etc. steps were emphasized. In 9th plans more emphasis was given to labour intensive sectors and those sectors in which more employment was there. It was noticed that government interference was

necessary for creation of employment opportunities. In 9th plan, sectors of agriculture and related activities, small and medium enterprises, education and health, manufacturing, communication technology, etc. were emphasized to create more employment opportunities. In 11th plan, the objective was to give employment to 5.58 lakh people in sectors of manufacturing, tourism, handicraft, stone business, leather products, food industries, etc. Under 12th plan the objective was to give employment to 10 crore people in the manufacturing sector. These programs of employment creation were of three types:

(i) Wage Employment Program:

Main objective of this program was to create wage employment for the inefficient labour in rural areas. Rural Landless Employment Guarantee Program, Aggregate Rural Employment Guarantee Plan (2005) were such programs. These programs were launched by government to tackle the underemployment in rural areas.

(ii) The objective of these programs was to give training for self employment and to make available the productive asset so that people could do their own business. Integrated Rural Development Program (IRDP), TRYSEM and Self Employment Program for Urban Poor, etc were the programs in this category.

(iii) Area Development Program:

Some area development programs were started for the development of less developed areas to create employment and to solve draught related and other problems. Water Shed Development Program, Desert Development Program, Draught Prone Area Development Program, etc. were such programmes.

Majour Employment Programmes:

Some of the major employment programmes were as follows:

1. National Rural Employment Programme (NREP):

This was mainly wage employment programme in which productive social assets were constructed in rural areas. NREP was started in 1980 to create employment opportunities in rural areas. Under this programme funds were given to states by the central government on the basis of marginal farmers, number of agriculture labourers and effect of poverty. In 1989-90, this programme was merged into Jawahar Rojgar Yojana.

2. Training for Rural Youth for Self Employment Programme (TRYSEM):

This programme was started in 1979 to train rural youths for self employment. Under this programme 2 lakh people were to train each year. It was mandatory to have 1/3 rural women in training. 8.8 lakh rural people were trained in the 7th plan. 23.3 lakh people were trained in the period 1991 to 1999. In 1999 this programme was merged into Swarn Jayanti Gram Swarozgar Yojana.

3. Rural Landless Employment Guarantee Programme (RLEGP):

Started in 1983 this programme aimed to give employment of 100 days per year to at least one member per family to the agricultural labour (labourers who earn income by doing work on the land of others). Under this programme following construction works were carried out:

- (a) Small irrigation, school building, water conservation, and small dam construction.
- (b) Programme of social forestry and farm foresting.

- (c) Construction of houses in Indira Aawas Yojana.
- (d) Construction of toilets in rural areas.

In 1989, this programme was merged in JRY.

4. Employment Assurance Scheme (EAS):

This programme was started in 1993 in 772 backward development blocks. It was mainly a wage employment programme started particularly in tribble, hill, desert and draught prone areas. In 2001, this programme was merged into Gram Samariddhi Yojana and later in Integrated Rural Employment Yojana.

5. Jawahar Rozgar Yojana (JRY):

This programme was started in 1989-90 as wage employment programme. Under this programme both NREP and RLEGP were merged. To be implemented through panchayats, 30% was the reservation for women. Under this programme resources were to be given to states on the basis of poverty ratio, SC and ST population ratio, ratio of agricultural labourers and level of agricultural production. In 1999, it was named as Jawahar Gram Samriddhi Yojana.

6. Nehru Rozgar Yojana (NRY)

It was the employment oriented programme for urban areas for the following objectives.

- (a) Wage employment in urban areas.
- (b) Establishment of small enterprises in urban areas.
- (c) Improvement of housing in urban areas.

7. Integrated Rural Development Programme (IRDP):

It was the programme for poverty removal and started in 1978-79. It was self employment based programme. Under it productive assets were made available so as to come out from poverty by earning income. Animal husbandry, weaving, handicraft, etc. activities were included.

8. Swarn Jayanti Gram Swarozgar Yojana:

In 1999 this programme was launched jointly with self employment oriented rural programmes. It was the programme of rural self employment. Productive assets were provided through loan and assistance for self employment and run by self help groups. Upto 2011, Rs.42168 crore were given to 1685 people as assistance. Later on this programme was marged in National Rural Livelihood Mission. The share of expenditure of center and state was 75:25.

9. Swarn Jayanti Shahari Swarozgar Yojana:

This programme was started in 1997 with five parts of it, as shown below:

- (a) Urban self employment
- (b) Training to promote urban employment
- (c) Urban wage employment
- (d) Urban woman self employment
- (e) Urban communicative development network

Upto 2014, 6.8 Lakh people were benefitted. In 2013, Rs. 720.5 was the total expenditure in this programme. In this programme the share of centre and state was 75:25.

10. National Rural Employment Guarantee Act:

This programme was started in February, 2006 in 200 most backward districts of India and extended to all districts of the country in 2008. On October 2, 2009, this programme was named as Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA). Under this programme guarantee of 100 days inefficient wage employment in nearby areas was given to each rural family. 1/3 reservation is given to women. There is provision of unemployment allowance when wage employment is not available. This programme was implemented by

Panchayati Raj institutions and works of water conservation, forestry, plantation, flood control, road construction, etc. were taken into hand. In 2012-13, total expenditure in this programme was 39661 crore.

Under this programme employment of 230 crore man days was created in 2012-13 and thus wage rate and demand for labour increased in rural areas. Wage was paid through post office accounts which promoted financial inclusion. It strengthened the natural resource base of the country.

This programme faced some limitations. Due to late payment of wages, unemployment allowance was not paid. In the implementation of the programme norms were not fulfilled strictly.

Government has organised many committees to give suggestions to increase employment. These suggestions are:

- (a) National Development Council Committee, 1992 gave recommendations to develop rural infrastructure, to develop the small and medium cities in the integrated way and to generate wage employment in small cities.
- (b) The working committee on employment opportunities emphasized on increasing the growth rate, launching employment programmes for weaker sections of society and increasing education and efficiency.
- (c) Special group on employment creation in 10th plan emphasized on launching special programmes for the availability of employment to 1 crore people per year.

Suggestions to Control Unemployment:

Following suggestions can be given to control unemployment:

1. Increase in Investment and Structural Changes in Investment:

Higher levels of investment and capital formation increase the employment opportunities

in economy. There should be more investment in labour intensive projects so that there can be more production and more creation of employment opportunities. Labour intensive technique should be used in agriculture along with expansion of animal husbandry, food processing industries, fisheries and intensive agriculture.

2. Establishment and Expansion of Small and Village Industries:

Small and cottage industries should be started in rural areas because these industries require less capital and have lower employment elasticity. This step increases employment opportunities in rural areas and thus problem of under employment and seasonal unemployment can be solved. Expansion of facilities of drinking water, housing, education, health, roads, etc. can also increase employment opportunities in rural areas.

3. Man Power Planning:

There should be proper planning regarding the available labour force and the required labour force in the country. On one side, labour force is unemployed and on the other side, efficient labour force is not available. Thus, there is need to train the labour force as per the need of the economy. This is the way by which employment can be increased.

4. Change in Education System:

Education system should be developed according to the local employment requirement. In case of higher education, proper training system should be developed. Education and training should be according to the requirement of employer, producer and economic activities. It should be studied time to time that what type of labour is required by different sectors of the economy. Thus, there should be changes in the education system according to the long term need of economy.

5. Population Control :

Population control is required to plan the labor force of country as per the need of it. Expansion of economic activities should be followed according to the increase in labour force. Birth rate should be controlled to keep population at the desired level in the country.

6. Special Employment Programme:

In India, disguised unemployment is more than open unemployment. In case of underemployment work opportunities should be created by wage employment programmes, like MGNREGA. For the long term solution of employment, wage employment programmes are more important both in rural and urban areas.

Urban unemployment is mainly due to the migration of rural labour force towards cities and this is mainly the educated unemployment. For its solution special employment programmes should be started in rural areas. There is need to change the structure of investment so that it can absorb more labour force. The nature of short run special employment programmes and long run special employment programmes should be different.

Important Points :

- Labour is important factor of production. When people, who want to do work and have ability to work but do not get work, they become unemployed.
- There are different causes of unemployment in developed and developing countries. Cyclical unemployment is found in developed countries while disguised unemployment is seen in developing countries. In developing countries seasonal unemployment and structural unemployment are also found.
- There are three criteria to measure unemployment in India. These are:
 - (i) Usual status unemployment

(ii) Weekly status unemployment

(iii) Daily status unemployment

Daily status unemployment is the wide criterion.

- In rural sector seasonal and disguised unemployment is found while industrial and educated unemployment is found in urban areas.
- Share of primary sector in employment is decreasing while shares of secondary and service sector are increasing .
- According to daily status unemployment in India in 2011-12 was 5.6%, number of daily wage earners is 39%, and 52% is the self employment in total employment in India.
- Underdevelopment, rapid increase in labour supply, defective education and planning systems, etc. are the main causes of unemployment.
- For removal of unemployment self-employment, training, area development, wage employment creation and many other programmes have been launched.
- Change in investment structure, expansion of small and rural industries, manpower planning, change in education system, population control are the suggestions to control the unemployment.

Questions for Exercise

Objective Type Questions:

1. Data on unemployment in India are collected by:-
 - (a) Reserve Bank of India
 - (b) State Bank of India
 - (c) NABARD
 - (d) N.S.S.O. ()

2. The widest criterion to measure unemployment is:-
 - (a) Usual status unemployment
 - (b) Weekly status unemployment
 - (c) Daily status unemployment
 - (d) Open unemployment ()
3. Standard employment year includes-
 - (a) Daily 6 hours and 275 days in the year
 - (b) Daily 8 hours and 273 days in the year
 - (c) Daily 8 hours and 275 days in the year
 - (d) Daily 8 hours and 280 days in the year
4. In total employment in India in 2011-12, the maximum share was of-
 - (a) Wage employment
 - (b) Self employment
 - (c) Salary employment
 - (d) None of above ()
5. Agricultural has labour more than necessity and thus labour productivity is lower. If this excess labour is removed from agriculture the production will not decrease. This is the type of unemployment.
 - (a) Structural unemployment
 - (b) Disguised unemployment
 - (c) Cyclical unemployment
 - (d) Seasonal unemployment
6. Due to trade cycle output decreases and thus employment decreases. This is the type of unemployment:
 - (a) Seasonal unemployment
 - (b) Cyclical unemployment
 - (c) Disguised unemployment
 - (d) Structural unemployment ()
7. In 2011-12, according to usual status, unemployment rate of educated youth (15-29 years of age and education above secondary level) was maximum for-
 - (a) Rural men
 - (b) Rural women
 - (c) Urban men
 - (d) Urban women ()
8. Which measure should be used to control the problem of unemployment ?
 - (a) Increase in investment and change in investment structure
 - (b) Establishment and expansion of small and rural industries
 - (c) Manpower planning
 - (d) All of the above ()

Very Short Answer Questions:

1. What is standard person year ?
2. What is meaning of usual status unemployment ?
3. What is weekly status unemployment ?
4. What is current status unemployment?
5. Name any two programmes launched in India for the removal of unemployment.
6. Name any two wage employment programmes used to remove unemployment in India.
7. Mention any two reasons responsible for the problem of unemployment in India.
8. Write any two types of unemployment found in rural sector.

Short Answer Questions:

1. What is meaning of unemployment?
2. What do you mean by disguised unemployment?

3. Write meaning of seasonal unemployment.
4. Write three status of unemployment measurement in India.
5. What is the size of educated unemployment in India?
6. Write areas of main employment activities in urban areas in India.
7. Write structural changes in employment in different sectors of economy.
8. What type of changes are required in education system to remove the educated unemployment ?

Essay Type Questions:

1. Write different types of unemployment and show that how the problem of unemployment is different in developed countries from that in developing countries ?
2. Write a notes on the status of employment and unemployment in India.
3. Discuss the main causes of unemployment in India.
4. Describe the policies adopted by government for removal of unemployment in India.
5. Write suggestions for the solution of the problem of unemployment in India.

Answer to objective Type Questions-

(1) d (2) c (3) b (4) b (5) b (6) b (7) d (8) d

Reference Books:

1. Economic Survey : 2014-15, GOI
2. Indian Economy: Mishra and Puri, Himalaya Publication.
3. The Indian Economy : I.C. Dhingra, S.Chand & Sons, New Delhi.
4. Indian Economy: L.N. Nathuramka
5. N.S.S.O. : Different Reports, GOI.

Chapter - 4.3

Environment Pollution

Inputs for production and necessary conditions for life are provided by environment. Effects of economic activities on environment in last four decades have worried us. It is argued that future development will inversely be affected by environment. Environment means all those organic and inorganic agents which are related with each other and provide necessary conditions for our life. Organic agents include human being, animals, birds, trees, plants, small living organs, etc. and inorganic agents include water, air, soil, light, etc. Environmental study is the study of relation between these organic and inorganic agents.

Environment performs 4 major function for live. These are:

- (i) To arrange necessary biological, physical and chemical systems for life like air, rivers, fertile soil, living creatures and plants.
- (ii) Environment provides inputs for production and economic activities.
- (iii) Environment controls itself the wastage created by human activities and production activities.
- (iv) To provide other services like natural beauty.

Type of Pollution:

Different types of pollution are as discussed below:

1. Air Pollution:

Any adverse change in physical, chemical and biological qualities of air which affects the human life and other living creatures is known as air pollution. Gases released by thermal power projects, industrial units and automatic vehicles concentrate in specific area. In these gases carbon dioxide, carbon monoxide, sulphur dioxide, other gases are present which pollute air which causes problems related will sleeplessness, stress, headache, heart diseases, eye diseases, etc. Life of plants and animals is also affected by air pollution. The main air pollutant is the carbon dioxide.

Due to concentration of gases average temperature is increasing which is known as green house effect. It results into melting the ice which increases the water level in seas. The rain cycle becomes irregular and crop productivity decreases.

In Kyoto conference (1997) in Japjan a treaty was concluded (known as Kyoto protocol) and it was decided that the emission of gases (who are responsible for increase in global temperature) has to be decreased by 5% upto 2010. 169 countries have accepted these provisions upto now.

Air pollution can be controlled by decreasing dependence on thermal energy projects, by using clean fuel, by using

environment friendly techniques in industrial projects, by increasing public distribution system, etc.

The gas released by airconditioner, refrigerator, etc. is known as chlorofluorocarbon which destroys the ozone layer and thus ultra violet rays reach the earth. To control the depletion of ozone layer an agreement (Muntreal agreement) was signed in Septemeber 1987 with the efforts of U.N.O. Objective of this agreement was to close down the production of chlorofluorocarbon gas upto 2010 in whole of the world. 191 countries signed this agreement. Countries made efforts and the level of ozone layer decreased 5% in the period 1979 to 1990.

Increase in air pollution results in acid rain. The acid rain is harmful for plants and water. Acid rain reduces the fertility of land. So there is need to control the gases which are responsible for acid rain.

2. Water Pollution :

Quality of clean water is reduced by environmental activities which results into decreasing the clean water supply. This is known as water pollution. It adversely affect the animal world and the vegetation. Following are the causes of water pollution:

- (i) Mixing of industrial wastage into clean water.
- (ii) Dropping of home wastage in the source of clean water.
- (iii) Mixing of agriculture chemicals in clean water.
- (iv) Lack of proper solid waste management
- (v) Mixing of radio active elements in water.

3. Soil Pollution:

The upper thin layer of soil is very valuable for life. The adverse change in physical, chemical and biological qualities of soil is known as soil pollution which destroys the thin layer of soil.

Thus productivity of soil is reduced. Following are the causes of soil pollution:

- (i) Deforestation or cutting of trees.
- (ii) Excess grazing of animals.
- (iii) Use of agriculture chemicals (fertilizers and pesticides)
- (iv) Rapid flow of water
- (v) Improper way of solid waste management.
- (vi) Excess exploitation of underground water.
- (vii) Lack of proper methods for land conservation.
- (viii) Improper irrigation.

Soil pollution can be controlled by these methods- (i) Plantation (ii) Control on excess grazing (iii) use of organic manure and pesticides (iv) use of proper water flow system (v) proper utilization of water, (vi)Using proper crop cycle, and (vii) proper management of solid wastage.

4. Lose of Biodiversity:

Biodiversity is an important resource of the world. Existence of plants, trees, animals and micro creatures is the biodiversity. It is important due to these causes-

- (i) Importance in ecological system.
- (ii) Importance for increasing agricultural production.
- (iii) Availability of medicines because 80% material used in medicines is available from plants, animals, etc.
- (iv) Importance for natural beauty.

Biodiversity is suffering from loss due to below given reasons:

- (i) Loss of habitat of living creatures due to human activities.
- (ii) Loss due to excessive exploitation of natural resources.
- (iii) Continuous loss due to climate change.

Because biodiversity is important resource so its loss can be controlled by:

- (i) Protecting habitat
- (ii) Controlling excessive exploitation of natural resources
- (iii) Controlling improper changes in climate.

5. Solid Waste Management:

Reusable material kept at improper place and in improper way which creates problems in the working system of environment is the solid waste. This solid waste is created by human, industrial and agriculture activities.

As result of communication revolution electronic waste is increasing like old computers, old mobiles and electronic goods. Developed countries are sending this solid waste to developing countries Nuclear waste is also a problem because it is not managed by proper method. These wastes are dropped in sea which pollutes sea resources. Open places, rivers, etc. are also being polluted due to the solid wastes. Wastes of houses, agriculture activities, etc. are very harmful for environment. In developing countries solid waste management has become a very big problem due to increasing population, expanding urbanization and increasing economic activities. All types of solid waste should properly be collected, stored, discharged and reconstructed.

Solid wastes are created by two sources:

- (i) Municipality waste: It includes the garbage created in houses, offices, markets and from small and cottage industries in the municipality area.
- (ii) Non-municipality Waste: it includes the waste created by agriculture, industry, mixing and other economic activities.

To manage the solid waste following types of steps should be undertaken:

- (i) Proper system to collect garbage in residential areas.
- (ii) Plastic, metal waste, electronic waste, and nuclear waste should be treated as per their nature.
- (iii) Solid waste of hospitals should be treated and managed separately.
- (iv) Throwing and burning garbage in open area should be prohibited.
- (v) Food waste should be used to feed animals and in biogas production.
- (vi) Closed vehicles should be used in transportation of solid waste, and
- (vii) Joint efforts of general public, local selfgovernment units and non-government organisations are needed for this work.

6. Noise Pollution:

Abnormal and unbearable high noise is the noise pollution. Abnormal and high voice is known as noise. According to world Health Organisation, noise during day and night should be of 55 decibel and 45 decibel respectively. Generally, noise of more than 60 decibel is considered to be harmful.

High noise created by human made sources is the main source of noise pollution. Noise created by machines in industrial sectors, noise created by transport means and noise of entertainment sources are the examples of noise pollution.

Noise pollution decreases the hearing capacity. Noise of more than 90 decibel is dangerous to hearing capacity. According to one estimate 10% people in urban areas and 7% people in rural areas are suffering from this problem. Due to excessive noise pollution human behavior and mental condition of people are adversely affected.

Noise pollution is harmful for Health-

Modernisation has increased the problem of noise pollution. Sufficient law, technical way of life and change in human behavior are required to control the noise pollution. Establishment of industrial units outside the residential area, maintenance of machines, using less noise making machines, determination of noise level in urban areas, effective control on noise making old vehicles, etc. are the various steps which can be helpful in controlling noise pollution.

Causes of Environment Pollution:

Following are the causes of environment pollution:

1. Rapidly increasing industries and not using the proper pollution control system by industries.
2. Deforestation, lack of forests and excess grazing of animals.
3. Increase in carbon due to increasing number of vehicles.
4. Increasing use of chemical fertilizers and pesticides in agriculture, improper method of irrigation and lack of proper agriculture waste management.
5. Pressure of population on natural resources due to increasing population. 17% population of the world is living on 2.17% land area of the world.
6. Poverty-dependence on traditional sources of energy.
7. Lack of proper method of solid waste management.
8. Dependence on thermal power resources for energy.
9. Excess exploitation of non-renewable natural resources.
10. Lack of thinking on environmental issues concerned with loss of biodiversity.

11. Lack of commitment of developed countries in carbon emission control.

Suggestions to Control Environment Pollution:

Following suggestions can be given to control environment pollution:

1. Pollution should be controlled by using proper pollution control system in industries, by using efficient fuel method and by using solid waste management system.
2. Forest area should be increased by plantation. Grazing animals should be controlled. Social forestry should be developed and by using alternatives of wood uses.
3. Public transport system should be developed.
4. Organic manure should be used in place of chemicals and pesticides in agriculture and water efficient use system in irrigation should be developed.
5. Population growth should be controlled to reduce burden on natural resources.
6. Issues concerned with pollution should be kept in mind while implementing poverty removal programme. Dung gas should be used as fuel in place of dry dung.
7. There is need of proper decantation of urban, industrial and nuclear wastage.
8. Dependence should be increased on wind energy, solar energy and tidal energy. Efficient energy systems should be expanded.
9. Substitutes of non-renewable natural resources should be searched.
10. Biodiversity available on earth should be protected.
11. There should be commitment of developed countries for the control of carbon emission.

These countries should transfer the efficient technology to developing countries.

Earth Summit:

An environment conference was organised in 1992 by U.N.O. in Rio de Janeiro city of Brazil. The aim of this conference was to decide the outline of future environmental programmes. This conference is known as the earth conference.

Following documents had been submitted in this conference:

- (i) Document regarding guideline principles of environment policy having 27 points declaration was submitted.
- (ii) Document agenda 21 was submitted to keep the world green in 21st century. In this agenda issues of poverty, population policy, health, education, women, youth and underdeveloped human communities were emphasized. There is description of safety of pure water resources, safety of oceans, protective use of poisonous chemicals, etc. in this agenda.
- (iii) In this document there were provisions about reduction of the emission of responsible gases for the increasing temperature of environment.
- (iv) It was proposed for biological resources that if developed countries use the biological resources of developing countries, the developed countries should share the biological technique and benefits with developing countries. U.S.A. opposed this proposal.
- (v) This document was concerned with conservation of forests but due to objection of developing countries, this document was not approved.

Central Pollution Control Board:

This board was established in India in 1974 with 7 regional offices and 5 laboratories. This

board manages the estimation and investigation for environment. This board is responsible to maintain the national environmental standards under the different environmental rules. This board collects and distributes informations related with land, water and air. This board coordinates with all the state level pollution control boards also. It gives advice to central government on controlling water and air pollution. Central pollution control board, along with State Pollution Control Boards, take steps to implement the laws of controlling the environmental pollution.

Concept of Sustainable Development:

Studies conducted about relationship between environment and economy indicate that present mode of development is affecting environment seriously and if it is continued in the same way the environment will not be able to complete our economic activities in future. In this subject the issue to be worried about is to see whether necessary ecological conditions will be available or not for future generations.

The term 'sustainable development' was firstly used in 1980 by International Union for the Conservation of Nature and Natural Resources. This term became important in 1987 in the study 'Our Common Future' of 'World Commission on the Environment and Development'. This study is also known as Brundtland Report. Sustainable development is the development which satisfies wants of present generation without reducing the capacity of want satisfaction of the future generations.

Sustainable development is based on the thinking that present generation should be free for own welfare upto the level that welfare of future generations will not be reduced. According to Tinbergen, there are three alternative definitions of allocation between present and future generations.

(a) Weak Sustainability:

Present generation should not use resources upto that level so that future generations could

not get welfare equal to present generation. Total capital stock should not be reduced.

(b) Strong Sustainability:

According to this definition the stock of balanced natural capital should not be reduced. This definition emphasizes natural capital instead of total capital.

(c) Environmental Sustainability:

According to this definition not only the value of aggregate but physical flow of individual resources should also be maintained.

So environment should be protected along with satisfaction of wants of present population. This approach recommends that the resources used by present generation should equally be maintained for the future generations. The general estimates of U.N.O. show that if present population and consumption propensity are continued, two earths will be required for our needs upto 2030.

Indian government is making efforts for the balance between development and environment. Conservation of rivers, improvement in quality of urban air, increase in plantation, rapid increase in established capacity of renewable energy source, adopting public transport system, increase in rural and urban infrastructure, etc. are such efforts of the Indian government. Clean India Mission, Nirmal Ganga Yojana, and National Solar Mission are the recent efforts.

In Rio conference (June, 2012), under the document "The future We Want", 17 objectives relating to sustainable development were included in the document. These 17 objectives are as under:

Objectives of Sustainable Development :

1. To end the poverty in all sections of society.
2. To end starvation, to obtain food security, to improve nutrition and to increase the affirmative agriculture.

3. To ensure health and to increase well-being for all.
4. To ensure inclusive and equality based education and to increase opportunities for all for life long study.
5. To establish sex based equality and to empower girls and women.
6. To ensure permanent availability and management of water and cleanliness for all.
7. To ensure availability of reliable, modern and bearable energy for all.
8. To increase full, beneficial and proper employment and inclusive & sustainable economic development.
9. To construct progressive infrastructure, to increase inclusive & affirmative industrialization and to promote innovation.
10. To reduce inequality among countries.
11. To make cities and human slums inclusive, safe, progressive and affirmative.
12. To decide consumption and production patterns.
13. To take quick action against problems related with climate change and its effects.
14. To protect oceans, seas and sea resources for sustainable development and to use them in the affirmative way.
15. To protect ecological systems of earth and to increase their affirmative uses.
16. To promote peaceful and inclusive societies for affirmative development, to make easily available justice to all and to establish effective, responsible and inclusive institutions.
17. To strengthen the implementation methods and to reactivate the global participation for affirmative development.

A proper place should be given to non-traditional sources of energy (dung gas, L.P.G., wind power, small water plants, solar energy and natural gas) and tradition knowledge of country for sustainable development because these resources have the capacity of long term development without harming environment.

Important Points:

- Environment provides physical, biological and chemical system for our life and raw material for production.
- Any inverse change in organs of earth and atmosphere affecting working of environment adversely is known as environment pollution.
- Main environment pollutions include water pollution, air pollution, soil pollution, lose of biodiversity, lack of solid waste management and noise pollution.
- Industrialization, increasing number of vehicles, deforestation, increasing population, etc. are the causes of environment pollution.
- Pollution can be controlled by development of public transport service, development of clean energy sources, adopting organic agriculture and proper management of wastage.
- Relation with environment in development process should be of such type that not only present generation but also the future generation could not suffer the problem of dissatisfaction of wants. This is the sustainable development.
- Increasing temperature of earth, depletion of ozone layer, loss of biodiversity, etc. are the challenges of environment. Whole of the world must think about control of carbon emission so that life on earth can be better.

Question for Exercise

Objective Type Questions:

1. Function of environment is:
 - (a) To provide biological, physical and chemical system for life.
 - (b) To provide raw material for production.
 - (c) Absorption of wastage
 - (d) All of the above ()
2. The gas which is not responsible for air pollution is:
 - (a) Carbon dioxide
 - (b) Carbon dimonoxide
 - (c) Sulphur dioxide
 - (d) Hydrogen ()
3. Main gas for air pollution is:
 - (a) Carbon monooxide
 - (b) Carbon dioxide
 - (c) Sulphur dioxide
 - (d) Methane ()
4. Gas responsible for depletion of ozone layer is:
 - (a) Clorofloro carbon
 - (b) Hekxaflow carbon
 - (c) Carbondy oxide
 - (d) Sulpherdyoxide ()
5. Which activity is not pollution creater ?
 - (a) Dependence on thermal energy resources
 - (b) Increasing number of vehicles
 - (c) Increasing use of agriculture chemicals
 - (d) All of the above ()

6. In which year the study report 'Our Common Future' (Brundtland Report) of 'World Commission on the Environment and Development' was published ?
- (a) 1997 (b) 1980
(c) 1987 (d) 1960 ()
7. 'Montreal protocol' is related with:
- (a) Control of ozone layer
(b) Control of increasing temperature on earth
(c) Control of loss of biodiversity
(d) None of the above ()
8. Kyoto Protocol is related with:
- (a) To control increasing earth temperature
(b) To control loss of biodiversity
(c) To control depletion of ozone layer
(d) None of the above ()
9. In which year the 'Earth Conference' was held in Rio De Janeiro city of Brazil ?
- (a) 1980 (b) 1987
(c) 1992 (d) 1965 ()

Very Short Answer Questions:

- Name two gases responsible for air pollution.
- Name the gas causing ozone layer depletion.
- Name any two causes of air pollution.
- Name any two gases causing increase in earth temperature.
- Name two gases responsible for acid rain.
- Write any two factors of soil pollution.
- Write any two reasons of loss of biodiversity.
- Write any three types of pollution.

9. Name two Global Conference Declarations (protocol) for controlling environment pollution.

Short Answer Questions:

- What is meaning of environment ?
- What is meaning of environment pollution ?
- Write main types of environment pollution.
- What is air pollution ? Define.
- What do you mean by loss of biodiversity ?
- Define soil pollution.
- What is meaning of sustainable development ?
- What is Montreal protocol ?
- What is Kyoto protocol ?
- What is meaning of strong sustainability ?
- Write any four reasons of soil pollution.

Essay Type Questions :

- What are the functions of environment ?
- Discuss nature, causes and effects of air pollution.
- Describe types of environment pollution.
- Explain the causes of environment pollution.
- What are the suggestions for control of environment pollution ?
- What is sustainable development ? Why is it required ?

Answer to Objective Questions :

- (1) d (2) d (3) b (4) a (5) d (6) c (7) a (8) a (9) c

Reference Books:

- Economic Survey : 2014-15
- Indian Economy : Mishra & Puri, Himalaya Publications.
- The Indian Economy, Ishwar Chand Dhinra, S. Chand and Sons, New Delhi.
- Indian Economy: L.N. Nathu ramka.

Chapter - 5.1

Position of Rajasthan in Indian Economy

Rajasthan has glorious place in Indian history. Rajasthan is the underdeveloped state with many natural calamities. This chapter describes the position of Rajasthan in Indian economy from the point of view of population, area and infrastructures with the comparison of other states.

Presently Rajasthan is considered as a developing state of Indian economy. This state of western part of India is associated with many paradoxes. More of the half part of Rajasthan has desert. Most of the agriculture depends on monsoon. Industries are concentrated in a few areas of Rajasthan. Rajasthan lacks the infrastructure facilities. During the last 50-60 years of development Indian economy experienced many inequalities. Many states of India have become developed and other are still underdeveloped. This regional despiritry is due to the different types of policies in different states. Rajasthan is one of the states of India which is making efforts to get developed.

The boundary of Bharatpur and Dholpur touches Uttar Pradesh and boundary of Alwar, Jaipur, Sikar and Jhunjhunu touches Hariyana. In South boundary of Dungarpur, Banswara, Jalore and Sirohi touches Gujarat and the boundary of Banswara, Kota, Baran, Dholpur, Sawai Madhopur and Karouli touches Madhya Pradesh. Thus, size of Rajasthan is like the unequal parallelogram. Length of Rajasthan from West to

East is 869 kilometer and that from North to South is 826 kilometer. Jaipur is the capital of Rajasthan situated in the East middle part. Table – 1 shows the main features of the economy of Rajasthan.

Table-1

Main Features of Rajasthan Economy

S.No.	Item	Number
1	Area	3.42 lakh Sq. Km
2.	District	33
3.	Division	7
4.	Tehsil	314
5.	District Council	33
6.	Panchayat Samiti	295
7.	Gram Panchayat	9900
8.	Village	45493
9.	City	222
10.	Municipality	147
11.	Populaiton	6.85 Crore (2011)
12.	Population Density	200

The economic infrastructure (electricity, road, transport, communication, etc.) and social infrastructure (education, health, etc.) are in the backward position in the state and there are vast possibilities of their development in future.

Now we study the position of Rajasthan according to different areas as below :

1. Area of Rajasthan:

Total area of Rajasthan is 342239 square kilometers which is 10.41% of the total area of India while area of Gujarat is 6%, area of Uttar Pradesh is 7.3%. It is clear that on the basis of area Rajasthan is the biggest state.

Rajasthan has desert in its 61% part. Area of Rajasthan is 16 times of Israel, 171 times of Mauritius, 5 times of Srilanka and 2 ½ times of Bangla Desh and Purtgal.

Rajasthan is backward due to its natural conditions along with the fact that the journey of economic development here started very late. Thus, Rajasthan requires more efforts to keep pace with other states of India.

2. Population in Rajasthan :

Total population of Rajasthan is 6.85 crore (2011) while that of India has been estimated as 121.09 crore (2011). Population of Rajasthan is 5.7% of total population of India. Indian population increased by 17.7% in the period 2001-2011 while population in Rajasthan increased by 21.3% in the same period. So, it is a matter of worry that growth rate of population in Rajasthan is higher than that of India. According to 2011 census the position of Rajasthan in India is 8th.

3. Infrastructure in Rajasthan:

Rajasthan is accounted in the category of non-specific states. Position of Rajasthan in India is 14th on the basis of infrastructural facilities. Thus Rajasthan is very backward state. The infrastructural position in Rajasthan can be studied as below:

(i) Plants of electricity production are situated at Kota, Suratgarh and Dholpur. Atomic energy plants are at Singroli, Rihand, Dadri, and Anta.

(ii) In 2010-11, per capita consumption of electricity in Rajasthan was 844 kilowatt hours which is less than that in Gujarat, Punjab and Haryana as shown in the below Table – 2:

Table-2

Percapita Electricity Consumption (2013-14)

(kilowatt hours)

State	Consumption of Electricity
Rajasthan	1011.2
Bihar	159.9
Gujarat	1972.6
Hariyana	1773.1
Punjab	1810.0
All India	956.6

Source: Economic Survey : 2016-17, Raj: Table 27, P A50.

At the end of Dec., 2016 total power capacity in Rajasthan was 17894.2 megawatt in which 5405.30 megawatt was received from the projects owned by government and rest amount of electricity was received from central projects, wind energy and solar energy projects. In 2013-14 per capita consumption of electricity was 1011.2 kilowatt hours in Rajasthan. Upto March 2014, 40249 villages were electrified while there were total 45493 villages in Rajasthan in 2011.

(ii) It was estimated that upto the end of March 2016 length of roads per 100 square kilometer area was 63.61 km while national average was 166.47 km and thus the condition of Rajasthan is not satisfactory.

(iii) For balanced and integrated development of Rajasthan development of roads is necessary and an important mean. Roads prepare efficient and effective base for all sectors of economy which results into economic and social benefits. Roads reduce

the distance between centers of services and knowledge. There is positive correlation between economic development and road system. Length of roads in Rajasthan is less than that in Gujarat, Hariyana and Madhya Pradesh. In March 2015 the length of railway route was 5898 km in Rajasthan in which 4801.18 km was the length of broad gaze, 983.71 km of meter gaze and 86.70 km was of the narrow gaze. This is also not satisfactory.

- (iv) In Rajasthan the literacy ratio in people of SC and ST is very low. This direction still needs much more efforts. Enrollment level is increasing but drop out is also very high. Following Table 3 shows the Gross Enrollment Ratio (GER) in Rajasthan.

Table- 3
Gross Enrollment Ratio (2014-2015)

Area	Primary Class (1-5)			Middle Class (6-8)		
	Boys	Girls	Total	Boys	Girls	Total
Rajasthan	98.8	97.3	98.6	87.4	83.9	85.8
All India	94.9	101.4	100.1	87.7	95.3	91.2

(Economic Survey : 2016-17.P.111: Statistics of School Education)

It is clear that in middle schools GER of girls is lower in Rajasthan than in India.

Level of literacy is also very low in the state. In 2011, it was 66.1%. It was 79.2% for male and 52.1% for female.

- (v) In health facilities the position of Rajasthan is very backward in comparison with India.

Following Table-4 shows the index of health indicators:

Table-4
Indices of Health Indicators (2015)

Area	Infant Mortality Rate	Birth Rate	Death Rate
Rajasthan	43	24.8	6.3
India	37	20.8	6.5
Kerala	12	14.7	6.9

(Economic Survey: 2015-16, Table 27, P.A49)

Table clears that birth rate in Rajasthan is more than in India. Infant mortality rate in Rajasthan is more than in India. Position of Kerala is better than both Rajasthan and India. In 2016, total allopathic medical institutions were 17546 in Rajasthan in which 113 were hospitals. In 17546 institutions, sub-health centers were 14408 and dispensaries were 194.

- (vi) Position of Rajasthan in banking facilities is not satisfactory. In June 2016, number of bank branches in Himachal Pradesh were maximum.

4. Position of Agriculture in Rajasthan Economy:

70% population of Rajasthan earn living from agriculture. In economy of Rajasthan agriculture plays very important role where half of the total income comes from agriculture and other related activities. Irrigation is important in agricultural production. Rajasthan lacks the surface water sources. Due to less rainfall underground water level is reducing, Due to uncertainty, unequal distribution and unfavorable weather conditions agriculture production is decreased or increased.

Contribution of agriculture can be seen as below:

- (i) Size of average holding in 2010-11 was 3.07 hectare in Rajasthan while in India it was 1.15 hectare. In 2005-06, this size was 3.38 hectare in Rajasthan. In agriculture holding Nagaland is at the first place and Rajasthan is at the 4th position in India.
- (ii) In 2009-10, 11.3% of the total agriculture area of India we found in Rajasthan. Here, position of Rajasthan in India is 1st.
- (iii) Rajasthan is an important producer of oil seeds. 1/8 of the total oil seed production in India comes from Rajasthan. Rajasthan occupies 1st place in India in the production of mustard.
- (iv) In 2015-16, 7.5% production of foodgrains comes from Rajasthan. Place of Rajasthan is very important in India in the production of cotton.
- (v) Jawar, rice, bajara, maize, gram, wheat, mustard, oil seed, cotton and pulses are the famous crops of Rajasthan. Since some years in past Rajasthan has shown progress in the production of vegetables, orange, lemon and malta. In commercial crops red peper, mustard and cumin seed are famous in Rajasthan.

5. Position of Rajasthan in Irrigation:

Agriculture in Rajasthan depends on rainfall. Large regional disparities are seen in the availability of water for irrigation. Rivers of Chambal, Mahi, Ravi and Vyas are the good source of water. Ganganagar, Bikaner, Jaisalmer and Jodhpur receive water from Indira Gandhi canal while Kota, Bundi, Baran and Sawai Madhopur receive water from the Chambal river. Mahi-Bajaj Sagar supplies water to Banswara.

In 2012-13, gross irrigated area was 39.47% which was less than that in India.

6. Position of Industries in Rajasthan Economy:

Economy of Rajasthan is an industrially backward economy. State government is making efforts for industrial growth through various plans and programs. In 2015 under Resurgent Rajasthan a conference of foreign industrialists was organised in Jaipur to create the investment atmosphere.

Gross state domestic product measures all achievements of an economy. Economy of Rajasthan is agriculture based economy and when agriculture production increases or decreases then growth rate also increases or decreases.

Agriculture sector includes agriculture, animal husbandry, forestry and fisheries. Industrial sector includes mining, registered manufacturing units, non-registered manufacturing units, electricity, gas and water supply. Service sector includes railway, other transport, warehousing, communication, trade, hotel, public administration, banking and insurance.

Rajasthan is backward in factory sector but is doing well in handicrafts, and rural industries. Exporters of Rajasthan earn foreign exchange from ornaments, carpets and hand weaving. Factories in Rajasthan are 2 ½ times less in comparison to Gujarat and Maharashtra.

7. Position of Minerals in Rajasthan:

Rajasthan is enriched in minerals. There are 39 big minerals and 22 small minerals. On this ground place of Rajasthan in India is 2nd. In production of copper and zinc Rajasthan is at the first place. At current prices Rajasthan earned Rs. 511 crore in 1991-92 from minerals which is 2% of the net domestic product. It became 4.5% in 2013-14. 70% of total production of minerals come from Rajasthan.

Important Points:

- Rajasthan is less developed state due to draught, irregular rainfall and lack of water resources.
- Rajasthan lacks infrastructure facilities. So, Rajasthan is said to be backward.
- Agriculture is the base of economy of Rajasthan.
- Uttar Pradesh has less land area and in agriculture production it has higher levels in comparison to Rajasthan.
- Total product from all sectors in the period of one year is known as gross domestic product.
- Deducting depreciation from gross domestic product gives net domestic product.

Questions for Exercise

Objective Type Questions:

1. On the basis of area, the biggest state is
 - (a) Uttar Pradesh
 - (b) Madhya Pradesh
 - (c) Rajasthan
 - (d) Bihar ()
2. The % part of desert in Rajasthan is-
 - (a) 27%
 - (b) 61%
 - (c) 40%
 - (d) 50% ()
3. Population of Rajasthan in 2011 was-
 - (a) 6.85 crore
 - (b) 5.85 crore
 - (c) 6 crore
 - (d) 7 crore ()
4. At end of December 2016, the electricity production capacity of Rajasthan was-
 - (a) 17894.2 megawat
 - (b) 5405.30 megawat
 - (c) 11371.61 megawat
 - (d) 15405.30 megawat ()
5. In 2010-11, the average land holding was
 - (a) 3.07 hectare
 - (b) 1.05 hectare
 - (c) 3.88 hectare
 - (d) 4.07 hectare ()

Very Short Answer Questions:

1. What is area% of Rajasthan in comparison to area of India?
2. Which place is occupied by Rajasthan in India in the production of minerals ?
3. In which minerals production Rajasthan occupies 1st place?
4. In which district of Rajasthan the Mahi is constructed ?
5. What was the production of oilseeds in Rajasthan in comparison to India ?

Short Answer Questions:

1. What is difference in gross domestic state product and net domestic state product ?
2. Write a note on agriculture in Rajasthan.
3. What is relation between land and agriculture in Rajasthan economy ?
4. Explain the position of Rajasthan in India on the basis of industries.
5. Write a brief note on geographical situation of Rajasthan.

6. Explain the importance of mineral estate in Rajasthan.

Essay Type Questions:

1. Determine the place of Rajasthan in Indian economy.
2. Determine the place of Rajasthan in Indian economy in agriculture, industry and area.
3. Geographically, Rajasthan is larger than Gujarat and Maharashtra but economically backward. Explain.

Answer to Objective Type Questions:

(1) c (2) b (3) a (4) a (5) a

Reference Books :

- Economy of Rajasthan- Dr. Chhipa and Sharma J.P.H., Jaipur
- Economic Survey : 2016-17

Chapter - 5.2

Natural Resources in Rajasthan

Importance of Natural Resources in Economic:

Natural resources include all those free gifts provided by nature which are available in the atmosphere (physical environment) and on which earning for living depends. Natural resources include land, climate, forest, soil, mines, water and energy.

Nature, level, and development of any economy depend on quantity, quality and use capacity of physical and natural resources. Natural resources provide base for whole of the economic system and affect each aspect of economic life of human being.

Mining resources provide raw material to industries. Oil, coal and natural gas are like the back bone for the economy.

Rapid growth of America, Britain, France, Germany, etc. took place to large extent due to the natural resources. In the same way Punjab, Hariyana, Gujarat, Maharashtra and other Indian states have developed with the help of these natural resources. Rajasthan is the biggest state of India with geographical area of 3.42 lakh km which is 10.41% of the total area of the country. Climate, land, forest, water and minerals in Rajasthan determine both the direction and condition of industrial development which has long term effect on income and employment. So it is correct to say that quantity and quality of

natural resources affect the economic development of Rajasthan. Proper utilization of these resources can further boost the economic development of the state and thus problems of poverty, employment, etc. can be solved effectively.

Land Resources in Rajasthan:

Land resources directly affect the agricultural development. Here the quantity and quality (both aspects) of land resources are important. Agriculture is the most important economic activity in economy of Rajasthan. Crops are produced by keeping in view the types of soil, rainfall and climate. Use of land in economy is done as the primary resources, Rajasthan is mainly divided in four parts on the basis of land and climate.

1. North-West Desert Region
2. Eastern Plants
3. Central Mountain Area
4. South-East Plateau

1. North-West Desert Region:

About 61% part of the state lies in this region. There are 12 district in this region, mainly Bikaner, Churu, Jaisalmer, Barmer and Jodhpur. Marwar area and Thar desert are in this region. Main characteristics of this region are:

- (i) Average rainfall in about 12-15 cm which is

less and thus ureals are mainly produced.

- (ii) Mostly sand soil is available.
- (iii) Gwar, Jawar, bajra, moong and moth are the main crops.
- (iv) Irrigation facility is available in Ganganagar and Hanumangarh districts and thus crops of cotton, wheat and sugarcane are sufficiently produced.
- (v) Salt is produced in the salt water lakes of sambhar, Didweana and Pachpadra.
- (vi) Animal husbandry is the main industry.
- (vii) 57% area of Rajasthan is covered by this region.

2. Eastern Plains :

This region includes Jaipur, Dausa, Bharatpur, Dholpur, Tonk, Sawai Madhopur, Karouli, Alwar, Sikar and Some part of Jhunjhunu district contribution of this region in Rajasthan economy is so-so. Its main characteristics are:

- (i) Average rainfall is of 40-80 cm and this there is more population density.
- (ii) Wheal, oilseeds, cotton, sugarcane, gram, bajra and mustard are the main crops.
- (iii) Sufficient water availability is there and thus this region is fertile. This region covers 23% area of the state.

3. Central Mountain Area:

This region includes mainly Dungarpur and Udaipur with some part of districts of Sirohi, Pali, Banswara and Chittorgarh. Gurushikhar (172 meter high) and moutn Abu are in this region. Main characteristics are:

- (i) Average rainfall is 20-90 cm.
- (ii) Red, black, brown and stone based soil is found.
- (iii) Copper, mica, iron, zink, etc. are the main mining products.

- (iv) It covers about 9% area of Rajasthan.

4. South-East Plateau:

This region is also known as the Malwa-Harouti region in which districts of Kota, Baran, Bundi and Jhalawar are situated. Red and black soil is available and cotton, groundnut, rice, sugarcane and wheat are the main crops. Average rainfall is of 30-70 cm.

Soils in Rajasthan:

Crop pattern, sources of irrigation, means of transport and population density depend on nature of soil. The soil found in Rajasthan is of the following types.

(1) Sand Soil:

Area of this soil is the largest in the state. It is not more fertile. It is mainly available in districts of Churu, Barmer, etc. mostly cereals are produced in this soil.

(2) Red soil:

This soil has nitrogen, phosphorus lime, potash and iron elements in it. It is available in Dungarpur, Udaipur and Ajmer districts.

(3) Loan Soil :

This soil has potash, lime, phosphorus and iron in it. This soil lacks nitrogen and found in Jaipur, Dausa, Tonk and Dholpur districts.

(4) Black Soil:

This soil lacks nitrogen and organic matter with sufficient quantity of calcicum. This soil is found in Bansawra, Pratapgarh, Bundi, Jhalawar and Baran districts.

Except these soils red and yellow soil, red and black soil, brown sand soil are also found in different places of Rajasthan. Improvement in soil structure and productive capacity are always welcome and for it the water problem should be solved. Surface and ground water exploration should be controlled. Practices of deforestation should be checked and controlled.

Government Efforts in Land Conservation:

These are as given below:

- (1) Desert Development and Draught Prone Area Programs are running to check the expansion of desert.
- (2) Research work is being carried out on dry area at 'KAJARI' institute in Jodhpur.
- (3) Work of land reform is being done with the central cooperation under the 'combating desert program.'

Water Resources in Rajasthan:

Economy of Rajasthan depends on available water resources as water is required for agriculture and Rajasthan economy is an agriculture based economy. The occurrence of frequent famine and draught is the common in this state. 13.9% of the total agricultural area in India is in Rajasthan alone while 1% of the water resources is available in this state. Water resources are of two types in Rajasthan:

1. Surface water :

It includes the sources of rivers, canals, lakes and dams.

2. Underground Water:

It includes the sources of wells, handpumps and tubewells.

Main Rivers in Rajasthan:

These are as below :

1. Chambal River:

Details of this river are as under-

- (i) This river originates from Janabhav hill near Mau in Madhey Pradesh and passes through Kota, Sawai Madhopur and Dhoulpur districts. Chambal river's length is about 210km and at last it joins the Yamuna river.
- (ii) Kali Sindh, Parvati, Parvan, Banas, etc. are the tributaries of Chambal river.

(iii) Gandhi Sagar, Jawahar Sagar and Rana Pratap Sagar dams are on the Chambal river.

(iv) Electricity is generated from its water.

2. Mahi River :

(i) This river originates from Vindhya hills of Madhay Pradesh and flows for 174 km in Rajasthan. Then it enters in Gujarat.

(ii) Mahi Sagar dam is constructed on this river in Bansawara.

(iii) Electricity is generated from the water of Mahi river.

3. Banas River:

(i) It originates from Khamanor hills (Kumbhalgarh).

(ii) The Bisalpur dam is on this river which is used for drinking water and irrigation.

4. Looni River:

It is the largest river of Rajasthan. It originates from the Nag hill near Ajmer, flows in Jodhpur district. Salt is produced form water of Looni river.

Banganga, Ghagghar, Sabarmati, Sookari, Sahibi, Katli, Mantha, Jakham, Parvati, Kali Sindh, Meza, etc. are the other river of Rajasthan.

Lakes in Rajasthan:

Following is the information about

1. Lacks of Sweet water:

Pichhola lake, Fateha Sagar lake, Rajasamand lake and Jaisamand lake are in Udaipur. Aana Sagar lake, Faisagar lake and Pushkar lake are in Ajmer. Silised lake (Alwar), Nakki lake (Sirohi), Nav Khan lake (Bundi) and Kailana lake in Jodhpur are the other sweet water lakes.

2. Lack of Salti Water

These are used for making salt. Sambhar

lake (Jaipur), Didwana lake (Nagour), Lunkaransar lake (Barmer) are the lakes of salt water. 'Sambhar Salt Limited' produces salt in Rajasthan.

Main Canals in Rajasthan:

These are as described below:

1. Indira Gandhi Canal:

The origin of this canal is Harike dam on Satalaj and Vyas rivers. Its water is used for irrigation in Ganganagar, Bikaner, Barmer, and Jaisalmer districts.

2. Ganga Canal:

It originates from Husainiwala near Firozpur from the Satalaj river. It irrigates Ganganagar district.

3. Bharatpur Canal:

This canal is a branch of Agra canal which is 28 km long. It irrigates Bharatpur district.

Wells, Tubewells and Dams :

Through wells and tubewells underground water is used. In dams rainfall water is collected/stored. Level of underground water is an issue to be worried about. Water in dams depends on rainfall.

Efforts of proper utilization of water Resources in Rajasthan:

Following point are to be mentioned.

- (i) Available water should be used properly. Improved irrigation techniques should be used.
- (ii) Water sources are fixed in nature. So water conservation efforts should be made. Effective farmers should control the water irrigation system.
- (iii) State share in international water resources should completely to used.

- (iv) Rainfall water storing should properly be managed so that the depleting underground water level can be checked.

Forest Resources in Rajasthan :

Relation between vegetation and human being is seen from afar. Vegetation affects human life, culture, and daily routine. Rajasthan is backward in vegetation. Area of Rajasthan covered by forest is about 7% to 8% while according to the national forest policy forest should cover 33.33% of the total area. In India forest is in only the 22.8% area.

Role of forest in the economy of a state is very important. We have three types of natural vegetation in Rajasthan. These are forest, grass and desert vegetation. The south-east part of Rajasthan has forest only in the districts of Sawai Madhopur, Kota, Jhalawar, Baran, Bundi, Banswara, Dungarpur, Chittorgarh, Udaipur, Alwar, Bharatpur and Sirohi. Karouli, Baran and Udaipur districts have maximum forest area while Churu and Jaisalmer have least forest area.

Administratively, forest in Rajasthan is divided in there parts:

1. Reserved Forest:

In these forests grass feeding to animals and cutting of trees are not allowed.

2. Protected/Safe Forest:

In these forests people are sometimes allowed for feeding grass to animals and to cut the dried trees.

3. Unclassified Forest:

In these forests rainy grass pastures, trees and small shrubs are found.

Types of Forests:

These are described as below:

1. Forest of Dry Sagwan:

These are mainly found in Banswara and Dungarpur districts and in some parts of Udaipur, Chittorgarh and Kota districts.

2. Mixed Autumn Forest:

Mainly in Udaipur and some parts of Kota, Bundi, Chittorgarh, Rajsamand and Sirohi districts these forests are found. Main trees of these forests are banyan, gluten, blackberry, acacia, mango, etc.

3. Tropical Forest:

Thorn trees are found mainly in Bikaner, Jodhpur, Ajmer, Sikar, Pali, Jhunjhunu, Dausa and Nagour districts. Acacia, Sal, Ber, etc. are the main trees of this forest. Quadrant (Khejri) is the famous tree of this forest that is why it is known as the tree of heaven and it is the state tree of Rajasthan.

4. Semi-Dry Mangrove Forest:

These are the ever green forests. The area of 32 square km around Abu mountains has these forests. This is the area of semi dry mangrove forest of Rajasthan. Mango, bamboo, blackberry, neem, rohita, etc. are the main trees here.

Economic Contribution of Forests in Rajasthan:

Following points show the economic contribution of forests in Rajasthan:

1. Building Wood:

In forests of Rajasthan wood of Saagwan, Salar, Acacia, Mango, etc. is used in buildings.

2. Fuel:

Forest wood is used as fuel for cooking food, etc.

3. Grass:

It is used for animals and in making of ropes, broom, etc.

4. Bamboo:

It is used in making basket, paper, hut, bunk etc.

5. Honey and Wax :

We get honey and wax from forests.

6. Kattha, Khas and Tendu Leaf:

These are also obtained from forests of Rajasthan and have their commercial use.

7. Tourism Industry:

Forests attract tourists because of their natural beauty and thus foreign exchange is earned.

Government Efforts for Forest Development:

Government of Rajasthan has taken following actions for forest development:

1. Under program of social forestry individuals and Panchayat Raj institutions are distributing plants to get them sown in rural and urban areas.
2. Plants are given to farmers, schools and government institutions under farm forestry.
3. Budget of Rs. 1617.6 was allocated for forestry development in 2012-13 under 12th five year plan. Forest department is making efforts to reduce the desert area.
4. Work of plantation was done in 1992-93 to 2002 under Aravali plantation.
5. Plantation was done under Indira Gandhi Canal Project Forestry, non- Aravali forestry and non-Marwari forestry.
6. With the assistance of Japan steps were taken to develop and conserve forestry under the Rajasthan Forestry and Biodiversity Project in the period of 2012-13 to 2018-19.
7. 19 forest development agencies have been established in Rajasthan under the

Integrated Rural Forestry Plan of the Indian Government.

Mineral Resources in Rajasthan:

Different aspects of minerals in Rajasthan have been analysed as below:

Role of Minerals in Economic Development:

Mineral resources also decide the direction of economy like natural resources. Iron, still, cement, coal, petrol and diesel, etc. are very useful for the economic development. Each mineral is used as raw material in industries and thus increases the income and employment.

Following are some facts about mineral resources in Rajasthan.

1. The place of Rajasthan in India is 5th from the point of view of product value.
2. About 5 lakh people have got employment directly or indirectly in mining activities in Rajasthan.
3. At current prices Rajasthan earned Rs. 511 crore in 1991-92 and Rs. 21750 crore in 2013-14 from the mining business.
4. Presently Rajasthan is the single producer of jasper and bolastonite in the country.
5. Rajasthan has the first place in India in the production of lead, zinc ore, tungeston ore, phosphorus, calcite, ceramic, felsphere, garnet, gypsum, jasper, silver ore soap stone, etc. Table -1 shows the % share of Rajasthan in mineral production in India:

Table -1

% Share of Rajasthan in Mineral Production in India.

S.No.	Mineral	% shavna
1.	Bol Stonite	100%
2	Jaspar	100%
3	Zinc Phosphate	99%

4.	Florite	96%
5.	Gypsum	93%
6.	Marble	90%
7.	Asbestos	89%
8.	Soap stone	87%
9	Zink	80%
10	Rock Phosphate	75%

Rajasthan is very backward in the production of iron ore, boxcite, croprite, magnese, coal and petroleum. Rajasthan is now doing something good in petroleum in Barmer district. Contribution of Rajasthan in mineral production in India is 5.74% with 5th place.

Presently there are 39 main minerals (zince, lead, gypsum, copper, etc.) and 22 minor minerals like kota stone, sand stone, marble, etc.

Main minerals of Rajasthan are as discussed below:

1. Metallic Minerals:

Copper, gold, iron, lead, zinc, silver, magnese, etc. are the metallic minerals. These are used in metallic industries. Lead and zinc are used in making gun bullets.

Copper is found in Khetri-singhana (Jhunjhunu), lead and zinc are found in Jawar and Rajpura Dariba area (Udaipur), tunguston is found in Revat hill Degana (Nagour), and magnese is available in Banswara, Jaipur, Udaipur and Sawai Madhour districts.

2. Non-metallic Minerals:

Asbestos, felspar, silica sand, china clay etc. are the non-metallic minerals. Asbestor is found in Udaipur and Dungepur districts. Most of the felspar is available in Ajmer district.

3. Electronic and Automic Minerals:

Mica is found in Bhilwara, Jaipur, Tonk, Udaipur and Ajmer districts. In India, Rajasthan

has the 3rd place in the production of mica. Mica is used in the production of electrical equipments aeroplane, computers, transport and medicines.

Under automic minerals uranium is found in Udaipur, lithium in Ajmer and breayl is found in Bhilwara district.

4. Precious Minerals:

Under precious minerals emerald and garnet are included. In the production of emerald Rajasthan has the monopoly. It is available in Udaipur, Rajsamand and Jodhpur districts.

Garnet is available in Ajmer, Tonk, Bhilwara and Sikar districts. In its production there is monopoly of Rajasthan. It is found in the red colour.

5. Fertilizer Minerals:

Gypsum, rock phosphate, pyrites and limestone are the fertilizer minerals. Gypsum is used in colours, chemical fertilizer and plaster of paris. It is found in Nagour, Bikaner, Churu, Sriganaganar, Jodhpur, Jaisalmer, Barmer, Pali and Jalore districts.

Rock Phosphate is used in chemical fertilizer. It is available in Udaipur (Jhamra-Kotra, Dakan Kotra, Bhinder, Bailagarh, Lakhwas) and Jaisalmer (Lathi and Birmaniya).

Pyrites is found at Saladipura in Sikar district. It is used in chemical fertilizer.

Lime stone is largely available in Ajmer, Udaipur, Banswara, Chittorgarh, Bhilwara, Sirohi, Pali and Jaisalmer.

6. Minor Minerals:

Bentonite is a minor mineral. It is available in Barmer, Sawai Madhopur and Bikaner.

Multani soil is a natural soil and is available in Bikaner (Palana, Kesar Desar), Barmer (Kapurdi, Alameriya, Shiv) and Jaisalmer districts.

Marble, granite and building stone are also the minor minerals. 100% quality marble is found in makrana (Nagour). It is also found in Sikar, Jaipur, Alwar, Udaipur, Jalore and Sirohi districts.

Granite is found in Sikar, jaipur, Jhunjhunu, Ajmer, Dausa, Barmer, Pali, Bhilwara, Alwar and Sirohi districts.

Building stone is mostly available in Jodhpur, Kota, Jhalawar, Jaipur, Bikaner, and Chittorgarh districts. Red building stone is available in Karoli, Bharatpur and Dholpur districts.

7. Other Minerals:

(i) Soap Stone:

Rajasthan has monopoly in its production. It is used in toys, cosmetic products, rubber, etc. It is found in Jaipur, Dausa, Alwar, Bhilwara and Dungarpur districts.

(ii) Slate Stone:

It is used in making slates. It is exported to Germany, Holand and Australia. It is available in Alwar district.

(iii) Calcite:

It is also known as calcium carbonet and is used in making of paper, taxtiles, paints, etc. It is mainly found in Sikar district and in Sirohi, Pali, Jaipur and Udaipur districts also.

8. Petroleum, Natural Gas and Coal:

In desert land of Rajasthan oil fields are available in Barmer district. It will change the fate of Rajasthan. These oil fields are known as mangala, shakti, aishvarya, saraswati, rageshwari, kameshwari, vijaya, vandana and bhagyam.

Lignite coal is used in production of electricity. 60 crore tone coal is found in Barmer, 35 crore tone in Bikaner and 20 crore tone coal is available in Nagour district.

Search of Oil, Natural Gas and Coal Bed Mithen (CBM) Wells:

- In 2016-17, 33 oil wells have been searched in Jaisalmer and Barmer-Sanchur basin.
- Till now stock of 3.7-4.1 billion barrels of oil has been discovered in Barmer-Sanchour basin. Upto December, 2016 Ms. Keyarn Energy searched 171 oil wells.
- Petroleum sector gives important reveue to Rajasthan In 2014-15, Government of Rajasthan received Rs. 5100 crore as revenue from the petroleum sector.
- Production of mineral oil has started from 29-08-2009 in Mangla Oil Field.
- Ms. Focus Energy has completed the work of 50 oil wells in Shahgarh Sub-Basin in Jaisalmer.
- High quality gas has been searched in 3 wells.
- Production of high quality gas has started from July 8, 2010 by Ms. Focus Energy.
- Production of natural gas has been started in 16 oil wells in Shahgarh Basin.

Problems of Mineral Industry in Rajasthan and their Solutions:

Many types of minerals are available in Rajasthan and some of them have been developed irrationally. Some of minerals are still not developed. Following are the problems of the mineral industry.

1. Unequal Distribution of Minerals:

Most of minerals are found in southern and South-East districts of Rajasthan. Less minerals are available in North part of the state. Due to this there are inequalities in economic development of the state.

2. Unplanned Exploration:

Due to lack of transport facilities and new

technology minerals are being explored, without any rational plan. Secondly, the cost of exploration of minerals is higher in hill areas.

3. Lack of Machines and Equipments :

Due to shortage of financial resources with mining owners they can not purchase good quality machines and required equipments.

4. Lack of Fuel and Iron Minerals:

Engineering and heavy industries are not being developed due to lack of iron and fuel.

5. Lack of Efficient and Trained Workers :

Most of workers engaged in mineral industry are not efficient and well trained.

6. Lack of Water and Electricity:

Rajasthan lacks both in water and electricity. Due to this mineral industry is underdeveloped.

7. Most of the minerals are explored in Rajasthan and sent outside for purification which reduces quality.

8. According to Geologists, the rate at which minerals are being explored is very high and in future the quantity of minerals will decrease. This will create a big problem. So it is necessary to conserve the mineral resources. There should be a proper mineral policy of the government.

In 1979, the Rajasthan State Mineral Development Corporation was established. Its objective was to accelerate the exploration and marketing work of minerals and to adopt the scientific method in it.

In the same way Rajasthan State Mining and Minerals Corporation and Rajasthan State Tungsten Development corporation were established.

New Mineral Policy of Rajasthan, 2011

The mineral policy in Rajasthan was

declared in 1994 and 2005. In 2011 new mineral policy has been declared in Rajasthan with 11 objectives as given below:

1. Creation of favourable atmosphere for value added of minerals.
2. To increase employment opportunities.
3. To increase use of modern techniques in the exploration of minerals.
4. To promote mechanized and scientific exploration keeping in view the environmental products and mineral protection.
5. To mobilize human resources to increase the mine and mineral based industries.
6. To expand basic facilities in output areas.
7. To expand basic facilities in mining areas
8. To promote the work of mining and testing of fertilizers and industrial minerals.
9. To promote petroleum refinery and methane and lignite based industries.
10. To simplify processes and rules to solve the problems in mineral development.
11. To implement measures to increase welfare of mining workers.

Important Points:

- Natural resources include all the free gifts received by human being from nature.
- Base of economy depends on structure, type and fertility of land.
- Agricultural production depends on the proper contribution of land and water resources. Increase of agricultural production increases the economic activities of public.
- Water resources give assistance to all the processes of production in an economy.

- Forest has important contribution in the prosperity of a state. Developed forests balance the environmental activities.
- Forests develop tourism in Rajasthan. Pollution is controlled and foreign exchange is received from forests.
- Minerals are the life line for the economy of Rajasthan. The state which has sufficient minerals and explores them properly, get the higher levels of income and employment.

Questions for Exercise

Objective Type Questions :

1. Importance of natural resources lies in-
(a) Increasing state domestic product
(b) Consumption and environment improvement
(c) Development of tourist industry
(d) All of the above ()
2. Number of natural parts of Rajasthan is –
(a) Four (b) Five
(c) Three (d) Ten ()
3. District of North-West desert is-
(a) Churu (b) Kota
(c) Jaipur (d) Tonk ()
4. Tree of heaven of Rajasthan is –
(a) Neem (b) Ker
(c) Khejara (d) Babool ()
5. Mahi dem is situated in district of-
(a) Kota (b) Tonk
(c) Banswara (d) Jaipur ()
6. Sambhar lake is situated in district of.
(a) Jaipur (b) Nagour
(c) Barmer (d) Churu ()

7. The mineral whose 100% production in India is in Rajasthan is –
 - (a) Bolastonite and Jaspur
 - (b) Rock Phosphate and lead concentrate
 - (c) Iron
 - (d) Soap Stone ()

Very Short Answer Questions:

1. Name two lakes where salt is produced.
2. Where is 'KAJARI' institute?
3. Where is Pachpadra lake ?
4. What is mineral whose project is his khetari ?
5. Which dam is on the Chambal river ?
6. In which district the Bisalpur dam on Banas river is constructed ?
7. When was the first mineral policy of Rajasthan declared ?

Short Answer Questions :

1. Name the important minerals received from forests.
2. Name the main canals of Rajasthan which are used for irrigation.
3. Explain the impact of mineral resources on income and employment.
4. Where are the salty water lakes in Rajasthan ? What is economic use of these lakes ?
5. Developing forest area gives economic benefits and earns foreign exchange. Explain.

Essay Type Questions :

1. Why is the economy of Rajasthan affected from natural resources ? Explain in detail.
2. How does the increase in forest and water resources strengthen the economy of Rajasthan ? Explain.

3. Minerals are the backbone for the Rajasthan economy. Explain this statement.
4. If fertile land and sufficient water resources are available in a state, its economy can not be weak. Explain your views in detail.

Answer to Objective Type Questions:

- (1) d (2) a (3) a (4) c (5) c (6) a (7) a

Reference Books:

1. Economic Appraisal of Rajasthan : 2016-17
2. Economy of Rajasthan- Dr. Chhipa and Sharma, J.P.H., Jaipur.

Chapter - 5.3

Human Resources Development in Rajasthan

We use natural resources and natural resources are not active. Human resources get maximum production with the help of natural resources which is used by human resources. So human resources are both means and ends and are more important than natural resources. Without human resources research and development work are not possible. Human resources are a liability also because food, residence, education, health, entertainment and employment are arranged for them.

For the rapid economic development of any economy both physical and human resources are required. Physical resources are explored by human resources. In human resources the quantitative and qualitative aspects are included. Better the both aspects higher the levels of economic development. Human resources are the social infrastructure of the economic system in which population, education, health, habitat and drinking water are studied. Population affects various aspects of economic development.

Meaning of Human Resources:

Human being has the capacity of knowledge gaining and its expansion. To gain knowledge there is need of positive thinking, proper training and efficiency. When we complete these processes with success, we become more valuable and get the maximum social status. For this the first step is the education which has to be

supported further by good health. When both these things become together with human being, human being becomes able to choose the best alternatives. Such person develops himself alongwith the development of nation. This is known as human formation or human resource.

As soil is changed in to the soil pot through the production process, in the same way education converts human being into human capital and this is known as human development. In all round development of human being social background, good educational and training institutions, and health facilities play important role.

Importance of Human Resources:

The main base of development is the population. For the proper use of natural resources, human resources are required. Population affects economic development also. Population affects various indicators of economic development like labor force, rate of capital formation, level of income, per capita land ratio, distribution of income, living standard, level of investment, size of production and productivity, environment, etc. The main points in this regard are as below:

- i. Size of human resource indicates the power.
- ii. Necessary labor force is achieved from population.

- iii. Human resources use natural resources and increase their productivity
- iv. Population, on one hand, is a factor of production and on the other hand, it is the end also.
- v. Increase in population increases the market demand.
- vi. Research, innovation and invention are possible only by the human resources.
- vii. Technical knowledge is developed.

Even having the favourable effects of population, there are many unfavourable effects of it also.

Position of Human Resources in Rajasthan:

Position of human resources in Rajasthan can be seen as below:

Human resources have two aspects:

1. Quantitative Aspect:

Under this aspect following facts are included:

- i. Population size and growth
- ii. Density of population
- iii. Urban and rural population in Rajasthan

2. Qualitative Aspect:

It includes the following sub-aspects.:

- i. Education and literacy
- ii. Health
- iii. Habitat

All the above aspects (and their sub-aspects) have been analysed as below in reference of Rajasthan:

Quantitative Aspect:

i. Population Size and Growth in Rajasthan:

The factor which affects the development of

human being mostly is the size and growth of population. If growth of population is uncontrolled, there is lack of able persons which harms the human capital formation which has its negative effect on the economy. Most of the state income is used to fight with the issues of poverty, residence facilities, health and education and thus developmental works are badly affected. Thus study of size and growth of population of a state becomes necessary. Table-1 shows the size and growth of population in Rajasthan.

According to census of 2011, the population of Rajasthan increased upto 6.85 crore (which was 5.65 crore in 2001) and population of India increased upto 121.06 crore in 2011 which was 102.07 crore in 2001. In the period 2001-2011, the population of Rajasthan increased by 1.20 crore. This decadal growth rate was 21.30% while that for India was 17.7%. Thus the decadal growth rate of population in Rajasthan is more by 3.6% than in India but the area of Rajasthan is 10.4% of the area of India. 5.7% of total population live in Rajasthan. The place of Rajasthan in India from the population point of view is 8th. Uttar Pradesh has the maximum population in India.

Table-1

Year	Population (Crore)	Decadial Growth Rate 1%	Special note
1901	1.03	-	
1911	1.10	670	
1921	1.03	(-)6.29	Negative growth
1931	1.17	14.14	
1941	1.39	18.01	
1951	1.60	15.20	
1961	2.02	26.20	

1971	2.58	27.83	
1981	3.43	32.97	Maximum growth
1991	4.40	28.44	Rapid growth
2001	5.65	28.41	
2011	6.85	21.30	

It is clear from the table that population in Rajasthan increased from 1.03 crore in 1901 to 6.85 crore in 2011. In 1901-1951, population increased by only 57 lakh while in 1951-2011 it increased by 5.25 crore. After independence population increased rapidly which is an alarming issue and needs to be thought upon.

The growth rate of population in Rajasthan had been more than that in India. This has resulted into the higher population size in Rajasthan. Before independence both birth and death rates were lower in Rajasthan and thus both population size and growth were low. In this way there was no population problem. In 1921 growth rate was negative due to epidemic, disease, and world war.

In 2011, population was maximum in Jaipur district and minimum in Jaisalmer. The maximum population increase as 32.5% in Barmer and minimum increase was 10% in Ganganagar.

Causes of Population Growth in Rajasthan

There are many causes of population growth in Rajasthan. These are:

1. Child Marriage:

In rural Rajasthan child marriage is a common event which results into birth of children in lower age and thus population starts increasing rapidly. The legal marriage age is 21 years for boys and 18 years for girls but this rule is frequently ignored by people.

2. Poverty and Low Living Standard:

Rajasthan is traditionally a backward state. Population is used both as power and resource and so people keep large size of family for both power and resource. This results into increase in population. Presently people consider additional children as additional source of income. These small children are engaged in earnings.

3. Lack of Education:

In Rajasthan the level of literacy is low and due to this people do not think about their future. Female literacy is lower than male literacy in Rajasthan. Due to this there is lack of family planning methods and thus population increases.

4. Economic Backwardness:

Rajasthan is economically backward. There is negative relation between level of economic growth and size of population. So growth rate of population is higher

5. Hot Climate :

Climate of Rajasthan is hot and thus people get matured earlier. This results into the higher possibility of population increase.

6. Failure of Family Planning Program :

Due to indifference, laziness of government servants and lack of publicity efforts family planning program has failed and desired results could not be achieved.

7. Difference in Birth Rate and Death Rate:

There is big difference between birth rate and death rate in Rajasthan. This big difference means the birth rate is higher and the death rate is lower and thus the result is the increase in population. Birth rate in Rajasthan is higher due to the lower average age of marriage and the way of thinking of people that marriage is compulsory. Death rate is lower due to expansion of health facilities.

Birth rate measures the number of live infants divided by total population and then multiplied by 1000. Thus,

$$\text{Birth Rate} = \frac{\text{Total No. of births in the year}}{\text{Total Population in the year}} \times 1000$$

In the same way, death rate is calculated as :

$$\text{Death Rate} = \frac{\text{Total deaths in the year}}{\text{Total Population in the year}} \times 1000$$

8. Population Migration:

People migrated to Rajasthan from the neighbor countries and other states during the planning period. This has increased population in Rajasthan also.

9. Belief in Fate:

Most of people consider that children are given by God. So people are not sensitive towards small families.

10. Other Reasons :

Lack of entertainment resources, insufficient social security, lack of knowledge, etc. are the other causes responsible for increase in population in Rajasthan.

(ii) Density of Population:

Number of people living in per square kilometer is the measure of density of population. According to census of 2011, population density in Rajasthan was 200. It was 382 in India. In 2001 it was 165 in Rajasthan. The maximum density of population is 1106 in Bihar and minimum population density is 17 in Arunachal Pradesh.

(iii) Urban and Rural Population in Rajasthan:

We study urban and rural population separately because there is big difference in the structure, density, distribution, living standard and other issues of the urban and rural population. According to 2011 census 75.13% of total population in Rajasthan live in rural area and remaining 24.87% population live in urban area.

Thus two third population of Rajasthan live in rural area.

(iv) Sex Ratio:

Number of women for 1000 men is the sex ratio. According to 2011 census, the sex-ratio in Rajasthan was 928 while it was 921 in 2001. The highest sex-ratio in India is 1084 in Kerala. Lowest sex-ratio is 846 in Dhoulpur and highest sex-ratio is 994 in Pratapgarh in Rajasthan in 2011.

Sex-ratio in age group of 0-6 is known as the child sex-ratio. In 2011, this sex-ratio was 888 in Rajasthan which was 909 in 2001 which is an issue of worry.

(v) District wise Population and Sex Ratio:

In 2011, maximum population was in Jaipur and minimum population was in Jaisalmer district. Jaipur had the maximum density of population while Jaisalmer had the minimum density of population.

Qualitative Aspect:

The detailed analysis of various factors relating with qualitative aspect of population is as below:

1. Literacy and Education:

Education plays most important role in human resource development. Education is the base of social, cultural and economic progress. Education is very important source of human capital. Education develops the work efficiency of human being. Education contributes in economic development by strong thinking about the social infrastructural facilities.

The main objectives of different development plans in Rajasthan is to make people more happy and prosperous by developing social and economic sectors of economy. So, state government primarily tries to develop the social sector. Activities associated with social sector are

education, health, family welfare and drinking water.

History tells that efforts are being made by governments to develop education sector since very beginning. Without sufficient investment in human capital the continuous economic development is not possible. Education develops understanding, rationality, quality and efficiency in people. Education increases productivity and constructiveness in people which results into the development of entrepreneurship and technology. Thus, each country develops specific education system for the development of social and cultural activities.

At the time of organization of Rajasthan, the education system of Rajasthan was underdeveloped and poor. Since then government has been trying to take concrete steps for the development of education sector.

Status of Literacy in Rajasthan:

In 2011, total literacy in Rajasthan was 66.10%, male literacy was 79.20% while female literacy was 52.10% . Literacy rate in India was 72.99% in 2011. Clearly, literacy rate in Rajasthan is lower than in India. Table 2 shows the literacy rates in India and Rajasthan.

Table – 2

Literacy Rates in 2001 and 2011

Type of Literacy	Rajasthan		India	
	2001	2011	2001	2011
Total Literacy	60.40	66.10	64.80	72.99
Male Literacy	75.70	79.20	75.30	80.89
Female Literacy	43.90	52.10	53.70	64.64

Source : Economic Review: 2014-15. P.A44

It is clear from the above table that literacy in Rajasthan is very much less than that in India. Specially female literacy is very low. In caparison of 2011 with 2001, the literacy had improved in Rajasthan. Maximum literacy is in Kerala.

The female literacy in Rajasthan is very low. The condition of rural area is worse than of urban area as for as female literacy is concerned. The literacy in scheduled caste and scheduled tribe is very low. Table 3 shows the literacy rates in rural and urban areas.

Table 3

Literacy Rates in Rural and Urban Areas of Rajasthan

Literacy	2001	2011
Total Literacy	60.4	66.11
Rural Literacy	55.3	61.4
Urban Literacy	76.2	79.7

Source: Economic Review: 2014-15 P.A44

Table 4 shows the maximum and minimum literacy rates in districts of Rajasthan.

Table 4

District wise Maximum and Minimum Literacy Rate in Rajasthan

Literacy	Distrit
Maximum Literacy	Kota (76.61%)
Minimum Literacy	Jalore (54.9%)
Maximum Literacy	Jhunjhunu (86.9%)
Minimum Literacy	Pratapgarh & Banswara (69.5%)
Maximum Literacy	Kota (65.9%)
Minimum Literacy	Jalore (38.5%)

Causes of low literacy in Rajasthan:

Following are the some causes of it:

1. Before organization of Rajasthan rulers did not develop the education.
2. Various governments did not pay proper attention to develop the literacy.
3. Some social and economic reasons are also responsible.
4. Poverty in the state is also responsible.
5. There is lack of resources and institutions.

Status of Primary, Secondary and Higher Education in Rajasthan:

In 2014-15 there were 41525 primary, 37573 higher primary and 27155 secondary and higher secondary schools in Rajasthan. Total enrolment in all these schools was 60.75 lakh students.

In national education policy primary education has been given preference. To educate the children of 6-14 years age group, 'Universal Education Campaign' has been started. Right to Education (RTE) act, 2009 has been implemented in April, 2011. Under this Act, 25% seats are reserved for children of weaker sections in private schools.

To increase education for girls, 200 Kasturba Gandhi Balika Vidyalaya are working in Rajasthan and 10 Mewat Balika Residential Schools are being run.

To increase literacy many literacy programs have been launched. These are: comprehensive literacy campaign, national literacy mission, literacy India program, comprehensive education program, etc.

Secondary Education :

It is that level of education at which students select or choose their course for employment and self employment. In 2016-17, there are 13527 secondary and 15683 higher

secondary schools in Rajasthan. 3875 secondary and 9444 senior secondary schools are in the public sector. Total enrolment in secondary education is 37.96 lakh in which 15.48 lakh are girls. The gross enrolment ratio is aimed to be 100% in 2017 for which scheme RMSA (Rashtriya Madhyamik Shiksha Abhiyan) is working in the state. Efforts are being made to open at least one higher secondary school in each gram panchayat. 66 english medium Swami Vivekananda Governemnt Model schools have been established.

Facilities of toilets, drinking water and facilities of physical resources are being provided for girls and cycles are being distributed. Students are given scholarships under the schemes of NTSE/STSE.

Higher Education :

Presently there are 1729 colleges in Rajasthan where 192 colleges are of the government and 1509 are private colleges, 7 are self financed and 4 colleges are being run on the public private partnership basis.

814 are B.Ed. colleges, 15 colleges are law colleges of the government and 43 are private law colleges. There are 40 private universities and 7 deemed universities. 3.56 lakh students is the enrolment level of government colleges.

Number of girls is increasing in higher education. Thus there are 27 girls degree colleges and 17 post graduate colleges in Rajasthan. For technical education we have 197 polotechnic colleges, 2015 ITI in 2016-17. For medical education, there are total 12 medical colleges in which 8 are government and 4 are in private sector.

Thus it is clear that the quantitative objective of education are being tried to get them fulfilled but due to lack of physical facilities and poverty many students are not getting benefit of education. Literacy programs are not being implemented optimally and thus literacy is

increasing at low pace. Qualitatively education is weak and it is not employment oriented.

2. Health:

Health of people is affected mainly by balanced diet, drinking water, hebetate, etc. Healthy people can increase economic and general development for good health. Health facilities are required which increase the work efficiency of people. Health facilities increase life expectancy and decrease the infant mortality and general mortality rates which are the indicators of social development. Following Table 5 shows the position of health indicators in Rajasthan.

Table 5
Health Indicators in Rajasthan

S.No.	Health Indicator	Rajasthan	India
1.	Infant Mortality Rate (5 Rs-2016)	43	37
2.	Mother Mortality Rate (SRS. 2011-12)	244	167
3.	Gross Reproduction Rate (SRS -2013)	2.8	2.3
4.	Infant Mortality Rate (0-4)	13	11
5.	Birth Rate (SRS -2015)	24.8	20.8
6.	Death Rate (SRS -2014)	6.3	6.5
7.	Total Life Expectation (SRS: 2010-14)	67.7	67.9
8.	Male (SRS 2006-10)	64.7	64.6
9.	Female (SRS 2006-10)	68.3	67.7

Table shows that on the basis of all the health indicators the condition of Rajasthan is very poor

in comparison to India. In comparison to other states, Rajasthan is not healthy in health sector.

Health Facilities:

These facilities include hospitals, number of doctor, nutrition, drinking water ,etc. Upto 2016, allopathic institutions in Rajasthan were 17546 in which 114 were hospitals, 194 were dispensaries, and 14408 were sub health centers. Presently there are 118 Ayurvedic hospitals, 3577 are ayurvedic dispensaries, 3 are yoga classes and natureopathy hospitals. There are 46669 beds in all hospitals. Our states lacks health facilities in comparison to other states in India. There is need to expand health facilities in rural sector at which our government is taking steps year to year.

Schemes for the Expansion of Health Facilities in Rajasthan

Following two schemes are being run in the state

(i) Chief Minister Free Medicine Scheme:

This scheme was launched in the state on October 02, 2011 which is beneficial for both outdoor and indoor patients. Most of the medicines are given free under this scheme.

(ii) Chief Minister Free Test Scheme:

Under this scheme tests are conducted free for the benefit of patients in all the hospitals.

Excepts above schemes there are many other schemes being run in the state like Janani Shishu Suraksha Yojana, National Child Health Program, Chief Minister B.P.L. Jivan Raksha Kosh Yojana, Janani Express, Chief Minister 108 Toll free Ambulance Scheme, etc. State insurance scheme for government servants, family welfare and population stablisation program, National Health Mission, Asha Sahyogini, etc. schemes are also working in Rajasthan.

Problems of Health Sector in Rajasthan:

These are as below:

- (i) Lack of health facilities in rural and distant areas.
- (ii) Untrained staff at the time of infant birth.
- (iii) Lack of hospitals in rural areas.

3. Habitat:

There is need of healthy housing facility for human being. Living in clean houses makes people mentally and physically healthy. For this, both state and central governments are making efforts for B.P.L. families to make available the cheap housing facilities. Following are such schemes:

(i) Rajive Awas Yojana (R.A.Y):

The objective of this scheme is protect the health of people living in unhealthy houses so that they can improve their living standard. This scheme was launched in 2011 in two stages of two years. The implantation strategy of this scheme was approved the Govt. of India in 2013-2022. The implementation strategy of this scheme has the two stages, namely (i) slum free urban scheme (S.F.C.P.O.A.) and (ii) Project for selected slums.

(ii) Integrated Habitate and Slum Development Program (IHSDP) :

This program aims to make available the housing and other basic facilities to people living in slums in urban areas. Under this program all the sections of society are aimed who are living in slums through the group system. A budget of Rs. 101278 crore has been sanctioned under this programme. This progress includes the construction of houses, roads, drainage system, community centers, community toilets, safety tanks, road lights and the facilities of drinking water.

(iii) Indira Awas Yojana (IAY) :

This plan was started in 1986 as a sub-plan of Rural Landless Employment Guarantee Programme and the Jawahar Employment

Scheme under the efforts of making available the houses to rural poor. This plan has the following characteristics:

- Construction of houses for minorities and specially abled people living below the poverty line in rural areas.
- Sanction of assistance to the joint name of husband-wife or the female member of the family.
- Construction of healthy toilets and smokeless cooking places for SC/ST people.
- Mukhya Mantri Jan Awas Yojana 2015.
- No role of contractors or intermedicateries and the departmental agency in decisions regarding construction techniques, construction material and design. For this, decisions are taken by beneficiaries independently.

4. Drinking Water:

Drinking water plays important role in the development of human resources. So, it is necessary that drinking water must be available for human resources. This is the problem both in urban and rural areas. Government is making efforts to solve the problem of drinking water through various plans and programs. In 2016-17, Government has taken into hands the work of drinking water supply to 2039 colonies and small villages. Presently, following schemes are working for the purpose of availability of drinking water:

(i) Rural Drinking Water Schemes:

For these schemes financial resources are given by both centre and the state government.

(ii) Urban Drinking Water Schemes :

Under these schemes 33 district headquarters and 222 urban towns are included. All the 222 towns are being benefitted by the piped drinking water scheme.

Cities of Jaipur, Ajmer, Jodhpur, Bikaner, Bharatpur, Kota and Udaipur receive drinking water supply from the permanent water source. There is problem drinking water in some cities and towns due to excess exploration of underground water and less conservation of it. State government has taken policy decision to change the underground water source to the plans based on surface drinking water.

(iii) Big Drinking Water Schemes:

For the permanent solution of the long term drinking water problem some surface sources have been developed by the state government. These are Indira Gandhi Canal Project, Narmada River Project, Bisalpur Dam Project, Jawai Dam Project, etc. These projects have to be completed in coming 3-4 years.

Conclusion :

After the study of quantitative and qualitative aspects of population it is clear that quantitative aspects of population have shown rapid increase while qualitative aspects are still very weak. There is need of control of population growth, increase in both quantitative and qualitative literacy, effective control in birth rate, increase in health facilities and positive change in social indicators. Government must make efforts for the humane development and human capital formation.

Important Points:

- Both physical and human resources are important in the economy.
- We study population, education, health, habitation and drinking water in social infrastructure.
- Sex-ratio is the number of females per thousand males.
- The highest sex-ratio is in Dhoulpur (994) and the lowest sex-ratio is in Jaisalmer (846).

- Education is the base of social and economic progress of human life.
- Female literacy is important for social development. In rural areas of Rajasthan female literacy is very low.
- Healthy person can increase the social and economic development rapidly. So there is need to develop the health facilities in Rajasthan.
- There are many schemes being run for the improvement of health facilities in Rajasthan. These are free medicines and tests scheme, Janani Shishu Suraksha Yojana, National Child Development Program, Janam Express, etc.

Questions for Exercise

Objective Type Questions:

1. According to census 2011, total population of Rajasthan is –
 (a) 5.65 Crore (b) 6.85 Crore
 (c) 5.85 Crore (d) 6.65 Crore ()
2. In Rajasthan in the decade of 2001-2011 the population growth rate is –
 (a) 28.44% (b) 28.41%
 (c) 21.30% (d) 20.40% ()
3. District with highest population density is –
 (a) Jaipur (b) Ajmer
 (c) Udaipur (d) Jaisalmer ()
4. Sex-ratio in Rajasthan, according to 2011 census, is-
 (a) 936 (b) 928
 (c) 920 (d) 925 ()
5. According to census 2011, the district of maximum female literacy is –
 (a) Kota (b) Jalore
 (c) Jhunjhunu (d) Pratnagarh ()

Very Short Answer Questions:

1. What is meaning of human resource ?
2. In which district of Rajasthan the maximum literacy is found ?
3. What is the percent population living in rural areas in Rajasthan ?
4. What are the indicators of human development ?
5. When was the RTE Act inacted in Rajasthan?
6. Which district of Rajasthan has the maximum population ?
7. According to 2011 census which is the district of Rajasthan having the least population ?

Short Answer Questions:

1. What are the problems of primary education in Rajasthan ?
2. Explain occupational distribution of population.
3. Describe the health indicators of Rajasthan.
4. Explain the Chief Minister Free Medicine Scheme.
5. List the factors affecting the growth of population .
6. What is sex-ratio ? What is its status in Rajasthan ?
7. What are the reasons of low level of literacy in Rajasthan ?

Essay Type Questions:

1. Explain the causes of population size and growth in Rajasthan.
2. Describe the status and problems of educations in Rajasthan? What are the measures to solve these problems?
3. Describe the efforts of government of Rajasthan for education and health.

4. Explain the quantitative aspects of human resources in Rajasthan.

Answer to Objective Type Questions:

- (1) b (2) c (3) a (4) b (5) a

Reference Books:

1. Indian Economy- Dr. Chhipa and Sharma, J.P.H., Jaipur
2. Economic Appraisal: 2016-17.

Chapter - 5.4

Tourism Development in Rajasthan

Human being is a social one who is so busy in the activities that feeds up the human being in the daily work. The result is that human being needs some change in the routine activities and for it the importance of tourism comes in.

Tourism is the activities which includes the tours of historical places, places of natural beauty, religious places and hill stations where people visit for the knowledge of language, culture and customs of different parts of a country. In modern time tourism has also developed like the industrial activities and thus known as tourism industry.

In Rajasthan tourism is highly concerned to be placed along with cultural tradition.

Role of Tourism in Rajasthan Economy :

Kashmir, Goa and Rajasthan are the three important tourist centers in India. Due to terrorism and separatist activities in Kashmir the tourism has become of less importance. In Rajasthan, government has declared tourism as industry. In reality, tourism has become the back bone of Rajasthan economy. In the state economy tourism plays important role as described below:



Hawamahal, Jaipur

1. Foreign Exchange Earning :

Through tourism foreign currency of crore of rupees is earned. Each third tourist of all the foreign tourists visits Rajasthan. In 2015, 351.87 lakh domestic tourists and 14.75 lakh foreign tourists visited Rajasthan while in 2015-16 total number of tourists visited Rajasthan was 346 lakh. In Rajasthan, total expenditure of tourists is more than thousand crore rupees each year which plays an important role in the development of Rajasthan.

2. Means of Employment :

Tourism is a pollution free industry. It is assumed that one person gets employment behind each eight foreign tourists. In the same way one person gets employment behind 32 domestic tourists. People get employment as guide, travel agent, driver, hotel owner, crafts, etc. So, it is clear that people get employment directly or indirectly in the tourism industry.

3. Art and Culture Development:

The cultural heritage of Rajasthan is alive due to tourism. Opportunities of cultural interaction increase from tourism. Programs of dance and music are organized at occasions of festivals and fairs in which many domestic and foreign tourists enjoy, for example, tourists are attracted by Teej, Gangour and puppet shows in Jaipur. Desert festival of Jaisalmer attracts many

tourists each year. The paintings on walls of buildings in Shekhawati region attract tourists also. The paintings in building of Poudhars, Chhavachhariya, Mansinghaka, Seksariya, etc. are very attractive in Navalgarh. Elephant riding in Amer, camel riding in Jaisalmer, etc. are good events enjoyed by tourists.

4. Increase in Transport Facilities:

Tourism activities increases transport facilities in Rajasthan. The "Palace on Wheels" train is running absolutely for tourists only. Increase in transport facilities increases employment opportunities also. Thus industries and trade are developed. Foreign tourists increase the foreign trade.

From the point of view of tourism, the following circuits have been developed:

- i. Dhundhar circuit (Jaipur-Ajmer-Dousa)
- ii. Mewar circuit (Ajmer-Bharatpur-Sawai Madhopur)
- iii. Vangad circuit (Dungarpur-Banswara)
- iv. Hadoti circuit (Kota-Bundi-Jhalawar)
- v. Marwara circuit (Ajmer-Pushkar-Merta, Nagour)
- vi. Shekhawati circuit (Sikar-Jhunjhunu-Churu)
- vii. Desert circuit (Bikaner-Jaisalmer-Barmer-Jodhpur)
- viii. Godwad circuit (Mount Abu, Ranakpur, Jalore)
- ix. Mewar circuit (Udaipur-Kumbhalgarh-Nathdwara-Chittorgarh, Jaisamand-Dungarpur)
- x. Ranthambor circuit (Ranthambor-Sawai Madhopur-Tonk)

These all circuits have their own separate properties. In some circuits there are hills and in some others there is desert. Thus nature has given

vast opportunities in Rajasthan in the sphere of tourism.

Main Tourism Points in Rajasthan:

Rajasthan as a special place of tourism is not only in India but also on the world map. On one side, there is Sonar fort in Jaisalmer (800 years old) and on the other side, there is the famous fort in Chittorgarh which is related with brave Rajput king Maharana Pratap. Bharatpur has the world famous Ghana bird sanctuary and there are many lakes in Udaipur (known as lake city). Thus Rajasthan has treasury of historical and cultural buildings in each corner. Important tourist places are as below:

1. Fort and Palace:

In 1733, King Surajmal constructed Lohagarh fort in Bharatpur. Royal palace of Deeg is the idle place to take rest. The palace of Dhoulpur is famous for the use of red colour stones.



Amer Fort, Jaipur

Old fort of Ranthambhore is in the Sawai Madhopur district. Its height is 200 meters. Jaipur, capital of Rajasthan, is known as Pink City which is a planned city and was established by king Jaisingh II in 18th century. The famous palaces and monuments of Jaipur are built on the basis of Hindu sculpture. A good mixture of hindu and muslim cultures can be seen in the area of Merwada. The victory stories of warriors of Rajasthan is present in these royal palaces and forts. Royal palaces in Jaipur, Udaipur,

Bharatpur, Kota, Bundi and Bikaner are the important centers of attraction. Forts constructed in hills are in Deeg, Amber, Bikaner, Jaisalmer, Targarh, Shergarh, Chittorgarh and Kumbhalgarh.

2. Religious Points:

Delwara Jain temple (made of marble) and Jain temple of Ranakpur are the famous religious points in Rajasthan. These temples are the example of good and unique missionary work. Jagdish temple, Rishabhdev temple, Charbhuj temple, Nathdwara temple and Aikling Ji temple are situated in Udaipur district. Temples of Sanvariya, Bijoliya, Shiv temple of Chousa, temple of Paran, Brahma temple of Pushkar, Soni temple of Ajmer, Mosque of Khwaja in Ajmer, Khatu Shyam temple in Sikar, Salasar Hanuman temple, Govinddev temple of Jaipur, Sun temple of Amber and Karni Mata temple of Bikaner are the famous temples of Rajasthan.

3. Art and Cultural Points:

Rajasthan is a rich state in art and culture. Ornaments of enamel of Jaipur, painting-dyeing



Nakora Jain Temple:

and handmade paper of Nathdwara Pratapgarh and Sanganer (Jaipur), wooden toys of Bikaner, carpets of Bikaner, Jaipur and Barmer and foliage on pots of brass and silver of Jaipur are very attractive to tourists. Thaikala painting of Pratapgarh, phad painting of Shahpura, painting of Bundi & Kishangarh style and sculpture of Jaipur are also very famous. Dandiya dance of

Marwar, Ghumar of Mewada, Dhol dance of desert, chakari dance of hadouti and agni dance of Bikaner are some of the famous dances of Rajasthan. Dashahara fair of kota, Teej and Gangour fairs of Jaipur, Holi of Bharatpur, Diwali of Jaipur, etc. are the main festivals of this state. Kapil muni fair of Kolayat, Khawaza Chishti fair of Ajmer, Kela Devi fair of Karouli, animal fair of Pushkar, Ramdev fair in Pokharan, Tejaji fair of Parbatsar, Gojaji fair of Ganganagar and Ganeshji fair of Ranthambhour are having the cultural importance also.



Navalgarh Ki Haveli

4. Vastu and Architectural Points:

Dhai Din Ka Jhopra of Ajmer, Jantar-Mantar, Hawamahal and Chandramahal of Jaipur, Patawa Haveli of Jaisalmer, Deeg palace, Vijay Stambh and Kirti Stambh of Chittorgarh, Chourasi Khambhon ki Chhatari of Bundi, Sarbag ki Chhatriyan, Bawari of Raniji, building of Ramgarh, Toran gate of Udiapur, etc. are the beautiful example of the architecture of Rajasthan.

5. Wildlife Tourism

The best bird sanctuary of Asia is in Bharatpur which is near to Kewaladev. Sariska forest of Alwar, Darra forest of Kota, forest of Dholpur and Sitamata forest near Pratapgarh are good tourist points. Ranthambhore is very famous for being out of the 9 big tiger area projects which is declared as national forest in 1983.



Ranthambhore Forest

Except all of the above some more points of geographical importance are: Anasagar, Faisagar, Pushkar lake in Ajmer, Galata Ji in Jaipur, Ummed Sagar in Jodhpur; Nakki lake in Mount Abu; Jaissamand, Udaisagar, Fatehsagar and Pichhola lakes in Udaipur. Birla temple and Zoo of Jaipur, Sunset point of Mount Abu, Camel riding in moon light in desert, Brijmohan Birla planetarium and many more are also the centers of tourists.

Problems of Tourism and their Solutions:

Rajasthan does not have development facilities for tourists like other states of India, Following are the main problems of it;

1. Lack of Proper Residential Facilities:

It is not comfortable to stay at tourist places due to lack of proper residential facilities. There are no sufficient number of hotels and tourists rest centers. To solve this problem state government has tried to start paying guest facilities. Land is being made available at concessionable rates for hotel construction. Old forts and palaces are converted into heritage hotels through renovation.

2. Problem of Publicity, Guide and Public Contact :

At important tourist places there is neither trained guide nor the any facilities of public contact. Due to this, tourists do not get proper

guidance about the tourist points and places. To solve this problem the tourist department has started the services of tourist information centers and tourist welcome centers.

3. Lack of Sufficient Transport and Communication Facilities :

The facilities of transport and communication are available at some important and big tourist places but at small tourist places these facilities are not sufficient. Due to this problem tourists face problems. To solve this problem the tourist department should provide the required facilities regarding transportation and communication.

4. Problem of Maintenance of Tourist Places:

At small tourist places there are some problems related with proper light, cleanliness and maintenance. Government should also look into the solution of this problem.

5. Lack of Marketing Centers:

For domestic and foreign tourists there should be some shops at which they can buy things of their choice at reasonable prices. Shopkeepers who charge higher prices in such cases should be treated properly according to provisions of rules and regulations. Some marketing centers should be opened for the purpose.

6. There is need of safety of tourists, proper arrangement of police administration, respect of tourists and faithfulness to them. Beggars create problems to tourists and it should be controlled properly.

Tourism Policy 2001

In 2001 a tourism policy was launched in Rajasthan to make tourism an industry and to create employment. Main points of this policy were:

- i. Development of proper market to sell the product of handicrafts and small industries.
 - ii. Provision to allot maximum 4 bigha land at $\frac{1}{4}$ price of the reserved rates to establish the tourist units.
 - iii. 100% recruitment of work force from the local people in the tourist unit.
 - iv. Concession in luxury tax to new tourist unit for 5 years.
 - v. 60% concession in registration fee for purchasing land for new hotels.
 - vi. 100% concession in land and building tax to hotels to be established in rural areas.
 - vii. Publicity and marketing of tourism in the state.
 - viii. Increasing events of camel-horse riding, etc.
 - ix. Developing cinema, theatre, film shooting etc. to increase tourists.
 - x. Interest rebate of 2% to Government efforts for units investing upto Rs. 60 lakh.
3. To build and run the hotel, motel, etc. as facilities to tourists and provide food and residence facilities.
 4. To provide facilities of transport, entertainment, etc. to tourists and to arrange package tours.
 5. To publish the literature on tourism and to distribute it to attract the tourists.

Programmes of Tourism Development in Rajasthan :

Following are the various programmes started or launched by government:

Government Efforts for Tourism Development in Rajasthan :

Under various plans in Rajasthan, government tries to give incentives to private entrepreneurs through Rajasthan Tourism Development Corporation for providing facilities like residence, transport, guidance and other facilities. Efforts are also being made to expand the information about new tourism centers.

To develop tourism at international level, Rajasthan Tourism Development Corporation was established on 1 April, 1979 as a private limited company. This corporation performs the following functions:

1. To implement the project scheme for tourists.
2. To maintain and develop the tourist places.

1. In march 1989 state government declared tourism as industry. The subsidy to private investors increased from 15% to 20%.
2. Paying guest scheme was started for 4000 tourists by 562 families in Jaipur, Jodhpur, Udaipur, Jaisalmer, Bikaner, Ajmer, Chittorgarh, Mount Abu and Puskhar.
3. For conservation of Jaisalmer fort the dirty water was treated and sewerage scheme was launched.
4. State government is developing the tourist centers. Presently this is going on in Ajmer Sharif and Pushkar. Before this, developmental work was done at Kailadevi, Gogamedi, Salasar, Ramdevara, Deshnok and Mehandipur Balaji.
5. The air service is being expanded for tourists. Now number of flights has increased from 9 to 42 per week.
6. Light and sound shows have been started at motidungari in Udaipur and Amber palace.
7. Number of heritage hotels is increasing in Rajasthan.
8. Efforts are being made to increase the tourists in Rajasthan.

9. In the budget of 2010-11, desert safari, international kite and balloon festivals are organised.
10. The Jaipur Jantar-Mantar has been included in World property/estate by UNESCO in 2011-12.
11. In 2012-13 heritage walk was developed in cities and facility of drinking water developed at religious places.
12. The tourism policy was extended upto 31 March, 2014 in 2013-14.

Proposal for Tourism Development by Vasundhara Raje in 2014-15 Budget :

This proposal includes the following points:

1. The 'Rajasthan Day' has to be celebrated every year as a festival like 'Tomatino Festival' in Spain and Goa Karnival.
2. Development of Pali, Jalore, Rankapur (Sirohi), Narvaria and Jawai dam.
3. Development of places of Silished, Jaisamand, etc.
4. Development of religious area and bus stand in sambharlake area.
5. Development of tourist places in Bundi Ranthambore, Jhalawar, Deeg and Dholpur districts.
6. Development of Budha Pushkar (Ajmer), Nathdwara (Rajsamand) and Kela devi (Karouli) and other religious places.
7. Construction of Mega Desert Tourist centre.

New Tourism Unit Policy, 2015

Under this policy new investment proposals will be received. These tourist units will also receive the economic benefit under the proposed policy (units sanctioned under the previous policy of 2007). It is to be explained that under the Rajasthan tourism unit policy, 2007 the tourism

department had approved 1500 projects of tourism units upto 2015 and under which Rs. 12500 crore had been invested.

Following are the main points of the Rajasthan Tourism unit Policy, 2015:

1. Under this policy the various units of tourism sector have been defined widely which includes hotel, motel, heritage hotel, budget hotel, restaurant, camping sight, convention center, sports resort, resort, health resort, amusement park, animal safari, park, rop way, tourist luxury coach, etc.
2. Land conversion of new tourism units will be free in urban and rural areas. No development fee will be charged from new tourism units in urban areas.
3. In urban and rural areas present heritage property and hotels will be free from land conversion charges.
4. Time limit for land conversion is fixed.
5. Urban development tax on constructed area of heritage hotels will be charged according to the residential rate but on open area no urban development tax will be charged.
6. Heritage hotels will have to pay the B.S.U.P. shelter fund only on the constructed area.
7. Heritage hotels will be issued the lease deed.
8. There is no limit on width of roads for heritage hotels in rural and urban areas.
9. Tourism units are allowed to double F.A.R. i.e. from 2.25 to 4.50.
10. Heritage hotels are allowed to use maximum 10% or 1000 square meter, whichever is less, of constructed area for commercial use.

11. Building plan will be approved by the concerned department within the fixed time limit.

Important Points :

- People get puzzled with daily routine of working and go to near nature to feel happiness in terms of tourism.
- In Rajasthan culture guest are worshiped and due to this spirit tourism in Rajasthan is expected to be developed.
- Government is taking help of private partnership for the development of tourism to earn foreign exchange.
- Development of tourism industry increases the employment opportunities for local people.
- Development of tourism maintains our culture and civilization along with earning income.
- There are 10 circuits according to point of view of tourism in Rajasthan.
- Old forts, havelis, religious places and natural beauty is sufficiently found in Rajasthan to increase tourism.
- Fairs, festivals, functions, etc. attract tourists to visit Rajasthan.
- Government of Rajasthan recognizes tourism as industry and tries to develop tourism with the private sector.

Questions for Exercise

Objective Type Questions:

1. The established in Jaisalmer is-
- (a) Nahargarh fort
 - (b) Taragarh fort
 - (c) Sonar Fort
 - (d) None of above ()

2. Which included in new tourism package is-
- (a) Palace on wheels
 - (b) Heritage Hotel
 - (c) Paying Guest Scheme
 - (d) All of the above ()
3. Number of tourism circuits in Rajasthan is-
- (a) 5 (b) 7 (c) 9 (d) 10 ()
4. Ranthambore is situated in –
- (a) Alwar
 - (b) Sawai Madhopur
 - (c) Bharatpur
 - (d) Sikar ()

Very Short Answer Questions:

1. In which district Mount Abu is situated ?
2. Where is the Brahma temple ?
3. Which city of Rajasthan is famous in enamel ornaments?
4. Where does the Gogaji fair take place?
5. In which city the Jantar-Mantar is situated ?
6. Where is the Poudhar ki Haveli situated?
7. In which district the Ghana bird sanctuary is?
8. Where is the Tal Chhapar Deer Park ?
9. When was the Rajasthan Tourism Development corporation established ?

Short Answer Questions:

1. What were the provisions for tourism in budget of 2012-13 ?
2. What are the main functions of R.T.D.C. ?
3. The vastu and architecture plays important role in the area of tourism. State your view.

4. What is importance of forts and palaces in tourism industry?
5. Development of tourism industry improves the economic condition of people. How? Explain.
6. What are the three main tourist places in India ?
7. Name any three problems of tourism sector.

Essay Type Questions :

1. What is meaning and importance of tourism?
2. What are the problems of tourism? How are these problems solved ?
3. Write an essay on development of tourism in Rajasthan.
4. What are the tourist places in Rajasthan ? Write in detail.

Answer to Objective Type Questions :

- (1) c (2) d (3) d (4) b

Reference Book :

1. Economic Appraisal 201-15.
2. Economy of Rajasthan- Dr. Chhipa and Sharma, J.P.H., Jaipur.

Chapter - 5.5

Constraints in the Economic Development of Rajasthan and Measures to Overcome them

Economic development of a state is not only seen in terms of state domestic product but also reflected in level of education, expansion of health facilities, social strength and development of infrastructure.

For economic development the planned development process was adopted in Rajasthan with the first five year plan in 1951. Rajasthan has not yet received the category of developed state even in last 65 years with the completion of 11 five years plans and 6 annual plans.

Following are the constraints in the economic development of Rajasthan:

1. Natural/Geographic Constrains

Here, the following constraints are included:

- (a) Large Desert of west
- (b) Position of Aravali Range
- (c) Dependence on Rainfall
- (d) Draught and Desert
- (e) Regional Difference
- (f) Large Desert Land

These constraints have been described as below:

(a) Large Desert of West :

About 61% of the total land area of western

Rajasthan is surrounded by desert. There are 12 districts in this desert are: Due to desert these 12 districts face problems in agricultural and industrial development. It is also difficult to develop the transport facilities due to desert.

(b) Position of Aravali Range:

The Aravali Range is there from South-West to North-East which divides the state in to two parts. Due to the position of Aravali eastern districts of Rajasthan receive more rainfall and the western district get low rainfall. In these districts, the level of rainfall remains very low. Aravali area is very rich in minerals. Due to this area is industrially very developed but western districts are industrially very underdeveloped. In this way due to Aravali there are many inequalities in Rajasthan.

(c) Dependence on Rainfall:

Only river Chambal flows in whole of the year and there is no such river in Rajasthan. All the agricultural activities and other needs of water depend on monsoon only. Due to poor monsoon in any year, there becomes the shortage of even drinking water. In this situation agricultural activities face great problem. Farmers sow seeds in expectation of good monsoon but due to lack of rainfall crops are destroyed and the economy of the state can not develop.

(d) Draught and Desert :

There have been many draughts in Rajasthan. In 1991-92 and 2002-03 whole of the state was suffered from draught. Thus resources proposed for development were diverted towards the relief oriented programs. Draught results, on one hand side, into economic losses and, on the other hand side, it harms the development process of the state. The impact of draught can be seen on the economy of whole of the Rajasthan. Government losses the rental income and industrial sector does not get raw material. Decreasing employment results into low level of purchasing power and thus low levels of demand.

(e) Regional Difference :

There are many disparities in Rajasthan. Due to desert in West, plains in East, Aravali range and plateau in South the state can not make unanimous efforts for development. Due to these differences different types of programs are launched.

(f) Large Desert Land:

The large desert land is there in Rajasthan which is useless for agriculture purpose and other uses. This type of land does not contribute in the development of Rajasthan.

2. Economic Constraints:

Economic constraints are of the following types :

- (a) Lack of Irrigation Resources
- (b) Lack of Agriculture based Activities
- (c) Lack of Technology
- (d) Lack of Energy
- (e) Lack of Investment
- (f) Backward Infrastructure
- (g) Poverty and Unemployment
- (h) Biased Policy of Central Government

These constraints are being analysed as below:

(a) Lack of Irrigation Resources

Rajasthan is a state of water shortage. There is scarcity of both ground surface water and underground water. In desert districts there is shortage of drinking water. For drinking water journey of miles is undertaken. So it becomes difficult to develop agriculture, animal husbandry and industries.

(b) Lack of Agricultural based Activities:

Most of the population of Rajasthan is engaged in agriculture which is based on monsoon. Due to lack of rainfall and facilities of irrigation the level of agriculture production is very low. However, the alternative resources of earnings like animal husbandry, cottage industries, etc. are lacked. So, the economic condition of farmers is very poor.

(c) Lack of Technology :

Rajasthan is museum of minerals but due to lack of proper technology these minerals are not explored and thus can not be used properly.

There are plenty stores of natural gas, petroleum and coal but due to lack of exploration their productive use could not be possible.

(d) Lack of Energy :

For development of each sector infrastructure facilities are required. Rajasthan lacks these facilities also. Here, production of electricity is much less than the demand, which is due to lack of availability of high quality coal and water projects. High quality coal comes from other states and agreements are made with other states for the hydro electricity.

(e) Lack of Investment :

There are many industrialists and industrial houses in Rajasthan but they invested in other

states. Neither these industrialists nor foreign investors were attracted by Rajasthan. The reason behind this is the geographical situation and lack of energy and thus industrial development of Rajasthan is only in the hands of public sector.

(f) Backward Infrastructure:

Rajasthan lacks the transport infrastructure due to desert and hill areas. Roads are not good and railway lines are limited. Transport facilities are veins of economic development but this is a challenge still for Rajasthan.

(g) Poverty and Unemployment:

The problem of poverty and unemployment is dominant in Rajasthan even after having the economic planning process since independence. It is a challenge for policy makers and economists that how this problem can be solved.

Initially, it was assumed that problems of poverty and unemployment would be solved with the development and thus we tried to increase the growth rate but it could not be achieved.

Efforts were made in five year plans to remove poverty and unemployment but no significant results were found. Due to considering

distribution of poverty as one of the base to get funds from the centre is an important problem for policy makers, economists and politicians.

(h) Biased Policy of Central Government:

Rajasthan mostly faced the biased policy of the central government and thus our state could not get sufficient grant. Tribal and desert areas of Rajasthan were always ignored by the government.

3. Social Constraints:

These constraints include the following:

- (a) Population Growth
- (b) Level of Education and Literacy
- (c) Backward Social Structure

These social constraints have been analysed as below:

(a) Population Growth:

The higher growth rate of population has been a significant cause of under-development in Rajasthan. The decadal growth rate of population in Rajasthan is very high in comparison to India and thus availability of resources for the increasing population is a great problem. It is also a problem to meet out the needs of employment, education, health and residence of the population in the state.

(b) Level of Education and Literacy:

Rajasthan is a backward state in the sphere of education and literacy. The literacy rate was 67.1% according to the census of 2011 in Rajasthan. The female literacy rate in Rajasthan was 52.7%. It is clear that the lower literacy rate is a hurdle in the growth process because of the poor quality of human resources. Even after making many efforts for the development of education in Rajasthan the sufficient facilities could not be provided to people. Availability of health facilities in remote and rural areas is still a challenge.

(c) Backward Social Structure:

Most of the population live in rural areas in Rajasthan where child marriage, dowry system, sex discrimination, untouchability and other social problems are seen. Rural population is illiterate so people can not keep themselves away from these problems. This type of society is a constraint in the development of the Rajasthan.

Measures to Remove constraints in Economic Development

Following measures can be helpful in removing the various constraints of economic development of the state.

1. Increasing Dry Farming:

Due to lack of rainfall and irrigation

facilities there is need of cultivation of such crops which need less water. Desert land should be improved for agriculture purpose. Improved and suitable irrigation system should be adopted in Rajasthan, Also, the favourable agricultural activities should be developed.

2. Development of Agriculture Supported Activities:

To improve the economic condition of farmers, there is need of the development of agriculture supported activities like animal husbandry, bee keeping, poultry, small scale and college industries, etc. This step can reduce the dependence of people on agriculture and thus economic condition of farmers can be improved.

3. Controlling Expansion of Desert:

Development of intensive forestry is required to control the expansion of desert in Rajasthan. The plantation there in desert areas should be favourable to the natural conditions and soil. Facilities of irrigation and drinking water should be made available. Irrigation projects should be launched. Connecting rivers can be a very good and effective solution of the problem.

4. Small and Cottage Industries:

These industries should be developed more because sufficient capital is not available for investment in Rajasthan. It will increase employment opportunities and thus the economic condition of state will improve.

5. Management of Draught and Famine:

The rainwater should be stored to reduce the dependence on the monsoon. Wells and dams should be constructed and reconstructed to make the water available for long time. This will control the draught and famine.

6. Development of Non-traditional Energy Resources:

Rajasthan has vast possibilities of

development of solar and wind energy. Thus these sources of energy should be developed so that the problem of its shortage can be controlled.

7. Attracting Investors:

Facilities should be provided to domestic and foreign investors to invest in Rajasthan. Industrial development can be boosted through this device.

8. Development of Tourist Areas:

Rajasthan is a centre of attraction of tourists. Indian and foreign tourists visit Rajasthan in a large number every year so efforts should be made in developing this sector. Forts, havelies and hill areas attract tourists in Rajasthan and thus these areas should be developed in the state.

9. Development of Infrastructure:

State government should take steps to develop the education, health, transport, communication, banking, irrigation, energy and other facilities so that agriculture and industry sectors can develop.

10. Mineral and Industrial Development:

Economic surveys should be conducted intensively to find the possibilities of industrial and mineral development in the state. Minerals should rationally be explored.

11. Development of Animal Husbandry:

Due to the availability of dairy and poultry development possibilities in Rajasthan, these areas should be developed so that the state economy can develop with increasing opportunities of employment and income.

12. Development of Handicrafts:

The activities of handicrafts are concentrated in many party of Rajasthan and thus these areas need to be developed so that levels of income and employment can increase. The works of painting, dying, bandhej, gota patti, etc. are

famous through out the country which need some special attention of government.

13. Development of Rural Infrastructure:

In rural Rajasthan facilities of education, health and transport should be developed to remove the social backwardness. Literacy of rural women and tribal needs should be emphasized more so that these areas can come into the main stream.

14. Financial Management:

Due to the limited economical and financial resources there is need to control the wastage and misallocation of the scarce financial resources in Rajasthan. For this teams of experts and analysts should be formed for the effective planning system.

For this there is need of the administrative efficiency also. Efficient and honest people should be awarded and corrupt should be punished.

15. Control on Population Growth:

Population growth should be controlled and literacy rate should be increased Economic freedom to women, family planning, family welfare and such other programs should be launched in this regard.

16. Cooperation, Coordination and Public Participation :

Under the world wide atmosphere of globalization and liberalization efforts should be made for the coordination and cooperation among various agencies, institutions, boards, etc. so that objectives of development can be achieved. In this regard public cooperation should be used in the developmental programmes.

Important Points :

- For development of Rajasthan the way of five years plans was adopted.

- About 61% of the land area is covered by desert.
- The Aravali range is in the state from South-West to North-East.
- Due to lack of water, agriculture depends on monsoon and monsoon is insufficient and uncertain.
- There is lack of technology and investment in Rajasthan.
- The social and economic infrastructure facilities in Rajasthan are back ward.

Questions for Exercise

Objective Type Questions:

1. The first five year plan was started in Rajasthan in the year of:
(a) 1950 (b) 1951
(c) 1981 (d) 1956 ()
2. Number of desert districts in Rajasthan is—
(a) 10 (b) 15
(b) 12 (d) 5 ()
3. Famine was there in Rajasthan in the years of :
(a) 1991-92 and 2002-03
(b) 1991-92 and 2003-04
(c) 1990-91 and 2002-03
(d) 1990-91 and 2000-01 ()
4. The % of literacy in Rajasthan is.
(a) 67% (b) 67.2%
(c) 66.1% (d) 66.2% ()
5. Non-traditional sources of energy is-
(a) Solar energy
(b) Wind energy
(c) Both solar energy and wind energy

- (d) None of the above ()
6. The obstacle in the development of rural areas is-
- (a) Child marriage
 (b) Lack of education
 (c) Sex discrimination
 (d) All of the above ()

Very Short Answer Questions:

1. In which direction is the Aravali range in Rajasthan ?
2. What is famine?
3. What do you mean by regional difference ?
4. What is dry farming ?
5. In what type of industry less capital is required?
6. In which part of India is the plateau ?
7. In which part of Rajasthan there is plane area ?
8. Why is there low rainfall in western districts of Rajasthan ?

Short Answer Questions:

1. What are the geographical constraints in the economic development of Rajasthan ?
2. How does the economic infrastructure affect the economic development ?
3. Social customs harm the economic development in Rajasthan. Explain.
4. Why do industrialists not invest in Rajasthan ?
5. Why is there less rainfall in western districts of Rajasthan ?

Essay Type Questions :

1. Describe the constraints in economic development of Rajasthan.
2. Explain the measures to remove the constraints in economic development of Rajasthan.
3. Write your own original note on the constraints in economic development and their removal in Rajasthan.

Answer to Objective Type Questions :

(1) b (2) c (3) a (4) a (5) b (6) d

Reference Books:

1. Economic Review, 2016-17. Deptt. of Economics & Statistics, Govt. of Rajasthan, Jaipur
2. Economy of Rajasthan : Dr. Chhipa and Sharma J.P.H., Jaipur.