Welcome to the comprehensive notes on economics for Class XII, personalised for students and teachers of all streams. These notes aim to provide a thorough understanding of the fundamental concepts, theories, and principles of economics as prescribed by the curriculum. Economics is a crucial subject for many academic programs because it provides students with the skills, they need to analyse data, think critically, and solve problems.

The purpose of these notes is to:

Make difficult concepts understandable with straightforward explanations and examples.

Make revision and reference simple.

Promote active learning and engagement.

Enhance instruction outside of the classroom.

Consider students' varied learning preferences and skill levels.

These notes can be used by Economics teachers as a tool to:

Create and present lessons that are effective.

Add to their course materials.

Promote learning that is focused on the student.

These notes can help students by:

Developing a deeper comprehension of economic ideas.

Laying a solid foundation for future studies.

Improving their capacity for analysis and problem-solving.

Getting high grades in economics.

I hope that these notes serve as an invaluable tool for educators and learners alike, promoting a thorough comprehension of economics and its practical applications.

Warmest wishes for a successful and rewarding educational journey!

INTRODUCTORY MICRO ECONOMICS

Economics – Definitions

Economics is a ***social science*** that examines how society allocates its limited resources to produce and distribute goods and services to its people The name "economics" comes from the Greek word "**oikonomia**," which means "management of household affairs" or "household management." In other words, it refers to how individuals manage their resources and income and allocate it to their needs, wants, and luxuries.

The present form of economics was born with the publication of ***Adams Smith's*** book ***An Enquiry into the Nature and Causes of the Wealth of Nations*** in ***1776***. Earlier, economics was known as ***political economy***. Later, ***Alfred Marshal*** presented the political economy as '***Economics***.'

Various Definitions

Wealth Concept (Adam Smith): defined economics as the *science of wealth*. This means that economics studies the production and consumption of wealth.

Welfare Concept (Alfred Marshall): defined Economics as 'The study of Man's Action in Ordinary Business of Life.'

Scarcity Concept (Lionel Robbins) defined Economics as a science, which studies human behaviour as a relationship between ends and scare means, which have alternative uses. Thus, scarcity of means in relation to unlimited wants leads to the problem of choice. That is, the economic problems.

Growth Concept (Prof. P.A. Samuelson) *"Economics is the study of* how people and society choose, with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities over time and distribute them for consumption now and in the future among various persons and groups. Economics should also make an enquiry to accelerate the rate of growth and promote social welfare which provides security to future generation.

Adam Smith	**Wealth of nations**	**1776**
Alfred Marshall	**Principles of Economics**	**1890**
Lionel Robbins	**Significance of Economic Science**	**1932**
P.A. Samuelson	**Economics**	**1948**

Economic Activity and Economy

Economic Activity: activities that are paid for or remunerated is considered economic activity.

Economy: The sum of all Economic activities of the society is known as an Economy. According to Brown "Economy is the system of earning livelihood" **Positive Science & Normative Science:**

Positive Science deals with the facts '*what is*. it presents the real picture of a fact without any comments or suggestions. There is no chance for value judgement. Examples: India is an over populated country, India follows Mixed Economy, Marginal utility of money for rich is low, and there is inverse relationship between price and quantity demanded.

Normative Science: deals with norms of fact and recommend '*what ought to be'* and what ought to have been. There is chance for value judgement. Examples: Taxes ought to be applied on agricultural revenue. All economic sectors in India must have balanced growth, unemployment must be eliminated by prudent economic policy, and resources must be distributed fairly between the central government and the states.

Major Types of Economy

1. **Market Economy:** - It is an economy in which goods and resources are bought and sold freely in the market.
2. **Centrally planned Economy: -** This type of economy is one in which the government or a centrally planned authority makes all economic choices.
3. **Mixed Economy: -** It is an economy in which all economic decisions are taken by the government or centrally planned authority and Market forces (Price Mechanism)

Planned Economy	Market Economy
All the materials mean of production are owned by government.	All the materials mean of production are owned by private individuals.
Main objectives of production are social welfare	Main objectives of production are maximization of profit.
Ownership of property is under government control	There is no limit to private ownership of property.
All the economic problems are solved as per direction of the planning Commission.	All the economic problems are solved through price mechanism i.e., demand and supply.

Basic Economic Problems

- Economic problems arise out of the scarcity. By scarcity we mean that the means of production are always scare in relation to the demand for goods and services they produce.
- Human wants are unlimited. Therefore, all human wants cannot be satisfied with the limited means because resources are limited and resources available for production of goods and services have alternative uses.
- Man must choose which want should be satisfied with the limited resources at his disposal to get maximum satisfaction. Here the problem of choice arises. Making best use of available resources. is known as ***Economising Resources***.

Causes of Economic Problems

Prof. Robbins has classified four basic causes of economic problems.

1. Human wants are unlimited,
2. Resources are limited,
3. Resources available have alternative uses
4. Problem of choice

Basic Economic Problems of an Economy

All economies whether developed or underdeveloped faces the problem of an economy.

What to Produce? There are two aspects to this problem. First, what should be produced? Second, what should be their quantity? The first problem is the choice of goods and services to be produced, and the second problem is determining the quantity of goods and services to be produced.

How to Produce? The problem of how to produce refers to the problem of selecting techniques of production in the process of producing goods and services. labour-intensive or capital intensive.

Labour intensive techniques engage more quantity of labour with less quantity of capital, whereas *capital intensive techniques* engage more quantity of capital with less quantity of labour.

Underdeveloped economies, where labour is abundant and cheap, use labour intensive techniques of production, while developed economies, where capital is abundant and cheap, adopt capital-intensive techniques of production.

Whom to Produce? The third problem is the problem of the distribution of national income. In a capitalist economy, decisions are taken based on the purchasing power of the consumers, whereas in a socialist economy, decisions are taken based on the requirements of the consumers through planning.

How to achieve fuller and efficient use of resources? The fourth problem of an economy is the problem of achieving optimum utilisation of resources. Since the means of production are always limited in relation to the demand for goods and services they produce, every effort must be made to achieve a fuller and more efficient use of resources. That is, resources should not be kept idle or underutilised.

The Problem of growth of resources: - Since the means of production are scarce and will exhaust with constant use, the growth of resources has become another problem for an economy. The economy should strive to discover new resources to substitute for older ones.

The Problem of economic Growth: - Every economy in the world aims to raise the standard of living for its citizens by accelerating economic growth. It must determine the rate of savings, investment, and technology use to accomplish this goal. Thus, it is imperative that economists consider the issue of economic growth.

Solution of Central Problems

In a market-oriented or capitalist economy, problems are solved by the price mechanism. In a planned economy or socialist economy, all economic decisions are solved by the state through planning, and in a mixed economy, all economic decisions are solved by both price mechanisms and planning.

Central Problems and Branches of Economics

Economics (price theory).	It deals with allocation of resources -what to, how to and whom to produce.
Macro Economics (Income theory).	It deals with the full employment of resources.
Developmental Economics.	It studies the growth of resources.
Welfare Economics	It deals with the efficiency of production and distribution.

Micro (Worms Eye View).	Macro Economics **(Birds Eye View)**
It studies individual units.	It studies the aggregate of economic units.
It is also known as 'Price Theory'	It is also known as 'Income Theory'

The method of study is partial equilibrium analysis.	The method of study is general equilibrium analysis.
It studies individual units, which are mortal.	It studies society, which is immortal.
It is concerned with the theories of consumer equilibrium, producer's equilibrium, factor pricing (theory of distribution), and economic welfare.	It is concerned with national income accounting, general price level, full employment, economic growth, business cycles, and international trade.

PRACTICE QUESTIONS

Correct the following:

1. The price mechanism is an important feature of the centrally planned economy.
2. Macroeconomics is also known as Income Theory.
3. The central problems of an economy are found only in those economies that are regulated by the government.
4. Scarcity exists even when certain goods are available at zero prices.
5. Economising the use of resources means saving the resources for future use.

Classify the following variables into two branches of economics:

1. General Price Level, Consumption, Rent for a house, Per Capita Income, Salary of a doctor, Price of a book, National Income

Classify the following features with suitable titles:

1. Comprehensive planning, price mechanism, profit motive and public sector **Find odd one out:**

1. Planning, Price Mechanism, Socialism, welfare
2. Price of a pen, Salary of a clerk, deficit financing and profit of a firm

Answer the following questions:

1. In which branch of economics do you include the following statements? Why?
    a. The Govt. proposes to introduce a new EXIM policy for the country.
    b. A shoe manufacturer decides to increase the price of shoes
2. Classify the following into micro and macro concepts.
    Per-capita income, salary of Mr. Raju, general price level, profit of BSNL.
3. Analyse the statements and classify them under micro and macroeconomics.
    a. Study of a firm.
    b. Partial Equilibrium analysis.
    c. Government regulation on environmental degradation.
    d. A family's decision about how much income to be spent.
    e. Employment level of a country.
    f. Relationship between quantity of money and general price level in an economy
4. Identify the central problem of an economy. How these problems are solved in a capitalist economy?
5. Give two examples of microeconomics and macroeconomics variables.

6. An economy must face many problems. Mention the basic problems faced by the economy.
7. **Match column A with B and C.**

A	B	C
Capitalism	Centralised Planning	Private and Public Sectors
Socialism	both Planning and Price Mechanism	Profit Motive
Mixed economy	Price Mechanism	Public Welfare

8. **Complete the following table.**

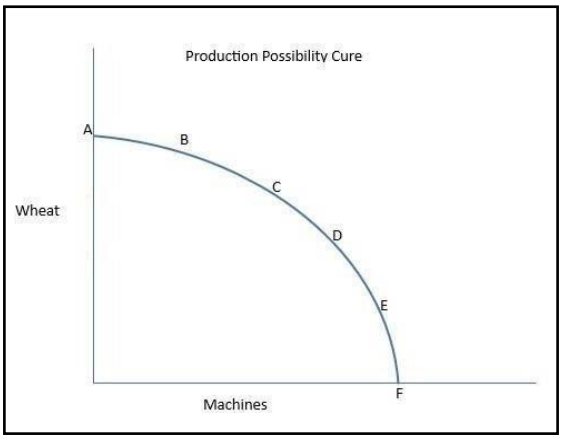
	Micro Economics	Macro Economics
It studies		
Method of study		
Also known as (name)		

PRODUCTION POSSIBILITY CURVE

A Production Possibility curve is a curve that **shows *the various alternative production possibilities that can be produced with given resources and techniques of production.*** For the sake of simplicity, we assume that two commodities are in production: wheat and machines.

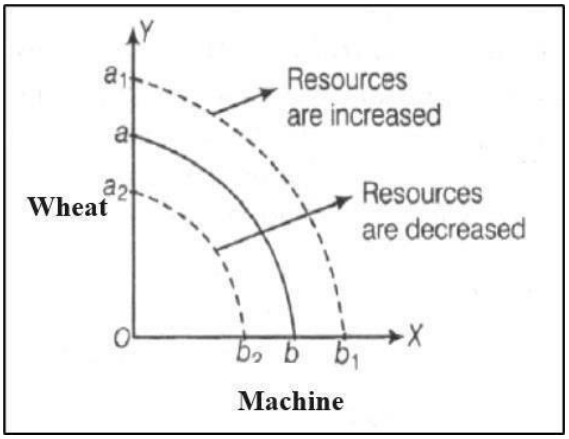
Possibility	Wheat	Machine
A	15	0
B	14	1
C	12	2
D	9	3
E	5	4
F	0	5

From the above table it is evident that, with the given resources and techniques of production, the various combinations of wheat and machines that can be produced are A, B, C, D, E, and F. The economy must choose one out of the various combinations of production possibilities. All points on PPC or inside PPC are attainable with the given resources and technology. All points on PPC show full employment of Resources. The shape of PPC is concave to the origin.



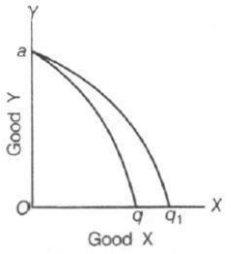
Shift in PPC

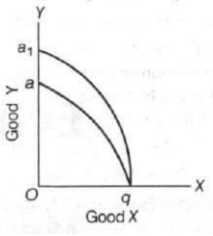
Let the initial production possibility curve be (a, b). If the economy can increase its resources due to the process of growth (advancement of technologies and availability of resources), the production possibility curve shifts rightward (a_1, b_1). Thus, the economy can produce more of both goods than before. Similarly, if resources are reduced, the economy would produce less of both goods than before. Accordingly, the production possibility curve shifts leftward (a_2, b_2).



Rotation of Production Possibility Curve

When the technologies are efficient for commodity X, PPC rotates from a, q to aq_1, as this will raise the productivity of X. (Fig-1). When the technologies are efficient for a commodity Y, PPC rotates from a, q to a_1, q, as this will raise the productivity of Y. (Fig-2)





Concept of Opportunity Cost

Our resources are limited. These resources can be put to alternative uses. This can be understood with the help of an example, if one acre of land produces rice worth Rs. 5,000 and wheat worth Rs. 8,000, the rational producer will forgo the production of rice worth Rs. 5,000 for the sake of wheat worth Rs. 8,000. Then the opportunity cost for producing wheat is Rs.5000, the cost of producing rice.

The opportunity or alternative cost of producing one unit of commodity X is the amount of commodity Y that must be sacrificed to use resources to produce commodity X rather than commodity Y. Opportunity cost is also known as the transfer earnings of a factor of production or the cost of the next best-forgone alternative. *Opportunity Cost also means Opportunity Lost*

Marginal Opportunity Cost

The opportunity or alternative cost of producing one unit of commodity X is the amount of commodity Y that must be sacrificed to use resources to produce commodity X rather than commodity Y. The rate of this sacrifice is called the marginal opportunity cost. In general, to increase the production of one commodity, we will have to make sacrifices for another commodity. This can be understood with the help of an example.

Possibility	Wheat	Machine	MOC
A	15	0	-
B	14	1	**1**
C	12	2	**2**
D	9	3	**3**
E	5	4	**4**
F	0	5	**5**

Marginal Opportunity Cost (MOC) is the rate at which the output of one commodity is sacrificed to produce one more unit of the other commodity.

$$\text{MOC} = \frac{\text{Good Sacrificed}}{\text{More Units of Other Good Produced}} = \frac{\delta y}{\delta x}$$ Unit of One

Shape of Production Possibility Curve and Marginal Opportunity Cost

If the marginal opportunity is increasing, the shape of the production possibility curve is concave to its origin (Fig A); if the marginal opportunity is decreasing, the shape of the production possibility curve is convex to its origin (Fig B); and if the marginal opportunity is constant, the shape of the production possibility curve is a straight line (Fig C).

Shape of Production Possibility Curve and Marginal Opportunity Cost

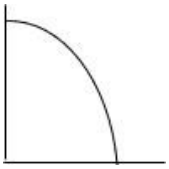


Fig A

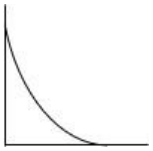


Fig B

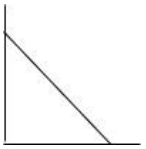


Fig C

PRACTICE QUESTIONS

Correct the following:

1. All points inside the production possibility curve show efficient use of resources.
2. Production possibility curve may sometimes be convex to the origin
3. PPC is drawn on the assumption of constant technology.
4. If resources are not efficiently utilised, we are outside PPC. **Fill In the Blank**

1. Marginal opportunity cost refers to the loss of output of Goods-1 when_____
2. Growth of resources causes a shift in PPC to the__
3. When an economy is operating inside the PPC, it is in a situation of _____
4. In a state of economic slowdown (or recession) when there is massive unemployment and the economy fails to operate on the PPC, it tends to operate _____
5. The destruction of resources causes a shift in PPC to the _____
6. The discovery of resources (or new technology) causes a shift in PPC to the_____

Numerical Problems

1. Find the marginal opportunity cost from the following data:

Commodity X	Commodity Y
100	100
120	60

2. The following table shows the production possibilities of an economy that produces two goods, X and Y.

	A	B	C	D	E	F

Good X	0	1	2	3	4	5
Good Y	20	14	9	5	2	0

3. The following table shows the production possibilities of an economy that produces two goods, Rice, and Wheat. Draw PPC

	A	**B**	**C**	**D**	**E**
Rice	0	1	2	3	4
Wheat	10	9	7	4	0

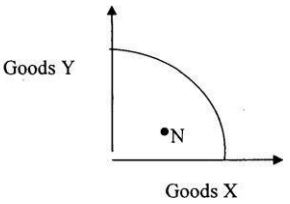
4. The following table shows the production possibilities of an economy that produces two goods, Rice, and Wheat. Draw PPC and comment on the shape.

	A	**B**	**C**	**D**	**E**
Rice	0	1	2	3	4
Wheat	4	3	2	1	0

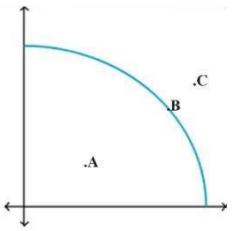
5. Comment on the shape of the production possibility curve based on the following table:

	A	**B**	**C**	**D**	**E**
Rice	0	1	2	3	4
Wheat	20	18	14	8	0

6. Darshan is working as a teacher in a school at a salary of D.60000/- He gets another offer as manager at a commercial bank of D.50000/-. What is the opportunity cost of working as a teacher?
7. If one acre of land produces rice worth Rs. 5,000 and wheat worth Rs. 8,000, the rational producer will forgo the production of rice worth Rs. 5,000 for the sake of wheat worth Rs. 8,000. Find the opportunity cost of producing wheat instead of rice.
8. The production possibility curve representing the existing resource allocation in the Indian economy is given below. Suppose the Indian economy is operating at point 'N' due to underutilization of resources. Suggest any two measures to lift the economy to any point on PPC.



9. identify the points in the production possibility curve A, B and C.



THEORY OF CONSUMER BEHAVIOUR

Every prudent person wants to make the best of his or her resources. To understand how a consumer behaves, we must study the concept of utility. The term utility should be differentiated from satisfaction. Utility implies expected satisfaction, whereas satisfaction stands for realised satisfaction.

The utility of a commodity is the power of that commodity to satisfy a human want.

Features of Utility

1. It is essentially a subjective or introspective concept.
2. It relates to inner sentiments and emotions.
3. It has no physical or material existence.
4. It is not inherent in the physical commodity.
5. It depends on the mental makeup of the consumer
6. It has no ethical or legal significance.

Cardinal Utility Analysis

Alfred Marshall says utility can be measured cardinally. He says the utility of a product for a person can be measured in terms of the price he is willing to pay for it. That is, if a student is willing to pay ₹.2 for a cup of tea, it means that he derives utility worth ₹.2. from the consumption of that cup of tea.

Total utility.

Total psychological satisfaction obtained by a consumer from consuming a given amount of a particular commodity is called total utility. This can be understood with the help of an example.

Units Consumed	Total Utility	Marginal Utility
0	0	0
1	20	20
2	38	18
3	53	15
4	64	11
5	70	6
6	70	0
7	62	-8
8	46	-16

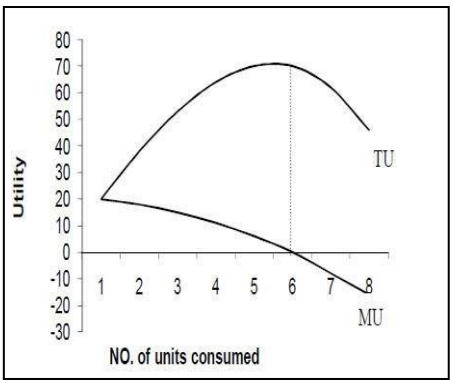
Marginal Utility

Marginal utility is the change in total utility resulting from the consumption of one more unit of a commodity, or it is the addition made to the total utility by the addition of one more unit of a commodity. In other words, the utility derived from the consumption of the last unit is termed marginal utility.

MU = TUN- TUN- 1

Law of Diminishing Marginal Utility

It is a psychological fact that when a consumer acquires more units of a commodity during a particular time, the utility of the successive units will diminish. That is, marginal utility declines with the consumption of successive units of a commodity. This pattern of decline in marginal utility is called the Law of Diminishing Marginal Utility. This law is natural and holds good for every product and service. The Law of Diminishing Marginal Utility states that the more we have of a thing, the less utility we get from every additional unit.



From the above graph, we can observe that the total utility curve slopes upwards to the right, indicating that total utility will increase with the consumption of additional units. However, the increase in total utility is not constant but declines gradually. This is shown by

the marginal utility curve, which has a negative or downward slope. The marginal utility curve cuts the X-axis (marginal utility is zero when total utility reaches maximum) and goes below the X-axis. (Marginal utility is negative.)

Relationship between Total Utility and Marginal Utility

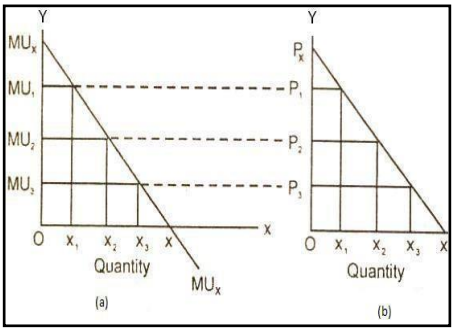
TOTAL UTILITY	MARGINAL UTILITY
Increases, but at a diminishing rate.	Declines
Reaches maximum	Reaches zero
Decline from maximum	Becomes negative

Assumptions of Law of Diminishing Marginal Utility

1. Different units of commodity consumed are homogenous.
2. There is no time interval between the consumption of two units.
3. The taste, habit, preference, and fashion of the consumer do not change.
4. Different units of commodity consumed are homogenous.
5. There is no time interval between the consumption of two units.
6. The taste, habit, preference, and fashion of the consumer do not change. 7. Consumers are assumed to be rational.

Derivation of the Demand Curve with the help of the Law of Diminishing Marginal Utility

Dr. Alfred Marshall derived the demand curve with the aid of the law of diminishing marginal utility. The law of diminishing marginal utility states that as the consumer purchases more units of a commodity, he gets less and less utility from the successive units of the expenditure. At the same time, as the consumer purchases more units of one commodity, a lesser and lesser amount of money is left with him to buy other goods and services.



A rational consumer, while purchasing a commodity, compares the price of the commodity he must pay with the utility of the commodity he receives from it. So long as the marginal utility of a commodity is higher than its price (MUx > Px), the consumer will demand more units of it until its marginal utility is equal to its price (MUx = Px) or the equilibrium condition is established.

To put it differently, as the consumer consumes more units of a commodity, its marginal utility goes on diminishing. So it is only at a diminishing price that the consumer would like to demand more units of a commodity.

Ordinal Utility Analysis

Cardinal utility analysis is simple to understand but suffers from a major drawback in the form of the quantification of utility in numbers. In real life, we never express utility in the form of numbers. At the most, we can rank various alternative combinations in terms of utility. In other words, the consumer does not measure utility in numbers, though she often ranks various consumption bundles. This forms the basis of ordinary utility analysis.

Prof. J.R. Hicks and R.G.D. Allen called the utility approach unrealistic because satisfaction (utility), a subjective mental phenomenon, can never be measured precisely. They, therefore, presented an alternative technique known as inference curve analysis. Indifference curve analysis assumes that every consumer has a scale of preference.

He assigns ranks (like 1st, 2nd,3rd…….) to different combinations of two goods called bundles, and he can tell which combination he likes best. (This is called the ordinary measure of utility.)

Related Concepts of Indifference Curve Approach

Consumer Budget

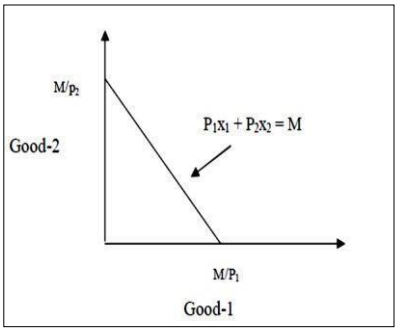
It is the real purchasing power of the consumer, from which he can purchase certain quantities of bundles of two goods at a given price. In other words, the consumption bundle available to a consumer depends on two things: the prices of two goods and the income of the consumer. (The consumer can afford to buy only those bundles that cost him less than or equal to his income.).

Budget Set

It is the collection of all the bundles that the consumer can buy with his income at the prevailing market prices. $P1\ x1 + P2\ x2 \leq M$

For example, Mr. Darshan's income is ₹ 20/-. He can purchase two goods, both of which are priced at ₹ 5/-. His budget set is (0,0), (0,1), (0,2), (0,3), (0,4), (1,0), (2,0), (3,0), (4,0), (1,1), (1,2), (1,3), (2,0), (2,1), (2,2), (3,0), (3,1), (4,0). Out of these bundles (0,4), (1,3), (2,2), (3,1), and (4,0), they cost the same, and all other bundles cost less than ₹ 20/-.

Budget Line (or Price Line)



A budget line represents all bundles (i.e., combinations of two goods) that a consumer can buy with his or her entire income and the prices of those goods. Suppose there are two goods, good-1 and good-2, and the price of good-1 is P1 and that of good-2 is P2. If the consumer wants to buy x1 units (quantity) of good -1 and x2 units of good -2, he will have to spend P1x1 + P2x2 amount of money. Suppose the money income of the consumer is M. He can choose any bundle of two goods that cost equal to the money he has. Expressed in the form of an equation:

$$P_1x_1 + P_2x_2 = M$$

Slope of the Budget line

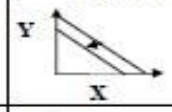
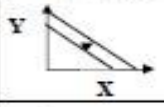
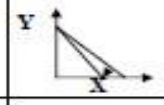
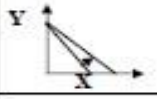
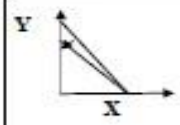
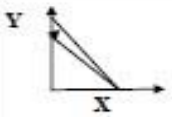
Slope of the budget line is negative. it is $(-)\frac{P1}{P2}$

Change in Budget Line

A budget line is based on income (M) and prices (P_X and Py). Thus, it changes when

there is a change in M, P_X, and P_Y.

$$MRS_x^y = \frac{dx}{dy}$$

	Increase	Decrease
Change in income		
Change in Price 1		
Change in price 2		

Preferences:

It means choosing one good over another. E.g., Darshan prefers coffee to tea.

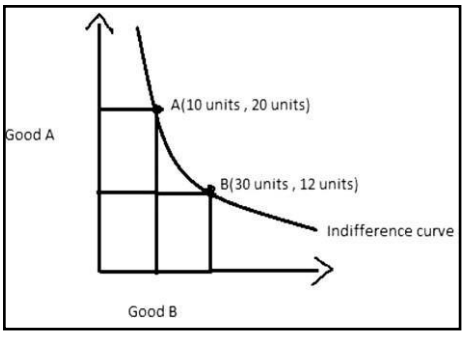
Monotonic preferences

Preference of "more is better." Monotonic preference means that consumers prefer any two bundles of goods that have more of at least one good and no less of other goods compared to the other bundle.

A consumer with monotonic preference will prefer the bundle (2, 3) to bundles (2, 1), (1, 3) and (2, 2) bundles, or a consumer with monotonic preference will prefer the bundle (2, 2) to (1, 1), (2, 1), and (1, 2) bundles.

Indifference Curve

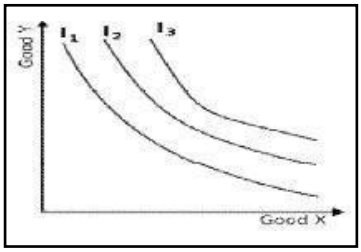
An indifference curve is a curve that represents all those combinations of two goods that give equal satisfaction to the consumer. The consumer has no reason to prefer one combination to any other combination on the same curve. So, he is indifferent (neutral) towards various combinations of two goods giving the same level of satisfaction, and, therefore, such a curve is called an indifference curve. If we show these combinations on a graph and join these points to form a curve, it is known as an indifference curve.



Thus, an indifference curve is the locus of all points representing various combinations (also called bundles) giving equal satisfaction to which a consumer is indifferent.

Indifference Map

An indifference map is a collection of indifference curves corresponding to different levels of satisfaction. Thus, it is a family of indifference curves. It gives a complete picture of a consumer's scale of preferences for two goods, as it represents different levels of satisfaction.



Properties of Indifference Curves

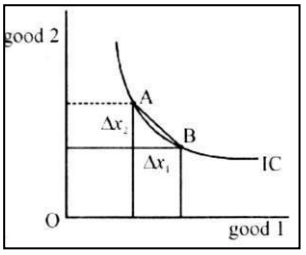
1. Indifference curves always slope down from left to right.
2. Higher indifference curves represent a higher level of satisfaction.
3. Indifference curves are always convex to the origin O.
4. Indifference curves cannot intersect each other.
5. The indifference curve touches neither the X-axis nor the Y-axis.

Marginal Rate of Substitution (MRS)

The marginal rate of substitution (MRS) can be defined as how many units of good x must be given up to gain an extra unit of good y while keeping the same level of utility. Therefore, it involves the trade-offs of goods to change the allocation of bundles of goods while maintaining the same level of satisfaction. It can be determined using the following formula:

Slope of Indifference Curve

The MRS is linked with indifference curves, since the slope of indifference curves is the MRS. ***Δ Good 2 / Δ Good 1 is the slope of indifference curve***



Diminishing Marginal Rate of Substitution (DMRS)

The marginal rate of substitution is the rate of exchange between some units of goods X and Y, which are equally preferred. The marginal rate of substitution of X for Y (MRS) xy is the amount of Y that will be given up to obtain each additional unit of X.
This rate is explained below.

Combination	Good X	Good Y	MRS for X for Y
L	1	9	-
M	2	6	3:1
N	3	4	2:1
P	4	3	1:1

To have the second combination and yet to be at the same level of satisfaction, the consumer is prepared to forgo 3 units of Y in exchange for obtaining an extra unit of X. The marginal rate of substitution of X for Y is 3:1. The rate of substitution will then be the number of units of Y for which one unit of X is a substitute. As the consumer proceeds to have additional units of X, he is willing to give away less and less units of Y so that the marginal rate of substitution falls from 3:1 to 1:1 in the fourth combination.

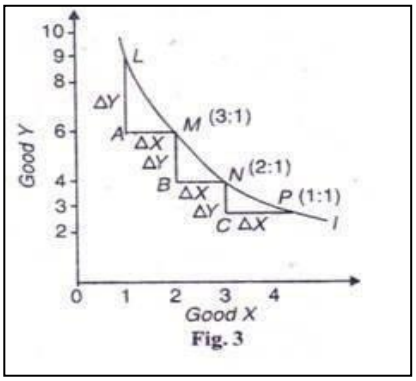


Fig. 3

This shows that as the consumer moves downward along the curve, he possesses additional units of X and gives up lesser and lesser units of Y, i.e., the MRS xy diminishes. It is due to this law of diminishing MRS that an indifference curve is convex to the origin.

Consumer's Equilibrium through Indifference Curves.

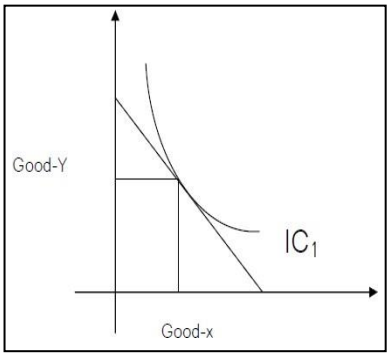
The consumer is in equilibrium when he maximises his satisfaction given his income and the price of goods. Here the most important point is the choice of that combination of two goods that gives the consumer maximum satisfaction. These three points of information about the consumer are required:

1. Income of the consumer.
2. Prices of goods (both items are represented by budget line).
3. Preference schedule, which is represented by the indifference map.

The consumer equilibrium is found at the point where the budget line is tangent to the indifference curve. A consumer is in equilibrium at a point where the budget line is tangent to the indifference curve. At this point; slope of the indifference curve (called MRS) is equal to the slope of the budget line.

Condition of Consumer's Equilibrium:

The following two conditions are necessary.



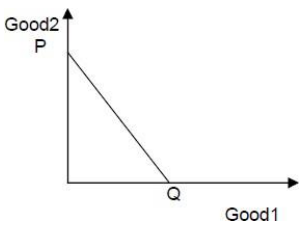
1. The budget line should be tangent to the indifference curve. {i.e., the slope of the indifference curve equal to the slope of the budget line.
2. The indifference curve should be convex to the point of origin O (i.e., MRS should be diminishing at the point of equilibrium).

A consumer is in equilibrium at a point where the budget line is tangent to the indifference curve. At this point; slope of the indifference curve (called MRS) is equal to the slope of the budget line.

PRACTICE QUESTIONS

Numerical Problems

1. A consumer has an income of Rs. 10. He wants to consume two goods, X_1 and X_2. The price of X_1 and X_2 are Rs. 20 and Rs. 10, respectively. Write down the equation for the budget line.
2. A budget line PQ for a consumer is given below. Show the following situations in separate diagrams:
   a. The income of the consumer decreases while the prices of goods remain constant.
   b. The price of Good-2 alone increases.
   c. The price of Good-1 alone increases.



3. Prepare a budget set with the following details: Income = Rs 10, P1 = Rs 2, and P2 = Rs 5.
4. Suppose Ramu wants to consume two goods, which are priced equally at Rs 5 each, and his income is Rs 25. Write down all the bundles that are available to him. Identify those bundles that cost him exactly Rs. 25. [Hint: Draw the budget line.]

5. A consumer with his given income can buy 20 units of good X and 12 units of good Y. The prices of X and Y are given as Rs. 15 and Rs. 25, respectively. Find out the income of the consumer.
6. Imagine that the income of a person is Rs. 50. In the market, there are two goods, viz., good x and good y. The price of good x is 5 and good y is 10. If he purchases a good X of 2 units, how much quantity of goods Y does he buy? Also indicate the equation for estimating the budget line.
7. A consumer has an income of Rs. 10/-. He wants to consume two goods, good 1 and good 2. The prices of the two goods are Rs 2 and Rs 1, respectively. What is the equation for the budget line?
8. A Consumer spends all his income on rice and wheat. He buys 10 units of rice and 8 units of wheat. The price of rice is Rs.20/- per unit and that of wheat is 15. Calculate the income of the consumer.
9. Mr. Santhosh wants to buy rice and milk with his income of Rs. 150. Its market prices are Rs. 10 and Rs. 5, respectively.
    a. Draw the budget line.
    b. Derive the budget line equation.
    c. Find the slope of the budget line.
    d. How much Kg of rice can Mr. Santhosh consume if he spends his entire income on that good alone?
10. Suppose a consumer consumes two goods, good1 and good2. Price of good1 is ₹4 and price of good2 is ₹5. Income of the consumer is ₹20.
    a) Write down the equation of budget line.
    b) Find the Horizontal and Vertical Intercept.
    c) Draw the budget line.
    d) Find the slope of the budget line
11. Suppose a consumer has income of ₹100 and he wants to consume two goods x and y. Price of good x and good y are ₹20 and ₹25 respectively.
    a. State the equation of budget line.
    b. Find vertical intercept.
    c. Find the slope of the budget line.
    d. Draw the Budget line
    e. Suppose income of the consumers increase to ₹150, show the change in budget line graphically.
12. A consumer wants to consume two goods the prices of two goods are 4 and 5 respectively. The consumer's income is 20.
    a. write down the equation of the Budget Line?

b. How much of good 1 can the consumer consumes if she spends her entire income on that good?
c. How much of good two can she consume if she spends her entire income on that good?
d. what is the slope of the Budget Line?

13. Define the indifference curve and explain any three features of the indifference curve.
14. List out the features of the indifference curve and graphically explain the consumer equilibrium.
15. Explain consumer equilibrium (optimum choice) with the help of a suitable diagram.
16. List the properties of the indifference curve.
17. Explain the consumer's equilibrium with the help of the indifference curves.
18. What do you mean by budget line? Explain various forms of shift in the budget line due to changes in prices and income with the help of diagrams.

LAW OF DEMAND AND ELASTICITY OF DEMAND

Demand

In a free market economy, the price of a commodity is determined by the interaction of the forces of supply and demand. A commodity is any good that is produced for sale in the market. The market means all areas in which buyers and sellers are in contact with each other for the purchase and sale of the commodity.

Demand for a commodity

Demand for a commodity refers to the quantity of a commodity demanded in the market at a given price and for a for a given period. It implies three elements: the quantity of the commodity, the price of the commodity, and the period. Period is important because, over different periods, different quantities of commodities may be demanded even at the same price. Demand in economics implies both the desire to purchase and the ability to pay. Mere desire does not constitute demand unless it is backed by ability to pay.

DEMAND = NEED +DESIRE + ABILITY TO PAY +AVAILABILITY.

Household Demand or Individual Demand

The basic unit of consumption in an economy is the individual household. The demand for a commodity by an individual household is the quantity of that commodity that he is ready to purchase or take away from the market at a given moment in time at a given price.

Factors affecting Household Demand

They are many factors effecting household demand:

a. **Price of the Commodity:** The demand for a commodity is inversely and negatively related to its price.
b. **The Price of the Related Goods:** The demand for a particular good is related to the change in price of the other commodity (substitute and complementary goods).
c. **Income of the Consumer.** There is a direct relationship between the income of the consumer and the quantity demanded.

d. **Taste, Preference, Habit of the Consumer**

Demand Function

The demand function shows the functional relationship between demand for a commodity and its various determinants.

$$Qd = f(P, Pr, Y, T \& W)$$

Where P is the commodity's price, Pr is the price of related commodities, Y is the consumer's income, T is the consumer's taste, preference, and habit, and W is the environment, including the population, climate, and fashion.

Kinds of Demand

Since taste, preference, and habit of the consumer are non-monetary factors, they cannot be measured in terms because they are affected by social, cultural, religious, political, and geographical factors. Therefore, we have three factors that affect demand. They are price, income, and price of the related goods, and accordingly, we have three kinds of demand. Price demand, income demand, and cross demand, respectively.

Price Demand

Other things being the same, price demand shows the functional relationship between the price of the commodity and the quantity of commodity demanded. It can be expressed as QD = f (P).

Income Demand

Other things being the same, income demand shows the functional relationship between the quantity of a commodity demanded and the income of the consumer who purchases it. It can be expressed as QD = f (y). **Cross Demand.**

Other things being the same, cross demand shows the functional relationship between the quantity of a commodity demanded and the price of its related commodity. It can be expressed as QD = f (Pr).

Household Demand Schedule

A Household demand schedule is a tabular statement that shows a full account of household demand for a particular commodity at different prices at a certain time.

Price	QD
10	50
9	60
8	70
7	80
6	90

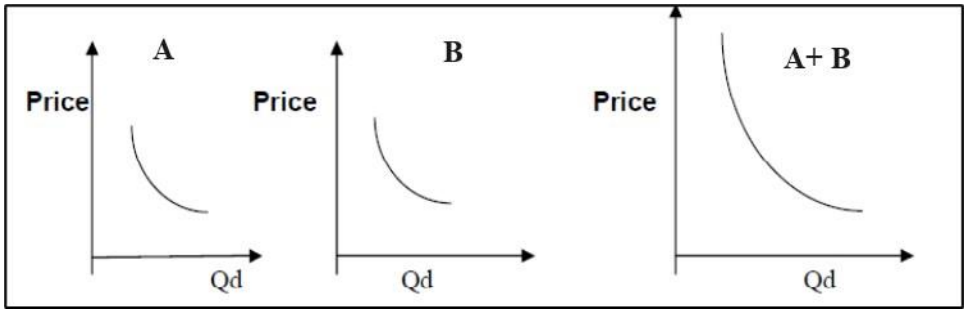
Household Demand Curve

A graphic representation of the household demand schedule is called the Household Demand Curve. In other words, the curve shows the various quantities of demand for a commodity by a particular household at various levels of price.

Market Demand Schedule and Market Demand Curve

The summation of all individual demand schedules in a market for a commodity is called the market demand schedule. A curve that shows the demand of the whole market for a commodity at its various prices is known as a market demand curve. The market demand curve is the horizontal summation of all individual household demand curves.

Price	Qd of consumer A	Qd of consumer B	Market Qd (A+B)
10	50	30	80
9	60	40	100
8	70	50	120
7	80	60	140
6	90	70	160



The Factors Affecting Market Demand

1. Population of the country
2. Distribution of income and wealth
3. Climate and seasons
4. Government policy

Law of demand

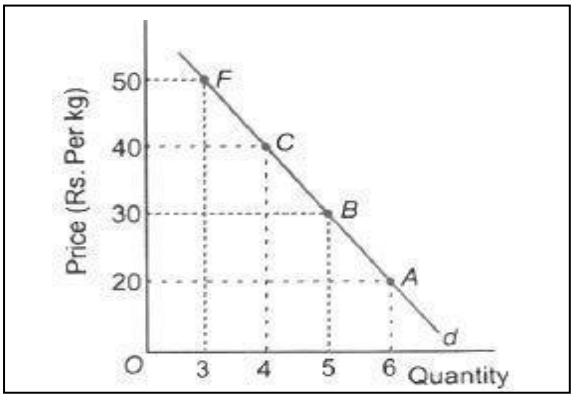
The law of demand establishes the relationship between the price and quantity of goods demanded. According to this law, "other things being the same, when the price of the commodity increases, the quantity demanded falls, and when the price of the commodity falls, the quantity demanded increases." It means that the price and quantity demanded move in the opposite direction. That is Price and Quantity demanded is negatively / indirectly related.

Assumptions of Law of demand

1. There is no change in the price of related commodities.
2. There is no change in the income of the consumer.
3. There is no change in the taste, preference, or habit of the consumer.
4. There is no change in the climate, fashion, etc.
5. There is no change in the population.
6. There is no change in the in the distribution of income and wealth.
7. There is no change climate and seasons.
8. There is no change in government policy.

Graphical Representation of Law of Demand

The demand schedule given below shows the relationship between the price and quantity of goods demanded. The law of demand can be illustrated graphically.



Exceptions to the Law of Demand

1. The Law of demand does not apply in the following cases:
2. **Giffen Goods.** The demand for Giffen goods (a special category of inferior goods) decreases with the fall in price of the commodity and increases with the rise in price.
3. **Conspicuous Goods.** Goods, which are purchased to emphasise social status or prestige, will be demanded more when the price rises.
4. **Expectation of future change in price of the commodity.** When buyers expect a further rise in price, they will demand more, and when buyers expect a further fall in price, they will demand less.
5. **Necessities**. Some goods are necessary for life. For example, food grains, salt, etc. The consumer will demand a minimum quantity of a commodity, irrespective of price change.
6. **Ignorance**. If consumers are not aware of the competitive price of the commodity, they may purchase more of it even at higher prices.
7. **Extra Ordinary Situation**. Wars, famine, and riots are extraordinary situations. Consumers tend to behave in an abnormal way during these situations.
8. **Change in Fashion, Habit, Attitude Etc**. Consumers tend to behave in a different way when fashion, habits, or attitudes change.

Why demand curve slopes downwards?

There are three reasons for this. They are,

Income effect

When the price of a commodity falls, a consumer must spend less on the purchase of the same amount of that commodity. i.e., when the price falls, the consumer's real income or purchasing power increases, which in turn enables him to purchase more of that commodity. The reverse will happen when the price of a commodity rises. When the price rises, the consumer's real income or purchasing power decreases, which in turn enables him to purchase less of that commodity. The effect on demand for a commodity due to a change in the real income of the consumer because of a change in its price is known as the income effect.

Substitution effect

When the price of a commodity falls, it becomes cheaper in comparison to another commodity. Therefore, the consumer starts to substitute this commodity in the place of another commodity. Thus, demand for the commodity increases with the fall in price. The combined

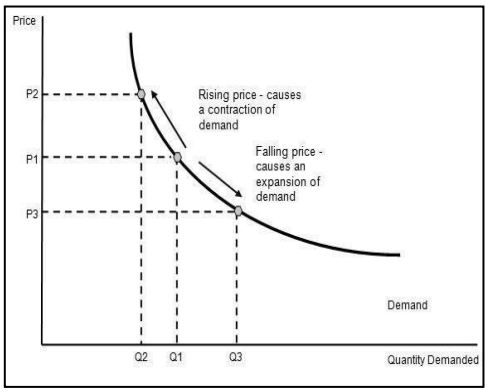
effect of income and substitution is called the price effect. This explains the behaviour of the individual household in the form of the law of demand.

Law of diminishing marginal utility operates.

A rational consumer with limited income spends it with a clear idea of maximising his satisfaction. Whenever a person buys more units of a commodity, he gets less and less utility from the additional units. At the same time, as he buys more units of one commodity, he has less money left with him for other goods and services. A prudent and sensible consumer will avoid extending purchases of any one commodity too far. When a consumer spends his limited income carefully on various goods and services and gets maximum satisfaction, he is said to be in equilibrium. At the same time, as he buys more units of one commodity, he has less money left with him for other goods and services. A prudent and sensible consumer will avoid extending purchases of any one commodity too far. When a consumer spends his limited income carefully on various goods and services and gets maximum satisfaction, he is said to be in equilibrium. A consumer will get maximum satisfaction when the ratio between the marginal utility of a good and its price is equal to the marginal utility of money.

Movements along the same demand curve (Extension / Contraction of Demand)

If the quantity demanded decreases or increases in response to the fall or rise in price of the commodity alone, assuming that other determinants of demand remain constant, it is known as movement along a demand curve.
(extension or contraction of demand)



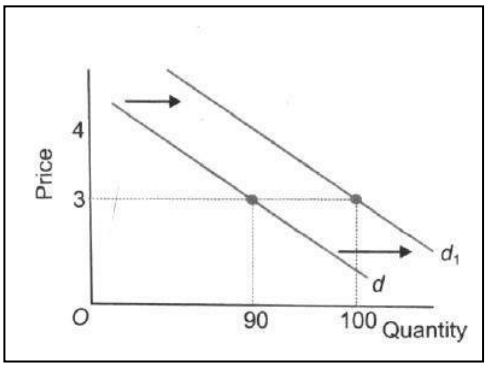
When the quantity demanded increases with the fall in price, it is called an extension of demand, whereas when the quantity demanded falls with the rise in price, it is called a contraction of demand.

Shift in demand curve (Increase or decrease in demand)

When the change in demand is due to factors other than the price of the commodity, it is known as a shift in demand curve. (increase or decrease in demand) (increase or decrease in demand) When the change in demand is due to factors other than the price of the commodity, it is known as a shift in demand curve. (increase or decrease in demand)

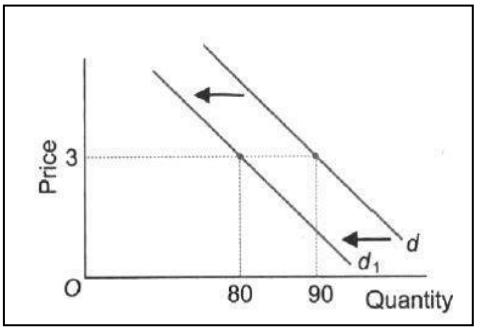
Increase in demand.

If more quantity of a commodity is demanded at the same price, due to favourable changes in factors other than the price of the commodity in question (change in income, change in the price of a related commodity, taste, preference, etc.). It is called an increase in demand.



Decrease in demand.

If less quantity of a commodity is demanded at the same price, due to unfavourable changes in factors other than the price of the commodity in question (change in income, change in the price of a related commodity, taste, habit, preference, tc.), It is called a decrease in demand.



Price Elasticity of Demand

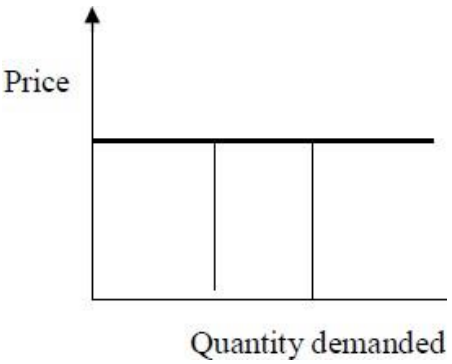
Price Elasticity of demand is the technical term used by economists to describe the degree of responsiveness of the quantity demanded of a commodity in response to a change in price of that commodity. In other words, Elasticity of demand is the ratio between proportionate change in quantity demanded and proportionate change in its price.

Degrees of Price Elasticity of Demand or Kinds of Demand

There are five kinds of elasticity of demand. They are: 1. perfectly elastic demand; 2. perfectly inelastic demand; 3. elastic demand; 4. inelastic demand; and 5. unit elastic demand.

Perfectly Elastic Demand

Perfectly elastic demand refers to that situation where a small rise in the price of the commodity leads to a quantity demanded of zero and a small fall in the price of the commodity leads to a quantity demanded of infinity. In short, perfectly elastic demand for a commodity refers to a situation where the quantity demanded is perfectly dependent on the price. The demand curve in this case is a straight line parallel to the X- axis. However, perfectly elastic demand has only because importance.

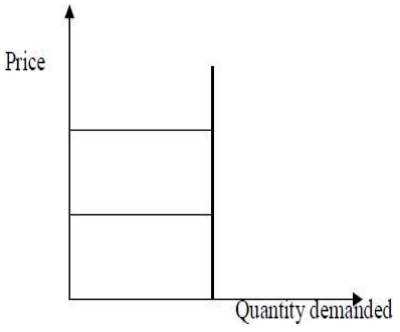


$$\frac{\delta P}{P} = 0$$

$$\frac{\delta Q}{\delta P} \times \frac{P}{Q} = \infty$$

Perfectly Inelastic Demand

Perfectly inelastic demand refers to a situation where the quantity demanded is independent of the change in the price of the commodity. The demand curve in this case is a straight line parallel to the Y-axis. But perfectly inelastic demand has only theoretical importance.

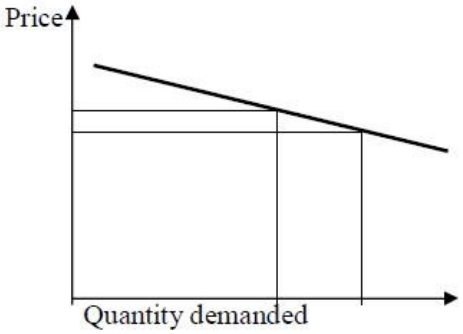


because $\frac{\delta Q}{Q} = 0$

$$\frac{\delta Q}{\delta P} \times \frac{P}{Q} = 0$$

Elastic Demand

Elastic demand refers to a situation where a proportionate change in quantity demanded is greater than a proportionate change in its price. A small change in the price of the commodity leads to a large amount of quantity demand. The slope of the demand curve is smooth.

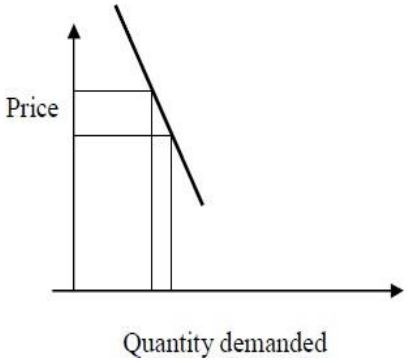


$$\frac{\delta Q}{\delta P} \times \frac{P}{Q} => 1$$

because $\frac{\delta Q}{Q} > \frac{\delta P}{P}$

Inelastic Demand

Inelastic demand refers to a situation where a proportionate change in the quantity demanded is less than a proportionate change in its price. I.e. a large increase in price causes only a small fall in quantity demanded and a large fall in price causes only a small rise in quantity demanded. The slope of the demand curve is steep. A large change in the price of the commodity leads to a small amount of quantity demanded.



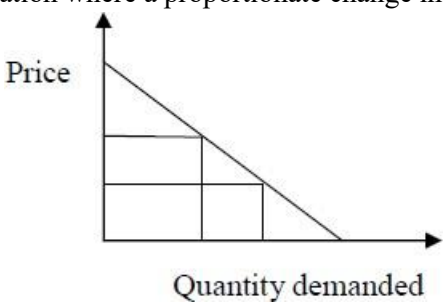
because $\delta Q < \delta P$

~~Q~~ ~~P~~

$$\frac{\delta Q}{\delta P} \times \frac{P}{Q} =< 1$$

Unit Elastic Demand

Unit Elastic quantity demanded refers to a situation where a proportionate change in quantity demanded is equal to a proportionate change in its price. A change in the price of the commodity leads to an equal change in the quantity demanded.



because $\frac{\delta Q}{Q} = \frac{\delta P}{P}$

$$\frac{\delta Q}{\delta P} \times \frac{P}{Q} = 1$$

#

Factors determining the Elasticity of Demand

The elasticity of demand for a commodity depends on several factors.

1. **The nature of commodity: Commodities are classified as durable and perishable goods. Perishable goods like vegetables, milk, etc. are inelastic in demand, whereas durable goods like radio, television, etc. are elastic in demand.**
2. **The availability of substitutes: If a commodity has a close substitute, the demand tends to be elastic, and if a commodity does have a close substitute, the demand tends to be inelastic.**
3. **The number of uses: Single use goods are inelastic in demand as compared to multi-use goods.**
4. **Time: In the short period, demand will be inelastic, while in the long period, demand will be elastic.**

Importance of the concept of price Elasticity of Demand Importance to Monopolist:

The concept of elasticity of demand helps the monopolist determine the elasticity of their product in different markets and charge different prices in different markets.

Importance to Finance Minister

Finance Minister to impose taxes to increase government revenue on commodities depending on their elasticity of demand.

Importance for International Trade

The concept of elasticity of demand helps the country determine the elasticity of its product in its own market and in foreign markets.

Helpful in determination of remunerations to factors of production

The concept of elasticity of demand helps in deciding reasonable remunerations based on factors of production.

Measurement of Price Elasticity of Demand

There are three methods of measuring elasticity of demand.

Total Outlay (Expenditure) Method

The elasticity of demand is measured with the help of the total outlay incurred on the purchase of the commodity. The total outlay is the product of the price of the commodity and the number of units purchased.

TO = TQ x P, Where TO is the total outlay, TQ is the total quantity and P is the price.

Percentage Method

Elasticity of demand is the ratio between proportionate change in quantity demanded and proportionate change in its price.

$$E_d = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price of the commodity}}$$

	When the price rises	When the price falls
Elastic demand	Total outlay falls	Total outlay rises
Inelastic demand	Total outlay rises	Total outlay falls
Unit elastic demand	Total outlay remains unchanged	Total outlay remains unchanged

Type of the Commodity	Price Per Unit	Quantity Demanded	Total Expenditure	Elasticity of Demand
A	10	12	120	Unity Ed = 1
	8	15	120	
	5	24	120	
B	10	14	140	Greater than Unity Ed > 1
	8	20	160	
	5	36	180	
C	10	13	120	Less than unity Ed < 1
	8	13	104	
	5	16	80	

$$E_d = \frac{\dfrac{\text{Change in quantity demanded}}{\text{Original quantity}}}{\dfrac{\text{Change in price}}{\text{Original price}}}$$

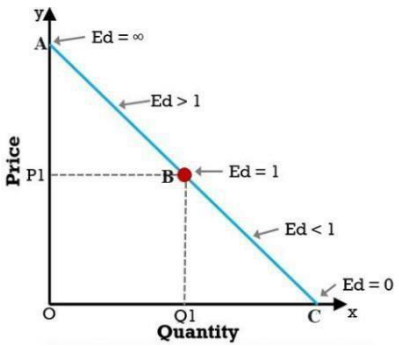
$$E_d = \frac{\delta Q}{\delta P} \times \frac{P}{Q}$$

Point Method or Geometrical Method

Price elasticity of demand can be measured geometrically. Accordingly, to this Method, elasticity of demand on each point of demand curve is different. It can be measured as.

$$\text{Elasticity of demand at a point} = \frac{\text{Lower segment of demand curve}}{\text{Upper segment of demand curve}}$$

It will be observed from the graph that the price elasticity of demand is zero at the point where the demand curve touches the X-axis and infinite at the point where the demand curve touches the Y-axis. The elasticity of demand at the central point is unit elastic. It will be less than unit elastic at the lower segment and more than unit elastic at the upper segment.



Income Elasticity of Demand

Income elasticity of demand is the technical term used by economists to describe the degree of responsiveness of the quantity demanded of a commodity in response to a change in the income of the consumer. Income elasticity of demand is the ratio between proportionate changes in quantity demanded and the proportionate change in income of the consumer.

$$E_y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income of the consumer}}$$

$$E_y = \frac{\dfrac{\text{Change in quantity demanded}}{\text{Original quantity}}}{\dfrac{\text{Change in income of the consumer}}{\text{Original income}}}$$

$$E_y = \frac{\delta Q}{\delta Y} \times \frac{Y}{Q}$$

Cross Elasticity of Demand.

Cross-elasticity of demand is the technical term used by economists to describe the degree of responsiveness of the quantity demanded of a commodity in response to the change in price of the other commodity (substitute and complementary goods). Cross-elasticity of demand is the ratio between proportionate changes in quantity demanded of a commodity and a proportionate change in price of the other commodity.

$$E_{dx} = \frac{\text{Percentage change in quantity demanded of commodity X}}{\text{Percentage change in price of the other commodity Y}}$$

$$E_{dx} = \frac{\dfrac{\text{Change in quantity demanded of commodity X}}{\text{Original quantity of commodity X}}}{\dfrac{\text{Change in price of the other commodity Y}}{\text{Original price of the other commodity Y}}}$$

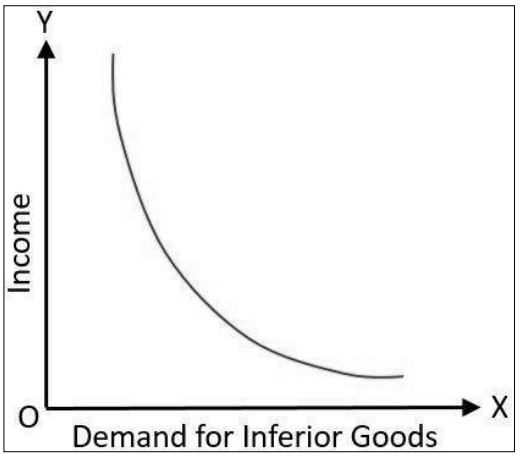
$$E_{dx} = \frac{\delta Q_x}{\delta P_y} \times \frac{P_y}{Q_x}$$

Normal Goods

When a rise in income leads to a rise in demand for a good, that good is called a normal good. Alternatively, it is goods whose quantity demanded increases as income increases. Thus, there is a direct relationship between income and demand for normal goods. In other words, goods whose income effect is positive are generally called normal goods. The positive income effect means that when the income of consumers rises, demand for normal goods also rises, and when income falls, demand for such goods also falls. Examples are: full cream milk, superior grains like wheat and rice, silk cloth, cigarettes, etc.

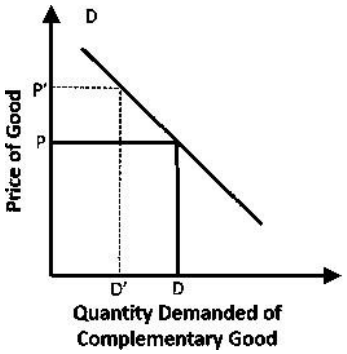
Inferior Goods

When a rise in income leads to a fall in demand for a good, that good is called an inferior good. Alternatively, it is a good whose demand falls with an increase in income. Thus, there is an inverse relationship between income and demand for an inferior good. In other words, goods whose income effect is negative are called inferior goods. The negative income effect means that when the income of the consumer rises, demand for inferior goods falls, and when income falls, demand for such goods rises. Examples are: toned milk, coarse grains like jowar and bajra, khaki cloth, bidies, etc.



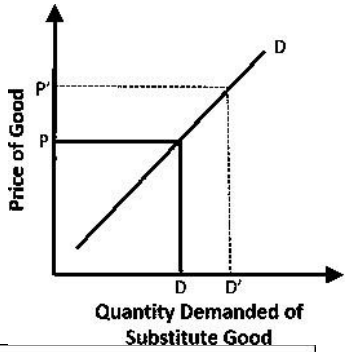
Complementary Goods

Complementary goods are a pair of goods that are demanded jointly to satisfy a given want. Examples are cars and petrol, fountain pens and ink, needles, and thread. There is an inverse relationship between the price of a commodity and the demand for its complementary good.



Substitute Goods

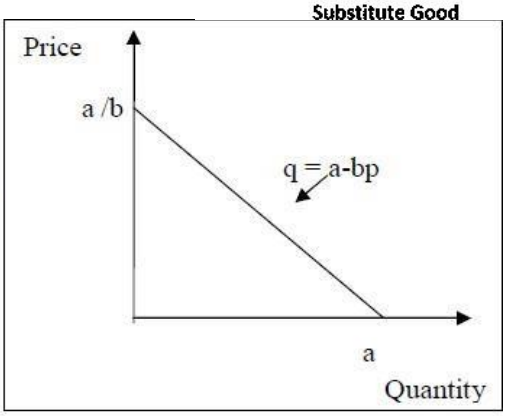
Substitute goods are a pair of goods which can be used (substituted) in place of each other to satisfy a given want. That is, they are also called competitive goods. Coffee and tea, scooter and pen and pencil, gur and sugar, ghee and oil are examples of substitute goods.



Linear Demand

$$Qd = a - bp$$

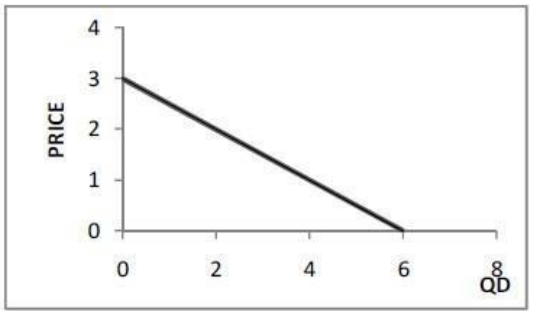
Qd = Quantity demanded
a = Vertical intercept
b - Slope of the demand curve = $\Delta P/\Delta Q$
p = Price of the commodity



Numerical example

If QD=6-2p; 0≤ P≤ 0, if P=3 draw the demand curve

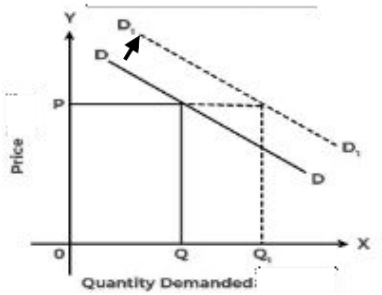
p	QD=6-2p	
0	6-2x0=6	(0,6)
1	6-2x1=4	(1,4)
2	6-2x2=2	(2,2)
3	6-2x3=0	(3,0)



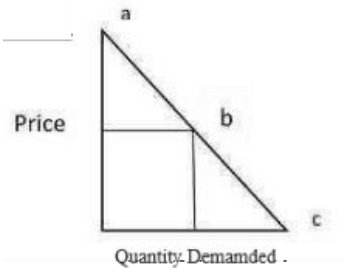
Horizontal intercept is 6
Vertical intercept is3
Slope = (-) 3/6 = -2

PRACTICE QUESTIONS

1. Write two examples for substitute goods and complementary goods.
2. Distinguish between the movement along a demand curve and shifts in the demand curve.
3. What are the factors affecting demand?
4. A good that can be used in place of another good is called_.
5. When income increases, demand for goods decreases. Name the type of good. {a. substitute goods, b. inferior goods, c. complementary goods, and d. normal goods}
6. Differentiate between normal goods and inferior goods.
7. Diagrammatically explain the changes in demand (hint: expansion, contraction, increase, and decrease).
8. Identify the type of change in demand.



9. What are the important factors that determine demand?
10. The coefficient of the perfectly elastic demand curve is___{∞, >1, 1, < 1, and 0}.
11. Define the price elasticity of demand.
12. The relationship between demand and factors affecting demand is called ..... {a. price elasticity, b. demand function, c. law of demand, and d. none of these.}
13. Mark the degree of elasticity along the linear demand curve at points a, b, and c.

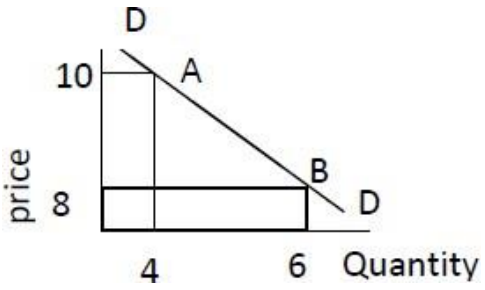


14. Elasticity in a rectangular hyperbola is ----- (0, 1, > 1, <1).
15. When the price of good X increases the demand for good Y increases, then these good are. Called

_____

16. What is the elasticity of demand at the midpoint of a linear demand curve? {a. greater than 1, b. less than 1, c. one, and d. zero}
17. What are the factors determining the price elasticity of demand for a good?
18. Write two examples for substitute goods and complementary goods.
19. Classify the following into two heads: - Bread, rubber, wheat flour, and tyres
20. Tea and coffee are examples of: {a. complementary goods; b. substitute goods; c. normal goods; and d. inferior goods.}
21. Define the law of demand. When the price of a commodity falls from ₹ 6 to ₹4 per unit, its quantity demanded rises from 40 units to 60 units. Calculate the price elasticity of demand.
22. In an economy, the price of oranges increases from Rs. 50 to Rs. 60. The quantity demanded decreases from 10 to 8 kg. Calculate the elasticity of demand and identify the type of elasticity.
23. Define the elasticity of demand, When the price of a good is Rs. 100, its demand is 5 kg. When the price changes to Rs. 110, the demand is 3 kg. Find the price elasticity of demand.
24. When the price of a good decreased from Rs. 5 to Rs. 4, its demand increased from 100 to 150. Find the price elasticity of demand.

25. Calculate the price elasticity of demand from a movement from point A to B on the demand curve DD.



26. A consumer demands 100 units of a commodity when its price is Rs 20/unit. If its price increases to Rs. 25/unit, he demands 80 units of that commodity. Calculate the price elasticity of demand.
27. Arun buys 10 kg of oranges at a price of Rs 50/kg. When the price increases to Rs. 60/kg, he purchases 8 kg of oranges, Find the price elasticity of demand.
28. When the price of a commodity falls from 10 to 6 per unit, its quantity demand rises from 40 to 50 units. Calculate the price-elasticity of demand.
29. Explain the changes in the demand curve with the help of diagrams.
30. When the price of a coconut was Rs. 50, the quantity demanded was 10 kg, and when the price increased to Rs. 100, the quantity demanded was 5 kg. Find out the price elasticity of demand.

THEORY OF PRODUCTION

PRODUCTION

Production in economics is defined as the creation of utility, i.e., the transformation of input into output. The term production is used to denote the production of both goods and services. The services of teachers, doctors, lawyers, and engineers are the examples of services.

Production Function

Production function is the name of the relation between physical inputs and physical outputs of a firm (Watson), or it is the functional relation between input and output under a given state of technology.

It can be expressed as follows:

$$Q = f(F1, F2, F3...Fn.)$$

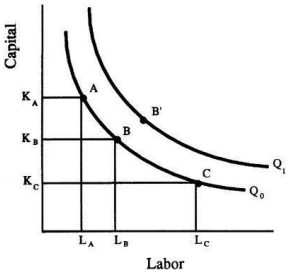
Where Q is the output and f1, f2, f3... fn. are the various factors of production.

Isoquant or Iso-product Curve

An isoquant may be defined as a curve showing all the various combinations of two factors that can produce a given level of output.

Isoquant Map

An isoquant map shows a set of iso-product curves. Each isoquant in the isoquant map represents a different level of output. A higher isoquant shows a higher level of output, and a lower isoquant represents a lower level of output. An isoquant that lies above and to the right of another represents a higher output level.



The Total Product

The total product is the total number of commodities, Produced during a given period by a given number of factors of production.

The Average Product

The average product of a factor is the total product divided by the number of units of a factor (AP = TP/N).

Marginal Product

Marginal product is the change in total product resulting from the use of one more or one less unit of variable factor, or it is the addition made to the total product by the addition of one more unit of variable factor. MP = TPN-TPN-1

Very Short Period

A very short period is defined as the period that is so short that the output cannot be adjusted with the change in demand.

Short Period

A short period is defined as the period during which the output can be adjusted by changing the quantities of variable factors and not fixed factors. In other words, the scale of production is constant.

Long Period

A long period is defined as the period during which the output can be adjusted by changing the quantities of the variable factor and the fixed factor. In other words, the firm can change the scale of production.

Short Run Production Function Or Law Of Variable Proportion

The law of variable Proportion exhibits the short run production function, in which one factor is variable and other factors are fixed. An extra unit of output can be obtained by applying a unit of variable factor, which can be greater than, equal to, or less than the output obtained by the previous unit. The Law of Variable Proportion is also known as the Law of Return, the Law of Variable Factor, or the Law of Diminishing Return.

Assumptions of the Law of Variable Proportion

1. One factor is a variable factor, and other factors are fixed factors. 2. It is impossible to make changes in the factors of production. 3. There is no change in the technique of production. 4. All units of the variable factors are homogenous.

Three Stages of the Law of Variable Proportion

Stage I

In the first stage, total product increases at an increasing rate, and average product increases. In the beginning of this stage, the marginal product also increases, but after a point, it starts to decline. The average product continues to rise until the marginal product is greater than the average product. When marginal product becomes equal to average product (at this point, average product is the maximum), the first stage ends. Since the average product increases with the increase in the unit of variable factor, ***this stage is called the Stage of Increasing Return.***

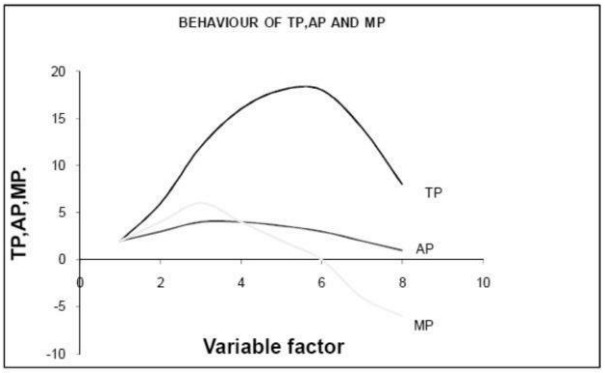
Stage II

In this stage, the total product continues to increase, but at a diminishing rate. This stage goes to the point when the total product reaches its maximum and the marginal product becomes zero. In this stage, the average product goes on diminishing, but never becomes zero. ***Since both average product and marginal product decline (but positive), this stage is known as the Stage of Diminishing Return.***

Stage III

In the third stage, the total product starts to decline and the marginal product becomes negative. The average product continues to fall, but never becomes zero. ***This stage is called the Stage of Negative Return.***

Fixed Factor	Variable Factor	T.P	A.P	M.P
1	0	0	0	-
1	1	2	2	2
1	2	6	3	4
1	3	12	4	6
1	4	16	4	4
1	5	18	3.6	2
1	6	18	3	0
1	7	14	2	-4
1	8	8	1	-6



Long Run Production Function or Laws of Returns to Scale

The relationship between quantities of output and the scale of production in long run when all inputs are varied in the same proportion is called returns to scale.

Stages of Returns to Scale

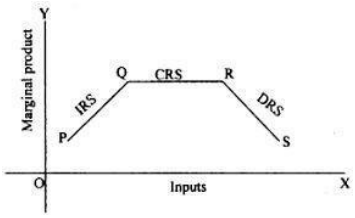
Increasing Return to Scale (IRS)

When we increase the scale of production in proportion, the output also increases in greater proportion. For example, if we increase the input at a rate of 100%, then the total product will increase at a rate of more than 100%.

Constant Return to Scale (CRS)

When we increase the scale of production in proportion, the output also increases in the same proportion. For example, if we double the input, then the total product will be doubled.

Diminishing return to scale (DRS)



When we increase the scale of production in proportion, the output also increases in a lesser proportion. For example, if we increase the input at a rate of 100%, then the total product will increase at a rate of less than 100%.

Reasons for the Operation of the Law

The reason for increasing returns to scale of production is the economics of scale.

Internal Economies

Benefits obtained by the producers due to their individual efforts are known as internal economies. There are five internal economies. They are.

Technical Economies:

The producers obtain these benefits due to their use of improved, up-to-date production techniques. An improved, up-to-date production technique increases production at minimum cost.

Managerial Economies:

The producers obtain these benefits due to their use of improved, qualified, and experienced professional managers. This would enable the producer to plan and organise the resources in the best possible manner.

Labour Economies:

The producers obtain these benefits due to their use of skilled labour and division of work. Division of work increases the efficiency of production at minimum cost.

Marketing Economies

The producers purchase goods in large quantities and thus enjoy maximum discounts. This would help them increase production at the minimum cost.

Financial Economies

Large-scale production units can obtain the requisite funds at a lower rate of interest. It reduces indirect costs, and net profit is increased.

External Economies

Benefits obtained by the producers not due to their individual efforts are known as external economies. These economies are available to all firms in an industry. It happens when there is collective growth in a particular industry or industries. There are three external economies. They are.

Commercialisation of industries:

In cases where industries are localised at a certain place or region, facilities for transport, communication, banking warehousing, etc. emerge and develop. Subsidiary industries will also develop, and raw materials will be available locally.

Information:

Publicity and advertising can be done jointly. All firms in an industry can enjoy the benefits of discovery and research.

Decentralization:

Decentralisation of work increases the efficiency of production at minimum cost.

Cobb Dougles Production Function

In economics, the Cobb-Douglas functional form of production functions is widely used to represent the relationship of an output to inputs. Knut Wicksell (1851–1926) proposed this production function and tested it against statistical evidence by Charles Cobb and Paul Douglas in 1928.The simplest production function is the Cobb-Douglas model. It has the following form:

$$Q=b.\,L^{\alpha}K^{\beta}$$

Where:

Q = total production (the monetary value of all goods produced in a year)

L = Labour input (the total number of person-hours worked in a year)

K = Capital input (the monetary worth of all machinery, equipment, and buildings) b

= Total factor productivity

α and β are the output elasticity of labour and capital, respectively. These values are constants determined by available technology.

1. If b + c = 1, the Cobb-Douglas model shows constant returns to scale (CRS).
2. If b + c > 1, it shows increasing returns to scale (IRS).
3. If b + c < 1, Diminishing returns to scale. (DRS)

PRACTICE QUESTIONS

1. In long run, all the factors are... {a. variable; b. fixed; c. unchanged; d. none of the above}
2. The functional relationship between input and output is known as_{a. demand function; b. supply function; c. production function; d. cost function}
3. Differentiate between the short run and the long run. (period)
4. Define production function.
5. When TP is at its maximum, MP becomes... {a. Zero; b. Maximum c. Negative d. Positive}
6. From the following table find AP and MP.

Labour	0	1	2	3	4	5	6
TP	0	3	8	15	20	23	24

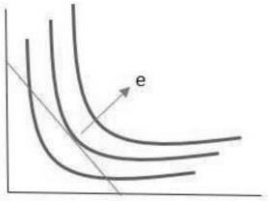
7. From the following table, find AP and MP.

Labour	1	2	3	4	5
TP	18	30	50	60	72

8. Mr. Anil is a producer. He employs two inputs. Among the two inputs, one is fixed and the other is variable. Explain the law of production associated with this.

9. Differentiate between returns to a factor and returns to scale.

10. Identify the following diagram: Explain



11. Distinguish between short-run and long-run production functions.

12. Write down the relationship between TP, AP, and MP in the short-run production function.

13. Briefly explain the production function in the long run.

14. Explain the law of variable proportion with the help of a diagram.

15. Ramesh cultivates paddy on a piece of land. He employs labourers successively, and the total product is given here.

Labourer	0	1	2	3	4	5	6	7	8
TP	0	2	6	12	16	18	18	14	8
AP									
MP									

a) Complete the table.
b) Plot TP, AP, and MP on the graph.
c) When does the producer stop hiring labourers?

COST OF PRODUCTION

Production is the transformation of input into output. It is the result of an effective combination of factors of production. The producer, in the form of wages, rent, interest, and profit, remunerates these factors. Payments made by the producer in the form of wages, rent, interest, and profit form the cost of production. In other words, all expenses incurred by the producer to produce a commodity are the cost of production.

Various Types of Costs Money

Cost:

It refers to the aggregate money expenditure incurred by the firm on various inputs entering production. Money costs are divided into two parts: Explicit Cost and Implicit Cost

Explicit Cost of Production

Explicit cost refers to the money expenditure that is recorded in the firm's account book by the accountant. It includes wages, salaries, expenditure on raw materials, interest paid on borrowed capital, rent paid for the use of land, depreciation charges, tax paid, expenditure made on transport, electricity, advertisement, etc. All these items together constitute the explicit cost of production.

Implicit Cost of Production

There are certain items that ought to be included in the money cost. They are

1. Wages for the work performed by the entrepreneur
2. Interest is paid on the capital supplied by the entrepreneur.
3. Rent on land provided by the entrepreneur
4. Normal profit earned by the entrepreneur

All these items are treated as implicit costs by the economist and not recorded on the firm's account book.

Real Cost of Production

The real cost of production is a subjective concept. It is considered that the trouble, turmoil, and sacrifice involved in production are real costs of production. Thus, real income includes the following basic elements:

1. Exertion of all kinds of labour
2. Waiting and sacrifice required to save the capital.

The real cost of production is a psychological concept and cannot be measured. Therefore, it is not applied in actual practice.

Private and Social Cost of Production

Private Cost of Production

It refers to all those expenses that are included by the firm (or a particular producer) producing a commodity.

Social Cost of Production

It refers to all those expenses that fall on the society during the course producing a commodity.

Social Cost higher than the Private Cost

In the case of driving a car, the private cost of production includes expenses on fuel, deprecation of spare parts, etc., and the social cost of production incurred includes expenses on the construction and maintenance of roads, bridges, and air pollution caused by the vehicle.

Social Cost lesser than the Private Cost

In the case of educational institutions, dams, and canals, the social cost of production is less than the private cost of production, i.e., the social benefit is greater than the private cost of production.

Opportunity Cost of Production

Opportunity cost of production for a commodity is the amount of other goods that must be given up to produce one additional unit of that commodity. For example, what a labourer would get in one job would depend on what he would get in another. What rate of interest will be earned by the capital in one industry depends on what it will earn in another industry.

Short Run Cost of Production

In the short run, one factor is a variable, and other factors are fixed. An extra unit of output can be obtained by applying a unit of variable factor; hence, it incurs two types of costs.

Fixed Cost of Production or Supplementary Cost Or Overhead Cost

Fixed costs are those costs of a firm that do not vary with the size of its output. They are same whether the output is small or large. Even when the output is zero, firm incur fixed costs. Examples of fixed costs are salaries, interest paid on borrowed capital, rent paid for the use of land, depreciation charges, tax paid to the government etc.

Variable Cost of Production or Direct or Prime Cost

Variable costs are the costs of a firm that vary with the size of its output. They increase when the output increases and fall when the output falls. When the output is zero, firms incur zero variable costs. Examples of variable costs are wages, payments made to raw materials, fuel, transportation, etc.

Total Cost of Production (TC)

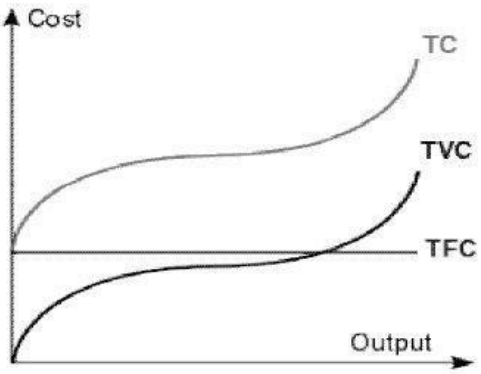
The total cost of production is the sum of the variable factor and the fixed cost of production at a particular level of output.

TOTAL COST OF PRODUCTION = TOTAL FIXED COST + TOTAL VARIABLE COST **TC**

= TFC + TVC

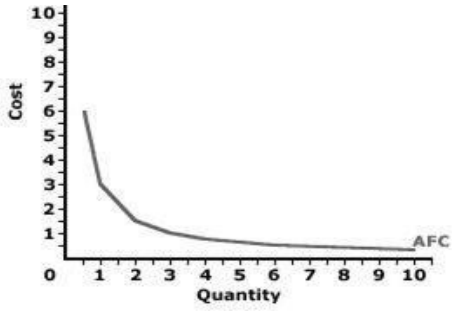
The total cost of production never becomes zero since fixed costs exist even when the output is zero.

Total Product	TFC	TVC	TC = TFC+TVC	AFC = TFC/N	AVC = TVC/N	AC = AFC+AVC	MC = TC_n-TC_{n-1}
0	100	0	100	-	-	-	-
1	100	25	125	100	25	125	25
2	100	40	140	50	20	70	15
3	100	50	150	33.33	16.67	50	10
4	100	60	160	25	15	40	10
5	100	80	180	20	16	36	20
6	100	110	210	16.67	18.33	35	30
7	100	150	250	14.29	21.42	35.71	40
8	100	300	400	12.5	37.5	50	150
9	100	500	600	11.11	55.56	66.67	200
10	100	900	1000	10	90	100	400



Average Fixed Cost

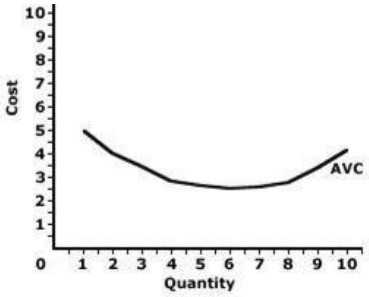
Average fixed cost is the ratio between total fixed costs divided by the number of units produced. When output increases AFC decreases since fixed cost is fixed



AFC= TFC / N

Average Variable Cost

The average variable cost is the variable cost per unit of output. It is observed that AVC declines initially up to a point where it becomes minimum, and thereafter it starts raising. ***The shape of AVC is U shape.***



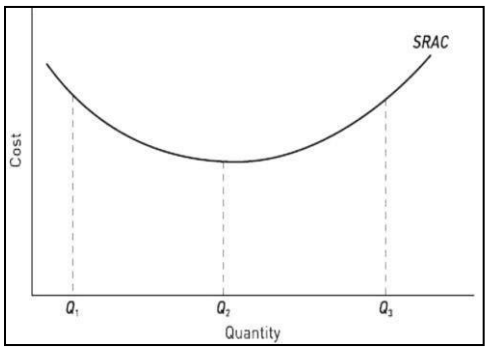
AVC= TVC/N

Average Cost of Production (A.C)

The total average cost of production, or average cost (A.C.), is obtained by dividing the total cost of production by the output.

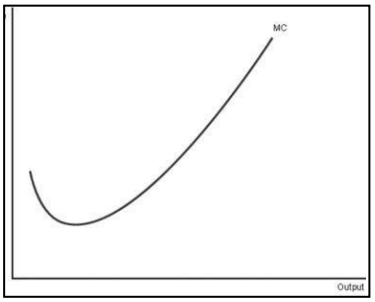
AC = AFC + AVC

The average cost is very high at first because a fixed cost is distributed over a few units of output. However, when increased units of output are produced, the fixed cost spreads over, and AC will be declining. However, if the output increases beyond a limit, the average cost of production rises because AFC continues to fall and AVC becomes stronger than the downward strength of AFC.



The main reason for the U-shaped short run average cost curve is the operation of the law of variable proportion. We know that as the output increases, the law of increasing returns operates in the initial stage. At this stage, when a firm increases its output, it gains economies, and the result is a decline in the average cost of production. After a point of optimum combination, economies turn into diseconomies, resulting in an increase in output and average cost. This is the stage of the law of diminishing returns.

Marginal Cost of Production (MC)



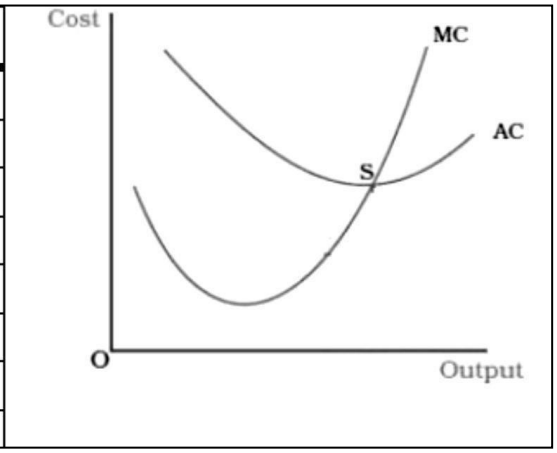
The marginal cost of production is the addition made to the total cost of production by producing one more unit of output.

MC= TC n -TCn-1

The Behaviours of Average Cost and Marginal Cost of Production

The relation, difference, and behaviour of average cost (A.C.) and marginal cost (M.C.) can be explained with the help of a table and graph.

Output	TC	AC	MC
1	30	30	30
2	50	25	20
3	60	20	10
4	72	18	12
5	85	17	13
6	102	17	17
7	126	18	24
8	160	20	34

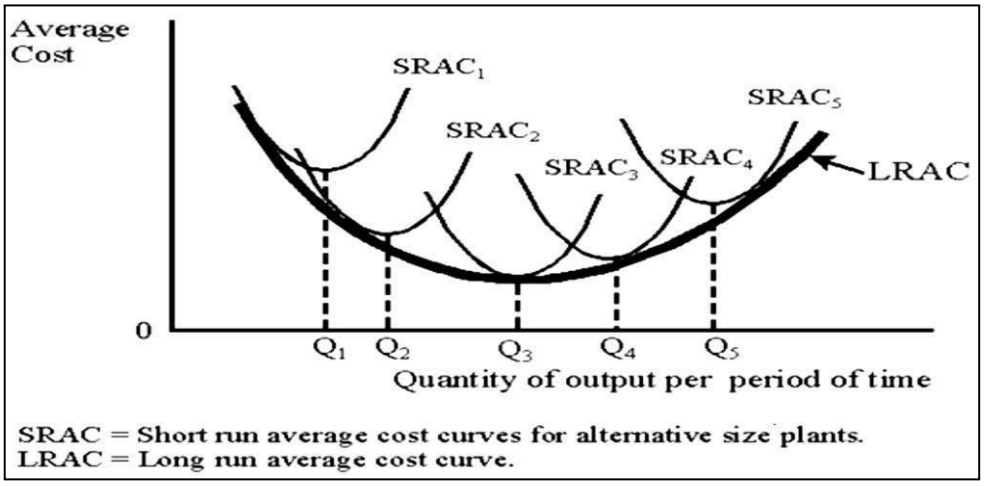


1. When AC is falling, MC remains below it.
2. When AC becomes constant, MC also becomes equal to it.
3. When AC starts rising, MC becomes higher than it.
4. The MC curve always cuts the AC curve (and the AVC curve) at their minimum point.
5. The minimum point of MC always comes before the minimum point of AC.
6. When MC is falling, AC cannot rise.
7. Both MC and AC are calculated from Total Cost of Production

Long Run Cost Curve

Eventually, a firm can vary its scale of production as and when it requires it. All factors of production are thus variable in this period. Therefore, there is no fixed cost. Here we find the following curves: long-run total cost curve (LTC), long-run average cost curve (LAC), and long-run marginal cost curve (LMC). Both the long- run average cost curve (LAC) and the long-run

marginal cost curve (LMC) are U-shaped curves. However, they are flatter than the short-run cost curves.



PRACTICE QUESTIONS

1. The shape of the TFC curve is__. {a. vertical straight line; b. horizontal straight line; c. upward sloping; and d. downward sloping}

2. Which of the following costs will be zero when production is stopped? {a. average fixed cost; b. total cost; c. fixed cost; d. variable cost}

3. AC is the sum of AFC +_____{a. AVC, b. AC, c. MC, d. TVC.}

4. In long run, all the factors are__{a. variable; b. fixed; c. unchanged; d. none of the above.}

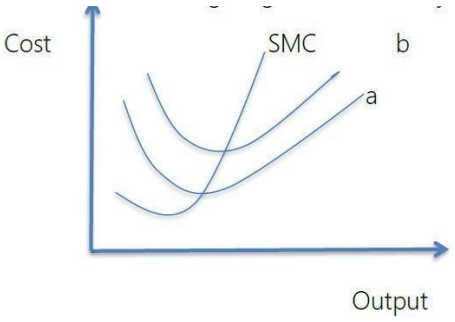
5. Differentiate between money costs and real costs.

6. What is an explicit cost? Give some examples.

7. What is an implicit cost? Give some examples.

8. Write down the relationship between the short-run average cost and the short-run marginal cost.

9. Consider the following diagram and identify the cost curves a and b.



10. Cost schedule of a firm is given below. Find TVC, TFC, AVC, AFC, SAC, and SMC

Output	0	1	2	3	4
TC	50	80	108	136	166

11. The following table gives the total cost schedule of a firm. Find the values of TVC, TFC, AVC, AFC, SAC, and SMC and draw the respective curves.

Q	0	1	2	3	4	5
TC	50	60	70	90	132	185

12. Complete the table TVC, AVC, AFC, SAC, and SMC,

Output	0	1	2	3	4	5	6
TC	20	28	60	100	170	250	340

THEORY OF REVENUE

The term revenue refers to the amount of money obtained by a firm when its output is sold.

Total Revenue (TR)

Total revenue refers to the total amount of money obtained by a firm when its output is sold. Total revenue varies with the size of output and price.

TOTAL REVENUE = Q x P

Q is the quantity sold, and P is the price per quantity of output. It should be noted that revenue is not profit. Profit is included in revenue. Profit is obtained when we deduct the cost of production from the revenue.

Average Revenue (AR)

Average revenue (AR) is obtained by dividing total revenue by the number of units of output sold. In other words, average revenue is the revenue per unit of output sold. AR curve and demand curve are the same because average revenue means per unit revenue received by the seller from the sale of the commodity.

AR= TR / N.

Marginal Revenue (MR)

It is the addition made to the total revenue by selling one additional unit of output.

MR = TRn-TRn-1

Theory of Firm under Perfect Competition

Features of Perfect Competition

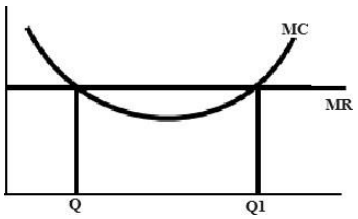
1. There are many buyers and sellers.

The sellers are 'Price Taker.'

2. Products are homogeneous or identical. Hence, a uniform price is charged in the market.
3. Freedom of entry and exit. A firm can enter or exit any time
4. Free mobility of goods and factors of production.
5. Perfect knowledge about market conditions.
6. No transport costs.
7. No selling costs.

For profit maximisation, four conditions must be satisfied.

1. Marginal revenue (MR) = Marginal cost (MC).
2. MC curve should cut MR curve from below.
3. In the short run, P ≥ AVC
4. In the long run, P ≥ AC

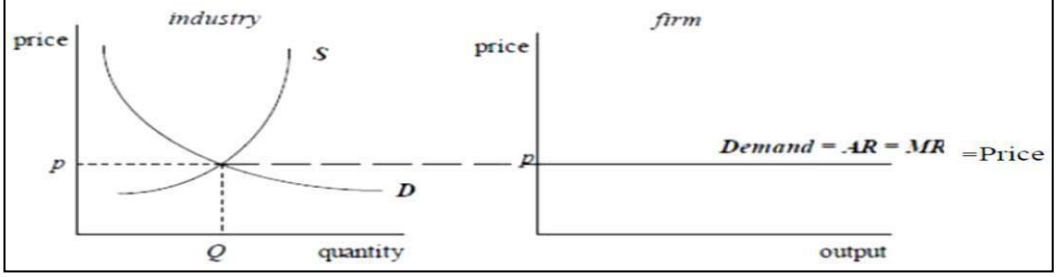


Revenue Curves under Perfect Competition

In perfect competition, a firm can sell as many units of a commodity as it desires at a fixed price. Since additional units are sold at the same price, the firm's average and marginal revenue become equal. The corresponding AR and MR curve is one and is a straight line parallel to the X-axis. Thus, under perfect competition, AR=MR=price.

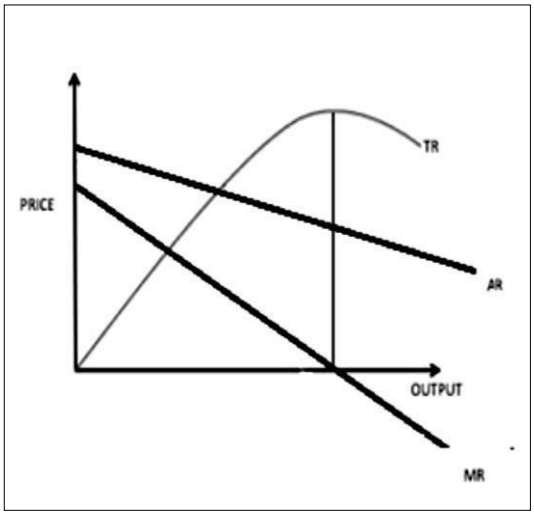
TR, AR, and MR under Imperfect Competition

Output	Price	Total revenue	Marginal revenue
1	5	5	5
2	5	10	5
3	5	15	5
4	5	20	5
5	5	25	5



Under imperfect competition, a seller can sell more units of output at lower prices.

Unit Sold	Price	TR	AR	MR
1	10	10	10	10
2	9	18	9	8
3	8	24	8	6
4	7	28	7	4
5	6	30	6	2
6	5	30	5	0
7	4	28	4	-2
8	3	24	3	-4
9	2	18	2	-6
10	1	10	1	-8



As it is clear from the above table, a firm must lower the price of the commodity to sell more units of it. Therefore, AR and MR fall. Price is equal to the AR curve, and MR falls to zero and then becomes negative. However, AR cannot become zero, even if the price becomes zero. Then it is a free good.

Behaviour of TR, AR & MR under Imperfect Competition TR

rises if MR is positive.

TR reaches maximum when MR is zero.

TR falls when MR becomes negative.

AR and MR fall throughout their length, but MR falls before AR. so the MR curve lies below the AR curve.

Profit Maximisation

A firm produces and sells a certain amount of a good. The firm's profit, denoted by π, is defined to be the difference between its total revenue (TR) and its total cost of production (TC).

In other words, π = TR minus TC.

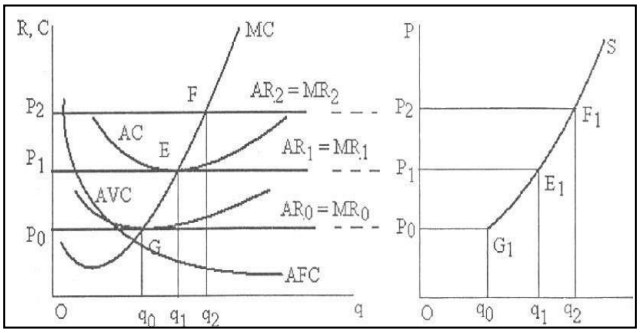
If a firm wishes to maximise its profit, the critical question is: at what output level is the firm's profit maximized? Assuming that the firm's output is perfectly divisible, we now show that if there is a positive output level, Q0, at which profit is maximised, then three conditions must hold:

1. The market price, p, is equal to the marginal cost at Q0.
2. The marginal cost is non-decreasing at Q0.
3. In the short run, the market price, P, must be greater than or equal to the average variable cost at Q0.
4. In long run, the market price, P, must be greater than or equal to the average cost at Q0.

Supply Curve- Short Run

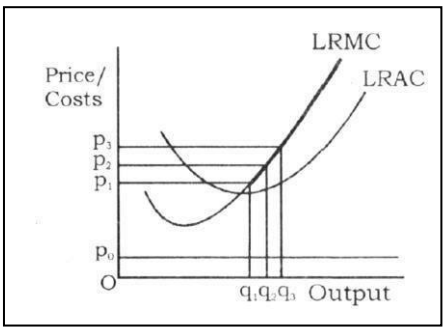
The upward-sloping portion of the marginal cost curve is the firm's supply curve.

In the short run, the price must be greater than or equal to the minimum of the AVC curve; therefore, the supply curve of affirm in the short run is an upward-sloping portion of SMC above the minimum point of the AVC. The supply curve of a firm in the short run is less elastic, and it is responsive to changes in price.



Supply Curve- Long Run

In long run, the price must be greater than or equal to the minimum of the LRAC curve; therefore, the supply curve of a firm in long run is an upward-sloping portion of the LRMC above the minimum point of the LRAC curve. The supply curve of a firm in long run is highly elastic, and it is more responsive to changes in price.



Factors affecting firms supply curve Technological

Progress:

The technological progress that affects the supply curve of a firm will shift downward (to the right). Because a firm can produce the same level of output using fewer inputs with improved technology, The marginal cost falls due to technological progress.

Unit Tax

A unit tax may be defined as the tax imposed by the government on per unit sale of output. The imposition of a unit tax shifts the marginal cost curve of the firm upward. As a result, the supply curve will shift to the left.

Price of an Input

An increase in the price of an input will shift the marginal cost curve upward. So, the supply curve shifts to the left. Therefore, an increase in the input price negatively affects the supply of the firm.

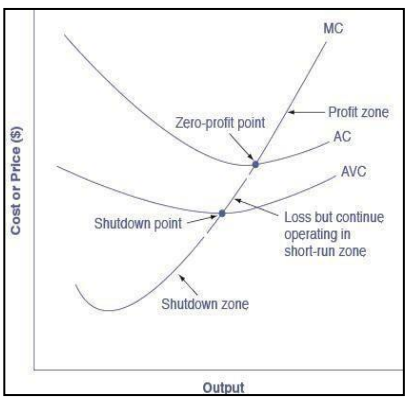
Increase in Number of Firms

If the number of firms increases in a market, the market supply curve will shift to the right as there will be more firms supplying more output.

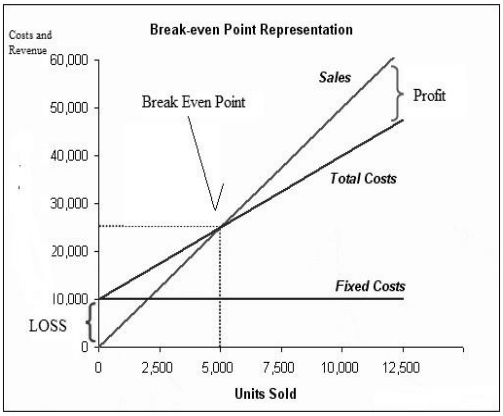
Shut Down Point

The firm will shut down if it cannot cover average variable costs. That is, a firm should continue to produce if the price is greater than the average variable cost. Once the price falls below that point, it makes sense to shut down temporarily and save on variable costs.

The shutdown point is the point at which the firm will gain more by shutting down than it will by staying in business. In other words, the shutdown point is the minimum of the AVC curve, i.e., the minimum price essential for a firm to exist in the industry.



The Break - Even Point

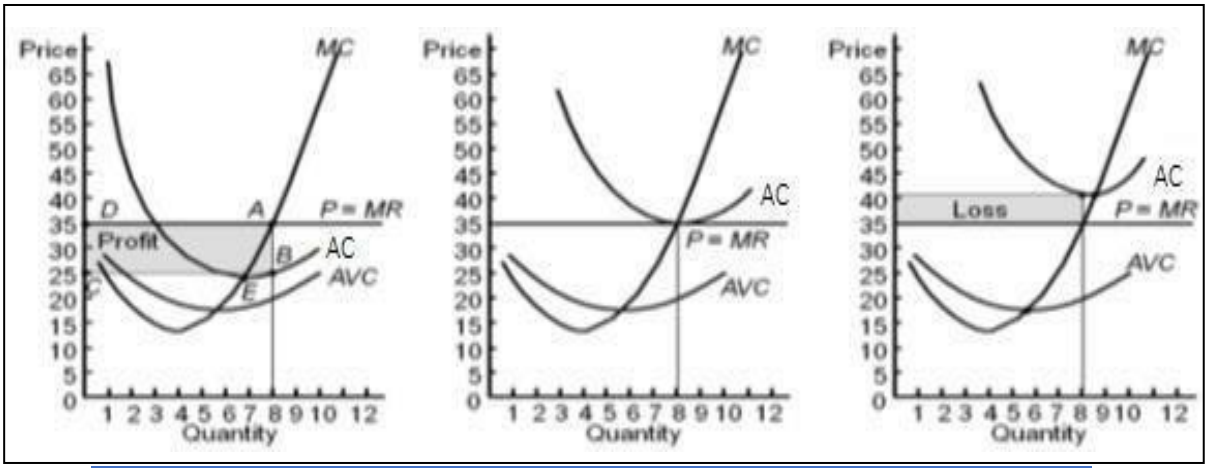


The point where the total cost of production equals the total revenue is called the break-even point. At this point, the producer will have neither profit nor loss. The revenue will just cover the expenses. That is, the producer is getting a normal profit. The following table and diagram will explain the break-even point.

In the above figure, point E is the break-even point. At this point, the total cost of production is equal to the total revenue. To the left of point E, the cost exceeds, hence the producer is looser; to the right of point E, revenue is more than the cost, and hence the producer is a gainer.

Determining profit and loss from a graph

Find output where MC = MR.: The intersection of MC = MR (P) determines the quantity the firm will produce if it wishes to maximize profits. Zero Profit or Loss where MC=MR. Firms can also earn zero profit or even a loss, where MC = MR. Even though economic profit is zero, all resources, including entrepreneurs, are being paid their opportunity costs.



LAW OF SUPPLY AND ELASTICITY OF SUPPLY

Supply refers to the quantity of a commodity offered for sale at a given price in a given market at a given time.

Supply and Stock

The term supply is different from stock. Supply refers to the quantity of commodity offered for sale, whereas stock is the excess of commodity in the market over the quantity of commodity offered for sale. Supply may be defined as a part of stock available in the market for sale at a certain time. Stock is always greater than supply.

Supply Function

The supply function shows the functional relationship between the supply of a commodity and its various determinants.

Qs = f (PX, Po, Fp, T, and G)

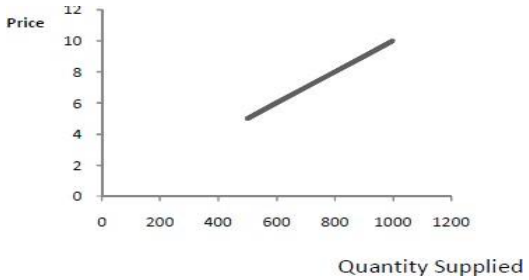
Where PX is the price of the commodity, Po is the price of other commodities, Fp is the price of factors of production, T is the technique of production, and G is the goal of the producer.

Supply Schedule

A supply schedule is a tabular statement that shows a full account of the supply of a particular commodity at different prices at a certain time in a specific market. The above supply schedule shows the relationship between the price and quantity of goods supplied.

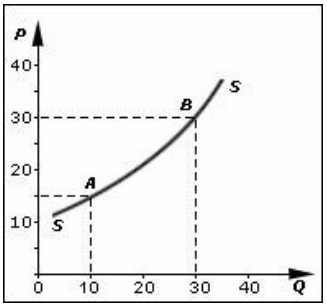
The Law of Supply

Price	Q. Supplied
5	500
6	600
7	700
8	800
9	900
10	1000



The law of supply establishes the relationship between the price and quantity of goods supplied. According to this law, "other things being the same, when the price of the commodity increases, the quantity supplied rises, and when the price of the commodity falls, the quantity supplied falls." It means that the price and quantity supplied move in the same direction. That is. They are positively / directly related.

Graphical Representation of Law of Supply



The Law of Supply can be illustrated graphically. The supply curve shows the relationship between the price and quantity of goods supplied. They show a positive relationship between price and supply. The price cannot fall below a certain point. If the price falls too much, the supply of the goods may be stopped. The price below which the producer will not be willing to sell is known as the **reserved price.** The amount of the reserve price depends on 1. Durability of the commodity; 2. Estimated price; 3. Storage charges; 4. Transportation cost, etc.

Assumptions of the Law of Supply

There is no change in

1. The goal of the firm
2. The technique of production
3. The factors of production
4. The price of a related commodity

Exceptions to the Law of Supply

The Law of Supply does not apply.

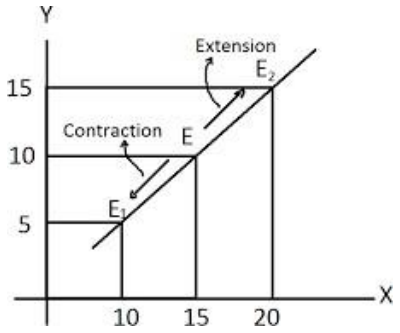
1. In the case of agricultural products, whose supply was affected by natural factors.
2. In the case of perishable goods, sellers may be willing to sell at low prices.
3. In the case of goods with social distinction, whose supply is limited even if their prices are high.

Movement along a Supply Curve (Extension / Contraction of Supply)

If the quantity supplied increases or decreases in response to the rise or fall in price of the commodity alone, assuming that other determinants of supply are constant, it is known as

Extension of Supply:

When the quantity supplied increases with the rise in price, it is called an extension of supply.



Contraction of Supply:

When the quantity supplied falls with the fall in price, it is called a contraction of supply.

Shift of Supply Curve (Increase or Decrease of Supply)

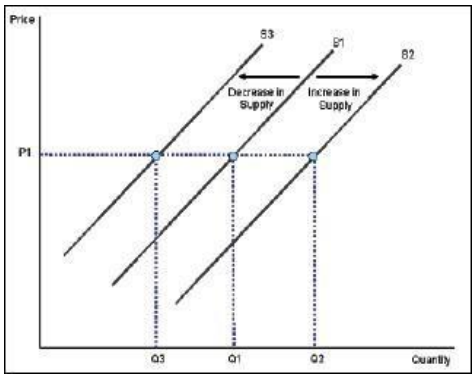
When the change in supply is due to factors other than the price of the commodity, it is known as a shift in the supply curve. (increase or decrease of supply)

Increase in Supply:

If more quantity of a supplied at the same price, due to change in factors other than price of the commodity in question (change in income, change in the price of related commodity, taste habit preference etc.). It is called increase in Supply.

Decrease of Supply:

If less quantity is supplied at the same price, due to changes in factors other than the price of the commodity in question (change in income, change in the price of a related commodity, taste preference, etc.), It is called a decrease in supply.



The above diagram shows the shift in the supply curve. The original supply curve is S1. When the supply curve shifts to the right and becomes the S2 supply curve, it is called an increase in supply. When the supply curve shifts to the left and becomes the S3 supply curve, it is called a decrease in supply.

Reasons for an Increase or Decrease in Supply

The following are the causes of an increase or decrease in supply: Changes in the goals of the producer, the price of related goods, price of factors of production, Changes in the technology of production, the number of firms in the market, and expectations regarding the price of the commodity.

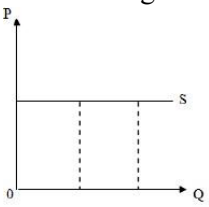
Price Elasticity of Supply

Elasticity of Supply is the technical term used by economists to describe the degree of responsiveness of the quantity supplied of a commodity in response to a change in price of that commodity. In other words, elasticity of supply is the ratio between a proportionate change in quantity supplied and a proportionate change in price.

Degrees of Price Elasticity of Supply or Kinds of Supply

Perfectly Elastic Supply

Perfectly elastic supply refers to a situation where a slight change in the price of the commodity leads to an infinite change in the quantity supplied. In short, perfectly elastic supply for a commodity refers to a situation where the quantity supplied is perfectly dependent on the price.

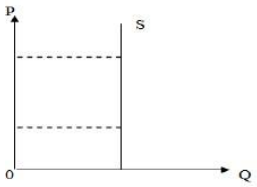


Perfectly elastic SS

$$\frac{\frac{\delta Qs}{Q}}{\frac{\delta P}{P}} = \frac{\delta Qs}{Q} \times \frac{P}{\delta P} = \infty$$

Perfectly Inelastic Supply

Perfectly inelastic supply refers to a situation where the quantity supplied is independent of changes in the price of the commodity. In short, perfectly elastic supply for a commodity refers to the situation where the quantity supplied is perfectly independent of price.

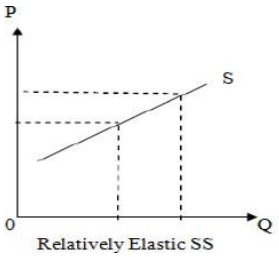


Perfectly inelastic SS

$$\frac{\frac{\delta Qs}{Q}}{\frac{\delta P}{P}} = \frac{\delta Qs}{Q} \times \frac{P}{\delta P} = 0$$

Elastic Supply

Elastic supply refers to a situation where a proportionate change in the quantity supplied is greater than a proportionate change in its price. A small change in the price of the commodity leads to a large amount of supply.

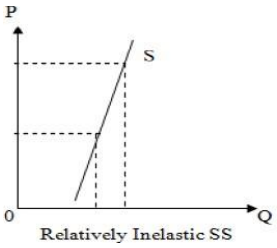


Relatively Elastic SS

$$\frac{\frac{\delta Qs}{Q}}{\frac{\delta P}{P}} = \frac{\delta Qs}{Q} \times \frac{P}{\delta P} > 1$$

Inelastic Supply

Inelastic supply refers to a situation where a proportionate change in the quantity supplied is less than a proportionate change in its price. A large change in the price of the commodity leads to a small amount of supply.

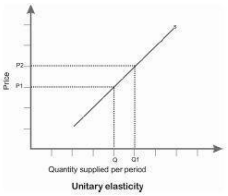


Relatively Inelastic SS

$$\frac{\frac{\delta Qs}{Q}}{\frac{\delta P}{P}} = \frac{\delta Qs}{Q} \times \frac{P}{\delta P} < 1$$

Unit Elastic Supply

Unit Elastic supply refers to a situation where a proportionate change in the quantity supplied is equal to a proportionate change in its price. A change in the price of the commodity leads to an equal change in the quantity supplied.



Unitary elasticity

$$\frac{\frac{\delta Qs}{Q}}{\frac{\delta P}{P}} = \frac{\delta Qs}{Q} \times \frac{P}{\delta P} = 1$$

Factors Determining the Elasticity Of Supply

Elasticity of Supply of commodity depends on several factors.

The Nature of Commodity:

Commodities are classified in to durable and perishable good. Perishable goods are less elastic in supply, whereas durable goods are elastic in supply.

Period:

In the short period, the stock can be varied by producing with the existing size of the plant. Therefore, in the short run, the supply is relatively inelastic. However, in the long term, supply is relatively elastic.

Scale of Production:

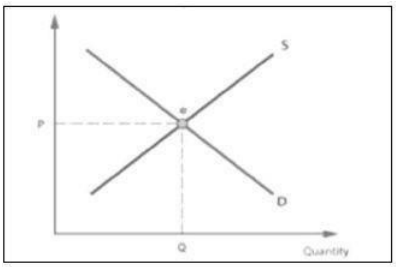
In the case of small-scale production, the supply is relatively inelastic, whereas in the case of large-scale production, the supply is relatively elastic.

EQUILIBRIUM PRICE

Price determination is an important and basic economic activity in an economy. As we have already said, in a free market economy, the price mechanism provides solutions for its various problems. The price mechanism performs this function through the forces of supply and demand. The forces of supply and demand act and react with each other to determine the price. The word equilibrium is derived from two Latin words: Aequalis, which means equal, and Libra, which means balance. In economics, the term equilibrium implies a position of rest or the absence of change. The opposing forces mutually cancel out each other, so the object to which pressure is applied does not move.

Equilibrium of Supply and Demand

Unit Price ₹	Q. Demand	Q. Supply
90	20	8
108	18	10
126	16	12
144	14	14
162	12	16
180	10	18
198	8	20



The above table shows the supply and demand of a commodity at different prices. As the price increases, demand falls and supply rises. Supply and demand are moving in the opposite direction. At price ₹. 144/tonne, the supply and demand are equal. This is the equilibrium price.

Effect of changes in supply and demand on the equilibrium price

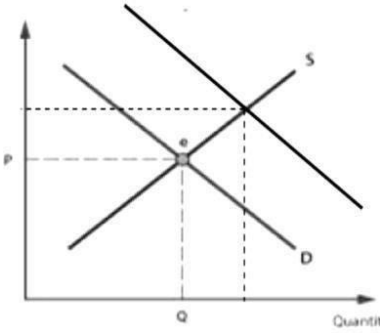
Any change in the supply and demand of a commodity will affect the equilibrium price. These changes can be studied under three headings. 1. Effect of a change in demand only,2. Effect of a change in supply only and 3. Effects of changes in supply and demand

Effect of a change in demand only

A change in demand means an increase or decrease in demand. An increase in demand means an upward shift in the demand curve. A decrease in demand means a downward shift in the demand curve.

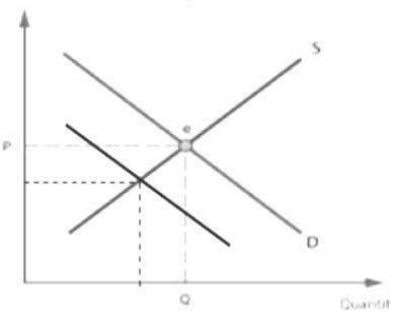
Increase in demand when the supply remains the same

An increase in demand when the supply remains the same leads to a new equilibrium. The price and the quantity supplied increase. The supply curve is given and constant. DD is the original demand curve. At equilibrium point E, the price is OP, and the quantity of commodities supplied and demanded is OQ. Let us suppose that the demand curve shifts upward to the right D_1D_1. The new demand curve intersects with the supply curve at point E1. At point E, the new equilibrium price is OP_1, which is greater than price Op, and the quantity of commodities supplied and demanded is OQ_1, which is greater than OQ.



Decrease in demand when the supply remains the same

A decrease in demand when the supply remains the same leads to a new equilibrium. The price and the quantity supplied decrease. The supply curve is given and constant. DD is the original demand curve. At equilibrium point E, the price is OP, and the quantity of commodities supplied and demanded is O Q. Let us suppose that the demand curve shifts downward to left D1D1. The new demand curve intersects with the supply curve at point E1. At point E1, the new equilibrium price is OP1, which is less than the original price OP, and the quantity of commodities supplied and demanded is OQ1, which is less than the original quantity OQ.

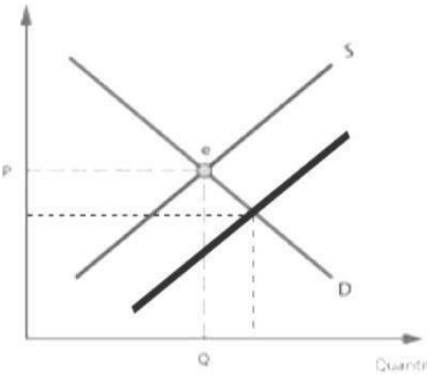


Effect of a change in supply only

A change in supply means an increase or decrease in supply. An increase in supply means an upward shift in the supply curve. A decrease in supply means a downward shift in the supply curve.

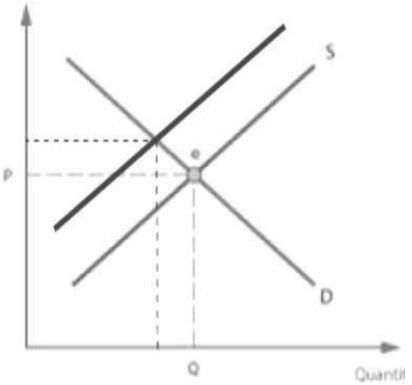
Increase in supply when the demand remains the same

An increase in supply when the demand remains the same leads to a new equilibrium. The price falls, and the supply and demand increase. The demand curve is given and constant. SS is the original supply curve. At the equilibrium point E, the price is OP and Quantity of commodity supplied and demanded is OQ. Let us suppose that the supply curve shifts to the right (S_1S_1). The new supply curve intersects with the supply curve at point E1. At point E1, the new equilibrium price is OP1, which is less than price Op, and the quantity of commodities supplied and demanded is OQ1, which is greater than OQ.



Decrease in supply when the demand remains the same

A decrease in supply when the demand remains the same leads to a new equilibrium. The price rises, and the quantity supplied and demanded decreases. The demand curve is given and constant. SS is the original supply curve. At equilibrium point E, the price is OP, and the quantity of commodities supplied and demanded is OQ. Let us suppose that the supply curve shifts to left (S1S1). The new supply curve intersects with the supply curve at point E1. At point E1, the new equilibrium price is OP1, which is greater than the original price OP, and the quantity of commodities supplied and demanded is OQ1, which is less than the original quantity OQ.



Simultaneous changes in supply and demand

Simultaneous changes in supply and demand take place in the following ways:

1. Both demand and supply increase; 2. Both demand and supply decrease; 3. Demand increases, while supply decreases, 4. Demand decreases, while supply increases.

If there is a simultaneous increase in demand and supply, if demand increases faster, the price will increase, and if supply increases faster, the price will decline. With a simultaneous

decrease in demand and supply, the price will decrease if the supply increases faster, and the equilibrium price will fall if the demand decreases faster.

Joint supply

There are certain goods that are jointly supplied, such as coal and gas, petrol, and diesel. The supplies of these commodities are made jointly. An increase in demand for one commodity will increase its supply, and its price will increase because an increase in supply coincides with an increase in price. The supply of other joint commodities will automatically increase, but its price will fall as its demand is not increased.

Some applications of supply and demand

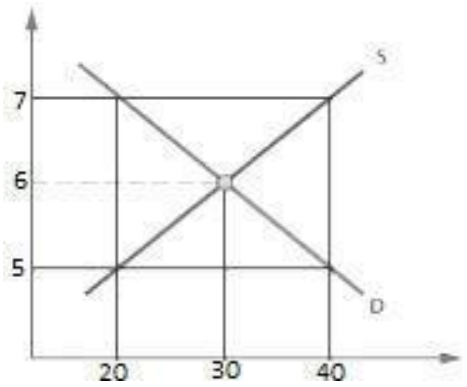
In a market economy, the forces of demand and supply determine the price of a commodity. Sometimes the government interferes in the price fixation. Government interference may occur in the following ways:

1. The government may fix the ***maximum price*** to safeguard the interests of the consumer.
2. The government may fix the ***minimum price*** to protect the interests of the producer.

Fixation of Maximum Price

When the government fixes the price lower than the equilibrium price, supply falls short of demand. Let us suppose that in an unrestricted market, the equilibrium price of wheat is ₹.6 per kilogram. Suppose the government intervenes and fixes a maximum price below the equilibrium price, say ₹.5 per kilogramme, then there will be a shortage of wheat at this price. That means ***supply falls short of demand {Excess Demand}***. This can be illustrated with the help of the following diagram:

In the diagram, the equilibrium price is ₹.6 per kilogramme, and the equilibrium quantity demanded and supplied is 30 tonnes. When the government fixes the price lower than the equilibrium price, say ₹. 5 per kilogramme, the quantity supplied falls to 20 tonnes and the quantity demanded is 40 tonnes. Thus, there is a supply shortage of 20 tons. If all traders observe Government price control, the demand will remain unsatisfied. In such a situation, the government will adopt the system of rationing.



Rationing means that through fair price shops, the government distributes the available commodity equally to all consumers, so that all consumers are satisfied.

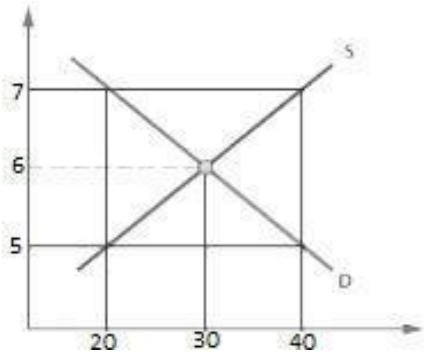
If all traders do not observe government price control, a black market will develop. A black market is a situation in which goods are sold at a higher price than the government's fixed price.

Dual Marketing:

To avoid black marketing, Government sometimes introduces dual marketing. Dual Marketing is a system in which certain quantity of commodity is supplied at fixed price through fair price shops and is sold in open market at equilibrium price.

Fixation of Minimum Price (Support Price)

When the government fixes the price at a higher level than the equilibrium price, supply exceeds demand. Let us suppose that in an unrestricted market, the equilibrium price of wheat is ₹.6 per kg. Suppose the government intervenes and fixes a minimum price above the equilibrium price, say ₹. 7 per kilogramme, then there will be a shortage of demand for wheat at this price. That means ***demand falls short of supply {Excess Supply}***. This can be illustrated with the help of the following diagram:



In the diagram, the equilibrium price is ₹.6 per kilogramme, and the equilibrium quantity demanded and supplied is 30 tonnes. When the government fixes the price higher than the equilibrium price, say ₹. 7 per kilogramme, the quantity supplied is 40 tonnes and the quantity demanded is 20 tonnes. Thus, there is a demand shortage of 20 tons. In this situation, the government may purchase a large amount of excess wheat at its fixed price (***called the support price or procurement price***) to protect the interests of the producers.

PRACTICE QUESTIONS

1. At the break-even point, the firm faces: {a. supernormal profit; b. normal profit; c. abnormal profit; d. loss}.
2. TR=TC is called... goods. {a. substitute, b. inferior, c. complementary, and d. normal}
3. The government imposes an upper limit on the price of a good; it is called... {a. price ceiling; b. price floor; c. market price; d. equilibrium price}
4. At the equilibrium price, the demand becomes equal to... {a. price; b. infinity; c. zero; d. supply}
5. Differentiate between stock and supply.
6. Explain Dual Marketing
7. How government can interfere to control black marketing?
8. Define the price elasticity of supply. Imagine that the market price of a good changes from Rs. 5 to Rs. 20, resulting in the quantity supplied increasing from 10 kg to 25 kg. Calculate the price-elasticity of supply.
9. Suppose the demand and supply curves of a commodity are given by Qd=1000-P and Qs=700+2p. Find the equilibrium price and quantity.
10. Suppose the demand and supply curves of a commodity are given by Qd=700-P and Qs=500+3p. Find the equilibrium price and quantity.
11. If Qd=200-4p and Qs=100+p from the above demand and supply functions, find the equilibrium price and equilibrium quantity demanded and supplied.
12. When the supply of commodity x increases, its demand remains the same. What will be the effect of this on equilibrium price and quantity?
13. Owing to the heavy monsoon, rubber tapping was delayed for some months in Kerala. Given the market demand, what effect will this have on its equilibrium price and quantity?
14. Calculate the equilibrium price and equilibrium quantity for the following: QD=800-P and QS=480+P
15. How will a change in the price of gasoline affect the equilibrium price and quantity of cars?
16. What happens to the equilibrium price of a commodity if there is a decrease? in its demand and an increase in its supply?
17. Explain the effects of an increase in the supply of a good on its equilibrium and equilibrium quantity. Use diagram

18. Suppose the government raised the support price of coconut from the prevailing rate.
    a. Point out its effect on the equilibrium price.
    b. Draw a market equilibrium diagram.
    c. Point out the effect of the support price on market supply and the price of coconut.
19. Mention the impact of the following:
    a. Imposition of a price ceiling below the equilibrium price
    b. Imposition of a price floor above equilibrium price
20. Suppose the market equilibrium price of sugar is Rs. 45/kg. The government fixes its price as Rs.35/kg. Explain the policy of the government and its impacts on the market with a suitable diagram.
21. Differentiate between price ceiling and price floor. What are the implications of price-celling?
22. Describe price ceilings and their effects.
23. Explain the terms: a. Break-Even Point and b. Shut Down Point.
24. The supply curve is part of the MC curve of a firm. What are the factors affecting the firm's supply curve?

NON-COMPETITIVE MARKET

Meaning of Market

In the ordinary sense, a market means a particular place or a locality where commodities are bought and sold. However, in economics, the term market means all the places in which buyers and sellers are in contact with each other for the purchase and sale of a commodity. The essentials of a market are: 1. A commodity or commodities to buy and sell, 2. buyers and sellers for a commodity; and 3. contact between buyers and sellers.

Classification of Markets

Based on number of buyers and sellers, product differentiation, mobility of factors of production and commodities and degree of market knowledge, the markets are classified into Prefect Competitive and Perfect non-competitive. Perfect Non-Competitive markets are divided into: 1. Monopoly; 2. Monopolistic Competitive Market; 3. Oligopoly; and 4. Duopoly.

Monopoly

Monopoly refers to a market situation where only a single producer controls the entire supply of the commodity, which has no substitutes. An absolute monopoly exists when there is only one seller or producer in the market.

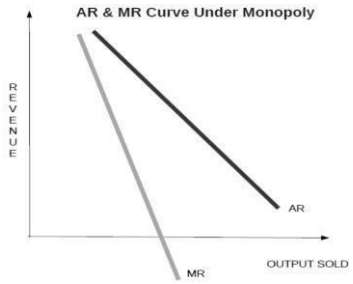
Features of Monopoly

1. **Single Producer:** There is only one producer responsible for producing a commodity. There is no distinction between a firm and an industry in a monopoly.
2. **No Close Substitutes**: The commodity produced by the monopolist have No Close Substitute.
3. **No Freedom of Entry:** The monopolist erects strong barriers to prevent the entry of new firms.
4. **Profit Motive:** The monopolist aims at maximisation of profit.
5. **Price Maker:** The monopolist is a price maker. However, to sell more units, a monopolist must reduce the price. He cannot sell more units at the existing price.
6. **Price Discrimination:** The monopolist can sell the same commodity or service at different prices to different buyers in different markets.

AR and MR under Monopoly

Under monopoly, if the firm must sell more units, it must reduce the price of the product. How much he will reduce the price depends on the elasticity of demand for his product. So, the average revenue and marginal revenue curve go on decreasing as the output increases.

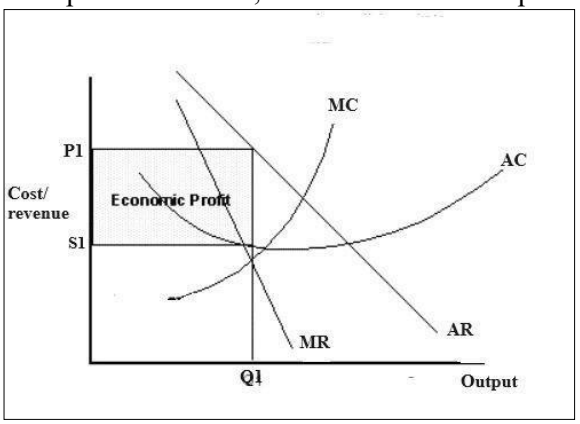
Price	Unit Sold	TR	AR	MR
10	1	10	10	10
9	2	18	9	8
8	3	24	8	6
7	4	28	7	4
6	5	30	6	2
5	6	30	5	0
	7	28	4	-2
3	8	24	3	-4



From the below table, the following conclusion can be drawn: Price = Average Revenue = Demand curve, AR and MR continue to fall; MR falls by double the rate of AR.

Price and Output Determination under Monopoly.

Since the monopolist is the single supplier of the product, If the monopolist wants to sell a large stock, he will have to reduce the price. However, he is interested in profit maximisation, so he generally restricts supply. Normally, the monopolist aims to produce output that yields him maximum profit. The profit will be maximum when MC = MR. The maximum price a monopolist can fix depends on the elasticity of demand for the commodity that he is producing. If the commodity is elastic in demand, he must lower the price to sell more, and if it is inelastic, he can fix a high price.



Price Discrimination

There are three types of Price Discrimination.

1. **Personal Price Discrimination**: occurs when different prices are charged to different buyers in accordance with their ability to pay. E.g., doctors, lawyers' teachers, etc.
2. **Local Price Discrimination**: occurs when different prices are charged for different locations. The monopolist may charge different prices at different localities.
3. **Trade or Use Price Discrimination**: occurs when different prices are charged to different users. E.g., the Electricity Board charges a low rate for industry and a high rate for households.
4. **Dumping**: The system of selling the same commodity at higher prices in the domestic market and at a lower price in the foreign market is called dumping.

Monopolistic Competition

Monopolistic competition is a mixture of monopoly and perfect competition. Monopolistic competition occurs when there are large numbers of producers selling differentiated products and services, so that the product of one firm is not regarded as a perfect substitute for the other firm.

Features of Monopolistic Competition

1. Existence of many firms; 2. Elements of Monopoly and Perfect Competition; 3.

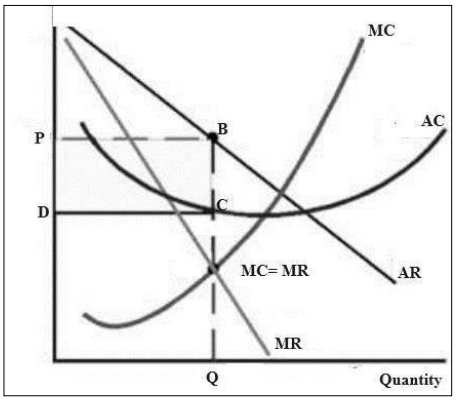
Freedom of Entry and Exit; 4. Product Differentiation 5. Selling Cost; 6. Transportation Cost; 7. No Uniform Price; and 8. No Price Competition

Product Differentiation

A product of one producer is differentiated from that of another producer, even though they are close substitutes. The method of inducing the buyer by means of differentiating his products from other products is known as product differentiation or non-price competition. The producer differentiates his product from other producers' products through advertisement, use of gifts, rebates, style of packing, colour, wrapper, and other special pre- and post-purchase services.

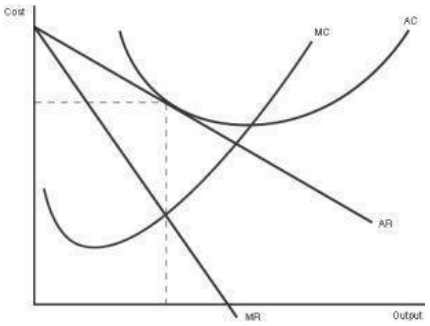
Selling Cost

The cost necessary to induce the consumer to purchase one product rather than another or to buy from one seller rather than another is called the selling cost. It includes advertisement charges, the discounts given by wholesalers to retailers, gifts, rebates, etc. These expenditures are included in the price.



Price Output Under Monopolistic Competition

In the short term, existing firms cannot increase production by employing additional factors, nor can enter the industry. Each firm is therefore monopolistic in the short run and has a downward-sloping demand curve for its product. The firm will reach equilibrium when **MC equals MR.** Since the price is greater than the AC, the firm earns an abnormal profit.



Long-Run Equilibrium of the Firm under Monopolistic Competition

The demand curve will continue to shift to the left until it is tangential to the average cost curve (AR=AC), where normal profits are earned and there is no incentive for further firms to enter the industry.

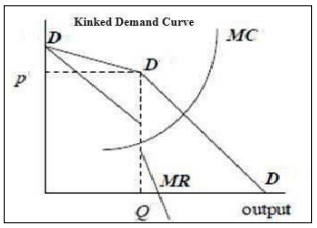
Oligopoly

Oligopoly is a market situation in which there are only a few sellers or producers of a commodity. Every producer has a perceptible effect on the activities of another producer. That is why it is often called competition among the few.

Features of Oligopoly

1. **Few Sellers or Producer:** The number of sellers or producers is very small, and every producer has a perceptible effect on the activities of other producers.
2. **Interdependence**: Every firm decides its policy regarding price and output, taking into consideration the possible reactions of its rivals. Thus, every producer has a perceptible effect on the activities of other producers.

3. **Indeterminateness of the Demand Curve:** It is impossible to estimate the probable reaction of the rival firms. Hence, the demand curve, or AR curve, faced by an oligopolistic firm is indeterminate. Paul M. Sweezy developed the kinked demand curve, which explains the price and output of an oligopolistic firm.



4. **Group Behaviour:** Sometimes in an oligopolistic market, firms enter collusion and form a group in the form of Trust, Cartel, Syndicate, etc. Through this agreement, these firms act as a single producer and determine price and output.
5. **Product Differentiation:** It is often seen that oligopolistic firms, instead of price competition, take up non-price competition. Oligopolistic firms indulge in product differentiation to increase sales.

Type of Competition	No. of Firms	Entry	Nature of Product	Demand Curve
Perfect	Large Number	Unrestricted	Homogenous	Horizontal
Monopoly	Single Seller	Restricted	Unique/No Substitute	Downward but inelastic
Monopolistic	Many	Unrestricted	Differentiated products	Downward but elastic
Oligopoly	Few	Restricted	Differentiated products	Kinked Demand Curve

Duopoly

If there are only two sellers, such a market situation is known as a duopoly. It is a special case of oligopoly market structure. Here we assume that the two produce homogeneous products and assume that no close substitutes are available. We can explain the behaviour of firms in the duopoly market in three ways.

Special cases of Oligopoly

1. Collusive Duopoly Model, 2. Cournot's Duopoly Model or Zero Cost Model

Collusive Duopoly Model

In this model, the two firms do not compete but collude together and try to maximise their profit. These two firms produce their products in different factories, but they behave like a single unit-monopoly.

Cournot's Duopoly Model

Augustine Cournot, a French economist, developed this model. He explains his model with the help of two production units.

1. There are only two firms,
2. Both firms sell identical products.
3. The cost of production is zero,
4. The demand curve of the firm is linear.
5. The objective of the firm is to maximise profit.
6. Each firm will assume that the rival firm will keep its output constant.

Equilibrium Price & Output

In Cournot model, each firm under duopoly reaches equilibrium when

1. It produces one third of the market demand at which the price is zero
2. Both producers together produce two-thirds of the market demand
3. The price at this point is the Equilibrium Price
4. The profit of the firms will be equal

PRACTICE QUESTIONS

1. In which type of market does the firm act as a price taker? {a. Monopoly b. Monopolistic Competition c. Perfect Competition and d. Oligopoly}
2. How does a demand curve behave in a monopolistic situation? {a. Elastic b. inelastic c. unit elastic d. none of these}
3. What requirements must be met for a commodity market to have a monopoly structure?
4. Draw the curves for AR and MR under perfect competition.
5. One who sets prices is a monopolist. Justify (Hint: Price Maker)
6. Explain the features of monopolist competition.
7. In a monopoly, the seller sets the price; in perfect competition, the seller is a price taker. Describe.
8. What is Product Differentiation?
9. Explain the concept 'Selling Cost'
10. Why is it not possible to determine the demand curve in the case of an oligopoly market?

Questions for Viva – Micro Economics (Mixed)

1. Define a normative statement.
2. Define consumer preference
3. Define normal profit.
4. Define the concept of price discrimination.
5. Define the elasticity of demand.
6. Define the term demand for a commodity.
7. Diffentiate between a firm and an industry.
8. Differentiate between supply and stock.
9. Explain normal and abnormal profit.
10. Explain the terms demand and quantity demanded.
11. Give one example of Conspicuous goods.
12. How will you interpret this statement: '*the coefficient of elasticity of demand for a commodity is 1.7.'*
13. State two reasons for the decrease in supply.
14. What are Giffen Goods?
15. What are the conditions for equilibrium for a firm?
16. What are the constituents of demand?
17. What are the selling costs?
18. What causes movement along the supply curve?
19. What do you mean by local price discrimination?
20. What do you mean by market equilibrium?

21. What do you mean by prestige goods?
22. What do you mean by product differentiation?
23. What do you mean by selling cost?
24. What do you mean by the term ‘ceteris paribus’ in the context of the law of demand?
25. What is a budget constraint?
26. What is a budget set?
27. What is a market period?
28. What is a non-price competition?
29. What is a positive statement?
30. What is a subsidy?
31. What is an abnormal profit?
32. What is dual marketing?
33. What is dumping?
34. What is monotonic preference?
35. What is the basic goal of a firm?
36. What is the breakeven point?
37. What is the coefficient of elasticity of demand in the case of elastic demand?
38. What is the coefficient of elasticity of demand in the case of inelastic demand?
39. What is the coefficient of elasticity of demand in the case of perfect elastic demand?
40. What is the coefficient of elasticity of demand in the case of perfect inelastic demand?
41. What is the coefficient of elasticity of demand in the case of unit elastic demand?
42. What is the reserve price?
43. What is the shape of the demand curve in the case of perfect elastic demand?
44. What is the shape of the demand curve in the case of perfect inelastic demand?
45. What is the shape of the demand curve in the case of unit elastic demand?
46. Who determines prices in a monopoly?
47. Who determines prices in perfect competition?
48. Why do doctors charge high fees to the rich and lower fees to the poor?

49. Why does the demand curve shift rightward and leftward?

50. Why does the demand curve slope downward?

51. Why is support price fixed?

52. Why is the maximum retail price fixed?

INTRODUCTORY MACRO ECONOMICS

Macroeconomics (Birds Eye View) studies the aggregate of economic units. It deals with the determination of the general price level and output in the economy. The method of study is called general equilibrium analysis. It is also known as income theory. Its study society, which is immortal

Subject Matter of Macro Economics

It studies the level of economic activities, total output, the general price level, and overall employment in the country. It studies foreign trade and trade balances. It studies the causes of disequilibrium in the balance of payments (BOP). It studies how monetary and fiscal policies affect the economy. It studies how economic policies can accelerate economic growth.

The Great Depression of the 1930s

The Great Depression lasted from 1929 to 1939 and was the worst economic downturn in the history of the industrialised world. It began after the stock market crash of October 1929, which sent Wall Street into a panic and wiped-out millions of investors.

Causes

1. Stock market crash of 1929: Many believe erroneously that the stock market crash that occurred on Black Tuesday, October 29, 1929, is the same as the Great Depression.
2. Bank failures
3. Reduction in purchasing across the board
4. Drought conditions

The Great Depression challenged American families in major ways, placing great economic, social, and psychological strains and demands upon families and their members. Millions of families lost their savings as numerous banks collapsed in the early 1930s.

John Maynard Keynes

John Maynard Keynes was an English economist, journalist, and financier best known for his economic theories (Keynesian Economics) on the causes of prolonged unemployment. His most important work, The General Theory of Employment, Interest, and Money (1935–36), advocated a remedy for economic recession based on a government-sponsored policy of full employment. Other important books by J. M. Keynes are The Economic Consequences of the Peace, A Tract on Monetary Reform, and How to Pay for the War.

Economic Agents:

By economic units or economic agents, we mean those individuals or institutions that take economic decisions. They can be consumers who decide what and how much to consume. They may be producers of goods and services who decide what and how much to produce. They may be entities like the government, corporations, or banks, which also take different economic decisions like how much to spend, what interest rate to charge on the credits, how much to tax, etc.

NATIONAL INCOME ACCOUNTING

National income can be viewed in three ways.

From a production point of view

From an income point of view,

From an expenditure point of view

National Income from Production Point of View

National income is the sum total of the money value of all the final goods and services produced by normal residents of a country in an accounting year.

National Income from Income Point of View

National income is the sum total of factor incomes earned by normal residents of a country in the form of rent, wages, interest, and profit in an accounting year.

National Income from Expenditure Point of View

National product is the net output of commodities and services flowing during the year from the country's productive system into the hands of ultimate consumers or into the addition of the country's capital goods. $Y= C+I+G+ (X - M)$

In short, national income is either the money value of all the final goods and services produced, the sum total of all factor incomes earned, or the sum total of the final expenditure (consumption expenditure plus investment expenditure) in a year.

Basic Economic Activities

Production, consumption, capital formation, government transactions, and transactions with the rest of the world are the basic economic activities.

Final Goods

All goods that are meant either for final consumption by consumers or for investment by firms are called final goods.

Intermediate Goods

Goods that are used up during the production of other goods are called intermediate goods. Such goods always move from one stage of production to another in the manufacture of a final product. Example: in the manufacturing of biscuits. Biscuits are final goods, but flour, milk, sugar, salt, fuel, etc. used in making biscuits are intermediate goods.

Final Expenditure

It is the expenditure made on the purchase of final goods and services for final consumption and investment.

Intermediate Expenditure

It is the expenditure made by a firm on the purchase of goods and services from other firms to be used as raw materials or for resale in the same year.

GOODS

Consumption Goods

Goods that are consumed by the ultimate consumers or meet the immediate needs of the consumer directly are called consumption (or consumer) goods.

Durable Goods

Durable consumer goods (called consumer durables) have a relatively long life and undergo wear and tear with gradual use. Example: cars, TV sets, computers, fridges, furniture, etc.

Semi-Durable Goods

Semi-durable consumer goods are those goods that can be used for a period of one year or slightly more. Example: clothes, crockery, electric goods, etc.

Non-Durable Goods

Non-Durable Consumer goods are those goods whose lifetime of use is comparatively small and are not of high value. Examples: food, vegetables, milk, meat, etc. Services such as those rendered by hired servants, recreation, medical care, and transport services availed by consumers are non-durable or single-use consumer goods.

Services

Services are those non-material goods that directly satisfy people's wants. A few examples of services are the services of a doctor, teacher, lawyer, domestic servant, etc.

Capital Goods

Durable goods, which are bought not for meeting the immediate needs of the consumer but for producing other goods, are called capital goods. Examples: tools, implements, plants, machines, and buildings.

Capital Formation (Investment).

Capital formation is an important function of an economy. Capital formation is the net addition to the capital stock of an economy during a given period.

Stock and Flow Variables

A stock is a quantity that is measurable at a point in time. Examples of stocks are wealth, foreign debts, loans, inventories (not change in inventories), opening stock, money supply (amount of money), population, water in a tank, etc.

Flow Variables

A flow is a quantity that is measured over a period of time. Thus, flows are defined with reference to a specific period (length of time), e.g., hours, days, weeks, months, or years. It has a time dimension. The national income is a flow.

Stock and Flow Variables

The distinction between stocks and flows can be easily understood by comparing the actions of a still camera (which records position at a point in time) with those of a video camera (which records position during a period of time).

Investment

Investment means adding to the stock of capital goods such as structures, equipment, or inventory. It implies the creation or addition of physical assets that are used to augment the productive capacity of the economy in future.

Gross Investment

It is an addition to the capital stock, which also includes replacement costs for the wear and tear that the capital stock undergoes over a period of time. Here, investment is expressed as a gross investment, which includes depreciation.

Net Investment

When we deduct depreciation from gross investment, we get net investment.

Net Investment = Gross Investment minus Depreciation

Depreciation or Consumption of Fixed Capital

Depreciation, which means a loss in the value of a fixed asset due to normal wear and tear and expected obsolescence, is called consumption of fixed capital. This is sometimes also called the current replacement cost.

Normal Wear and Tear

During the production process, capital goods like machines, tools, buildings, trucks, rail engines, roads, etc. wear out. This depreciation or fall in value due to normal wear and tear is called the consumption of fixed capital.

Obsolescence

Obsolescence is another reason for depreciation. Obsolescence refers to the loss of value of a fixed asset due to a to a change in technology or a change in demand for goods and services.

Domestic Territory

Domestic territory, or economic territory, is the geographical territory administered by a government within which persons, goods, and capital circulate freely.

Domestic Territory dose Include

1. Ships and aircraft owned and operated by the resident between two or more countries.
2. Fishing vessels, oil and natural gas rigs, and floating platforms operated by the residents of a country in international waters or areas where the country has exclusive rights for operation.
3. Embassies, consulates, and military establishments of the country are located abroad.

Domestic Territory does not include

1. Territorial enclaves (like embassies) are used or administered by foreign governments.
2. All international organisations that are physically located within the geographical boundaries of a country. Their offices form part of international territory.

Normal Resident

A normal resident is said to be a person (or an institution) who ordinarily resides in a country and whose centre of economic interest lies in that country. The period of stay should be at least one year or more.

Normal Residents includes

1. Both nationals and non-nationals residing in a country for more than a year.
2. The staff of international bodies are treated as normal residents of the country in which the international body operates.
3. Local employees working in foreign embassies located in their country are treated as normal residents.
4. Workers from across the border who cross the border in the morning to work in the other country and return in the evening are treated as normal residents of the parent country.

Normal Residents does not include

1. International bodies (like the World Bank, the World Health Organization, or the International Monetary Fund) are not considered residents of the country in which these organisations operate but are treated as residents of international territory.
2. Students and medical patients staying abroad are treated as normal residents of their home country, even if their stay in the host country is for more than one year.

National Income at Current Prices

If goods and services produced in one year are valued at current prices, i.e., prices prevailing in that particular year, we get national income at current prices. National income at current prices is called nominal national income.

National Income at Constant Prices or Real National Income

If goods and services produced in a year are valued at fixed prices, i.e., the prices of the base year, we get national income at constant prices. A base year is a carefully chosen year that is a normal year free from price fluctuations. (In India, 2011–12 is now treated as the base year.)

Market Price

Market Price = Factor Cost + Indirect Taxes - Subsidies or = Factor Cost + Net Indirect Taxes (Net Indirect Tax = Indirect Taxes - Subsidies)

Net Factor Income from Abroad (NFIA)

NFIA = factor income earned from abroad by normal residents or countries; the factor income earned by non-residents (foreigners)

Value of Output

The money value of the output of an enterprise is obtained by multiplying its physical output of goods and services by its market price.

Symbolically, value of output = quantity of output x price, or value of output = sales + change in stock.

Value Added

It refers to the addition of value to the raw material (intermediate goods) by a firm by virtue of its productive activities. Symbolically: Value Added = Value of output – Intermediate Consumption NVA at FC = Value of output - intermediate consumption - depreciation - net indirect taxes.

FACTOR PAYMENT (Income)	**TRANSFER PAYMENT (Income)**
It comprises rent, wages, interest, and profit.	It includes gifts, subsidies donations, scholarships, etc.
Received in return for rendering productive services.	Received without providing any goods or services in return.
Earned income (Earning Concept).	Unearned income (Receipt Concept).
Bilateral payment. .	Unilateral Payment.
Payments are included in national income.	Payments are not included in national income.

Sources of Domestic Income

Domestic income is the sum of factor incomes generated by all the producing units located within the domestic territory of a country in an accounting year. Following are the three components of domestic income. They are Compensation of Employees, Operating Surplus, and Mixed Income of Self-Employed

Compensation of Employees

It refers to all payments and other measurable benefits that the employees receive directly and indirectly in return for rendering productive services. Example: Wages and salary in cash, Compensation in kind (like rent-free quarters, free rations, etc.) Employer's contribution to social security schemes (like provident fund maternity benefits, life insurance, etc.)

Operating Surplus

Operating surplus is the sum of rent, interest, and profit. Alternatively, operating surplus is income from property (rent + interest) and income from entrepreneurship (profit). Royalties are also included in rent.

Mixed Income of Self-Employed

The income of a self-employed person and unincorporated enterprises that use their own resources (land, labour, capital, etc.) is called the mixed income of the self-employed.

Circular Flow of Income and Expenditure

Major Sectors of Economy:

Major sectors of the economy are households, firms, or producers. Government Sector and Foreign Trade Sector

Closed Economy & Open Economy

Closed Economy

A country that has no economic relations with the rest of the world Here Y= C+I+G

Open Economy

A country that has economic relations with the rest of the world. Here

Y=C+I+G+ (X-M)

Circular Flow of Income and Expenditure

It refers to the flow of money, income, or the flow of goods and services across different sectors of the economy in the circular flow.

Two Types of Circular Flow

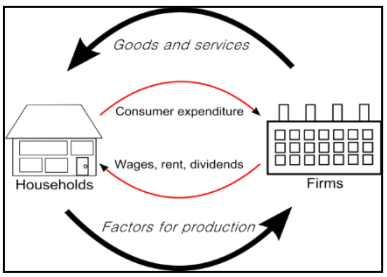
Real / Product / Physical Flow

The real flow of income implies the flow of factors and services from the household sector to the producing sector in the form of land, labour, capital, and organisation, and goods and services to the household sector.

Money / Monetary / Nominal Flow

The money flow of income implies the flow of payments from the producing sector to the household sector in the form of rent, labour, interest, profit, and expenditure on goods and services from the household sector to the firm.

Circular Flow of Income – Two Sector Model (Without Savings)



A simple model involving two sectors, namely, the household sector and the firm sector No government or foreign sector. It is a closed economy. No saving, no investment

Injection &Leakages

Injection

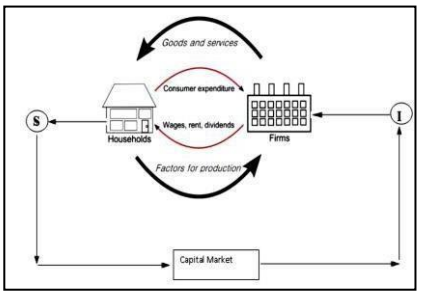
It refers to the additions to the circular flow injections that cause the expansion of the circular flow. Example Government expenditure, exports, and investment

Leakages

It refers to the withdrawals from the circular flow leakages that cause contraction of the circular flow. Savings is an example of leakage.

Circular Flow of Income – Two Sector Model (With Savings)

A simple model involving two sectors, namely, the household sector and the firm sector No government or foreign sector. It is a closed economy with savings and investment.



Measurement of National Income

Product Method

Net value added in primary sector at factor cost + Net value added in secondary sector at factor cost + Net value added in tertiary sector at factor cost + Net Factor income from abroad +Net Indirect Taxes + Consumption of fixed capital (Depreciation) **= GNP AT Market Prices**

Income Method

Compensation of Employees + Operating Surplus + Mixed Income Employed + Net Indirect Taxes + Consumption of fixed capital (Depreciation) + Net Factor income from **abroad = GNP at Market Prices**

Expenditure Method

Private final consumption expenditure + Govt. final consumption Expenditure + Gross Capital formation+ Net Exports + Change in Stock + Net Factor income from abroad **= GNP at MARKET PRICES**

Items to be Included

1. Rent of owner-occupied houses
2. Production for self-consumption

Items to be **Excluded**

1. All transfer payments and all expenditure on intermediate goods and services
2. Illegal incomes (smuggling, black marketing, etc.).
3. Corporate taxes.

4. Windfall gains from lotteries.
5. Income from the sale of second-hand goods.
6. Service of Housewives.
7. Work done as a hobby.
8. Interest on National Debt.
9. Expenditure on old shares and bonds

Difficulties of National Income Measurement

1. The problem of double counting
2. Difficulty in converting the value of goods and services in terms of money
3. The problem of measuring capital depreciation.
4. Income earned through illegal activities.
5. Difficulty of including transfer payments.
6. Price change
7. Abundance of Public Services.
8. Problems with inventory adjustments.

Double Counting

Counting the value of commodities at every stage of production more than once is called double counting. It can be avoided.

1. by adopting the value-added method in the calculation of national income.
2. by taking the value of the final commodity only while calculating national income.

Formulas of different concepts of NI and related aggregate

1. NNP at MP = GNP at MP – Depreciation
2. NDP at MP = NNP at MP - Net Factor Income from Abroad
3. NNP at FC or National Income = NNP at MP – Net indirect Tax

Private Income

Private income is the total of factor income from all sources, including net factor income from abroad and current transfers from the government and rest of the world, plus interest on national debt accruing to the private sector.

Personal Income = Private income – Corporate taxes - Undistributed profits less of net retained earnings of foreign companies

Personal Disposable Income

Personal Disposable Income is defined as the income remaining with individuals after deduction of all taxes levied against their income and their property by the government

Personal Disposable Income = Personal income - Personal taxes - Miscellaneous receipts of the government Consumption + Savings

GNP Deflater

It measures the average level of all prices of goods and services that make up GNP.

$$GNP\ deflator = \frac{Nominal\ GNP}{Real\ GNP} x\ 100$$

Green GNP

Green GNP is defined as GNP that would help to attain sustainable use of the natural environment and equitable distribution of the benefits of developments.

Consumer Price Index (CPI)

A consumer price index (CPI) measures changes in the price level of the market basket of consumer goods and services purchased by households. The CPI is a statistical estimate constructed using the prices of a sample of representative items whose prices are collected periodically. A consumer price index (CPI) measures changes in the price level of the market basket of consumer goods and services purchased by households. The CPI is a statistical estimate constructed using the prices of a sample of representative items whose prices are collected periodically.

The Consumer Price Index (CPI) is a measure that examines the weighted average of the prices of a basket of consumer goods and services, such as transportation, food, and medical care. India has adopted a new CPI to measure inflation. Consumer Price Index (Base: 2012 = 100)

Wholesale Price Index (WPI)

The Wholesale Price Index (WPI) is the price of a representative basket of wholesale goods. Some countries (like the Philippines) use WPI changes as a central measure of inflation. But now India has adopted a new WPI to measure inflation. Wholesale Price Index (Base: 2011-12 = 100)

GDP and Welfare

GDP per capita is the national income per person, the share of national income generated, or goods and services produced by one person. It is both a direct measure of productivity and an indirect measure of living standards. It is calculated by dividing a country's GDP by its total population. The rate of growth of GDP reflects the pace of the economy.

Indicators of Development

Common indicators of development used in economics.

1. Gross Domestic Product (GDP)
2. Gross National Product (GNP)
3. GNP per capita. ...
4. Birth and death rates. ...
5. The Human Development Index (HDI)
6. Infant mortality rate. ...
7. Literacy rate. ...
8. Life expectancy.

PRACTICE QUESTIONS

1. Which one of the following is a stock variable? {a. wealth; b. income; c. investment; and d. GDP}
2. Net investment = gross investment minus ... {a. Gross Savings, b. Investment, c. Depreciation, and d. Subsidy}
3. National income in India is: {a. GDP MP; b. GNP FC; c. NDP FC; and d. NNP FC}
4. The two-sector economy includes... {a. firms and government; b. firms and households; c. firms and external sectors; and d. households and government}
5. If nominal GDP = 5750 and real GDP = 40000, find the GDP deflator.

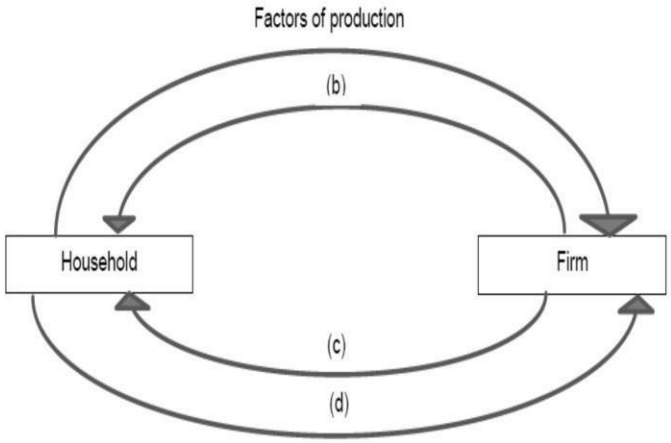
6. Briefly explain the circular flow of income in a simple economy.

7. Write down the three identities of GDP according to National Income Accounting.

8. List out the various steps of any two methods of measurement of national income.

9. If the real GDP of a country is ₹6780 crore, The nominal GD is ₹7890. Calculate the GDP deflator.
10. Is GDP considered the welfare of an economy? Justify your answer.

11. Complete the chart.



12. Describe the product method and expenditure method for calculating national income.
13. Distinguish between stock and flow variable.
14. Diagrammatically explain the circular flow of income in a two-sector economy.
15. Calculate the value of the GDP deflator from the following data: In 2018, the GDP at the current price was 8500, and the GDP at the constant price was ₹ 7000.
16. Fill In the blanks.
    a. GNP minus ..... = NNP
    b. GDP plus ..... = GNP
    c. GDP at factor cost plus ..... = GDP mp
    d. Indirect tax minus ..... = Net indirect tax.
17. Explain the product method and expenditure method of calculating gross domestic product. (GDP)
18. Production of a firm = 2000 units; sales = 1500 units. Find inventory
19. Explain GDP as an index of welfare.
20. Explain various methods of measuring national income.
21. Net Investment = Gross Investment_{a. depreciation, b. GNP, c. NIT, and d. NFIA}
22. Evaluate the limitations of GDP as an indicator of the welfare of a nation.
23. Calculate NNP at FC from the following: GNP at MP =12000, Depreciation =1000, NIT = 220
24. Which are the four sectors of an economy?
25. Which are the three methods of measuring National income? Explain any two methods.
26. Distinguish between real flow and money flow.
27. The nominal GDP of India was Rs. 3200 crores during the year 2011. The value of GDP of a country during the same year evaluated at the base year price was Rs. 2800 crores. Find the value of the GDP deflator.
28. Match the following.

A	B
GDP at factor cost	GNP at MP - Depreciation
NNP at factor cost	GDP at MP – Depreciation
NDP at market price	NDP at FC + NFIA
NNP at market price	GDP at MP – Net Indirect Tax

29. What do you mean by GDP? Explain any two methods of calculating GDP.

    Hint: Income Methods: Expenditure Methods or Value-added Methods.

30. If GDP at MP = 6500, consumption of fixed capital = 500, indirect tax = 300, subsidy = 200, Factor income from abroad = 400; factor income from abroad = 600; Find out:

    a) NDP at FC
    b) GNP at MP
    c) National Income

31. Which of the following is a GDP deflator?

A. Real GDP−Nominal GDP

B. $\frac{Real\ GDP}{Nominal\ GDP} \times 100$

C. $\frac{Nominal\ GDP}{Real\ GDP} \times 100$

D. $\frac{\text{Percapita Income}}{Real\ GDP}$

MONEY & BANKING

Barter System

The system of exchanging goods for goods is called the barter system.

Difficulties of Barter System

1. **Absence of Double Coincidence of Wants:** Two people can have a barter exchange only if their disposable possessions mutually suit each other's needs.
2. **Lack of a Common Measure of Value:** In the absence of a well-defined unit of account, in barter, the values of goods are measured in a relative sense; hence there is no absolute measurement of value.
3. **Indivisibility of Certain Goods:** Barter exchange also suffers from the indivisibility of many kinds of goods. For instance, a horse is not divisible and cannot be exchanged in parts for different divisible goods like rice, sugar, potatoes, etc. Thus, barter trade between divisible and indivisible goods of small value cannot be carried on without a loss of value.
4. **Lack of Standard of Deferred Payments:** Another drawback of barter is that it lacks a standard for deferred payments. Credit transactions cannot be promoted smoothly under barter trading. A chance of controversy about the quality of goods or services to be repaid can arise.
5. **Lack of Efficient Store of Value:** The major inconvenience of barter is the lack of a facility to store value or the lack of generalised purchasing power. People can store value for future use by storing wealth, but the difficulty arises when wealth consists of perishable goods.

Meaning of Money

According to Crowther, "anything that is generally acceptable as a means of exchange and which at the same time acts as a measure and store of value." Thus, anything is money, which is generally acceptable as a medium of exchange, and at the same time, it must act as a measure and a store of value. Anything implies a thing to be used as money, which need not necessarily be composed of any precious metal. The only necessary condition is that it should be universally accepted by people as a medium of exchange.

Functions Of Money

1. **Primary Function:** Medium of Exchange, Measure of Value.
2. **Secondary Function:** Unit of Account, Standard of Deferred Payments, Store of Value, and Transfer of Value.
3. **Contingent Functions:** Distribution of National Income, Maximisation of Satisfaction, Basis of Credit System, and Liquidity to Wealth. **Evolution of Money**

1. **Commodity Money:** In olden days, various commodities were used as money. Cows, seashells, hides, leather, precious stones, etc. were used.
2. **Metallic Money**: Precious metals like gold and silver were used as money.
3. **Paper Money:** In order to avoid the inconvenience of metallic money, paper money is introduced.
4. **Deposit, bank, or credit money:** Plastic money like ATM Card, Debit Cards, Credit Cards, purchase Vouchers etc. are the new form of money.

Supply of Money

It refers to the stock of money held by the public at a particular point in time for transactions and the storage of wealth.

Components of Money

Components of money are currency held by the public and demand deposits with banks.

The India Monetary System

The present currency system in India is managed by the **Reserve Bank of India** and is based on an inconvertible paper currency system. The present system of issuing notes in India is based on the Minimum Reserve Method. The minimum reserve to be maintained by the Reserve Bank is ₹. 200 cores, of which not less than ₹ 115 cores should be kept in gold coins and bullion.

Objectives of Minimum Reserve System (MRS)

1. To guarantee the Indian currency holders' trust that the currency they possess is legitimate tender and that they will be paid the full value of the currency they possess.
2. The Minimum Reserve System is a token of confidence to the general public that the Indian government is liable to pay them as per the face value of the notes because the RBI governor promised to the public that “I promise to pay the bearer a sum of 100/500 rupees.”
3. By using MRS, the RBI hopes to guarantee that the economy has a sufficient supply of money.
4. Without raising the rate of inflation in the economy, the RBI uses the MRS to quicken the nation's economic growth.

Money Supply in India

It refers to the total volume of money held by the public at a particular point in an economy.

1. **M1** = Currency held by public + Demand deposits + other deposits with Reserve Bank of India.
2. **M2** = M1+ Saving deposits with post office saving bank
3. **M3** =M1+Net time deposit with the bank
4. **M4** = M3 + Total deposits with post office saving bank excluding national saving certificate

Legal Tender

Legal tender refers to the money that can be legally used to make payments on debts or other obligations.

Fiat Money

Fiat money refers to the money that is backed by the order of the government under law. It must be accepted for all debts.

High Powered Money

High powered money is the total liability of the monetary authority of the country. This is also called the monetary base and is created by the RBI. High powered money includes currency (notes and coins), deposits with the government, and reserves of commercial banks with the RBI. So, to sum up, high-powered money is

H = C + R, Where

H = High powered money

C = Currency

R = Cash Reserves of commercial banks

Liquidity Preference

Money is the most liquid asset. Money commands universal acceptability. Everybody likes to hold assets in the form of cash. If they surrender this liquidity, they must be paid interest. The preference of investors for holding liquid assets rather than securities or long-term interest-bearing investments is called liquidity preference.

Demand for Money

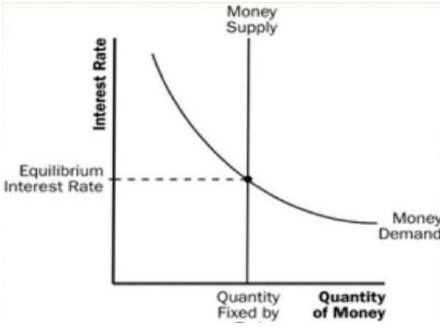
1. **Transaction Motive:** Individuals demand money for their day-to-day transactions.
2. **Precautionary Motive:** People demand to hold money with them to meet unforeseen contingencies.
3. **Speculative Motive:** People want to keep money with them to take advantage of the changes in the price of bonds and securities.

Supply Money

The aggregate supply of money in a community at any time is the sum of the money stock of all the members of the society.

Equilibrium Rate of Interest

The rate of interest is determined by the demand for money and the supply of money. The equilibrium rate of interest is fixed at that point where supply of and demand for money are equal. If the rate of interest is high, people's demand for money (liquidity preference) is low. The liquidity preference function, or demand curve, states that when the interest rate falls, the demand to hold money increases, and when the interest rate rises, the demand for money diminishes.



Speculative Demand for Money and Rate of Interest Where r = market rate of interest,

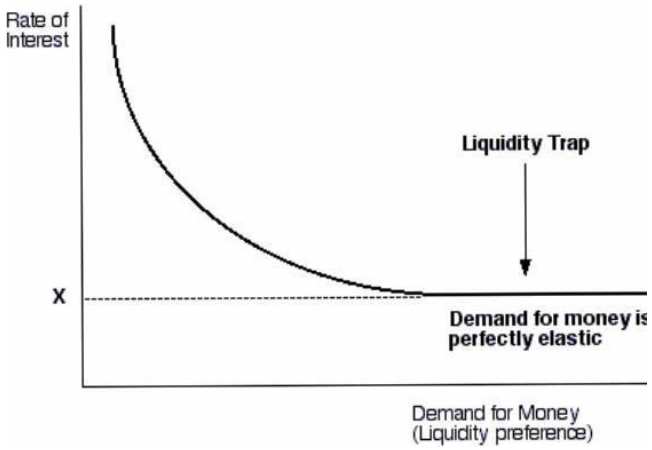
r_{max} = upper limit of market rate of interest,

$$M_s^d = \frac{r_{max} - r}{r - r_{mini}}$$

r_{min} = lower limit of market rate of interest

Liquidity Trap

A liquidity trap is a situation where the market rate of interest reaches its minimum and the speculative demand curve is parallel to the x-axis.



Commercial Banks

The commercial banks serve as the kingpins of the financial system of the country. They render many valuable services.

Function of Commercial Banks

Primary Function

Acceptance of Deposits

1. **Time Deposits:** These are deposits that are repayable after a certain fixed period. These deposits are not withdrawn by cheque, draft, or other means. Example: Fixed Deposits, Recurring Deposits, and Cash Certificates:
2. **Demand Deposits:** These are the deposits that may be withdrawn by the depositor at any time without prior notice. It is withdrawn by cheque/draft. Example: Savings Deposits and Current Account Deposits

Advancing of Loans

The commercial banks provide loans and advances in various forms. They are given below.

1. Overdraft
2. Cash Credit
3. Discounting of Bills and Loans and Advances
4. Housing Finance,
5. Educational Loan Scheme
6. Loans against Shares/Securities, Loans against Savings
7. Certificates
8. Consumer Loans and Advances

Credit Creation

Credit creation is one of the primary functions of commercial banks. When a bank sanctions a loan to the customer, it does not give cash to him. But the amount is credited to his account. He can withdraw the money whenever he needs it. Thus, whenever a bank sanctions a loan, it creates a deposit. In this way, the bank increases the money supply of the economy. Such functions are known as credit creation.

Secondary Function

Agency Functions

1. Collection of cheque, dividends, and interests
2. Payment of rent, insurance premiums
3. Dealing in foreign exchange
4. Purchase and sale of securities
5. Act as trustee, executor, attorney, etc.
6. Act as correspondent
7. Preparations of Income-Tax returns

General Utility Services

1. Safety Locker facility
2. Payment Mechanism or Money Transfer
3. Circular Notes or Circular Letters of Credit
4. Traveler's Cheque and Credit cards
5. Letters of Credit
6. Acting as Referees
7. Provides Trade Information
8. ATM facilities
9. Gift Cheque
10. Accepting Bills
11. Merchant Banking
12. Advice on Financial Matters

Central Bank

An apex body that controls, operates, regulates, and directs the entire banking and monetary structure of a country is called the Central Bank of the Country. In India, Reserve Bank of India (RBI) is the Central Bank of India.

Functions of Central Bank

1. **Currency Authority or Bank of Issue:** The central bank is the sole authority to issue currency in the country. The central bank is obliged to back the currency with assets of equal value (usually gold coins, gold bullions, foreign securities, etc.).
2. **Banker to the Government:** As a banker, it carries out all banking business for the government and maintains a current account for keeping cash balances for the government. Accepts receipts and makes payments for the government. It also gives loans and advances to the government.
3. **Banker's Bank and Supervisor:** The Central Bank acts as a banker to other banks in the country and controls the workings of other banks. It also checks the accounts of other banks and gives suggestions for the smooth functioning of the banking sector in the country.

4. **Lender of Last Resort:** When commercial banks fail to meet their financial requirements from other sources, they approach the Central Bank, which gives loans and advances.
5. **Clearing House:** Since the Central Bank holds the cash reserves of commercial banks, it is easier and more convenient to act as the clearing house for commercial banks.
6. **Custodian of Foreign Exchange Reserves:** Another important function of the Central Bank is to be the custodian of foreign exchange reserves. The Central Bank acts as the custodian of the country's stock of gold and foreign exchange reserves. It helps stabilize the external value of money and maintain a favourable balance of payments in the economy.
7. **Controller Of Money Supply and Credit:** Central Bank or RBI plays an important role during the times of economic fluctuations. It influences the money supply through quantitative and qualitative instruments. Former refers to the volume of credit and the latter refers to regulate the direction of credit.

Reserve Bank of India

The Reserve Bank of India Act of 1934 established the Reserve Bank. Since then, the Reserve Bank's role and functions have undergone numerous changes as the nature of the Indian economy and financial sector changed.

Sterilisation by RBI

Intervention by the monetary authority of a country (RBI) in the money market to keep the money supply stable against external shocks (such as increasing foreign exchange inflow or outflow) is known as sterilisation. When foreign exchange comes into an economy, the supply of money will increase. At this time, the RBI will engage in open market operations and will sell bonds worth the value of foreign exchange inflows. Thus, through this process, the RBI will keep the supply of money in the economy constant and control inflation. This process is known as sterilisation by the RBI.

Various Ratios

Currency Deposit Ratio (CDR):

It is the ratio of money held by the public in currency to that they hold in bank deposits.

$$cdr = \frac{CD}{DD}$$

Reserve Deposit Ratio (RDR):

It is the proportion of the total deposits Commercial Banks keep as reserves.

$$rdr = \frac{R}{DD}$$

Money Multiplier:

Money multiplier may be defined as the ratio of the stock of money to the stock of high-powered money in an economy.

$$\text{Money Multiplier} = \frac{M}{H} = \frac{1+cdr}{cdr+rdr}$$

Here, M = Stock of money

H = Stock of high powered money

Repo Rate

The repo rate is the rate at which the central bank of a country (the Reserve Bank of India in India) lends money to commercial banks in the event of a shortfall of funds. Monetary authorities use the repo rate to control inflation.

Reverse Repo Rate

The reverse repo rate is the rate at which the central bank of a country (the Reserve Bank of India in India) borrows money from commercial banks within the country. It is a monetary policy instrument that can be used to control the money supply in a country.

Relationship between Interest Rate and Bond Price

The Relationship between interest rate and bond price is negative. When the market rate of interest is high the bond price will be low. Therefore, there is a negative relationship between the market rate of interest and speculative demand for money the speculative demand for money can be written as

$$M_s^d = \frac{r_{max} - r}{r - r_{mini}}$$

We Will Have Two Extreme Conditions

When $r = r_{max}$

$$M_s^d = \frac{r_{max} - r}{r - r_{mini}}$$

$$M_s^d = \frac{0}{r - r_{mini}} = 0$$

When $r = r_{mini}$

$$M_s^d = \frac{r_{max} - r}{r - r_{mini}}$$

$$M_s^d = \frac{r_{max} - r}{0} = \infty$$

Monetary Policy of RBI (Quantitative Instruments)

1. **Bank Rate:** It refers to the rate at which the central bank lends money to commercial banks as a lender of last resort. The Central Bank increases the bank rate during inflation (excess demand) and reduces it in times of deflation (deficient demand).
2. **Open Market Operations:** It refers to the buying and selling of securities by the Central Bank from or to the public and commercial banks. It sells government securities during inflation or excess demand and buys the securities during deflation or deficient demand.
3. **Legal Reserve Ratio:** R.B.I. can influence the credit creation power of commercial banks by making changes in CRR and SLR.
4. **Cash Reserve Ratio (CRR):** It refers to the minimum percentage of net demand and time liabilities to be kept by commercial banks with the central bank. The Reserve Bank increases CRR during inflation and decreases the same during deflation.
5. **Statutory Liquidity Ratio (SLR):** It refers to the minimum percentage of net demand and time liabilities that commercial banks are required to maintain with themselves. SLR is increased during inflation or excess demand and decreased during deflation or deficient demand. **Monetary Policy of RBI (Qualitative Instruments)**
    1. **Margin Requirements:** It is the difference between the amount of the loan and the market value of the security offered by the borrower against the loan. Margin requirements are increased during inflation and decreased during deflation.
    2. **Moral Suasion:** It is a combination of persuasion and pressure that the Central Bank applies to other banks in order to get them to act in a manner in line with its policy.

3. **Selective Credit Controls:** The Central Bank gives direction to other banks on whether or not to give credit for certain purposes to particular sectors.

Demonetisation

Demonetisation was a new initiative taken by the Government of India on November 8, 2016 to tackle the problems of corruption, black money, terrorism, and the circulation of fake currency in the economy. Old currency notes of ₹ 500 and ₹ 1000 were no longer legal tender. New currency notes in the denominations of ₹ 500 and ₹ 2000 were launched. The public was advised to deposit old currency notes in their bank account until December 31, 2016 without any declaration and up to March 31, 2017 with a declaration to the RBI. Further, to avoid a complete breakdown and cash crunch, the government had allowed the exchange of ₹ 4000 old currency for new currency per person and per day. Old currency notes were acceptable as legal tender at petrol pumps, government hospitals, and for payment of government dues like taxes, power bills, etc. This move received both appreciation and criticism.

Merits

1. Large numbers of people were bought into the tax ambit.
2. The major achievement of demonetisation has been that it has helped the government track black money.
3. Demonetisation is an effective countermeasure against illegal activities such as funding terrorism, gambling, and inflating the price of major asset classes like real estate, gold, and other social evils.
4. Another benefit of demonetisation is that people disclose their income by depositing money in their bank accounts. As a result, the government received a good amount of tax revenue, which can be used for the betterment of society by providing good infrastructure, hospitals, educational institutions, roads, and many facilities for poor and needy sections of society.
5. Another major achievement of Demonetisation is that the Indian economy became cashless to a great extent. The government succeeded in encouraging people to use digital means for making transactions.
6. The economy has witnessed a close to 20% decline in currency circulation, the number of taxpayers has considerably increased, and a large number of shell companies have been identified.

Disadvantages of Demonetisation

1. Demonetisation has initially created chaos and frenzy among common people.
2. Destruction of old currency units and printing of new currency units involve costs that have to be borne by the government, and if the costs are higher than the benefits, then there is no use of demonetisation.
3. Many people kept cash as their black money was converted into other asset classes like real estate, gold, and so on, which were not affected by demonetisation.

PRACTICE QUESTIONS

1. The Central Bank of India is... {a. RBI; b. SBI; c. Canara Bank; d. Indian Bank}
2. What are the defects of the barter system?
3. Explain the functions of the Central Bank.
4. At the minimum level of interest, the speculative demand for money is... {a. perfectly elastic; b. elastic; c. perfectly inelastic. and d. Inelastic}

5. Distinguish between the concepts of money supply. {Hint: M1, M2, M3, and M4}
6. In terms of money supply, which is the least liquid one? {a. M1, b. M2, c. M3, and d. M4.}
7. 'People desire to hold money balance broadly from two motives.' Distinguish the concepts.
    a. Transaction motives of demand for money.
    b. Speculative motives of demand for money.
8. Define a money multiplier. If the CRR is 30 percent, estimate the value of the money multiplier.
9. List out the difficulties of the barter system.
10. Define monetary policy. What are the tools used by monetary authorities to control the money supply in the economy?
11. Define monetary policy. Analyse the instruments used by the RBI to control the money supply.
12. In the case of the liquidity trap, speculative demand for money is...
13. Mention the speculative demand for money with the help of a diagram.
14. Complete the following:

M1=_____ +_____

M2=_____ M1 + _____

M3 = M1 + _____

M4 = _____+_____

15. Explain the quantitative tools to control the money supply.
16. Explain the functions of money.
17. Explain four measures of the money supply.
18. What are the functions of money and explain them?

INCOME DETERMINATION

Says Law of Market

The Classical and Neoclassical Economists believed that there would be always Full Employment in the economy. The assumption of full employment was based on "Says Law of Market." The Says Law of Markets states that "Supply Creates its Own Demand," that is, all that is supplied in the market must be equal to all that is demanded. John Maynard Keynes rejected the following arguments of classical and neoclassical economists in his 1936 book General Theory of Employment, Interest, and Money, (popularly known as General Theory) published in 1936.

How Keynes rejected Classical & Neo- Classical Economists

CLASSICAL THEORY	KEYNES THEORY
Supply creates its own demand	Supply can not create its own demand
There is no over production	Some over production
No need of Govt intervention	Need Govt intervention
Full employment equilibrium	Under employment equilibrium
Analysis on supply side	Analysis on demand side
Full employment is the common	Under employment is the common

Keynes Says

1. There could not be equality between aggregate demand and aggregate supply automatically, and hence there was no chance of full employment.
2. The situation of full employment rarely exists. That is, aggregate demand could fall short of aggregate supply, so the situation of full employment is disturbed.
3. This is the situation of involuntary unemployment, where a person willing to work at the prevailing wage rate finds no employment.

According to Keynesian Theory, Employment depends on effective demand. Effective demand results in output. Output creates income. Income provides employment. Employment generates effective demand. Thus, a larger volume of employment will increase the national income. According to Keynes, only increasing employment can raise income.

Effective Demand

The core of Keynesian theory is that the volume of employment in an economy depends on the level of effective demand. Effective demand is determined at the point where aggregate demand is equal to aggregate supply.

Aggregate Demand and its Components

Aggregate demand is the total demand for the existing output at prevailing prices. That is, aggregate demand is the total demand or the total expenditure of the community on goods and services purchased. Aggregate demand consists of

4. Household consumption demands.
5. Investment demand.
6. Government demand for goods and services.
7. Net foreign demand.

$$AD = C+I+G+ (X - M)$$

Private Consumption Demand (C)

It is defined as the value of all goods and services that households are willing or planning to buy. Alternatively, it refers to ex-ante (planned) consumption expenditures to be incurred by all households on the purchase of goods and services.

Private Investment Demand (I)

It refers to planned (ex-ante) expenditure on the creation of new capital assets like machines, buildings, and raw materials by private entrepreneurs. It comprises expenditure on

1. Fixed Assets
2. Inventories
3. Residential Constructions

Government Demand (G)

It refers to government planned (ex-ante) expenditure on the purchase of consumers and capital goods to fulfil common needs of society like schools, transport, hospitals, roads, power, and health.

Net Foreign Demand (X-M)

Net export demand is defined as the aggregate of all demand for our goods and services by foreign countries' goods and services. **Net Exports = Exports (X) minus Imports (M)**

Household Consumption Demand (Consumption Function)

The level of household consumption demand depends on the level of disposable income in the household. The relationship between the level of disposable income and the level of consumption is called the propensity to consume.

Total Disposable Income = Total Personal Income minus Total Direct Taxes

There is a direct relationship between the level of disposable income and the level of consumption. As disposable income increases, total consumption expenditure also increases. Thus, we can say that consumption is a function of income. C = f (Y)

The **psychological law of consumption** states that the rate of increase in consumption expenditure is less than the rate of increase in disposable income.

Autonomous Consumption.

Even at a zero level of income, there is consumption because individuals and communities cannot survive without a minimum level of consumption. Consumption at zero levels of income is called autonomous consumption.

Propensity to Consume

Propensity to Consume does not mean desire to consume. It means actual expenditure on consumption.

Induced Consumption.

Consumption above autonomous consumption is called induced consumption.

Propensity to Consume is more with the poor people than with the rich people. (Due to their lower income, poor people spend their whole income on consumption as their income increases.)

Average Propensity to Consume (APC)

The average propensity to consume (APC) is the total consumption expenditure of the people divided by their total income.

$$APC = \frac{\text{Total consumption}}{\text{Total income}} = \frac{C}{Y}$$

For example: total income is ₹1000 Crs, and total consumption is ₹800 Crs. Then APC = C/Y = 800/1000 = 0.8. That is, 80% of the income is spent on consumption.

Marginal Propensity to Consume (MPC)

Marginal Propensity to Consume is an increase in consumption expenditure due to an increase in income. In other words, it is the ratio between the change in consumption and the change in income. For example, the change in consumption is ₹.300Crs. Change in income is ₹.500 Crs. Then MPC = $\Delta C/\Delta Y$ = 300/500 = 0.6 That is, 60% of the additional income is spent on consumption.

$$MPC = \frac{\text{Change in consumption}}{\text{Change in income}} = \frac{\delta C}{\delta Y}$$

Propensity To Save

A corollary to the concept of propensity to consume is propensity to save. Disposable income may be either saved or consumed. As income increases, savings also increase. The relationship between level of disposable income and level of savings is called propensity to save or saving function.

Average Propensity to Save (APS)

The average propensity to save (APS) is the total savings of the people divided by their total income. For example, total income is ₹.700 crores. Total Savings is ₹.100 Crs. Then APS = S/Y = 100/700 = 0.14. That is, 14% of the income is saved.

$$APS = \frac{\text{Total Savings}}{\text{Total income}} = \frac{S}{Y}$$

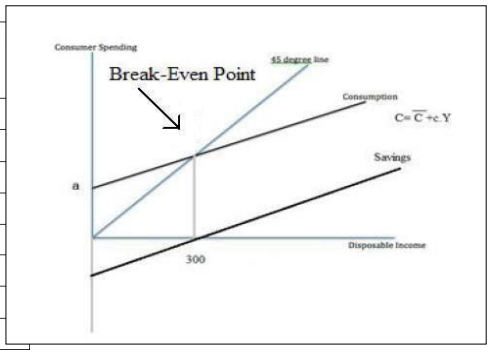
Marginal Propensity to Save (MPS)

The marginal propensity to save is an increase in savings due to an increase in income. In other words, it is the ratio between change in savings and change in income. For example, a change in savings is ₹. 300 crores. Changes in income are ₹. 500 Crs. Then MPS = ΔS/ΔY = 300/500 = 0.6 That is, 60% of the additional income is saved.

$$MPS = \frac{\text{Change in Savings}}{\text{Change in income}} = \frac{\delta S}{\delta Y}$$

The following table will illustrate the above concepts

Disposable Income	Consumption	Savings	APC	MPC	APS	MPS	APC+APS
100	200	-100	2.00	0.5	-1	0.5	1
200	250	-50	1.25	0.5	-0.25	0.5	1
300	300	0	1.00	0.5	0	0.5	1
400	350	50	0.88	0.5	0.125	0.5	1
500	400	100	0.8	0.5	0.2	0.5	1
600	450	150	0.75	0.5	0.25	0.5	1
700	500	200	0.71	0.5	0.29	0.5	1
800	550	250	0.68	0.5	0.31	0.5	1



At the zero level of income, autonomous consumption is ₹.100 crores. This consumption is made from past savings, borrowing, etc. Therefore, savings are negative as consumption exceeds disposable income until disposable income reaches ₹. 300 crores. When disposable income reaches ₹. 300 Crs, it will be equal to consumption. This is the break-even point. Beyond the breakeven point, people start saving as disposable income increases.

Keynesian Investment Multiplier

A multiplier implies the cumulative effect of investment on income. Keynes borrowed this concept from R.F. Khan. Investment The multiplier is the ratio of the total change in income due to the initial change in investment. It can be expressed mathematically as

$$\text{✿Y} = \text{K. ✿I} = \text{K} = \frac{\text{✿Y}}{\text{✿I}} = \frac{1}{\text{MPS}} \text{ because ✿I} = \text{✿S.}$$

Where K is the multiplier, ✿Y change in income and ✿I change in investment.

For example, if an investment in the economy is increased by ₹.100 Crs. and national income by ₹.400 Crs. Then the multiplier $\text{K} = \frac{\text{✿Y}}{\text{✿I}} = \frac{400}{100} = 4$

Relationship Between MPC and MPS

The propensity to consume need not be constant throughout. It usually declines as disposable income increases. Hence, MPC declines as disposable income increases.

Multiplier, MPC, and MPS

The value of the multiplier is determined by MPC. Whether the multiplier is large or small depends on the size of the MPS. A multiplier can work in the reverse direction, depending on the direction of the initial investment.

The MPC is complementary to the MPS. MPC can be derived from MPS.

$$\delta Y = \delta C + \delta S$$

Dividing both side by δY

$$\frac{\delta Y}{\delta Y} = \frac{\delta C}{\delta Y} + \frac{\delta S}{\delta Y}, \quad 1 = \frac{\delta C}{\delta Y} + \frac{\delta S}{\delta Y}, \quad (1 = \text{MPC} + \text{MPS}), \quad (1 - \text{MPC} = \text{MPS})$$

$$\boldsymbol{K = \frac{\delta Y}{\delta I} = \frac{1}{MPS} = \frac{1}{1 - MPC}}$$

Relationship between MPC and MPS

The propensity to consume need not be constant throughout. It usually declines as disposable income increases. Hence, MPC declines as disposable income increases.

Investment Function

Investment means the expenditure to make man-made investments in production like machines, equipment, buildings, etc. to increase the productive capacity of an economy. Investments are of two types:

Autonomous Investment

Autonomous investment is the expenditure on capital formation that is not influenced by the level of income or rate of interest. The level of income and rate of interest do not change the level of autonomous investment. Government expenditures on public utilities such as roads, railways, communication, etc. are examples of autonomous investment.

Induced Investment

Production in a capitalist economy is profit-orientated. Sine profit is the prime goal of the entrepreneur; they are induced to invest only when they expect to get profit. To examine the profitability of an investment, Keynes introduced the concept of marginal efficiency of capital (MEC).

Marginal Efficiency of Capital (MEC)

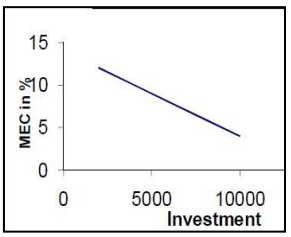
Marginal Efficiency of Capital (MEC) refers to the expected rate of return or expected profitability. According to Kenneth Kunihara, the marginal efficiency of capital is the ratio between the prospective yield of additional capital assets and their supply price.

That is, e =Q/P

Where e is MEC, Q is the prospective yield of additional capital assets, and P is the supply price. MEC depends on two factors. They are the prospective yield of additional capital assets and the supply price.

Investment Demand Schedule

The investment demand schedule shows the functional relationship between MEC and the amount of capital invested.



MEC and Rate of Interest

MEC and the rate of interest are the two factors determining the volume of investment. The factors are determined beforehand, independently of each other. Marginal efficiency of capital is the ratio between the prospective yield of additional capital assets and their supply price, while the rate of interest is determined by liquidity preference and the supply of money. A prospective investor will make an investment only when the marginal efficiency of capital (MEC) is greater than the rate of interest. The volume of investment will continue as long as the marginal efficiency of capital (MEC) and rate of interest are equalised.

Government Demand

The present-day government believes in the concept of a welfare state. It undertakes productive and unproductive expenditures. The marginal efficiency of capital (MEC) and rate of interest do not guide government investment.

Net Foreign Demand

The balance of exports over imports is called net foreign demand. Net foreign demand depends on factors like income, price elasticity of demand, foreign trade policy, foreign exchange rate, etc.

Determination of Income in Two-Sector Model

In a two-sector economy (household and firm), ex-ante aggregated demand (AD) for final goods is the sum total of ex-ante consumption expenditure (C) and ex-ante investment expenditure (I).

Thus AD = C + I

Ex-Ante Consumption Expenditure (C)

Ex-ante consumption expenditure (C) can be represented by: C = $\bar{C}$.+bY, where, $\bar{C}$. indicates autonomous consumption, b shows marginal propensity to consume (MPC), and Y stands for level of income.

Ex-Ante Investment Expenditure (I)

Ex-ante investment expenditure (I) can be represented by: I = $\bar{I}$ where $\bar{I}$ indicates autonomous investment.

Equilibrium Condition

An economy is in equilibrium when aggregate demand is equal to aggregate supply (AD = AS). AD consists of consumption expenditure (C) and investment expenditure (I). So, AD = C + I. Aggregate supply (AS) or total output represents national income (Y).

Thus AS = AD or Y = C + I

= $\bar{C}$ + bY + $\bar{I}$ (Because C = $\bar{\boldsymbol{C}}$ + By and $I = \bar{\boldsymbol{I}}$)

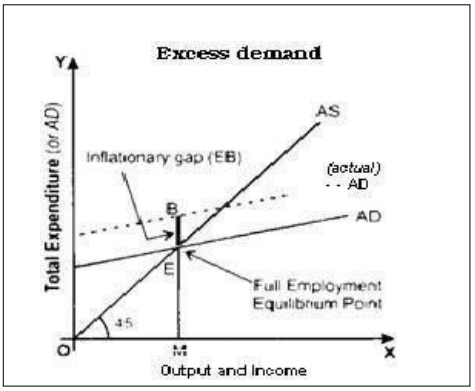
$= C + I + bY$

Y = A + bY where $\bar{A} = \bar{C} + \bar{I}$ showing total autonomous expenditure

Thus, equilibrium Ex- ante (Planned) supply of final goods (Y) = Ex-ante (Planned) demand for final goods A + bY

Impact of Deficient and Excess Demand on Output Employment and Prices

Full employment equilibrium: an economy is said to be in full employment equilibrium when aggregate demand and aggregate supply are in equilibrium at the full employment level. In other words, full employment is a situation free from involuntary unemployment. Involuntary unemployment exists when those who are able and willing to work at the prevailing rate of wage are not able to find a job.



Excess Demand or Inflationary Gap

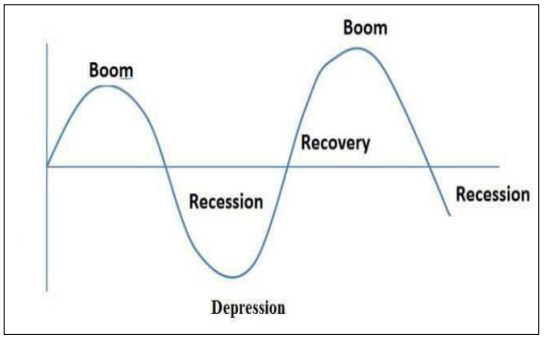
Excess demand refers to a situation in which aggregate demand exceeds aggregate supply at the full employment level. The difference between aggregate demand and aggregate supply at full employment level is called the inflationary gap. Inflationary gaps in an economy exist when planned expenditures exceed the value of available output produced by making use of available resources. An increase in demand beyond the equilibrium level of full employment does not increase output or employment. Hence, an increase in demand would result in a rise in prices.

Deficient Demand or Deflationary Gap

Deficient demand, or a Deflationary Gap, is the situation where aggregate demand falls short of aggregate supply. The difference between aggregate demand and aggregate supply at the full employment level is called the deflationary gap. A fall in demand beyond the equilibrium level of full employment is insufficient to eliminate involuntary unemployment. Hence the fall in prices.

Impact of Deficient and Excess Demand and Business Cycle

The business cycle refers to alternating periods of rising and falling levels of economic activity. The business cycle has four phases. They are boom, recession, depression, and recovery. Boom represents the peak level of economic activity, and depression represents the lowest level of economic activity. A boom is followed by a recession, which, unless checked, leads to depression. Recovery picks up the economy from depression and takes it again to boom. Thus, the cycle is complete.



Recession & Depression

Deficiencies in demand give rise to recession, which, unless checked, leads to depression. Recession and depression are characterised by an increase in unemployment, a fall in output, a fall in prices, etc. Excess demand, on the other hand, brings about a boom. A boom is characterised by an increase in employment, a rise in output, a rise in prices, etc.

Measures to Correct Excess Demand and Deficient Demand

	INFLATION	DEFLATION
MONETARY POLICY		
Bank Rate	High Bank Rate	Low Bank Rate
Open Market	Selling of Bonds	Buying of Bonds
CRR	High Rate of CRR	Low Rate of CRR
FISCAL POLICY		
Taxation	High Tax Rate	Low Tax Rate
Public Expenditure	Less Public Expenditure	Large Public Expenditure
Public Debt	Accepting Public Debt	Redemption in Public Debt

Additional Information

Ex-Ante Saving: It is what the savers plan to save at different levels of income in the economy.

Ex-Ante Investment: It is what the investor plans or intends to invest at different levels of income in the economy.

Ex-Post Saving and Investment: They refer to realised saving and investment in the economy. Ex-post saving is always equal to ex-post investment.

Full Employment Equilibrium and under Employment Equilibrium Full

Employment Equilibrium:

It refers to that situation in the economy when AD = AS along with fuller utilisation of the labour force.

Under Employment Equilibrium:

It refers to that situation in the economy when AS = AD but without the fuller utilisation of labour force.

Paradox of Thrift

There is an assumption that as the saving of the people increases, the total saving of the economy will increase. If all the people in the economy increase the proportion of income they save, the total value of savings in the economy will not increase. It will either decline or remain unchanged. This is known as the paradox of thrift.

Reasons for the Paradox of Thrift

The reason for this is that, increase in savings decreases consumption, which will decrease the demand for final goods. This results in excess supply. So, the firms reduce the production of final goods, and as a result, their income and savings also decrease. In other words, the paradox of thrift occurs due to the increase in marginal propensity to save (MPS), i.e., the value of MPC decreases. So, it eliminates the effect of multipliers. It reduces the increase in income.

PRACTICE QUESTIONS

1. An economy is planning to increase its investment by Rs.1000 crores. If the value of MPC is 0.75, find out the change in income.

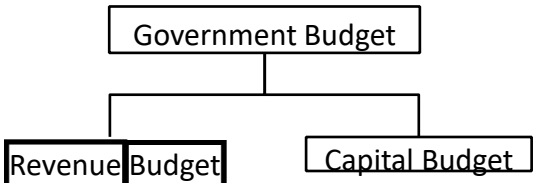
2. Assume that the MPC is 0.8. Calculate the government expenditure multiplier. What will be its impact on equilibrium income if the government decides to enhance their expenditure by 100 crores?
3. Calculate the value of the multiplier if an investment in the economy is increased by ₹.100 Crs. and national income by ₹.400 Crs.
4. Diagrammatically explain the determination of equilibrium income and output.
5. Differentiate between autonomous investment and induced investment.
6. Distinguish between MPC and MPS.
7. Distinguish between the Classical theory and the Keynesian theory of income and employment.
8. Explain the components of aggregate demand.
9. Explain the concept of consumption function.
10. Explain the concept of full employment.
11. Explain the determination of the equilibrium level of income in a two-sector economy.
12. Explain the Keynesian theory of income and employment.
13. Explain, with the help of a diagram, how the equilibrium level of income is determined.
14. Find K. The change in investment is 200 crores, and the change in income is 1000 crores.
15. Find MPS, if change in income is D.4000 and change in Investment is D.1000.
16. If all the people in the economy increase the proportion of income, they save, the aggregate savings in the economy will not increase, either they will decline or remain unchanged. This is known as_.
17. If MPC = 0.5, Find the value of the multiplier.
18. If the value of MPC is 0.8, calculate the value of MPS.
19. Suppose in an economy AD = 50 + 0.8 Y.
    a. Find AD at income levels 0, 100, 200, 250, 300, 400, and 500.
    b. Draw AD curve.
20. The value of MPC + MPS = _____
21. What happens when AD is greater or lesser than AS?
22. What is effective demand?
23. What is the difference between ex-ante investment and ex-post investment?
24. What is the effect of aggregate demand on the level of income?
25. What is the marginal propensity to consume? How is it related to the marginal propensity to save?
26. Write a short note on the marginal efficiency of capital (MEC).

GOVERNMENT BUDGET & THE ECONOMY

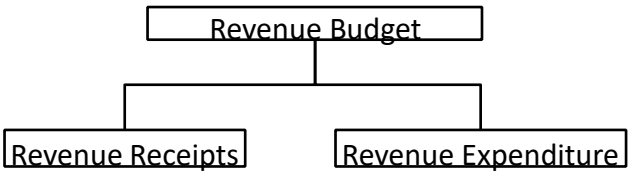
The budget is an annual statement of the estimated receipts and expenditures of the government over the fiscal year, which runs from April 1st to March 31st.

Functions of Budget

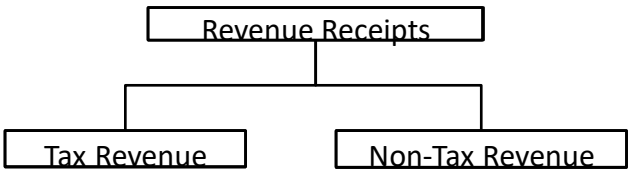
1. **Assessment of Economic Conditions:** The budget gives information about the nation's economic situation.
2. **Financial Resources' Information:** The budget provides information about the nation's overall financial situation by informing the public about total revenues, total expenditures, surplus, and deficit. It also provides information about the amount of money that will be collected in fees and surcharges, direct and indirect tax revenue, and the amount of development expenditure that will go towards public sector development.
3. **Assessment of Budget Conditions:** Through the budget, the government can also determine the expected monetary surplus or deficit for the following year.
4. **Expenditures' Distribution:** The government budget will be used to determine the percentage of spending that will go towards each economic sector. Moreover, the budget can be used to assess the relative importance of the various economic sectors.
5. **Assessment of Income and Wealth Distribution:** The budget provides information about the distribution of income in the nation. As a result, the government can mobilise resources to support the underprivileged segments of the population through various policies and instruments, such as taxes, expenditures, rebates, subsidies, and so on. Disparities can be eliminated when the economy's income and wealth distribution are objectively assessed.



Revenue budget divided into two: Revenue receipts and Revenue expenditures.

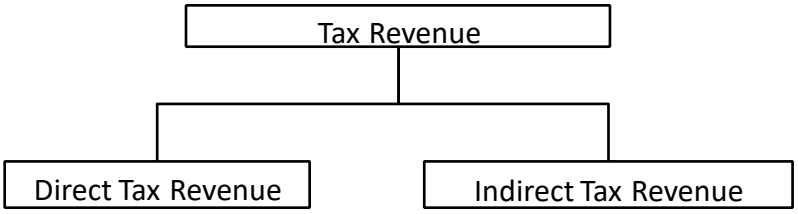


Revenue Receipts

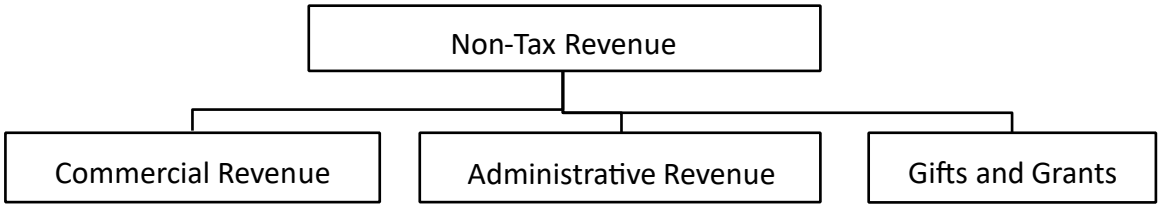


Any receipt that does not either create a liability or lead to a reduction in assets is called a revenue receipt. ***It includes tax and non-tax revenue***. Tax revenue includes direct and indirect taxes. Non-tax revenue includes receipts from commercial revenue, administrative revenue, interest, dividends, profit, and external grants.

Tax revenue includes direct tax (e.g., income tax, interest tax, wealth tax, and estate duty) and indirect tax revenue (e.g., goods and service tax (GST), customs duties, excise duties, and sales tax).



Non-tax revenue includes receipts from commercial revenue, administrative revenue, interest, dividends, profit, and external grants.



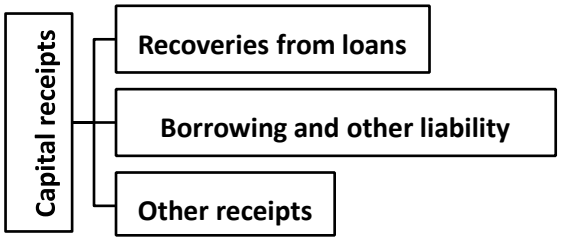
Examples of Non-Tax Revenue

a. **Commercial Revenue:** Examples: Payments for Postage, Tolls, and Interest on Funds borrowed from government credit corporations, electricity, and railway services.
b. **Administrative Revenue:** Examples: Fees, fines, penalties, etc.
c. **Gifts and Grants**

Revenue Expenditure

An expenditure that does not result in the creation of assets or a reduction of liability is treated as a revenue expenditure. Such expenditures are incurred for the normal running of the government. For example, expenditures such as salaries, pensions, interest, subsidies, etc.

Capital Budget is divided in to two: Capital receipts and Capital expenditure Capital Receipts



Any receipt that either creates a liability or leads to a reduction in assets is called a capital receipt.

Recoveries from Loans

It includes the recovery of loans granted by the central government to the state government. It is a capital receipt because it reduces the financial assets of the government.

Borrowing and other Liability

The funds raised from borrowings are treated as capital receipts.

Other Receipts

Other receipts include capital receipts from disinvestments of government shares in a public sector unit.

Capital Expenditure

An expenditure that leads to the creation of assets or a reduction of liability is treated as a capital expenditure. Purchases of land, buildings, machines, etc. are examples of capital expenditure. ***It includes plan expenditures and non-plan expenditures***.

Developmental and Non-Developmental Expenditure

Expenditure on activities that are directly related to the economic and social development of a country is called developmental expenditure. Expenditures on industry, agriculture, education, health, social welfare, etc. are examples of developmental expenditures.

Expenditure on essential general services of the government is called non-developmental expenditure. Expenditure on defence and administration are examples of non-developmental expenditure. Non-developmental expenditure is an essential part of the development process.

Balanced, Surplus and Deficit Budgets

Balanced Budget

It is one where the estimated revenue equals the estimated expenditure.

Surplus Budget

It is one where the estimated revenue is greater than the estimated expenditures.

Deficit Budget

It is one where the estimated revenue is less than the estimated expenditure

Different Concepts of Budget Deficit

Budgetary Deficit

It is the total receipts minus the total expenditure of the government on both revenue and capital accounts. ***Budgetary Deficit = Total Budget Receipts minus Total Budget Expenditure***

Revenue Deficit

The revenue deficit is the excess of the government's revenue expenditure over revenue receipts. ***Revenue Deficit = Revenue Receipts – Revenue Expenditure***

Fiscal Deficit

It is the budgetary deficit plus borrowing and other liabilities. The significance of the fiscal deficit is that it is a measure of the total borrowing requirements of the government.

Primary Deficit

It is the difference between fiscal deficit and interest payments

Fiscal Deficit and its Problems

The fiscal deficit creates many problems in the economy. Government liability in the future increases because it is necessary to pay the interest and repay the loan. Payment of interest increases revenue expenditure. Increases in revenue expenditure may lead to a revenue deficit.

This may further lead to more borrowing and higher interest payments. This creates a vicious circle. The government should try to reduce the fiscal deficit.

Three Levels Budget Impacts on the Economy

Aggregate Fiscal Discipline

This means having control over expenditures, given the quantum of revenues. This is necessary for proper macro-economic performance.

Allocation of Resources

The allocation of resources is based on social priorities.

Effective and Efficient Provision of Programme

Effectiveness measures the extent to which goods and services the government provides to achieve its goals.

Balanced Budget Multiplier

A balanced budget means a change in government expenditure (ΔG) is exactly matched by a change in taxes (ΔT). The expansionary effect of a balanced budget is called the balanced budget multiplier, or unit multiplier. Here, an increase in government spending matched by an increase in taxes results in a net increase in income by the same amount. $\Delta Y = \Delta T = \Delta G$

Tax Multiplier

The tax multiplier is the ratio between changes in income and changes in tax. The tax multiplier is a negative multiplier. If the amount of lump sum tax decreases, equilibrium income will increase. If the lump sum tax increases, equilibrium income will decrease.

$$\text{Tax multiplier} = \frac{\delta Y}{\delta T} = \frac{-c}{1-c}$$

Goods and Service Tax (GST)

Goods and Service Tax (GST) is the single comprehensive indirect tax, operational from July 1, 2017, on the supply of goods and services, right from the manufacturer or service provider to the consumer. It is applicable throughout the country with one rate for one type of goods or service. It has amalgamated a large number of central and state taxes and cesses. It has replaced a large number of taxes on goods and services levied on the production, sale, or provision of services.

It has replaced various types of taxes/cesses, levied by the central and state/UT governments. Some of the major taxes that were levied by the Centre were Central Excise Duty, Service Tax, Central Sales Tax, Cesses, Taxes on Advertisements, Taxes on Lottery, Betting, Gambling, State Cesses on Goods, etc. These have been subsumed in GST. Five petroleum products have been kept out of GST for the time being, but with the passage of time, they will become subject to GST. State governments will continue to levy VAT on alcoholic liquor for human consumption. Tobacco and tobacco products will attract both GST and Central Excise Duty.

Under GST, there are six (six) standard rates applied, i.e., 0%, 5%, 12%, 18%, and 28%, on the supply of all goods and/or services across the country.

Salient Features of GST

1. **One Nation, One Tax:** Numerous indirect taxes, including value-added tax (VAT), excise duty, and service tax, were superseded by the GST imposed by the Central and State Governments. It eliminated the cascading effect of taxes and brought uniformity to the tax structure throughout India.
2. **Dual Structure:** Two distinct taxation regimes are used to administer GST: the Central

Government's (CGST) and the State Governments' (SGST) levies.

3. **Destination-based Tax:** GST is a destination-based tax that is applied to every transaction in the supply chain, from the producer to the final customer.
4. **Input Tax Credit (ITC):** Under the GST, businesses can use input tax credit to claim a credit for the taxes they have paid on inputs used in the production or provision of goods and services. In addition to lowering the total tax liability, this helps prevent double taxation.
5. **Everything that is sold for human consumption would be subject to GST, with the exception of alcohol.**
6. **Increased Compliance and Transparency:** GST aims to enhance tax compliance by bringing more businesses into the formal economy. The transparent nature of the tax system, with the digitization of processes and electronic records, helps in curbing tax evasion and increasing transparency.

PRACTICE QUESTIONS

1. Which of the following is an indirect tax? {a. excise duty; b. sales tax; c. customs duty; d. all of these}
2. Explain the function of the government budget.
3. Explain the objectives of the government budget.
4. When revenue is greater than expenditure, the budget is...
5. Receipts and expenditures of the central government are given below: Revenue Receipts: 5250 crores; Revenue Expenditure: 6200 crores; Borrowing: 1700 crores; Capital Receipts: 1800 crores; and Capital Expenditure: 850 crores. Calculate a. gross fiscal deficit and b. revenue deficit.
6. Explain the components of the government budget.
7. Which of the following is tax revenue.? {a. Fees, b. Fine c. GST and d. Profit}
8. Explain the components of fiscal policy.
9. Distinguish between revenue expenditure and capital expenditure.
10. Primary deficit = fiscal deficit...
11. Calculate the fiscal and primary deficits. Explain the terms briefly.
12. Classify the following items and arrange them under the proper headings: {Fees, Income Tax, Fines, Estate Duty, GST, VAT, Dividends, and Wealth Tax.}
13. An example of government capital receipt is__{a. subsidies; b. pension; c. salary; and d. income from disinvestment.}
14. The financial year in India is {a.1st January to 31 December, b.1st July to 30 June, c.1st April to 31st March, and d.1st October to 30th September.}

15. If revenue < expenditure, the situation is {a. balanced budget, b. surplus budget, c. deficit budget, and d. revenue budget}

16. If the revenue of the government is more than expenditure, the budget is known as _____.

17. Income tax is an example of_____{a. direct tax, b. indirect tax, c. corporate tax, and d. customs duty}

18. Calculate the revenue deficit, fiscal deficit, and primary deficit from the budget details.

Revenue Receipts	4773
Capital Receipts	3443
Borrowings	3140
Revenue Expenditure	8064
Capital Expenditure	152
Interest payments	1195
Total Expenditure	9216

19. Fill in the blanks.

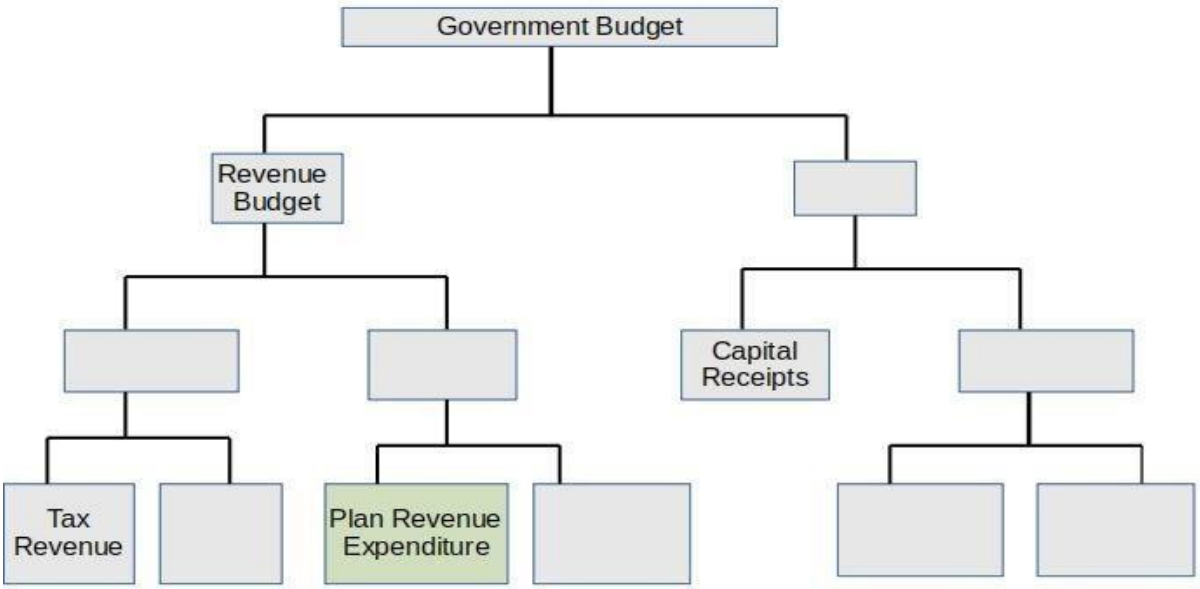
    a. Revenue deficit = revenue expenditure minus

    b. Fiscal deficit = _____minus total receipts excluding borrowing.

    c. = fiscal deficit minus net interest payments.

20. Explain the difference between revenue receipt and capital receipt.

21. Complete the chart.



OPEN ECONOMY MACRO ECONOMICS

Open economy is a country which has economic relations with the rest of the world here Y=C+I+G+(X-M) while closed economy is a country which has no economic relations with the rest of the world Here Y= C+I+G

All modern economies are open economies. There are three ways in which these linkages are established. **Output Market:**

An economy can trade in goods and services with other countries. This widens choice in the sense that consumers and producers can choose between domestic and foreign goods.

Financial Market

Most often, an economy can buy financial assets from other countries. This gives investors the opportunity to choose between domestic and foreign assets.

Labour Market

Firms can choose where to locate production and workers to choose where to work. There are various immigration laws which restrict the movement of labour between countries. **Balance of Trade & Balance of Payments**

Balance of Trade

The balance of trade is the difference between the money value of exports and imports of material goods (visible items).

Balance of Payments

A balance of payments is a systematic record of all economic transactions between the residents of a country and the residents of foreign countries during a given period of time. It includes both visible and invisible items. The balance of payments gives a better picture of a country's economic transactions with the rest of the world than the balance of trade. **Accounts of Balance of Payments:**

Current Account

The current account records the export and import of goods and services and unilateral transfers.

Capital Account

It records all such transactions between normal residents of a country and the rest of the world that relate to the sale and purchase of foreign assets and liabilities during an accounting year.

Components of Current Account	Components of Capital Account
Visible items (import and export of goods).	Foreign Direct investment.
Invisible items (import and export of services).	Loans.
Unilateral transfers.	Portfolio investment.
Income receipts and payments from and to abroad.	Banking capital transactions.
These are the transactions which do not affect the assets or liabilities position of the country.	These are the transactions which affect assets or liabilities position of the country.
It is a flow concept.	It is a stock concept.

Autonomous Items

Autonomous items are those items of balance of payment that are related to such transactions and are determined by the motive of profit maximisation and not to maintain equilibrium in balance of payments. These items are recorded as a first item before calculating the deficit or surplus in the balance of payment a/c. These items are generally called ***'above the line items'*** in the balance of payment.

Accommodating Item

It refers to transactions that take place because of other activity in Balance of Payment. These transactions are meant to restore the Balance of Payment identity. These items are generally called ***'Below the Line items.***

Deficit of BOP Account

When total inflows of foreign exchange on account of autonomous transactions are less than total outflows on account, such transaction then there is a deficit in BOP.

Official Reserve Sale

Official reserve transactions refer to transactions by the central bank that cause changes in its official, reserves of foreign exchange. Such transactions take place when a country withdraws from its stock of foreign exchange reserves to finance deficit in its overall balance of payments (BOP). The official reserve is a country's holdings of gold reserves, special drawing rights, and tradable foreign currency.

Errors and Omissions

It is difficult to record all international transactions accurately. Thus, we have a third element of BOP (apart from the current and capital accounts) called errors and omissions which reflects this.

Foreign Exchange Rate

It refers to the rate at which one unit of currency of a country can be exchanged for the number of units of currency of another country. In simple words, we can say that the price of one currency in terms of other currency is known as foreign exchange rate or exchange rate.

System of Exchange Rate

Fixed Exchange Rate

Under a fixed exchange rate system, the nation's government or monetary authority sets the official exchange rate.

Merits of Fixed Exchange Rate

1. Stability in exchange rate
2. Promotes capital movement and international trade.
3. No scope for speculation
4. It forces the govt. to keep inflation in check.
5. Attracts foreign capital.

Demerits of Fixed Exchange Rate

1. Need to hold foreign exchange reserves.
2. There is no automatic adjustment in the 'balance of payments.' 3. It may result in the undervaluation or overvaluation of currency.
4. It undermines the purpose of free markets.

Flexible Exchange Rate

In the system of flexible exchange rates (also known as floating exchange rates), the exchange rate is determined by the forces of market demand and supply of foreign exchange. The demand of foreign exchange has the inverse relation with flexible exchange rate. If the flexible exchange rate increases, the demand for foreign exchange falls and vice versa.

Sources of Demand for Foreign Exchange

1. To purchase goods and services from the rest of the world.
2. To purchase financial assets (i.e., to invest in bonds and equity shares) in a foreign country.
3. To invest directly in shops, factories, and buildings in foreign countries.
4. To send gifts and grants abroad.
5. To speculate on the value of foreign currency.
6. To undertake foreign tours.

Sources of Supply of Foreign Exchange

The supply of foreign exchange has a positive relationship with the foreign exchange rate. If the foreign exchange rate rises, the supply of foreign exchange also rises, and vice versa.

1. Direct purchases by foreigners in the domestic market.
2. Direct investment by foreigners in the domestic market.
3. Remittances by non-residents living abroad.
4. Flow of foreign exchange due to speculative purchases by N.R.I.
5. Exports of goods and services. 6. Foreign direct investment as well as portfolio investment from the rest of the world.

Merits of Flexible Exchange Rate

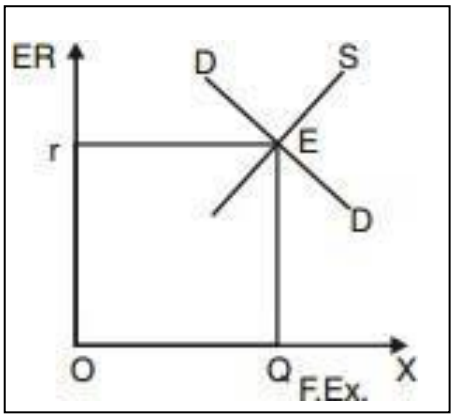
1. There is no need to hold foreign exchange reserves.
2. Leads to an automatic adjustment in the 'balance of payments.
3. To enhance efficiency in resource allocation.
4. To remove obstacles in the transfer of capital and trade.
5. It eliminates the problem of undervaluation or overvaluation of currency.
6. It promotes venture capital in the form of foreign exchange.

Demerits of Flexible Exchange Rate

1. Fluctuations in the future exchange rate.
2. Encourages speculation.
3. Discourages international trade and investment.
4. It creates a situation of market instability.

Determination of Equilibrium Foreign Exchange Rate:

Equilibrium FER is the rate at which demand for and supply of foreign exchange are equal. Under a free market situation, it is determined by market forces, i.e., demand for and supply of foreign exchange. There is an inverse relationship between demand for foreign exchange and the exchange rate. There is a direct relationship between the supply of foreign exchange and the exchange rate. Due to the above reasons, demand curve is downward sloping and supply curve is upward sloping. The graphic intersection of the demand curve and the supply curve determines the equilibrium foreign exchange rate.



Devaluation of a currency

When the government or monetary authority of a country officially lowers the external value of its domestic currency (in respect of all other foreign currencies), this is called devaluation of a currency. It takes place by government order under a fixed exchange rate system.

Revaluation of a currency

When the government or monetary authority of a country officially raises the external value of its domestic currency, this is called revaluation. It takes place by government order under a fixed exchange rate system.

Currency Depreciation

In currency depreciation, there is a fall in the value of domestic currency in terms of foreign currency due to changes in demand and supply of the currency under a flexible exchange rate system.

Currency Appreciation

In currency appreciation, there is a rise in the value of domestic currency in terms of foreign currency due to changes in demand and supply of the currency under a flexible exchange rate system.

Managed Floating System

A managed floating system is a system in which the central bank allows the exchange rate to be determined by market forces but intervenes at times to influence the rate. When the central bank finds the rate too high, it starts selling foreign exchange from its reserve to bring it down. When it finds the rate is too low. It starts buying to raise the rate.

PRACTICE QUESTIONS

1. How does the balance of payment differ from the balance of trade? List the two accounts in Balance of Payment.
2. Trade deficit is... {a. export = import; b. demand = supply; c. import > export; and d. export = import}
3. Fill in the following blanks with suitable economic terms:

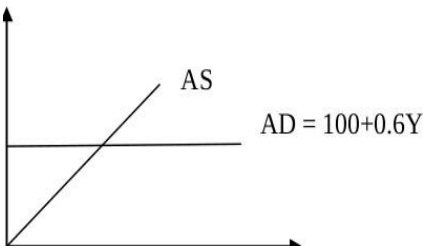
Conditions	**Economic term**
Export > import	
Export = import	
Export < import	

4. What do you mean by the exchange rate? Prepare a short note on the different types of exchange rate systems.
5. The value of domestic currency increases due to market forces and is called... {a. depreciation, b. revaluation, c. appreciation, and d. devaluation}
6. Which of the following is not included in the current account. {a. trade in goods; b. trade in services; c. transfer payments; and d. investment}
7. Explain the different systems of exchange rate determination.
8. Differentiate between the fixed exchange rate system and the flexible exchange rate system.
9. Purchasing power parity is equal to... {a. Real Exchange Rate is 1; b. Real Exchange Rate<1; c. Real Exchange Rate>1; and d. Real Exchange Rate is 0}

10. Give a brief account of the methods for determining the exchange rate.
11. Distinguish between the nominal exchange rate and the real exchange rate. If you were to decide whether to buy domestic goods or foreign goods, which rate would be more relevant? Explain
12. Differentiate between Balance of Payment (BOP) and Balance of Trade (BOT).

Additional Questions (Mixed)

1. Diagrammatically explain circular flow in a two-sector model.
2. Explain the following concepts: a. appreciation and depreciation; and b. devaluation and revaluation.
3. Explain the functions of money.
4. Is GDP a good indicator of the welfare of an economy?
5. List out the objectives of the budget.
6. The central bank is the monetary authority of a country. How does the Central Bank function as a monetary authority?
7. The most important role of the RBI is credit creation and control of the money supply. Explain the instruments that the RBI uses for conducting monetary policy.
8. What are the components of aggregate demand? Explain.
9. What is the difference between a flexible and a fixed exchange rate?
10. What is the public good? And state the features of public goods.
11. Write a note on the emergence of macroeconomics.
12. Write any two linkages of international trade
13. Write down the difference between consumer goods and capital goods with an example
14. What are the three functions of the Central Bank of India?
15. Visible and invisible items included are {a. BOP, b. BOT, c. PPP, and d. None of these}
16. Non rivalry and non-excludability are features of: {a. public good; b. private good; c. both a, & b, and d. none of these}
17. The Reserve Bank of India controls the money supply in the country through its instruments. How?
18. A hypothetical aggregate demand function is given below,



When MPC increased to 0.80, show it diagrammatically and explain the changes in equilibrium income.

Questions for Viva – Macro Economics (Mixed)

1. What is demonetisation?
2. What is the meaning of the minimum reserve system?
3. What is black money?

4. What do you mean by a cashless economy?
5. What does GST stand for?
6. What does IGST stand for?
7. Diffentiate between disinvestment and privatisation.
8. What is the repo rate?
9. What is the reverse repo rate?
10. What is a central bank?
11. Why is the is the central bank called the lender of last resort?
12. Where is the head office of the Reserve Bank of India located?
13. What is called high-powered money?
14. Differentiate between capital goods and consumer goods.
15. What is the problem with double counting?
16. Who wrote the book ‘The General Theory of Employment, Interest, and Money’
17. What is the method of study in macroeconomics?
18. What is ‘The Wall Street Crash of 1929'?
19. What are economic agents?
20. Distinguish between final good and intermediate good
21. Distinguish between stock and flow variables
22. What is the meaning of normal wear and tear?
23. What is the meaning of obsolescence?
24. What is Domestic territory or Economic territory?
25. Who is a Normal Resident?
26. What do you mean by the concept Value Added**?**
27. Distinguish between Factor Payment and Transfer Payment
28. What is Operating surplus?
29. Distinguish between closed economy & open economy
30. Distinguish between money flow and real flow.