STUDY MATERIAL ECONOMICS (030) 2017-18

CLASS XII

Rationale Behind teaching Economics

Economics is a subject of study which influences every human being.

- As economic life and the economy go through changes, there is the need to develop concepts through children's own experiences.
- While doing so, it is essential provide the children the opportunities to acquire analytical skills to observe and understand the economic realities.
- The children must be in a position to understand the concept ideas, exercise the power of thinking and to develop their own perception.

- Understanding of some basic economic concepts and development of economic reasoning which the children can apply in their day-to-day life as citizens, workers and consumers.
- Realisation of learners' role in nation building and sensitivity to the economic issues that the nation is facing today.
- Equip with basic tools of economics and statistics to analyse economic issues. This is pertinent for even those who may not pursue this course beyond senior secondary stage.
- Development of understanding that there can be more than one view on any economic issue and necessary skills to argue logically with reasoning.

SYLLABUS (2016-17)

CLASS - XII (2017-18) 100 Marks 3 Hours

UNITS		MARKS	NO. OF PERIODS
Part 1	**MICRO ECONOMICS**		
	Introduction	6	**11**
	Consumer's Equilibrium & Demand	16	**34**
	Producer Behaviour & Supply	16	**34**
	Forms of market & Price determination	12	**31**
Part 2	**MACRO ECONOMICS**		
	National Income & Related Aggregates	15	**32**
	Money & Banking	8	**18**
	Determination of Income & Employment	12	**27**
	Government Budget & Economy	8	**17**
	Balance of Payments	7	**16**
		100	**220**

Part A: Introductory Microeconomics

Unit 1: Introduction- Meaning of microeconomics and macroeconomics, positive and normative economics What is an economy? Central problems of an economy: what, how and for whom to produce; concepts of production possibility frontier and opportunity cost.

Unit 2: Consumer's Equilibrium and Demand: Consumer's equilibrium - meaning of utility, marginal utility, law of diminishing marginal utility,conditions of consumer's equilibrium using marginal utility analysis.Indifference curve analysis of consumer's equilibrium -the consumer's budget (budget set and budget line), preferences of the consumer (indifference curve, indifference map) and conditionsof consumer's equilibrium.

Demand, market demand, determinants of demand, demand schedule, demand curve and its slope, movement along and shifts in the demand curve; price elasticity of demand – factors affecting price elasticity of demand; measurement of price elasticity of demand - (a) percentage change method and (b) geometric method (linear demand curve); relationship between price elasticity of demand and total expenditure.

Unit 3: Producer Behaviour and Supply

Production function – Short-Run and Long-Run -Total Product, Average Product and Marginal Product. Returns to a FactorCost: Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed

cost, average variable cost and marginal cost-meaning and their relationships. Revenue - total, average and marginal revenue - meaning and their relationships. Producer's equilibrium-meaning and its conditions in terms of marginal revenue-marginal cost.

Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply - (a) percentage-change method and (b) geometric method.

Unit 4: Forms of Market and Price Determination under Perfect Competition with simple applications

- Perfect competition - Features; Determination of market equilibrium and effects of shifts in

demand and supply. Other Market Forms - monopoly, monopolistic competition, oligopoly - their meaning and features. Simple Applications of Demand and Supply: Price ceiling, price floor.

Part B: Introductory Macroeconomics

Unit 5: National Income and Related Aggregates

Some basic concepts: consumption goods, capital goods, final goods, intermediate goods; stocks and flows; gross investment and depreciation.Circular flow of income; Methods of calculating National Income - Value Added or Product method, Expenditure method, Income method. Aggregates related to National Income:

Gross National Product (GNP), Net National Product (NNP), Gross and Net Domestic Product (GDP and NDP) - at market price, at factor cost; National Disposable Income (gross and net), Private Income, Personal Income and Personal Disposable Income; Real and Nominal GDP. GDP and Welfare

Unit 6: Money and Banking

Money - its meaning and functions. Supply of money - Currency held by the public and net demand deposits held by commercial banks. Money creation by the commercial banking system. Central bank and its functions (example of the Reserve Bank of India): Bank of issue, Govt. Bank, Banker's Bank, Controller of Credit through Bank Rate, CRR, SLR, Repo Rate and Reverse Repo Rate, Open Market Operations, Margin requirement.

Unit 7: Determination of Income and Employment

Aggregate demand and its components.Propensity to consume and propensity to save (average and marginal). Short-run equilibrium output; investment multiplier and its mechanism. Meaning of full employment and involuntary unemployment. Problems of excess demand and deficient demand; measures to correct them - changes in government spending, taxes and money supply.

Unit 8: Government Budget and the Economy

Government budget - meaning, objectives and components , Classification of receipts - revenue receipts and capital receipts; classification of expenditure –revenue expenditure and capital expenditure. Measures of government deficit - revenue deficit, fiscal deficit, primary deficit their meaning.

Unit 9: Balance of Payments

Balance of payments account - meaning and components; balance of payments deficit-meaning.Foreign exchange rate - meaning of fixed and flexible rates and managed floating.Determination of exchange rate in a free market.

Suggested Question Paper Design

Economics (Code No. 030) Class XII (2017-18) March 2017 Examination

Theory: 100 marks Marks Duration: 3 hrs.

S.N.	TYPES OF QUESTIONS	VSA MCQ 1 mark	SA I 3 marks	SA 2 4 marks	LA 6 marks	MARKS	%
1	Remembering – (knowledge – Simple recall questions, meaning, terms, concepts, principles, theories, identify information)	2	1	2	2	25	25%
2	Understanding – (Comprehension to be familiar with meaning & to understand conceptually, Interpret, compare, contrast, explain, paraphrase, or interpret information)	3	2	1	2	25	25%
3	Application (Use abstract information in concrete situation, to apply knowledge to new situations, use given content to interpret a situation, provide an example, solve a problem)	3	1	2	1	20	20%
4	HOT skills: (Analysing & synthesis – classify, compare, contrast, differentiate between different between different pieces of information from variety of sources)	1	1	1	2	20	20%
5	Evaluation (Appraise, Judge, justify, value or worth of a decision or outcomes based on values)	1	1	-	-	1	10%
6		10X1=10	6X3=18	6X4=24	8X6=48	100 (30)	100%

Amendments in Study Material - Microeconomics

Page 1: Front page: Change 2016-17 to 2017-18

Page 2: Design of question paper: Change according to latest design provided by CBSE

Modify marks distribution according to the latest scheme

Page 3: Under unit 2- delete (b) geometric method (linear demand curve); relationship between price elasticity of demand and total expenditure.

Under unit 3- delete (b) geometric method.

In Part B under Unit 5- delete National Disposable Income (gross and net), Private Income, Personal Income and Personal Disposable Income

Under Unit 6- 'Money and Banking: functions of money deleted.

Study Material ---- Micro Economics

Page 21: Delete 'Measuring elasticity of demand' and Point 2 'Total outlay or Expenditure Method'

Page 22: Delete point no. iii Geometric method

Page 25: Delete 'Law of return to scale: Long run productive function (Non-evaluative)'

Page 38 : Delete Geometric Method

Question Bank (Micro)

Page 30: Delete Question no. 7

Page 31: Delete Question no. 13

Page 32: Delete Question no. 19

Page 32: Delete Question no. 20

Page 39: Delete Point 2: Total Expenditure Method

Page 42: Delete Question no. 15

Page 44: Delete Question no. 19, 20, 21, 22, 23

Page 45: Delete Question no. 27

Part A : Introductory Microeconomics

Unit 1: Introduction

Meaning of microeconomics and macroeconomics, Positive and Normative economics

What is an economy? Central problems of an economy: what, how and for whom to produce; concepts of production possibility frontier and opportunity cost.

1) What is Micro &Macro Economics?

Ans: Micro Economics is a branch of Economics which studies the behaviour of individual units of an economy. Example: a producer, a consumer, a firm, an industry, demand of a consumer, market supply of a good etc.

Macro Economics is a branch of economics which studies the economy as a whole. Example: Aggregate Demand, Aggregate Supply, General Price level, Gross investment etc.

2) Distinguish between Micro & Macro Economics.

	Points of Difference	Microeconomics	Macroeconomics
1	Study matters	It studies about individual economic units like households, firms, consumers, etc.	It studies about an economy as a whole.
2	Deals with	It deals with how consumers or producers make their decisions depending on their given budget and other variables.	It deals with how different economic sectors such as households, industries, government and foreign sector make their decisions.
3	Method	It uses the method of partial equilibrium, i.e. equilibrium in one market.	It uses the method of general equilibrium, i.e. equilibrium in all markets of an economy as a whole.
4	Variables	The major microeconomic variables are price, individual consumer's demand, wages, rent, profit, revenues, etc.	The major macroeconomic variables are aggregate price, aggregate demand, aggregate supply, inflation, unemployment, etc.
5	Theories studied under the branch of Economics	1) Theory of Consumer's Behaviour and Demand 2) Theory of Producer's Behaviour and Supply 3) Theory of Price Determination under Different Market Conditions	1) Theory of National Income 2) Theory of Money 3) Theory of General Price Level 4) Theory of Employment

3) What is an economic problem? Define Economy

Ans: Economic Problem is the **problem of choice** of unlimited wants and limited resources having alternative uses.

Economy is a system by which people get a living and satisfy their wants.

4) How does economic problem arise?

Ans: Economic Problem arises due to **Scarcity of resources**.(Scarcity means goods are not free & society does not have enough of the goods to satisfy the wants of its people.)

- Human **wants are unlimited** – If we fulfil one need another arises. Needs never end.
- **Resources** to fulfil these needs are **limited.**
- Therefore there is a need to **'economise the resources**'. Economising the resource does not mean being miser, it means reducing wastage of resource & using them to their best possible efficiency.
- These resources have **alternative uses,** therefore there is a **need to choose** among these alternative uses. This is problem of choice.

5) Explain the economic problem with the help of an example.

Ans: Suppose there is a lot of power cuts in the summers. A person has an inverter which is charged. This is **limited resource**. He has many **alternative uses** of it like watching T.V. running fans, tube light/ bulbs for studying, cooking and other no. of works. If resource is limited the main problem is to **choose** among these alternative uses. If there is no scarcity of resource there will be no economic problem.

6) What is meant by Scarcity of Resources?

Ans. It is a situation when the requirement of goods and services exceeds their availability so that goods acquire market value or price. Since the requirement of goods and services does not match the supply the scarcity arises. Greater the Scarcity higher will be the prices.

7) What are central problems of an economy?

Ans: There are three central problems:

i) Problem of **allocation of resources**
   a) **What** to Produce & in what quantity?
   b) **How** to produce?
   c) **For** whom to produce?

ii) Problem of **efficient utilisation** of resources/ best utilisation

iii) Problem of **growth** of resources.

i)Allocation of Resources :

Allocation of resources refers to the problem of assigning the scarce resources in such a manner so that maximum wants of the society are fulfilled. As resources are limited in relation to the unlimited wants, it is important to economize their use and utilize them in the most efficient manner.

The problem of allocation of resources is studied under 3 heads:

(1) What to produce & in what quantities?

(2) How to produce?

(3) For whom to produce?

An economy has to allocate its resources and choose from different potential bundles of goods (What to produce), select from different techniques of production (How to produce), and decide in the end, who will consume the goods (For whom to produce).

1. Problem Of "What to Produce & in what quantities"? (Problem Of "What")

This problem involves selection of goods and services to be produced and the quantity to be produced of each selected commodity. Every economy has limited resources and thus, cannot produce all the goods. More of one good or service usually means less of others.

For example, production of more sugar is possible only by reducing the production of other goods if resources are limited. Production of more war goods is possible only by reducing the production of civil goods. So, on the basis of the importance of various goods, an economy has to decide which goods should be produced and in what quantities. This is a problem of allocation of resources among different goods.

The problem of 'What' has two aspects:

(i) What possible commodities to produce? : An economy has to decide, which consumer goods (rice, wheat, clothes, etc.) and which of the capital goods (machinery, equipment's, etc.) are to be produced. In the same way, economy has to make a choice between civil goods (bread, butter, etc.) and war goods (guns, tanks, etc.). Demand, Supply & Price decides the solution of the problem of 'what'. If Demand exceeds Supply of a good its price rises & it becomes profitable for the producer to produce, thus producer will produce it.

(ii) How much to produce: After deciding the goods to be produced, economy has to decide the quantity of each commodity that is selected. It means, if involves a decision regarding the quantity to be produced, of consumer and capital goods, civil and war goods and so on.

Guiding Principle of 'What to Produce & in what quantities': Allocate the resources in a manner which gives maximum aggregate satisfaction.

2. Problem of "How to Produce"? (Problem of "How")

This problem refers to selection of technique to be used for production of goods and services. Generally, techniques are classified as: Labour intensive techniques (LIT) and Capital intensive techniques (CIT).

i. In Labour intensive technique, more labour and less capital (in the form of machines, etc.) is used.

ii. In Capital intensive technique, there is more capital and less labour utilization.

For example, textiles can be produced either with a lot of labour and a little capital or with less labour and more capital. Availability of factors and their relative prices helps in determining the technique to be used. The selection of technique is made with a view to achieve the objective of raising the standard of living of people and to provide employment to everyone. For example, in India, LIT is preferred due to abundance of labour, whereas, countries like U.S.A., England, etc. prefer CIT due to shortage of labour and abundance of capital.

Guiding Principle of 'How to Produce': Combine factors of production in such a manner so that maximum output is produced at minimum cost, using least possible scarce resources.

3. Problem of "For Whom to Produce"? (Problem of " Whom")

This problem is the problem of distribution of national income among various factor of production. It refers to selection of the category of people who will ultimately consume the goods, i.e. whether to produce goods for poorer and less rich or richer and less poor. Since resources are scarce in every economy, no society can satisfy all the wants of its people. Thus, a problem of choice arises.

Goods are produced for those people who have the paying capacity. The capacity of people to pay for goods depends upon their level of income. It means, this problem is concerned with distribution of income among the factors of production (land, labour, capital and enterprise), who contribute in the production process.

The problem can be categorised under two main heads:

(i) Personal Distribution:

It means how national income of an economy is distributed among different groups of people.

(ii) Functional Distribution:

It involves deciding the share of different factors of production in the total national product of the country. Guiding Principle of for whom to 'produce': Ensure that urgent wants of each productive factor are fulfilled to the maximum possible extent.

It must be noted that in addition to 'Allocation of Resources', there are two more Central Problems:

(Not in syllabus)

(i) **Problem of fuller and efficient utilisation of resources:** The problem of all economic efficiency

Resources are scarce and it is important to use them as efficiently as possible. Thus, it is essential to know if the production and distribution of national product made by an economy is maximally efficient. The production becomes efficient only if the productive resources are utilised in such a way that any reallocation does not produce more of one good without reducing the output of any other good; in other words, "efficient distribution" means that any redistribution of goods cannot make anyone better off without making someone else worse off.

The inefficiencies of production and distribution exist in all types of economies. The welfare of the people can be increased if these inefficiencies are ruled out. Some cost will have to be incurred to remove these inefficiencies. If the cost of removing these inefficiencies of production and distribution is more than the gain, then it is not worthwhile to remove them.

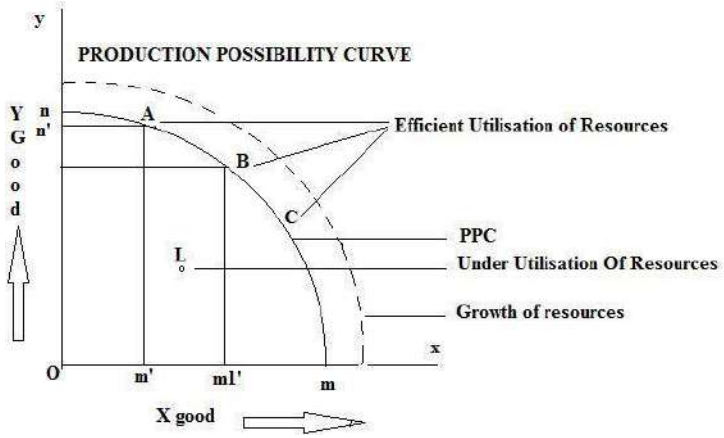
(ii) **Problem of Growth of resources**. If the productive capacity of the economy grows, it will be able to produce progressively more goods, which will result in a rise in the standard of living of the people in that economy. The increase in productive capacity of an economy is called economic growth. There are various factors affecting economic growth. The problems of economic growth have been discussed by numerous growth models, including the Harrod- Domar model, the neoclassical growth models of Solow and Swan, and the Cambridge growth models of Kaldor and Joan Robinson. This part of economic problem is studied in the economies of development.

8) What is Production Possibility curve?

PPC is a boundary line which shows all possible combination of two goods which can be produced by maximum utilisation of given resources and technology at a given period of time.

Suppose there are two goods produced in an economy X & Y. Production technique & resources are given, so production possibilities can be shown through the following Schedule:

Production possibilities	X good	Y good
A	1	20
B	2	18
C	3	15
D	4	11
E	5	6
F	6	0



Nm is PPC – concave to the origin

ABC on PPC show efficient utilisation of resources

L point shows under utilisation of resources

Rightward shift of PPC by dotted line shows growth of resources.

9) What are the assumptions of drawing PPC?

1. The resources available are fixed.
2. The technology remains unchanged.
3. The resources are fully employed.
4. The resources are efficiently employed.
5. Economy can produce only two goods
6. The resources are not equally efficient in production of all products. Thus if resources are transferred from production of one good to another, the cost increases. In other words marginal opportunity cost increases.

The last assumption needs explanation because it determines the shape of the PP curve. If this assumption changes, the shape changes.

Efficiency in production means productivity i.e. output per unit of an input. Let the input be worker. Suppose an economy produces only two goods X and Y. Suppose a worker is employed in production of X because he is best suited for it. The economy decides to reduce production of X and increase that of Y. The worker is transferred to Y. He is not that efficient in production of Y as he was in X. His productivity in Y will be low, and so cost of production high. The implication is clear. If the resources are transferred from one use to another, the less and less efficient resources will be transferred leading to rise in the **marginal opportunity cost** which is technically termed as **marginal rate of transformation** (MRT).

10) What is M**arginal Rate of Transformation (MRT)?**

The amount of good Y sacrificed in order to increase the production of one additional unit of good X is called as Marginal rate of transformation. We can also define MRT in general terms. MRT is the ratio of units of one good sacrificed to produce one more unit of the other good.

MRT = Units of good Y sacrificed / More units of good X produced

$MRT_{xy} = \Delta Y / \Delta X$

11) What are the Characteristics Of PPC?

A typical PP curve has two characteristics:

(1) Downward sloping from left to right

It implies that in order to produce more units of one good, some units of the other good must be sacrificed (because of limited resources).

(2) Concave to the origin

A concave downward sloping curve has an increasing slope. The slope is the same as MRT. So, concavity implies increasing MRT, an assumption on which the PP curve is based. Note that a typical PP curve is taken to be a concave curve because it is based on a more realistic assumption that no resource is equally efficient in production of all goods. So, when resources are transferred from Y to X, more and more units of Y are to be transferred to produce one more unit of X.

12) Can PP curve be a straight line?

Yes, if we assume that MRT is constant, i.e. slope is constant. When the slope is constant the curve must be a straight line. But when is MRT constant? It is constant if we assume that all the resources are equally efficient in production of all goods.

13) How are the central problems solved through PPC?

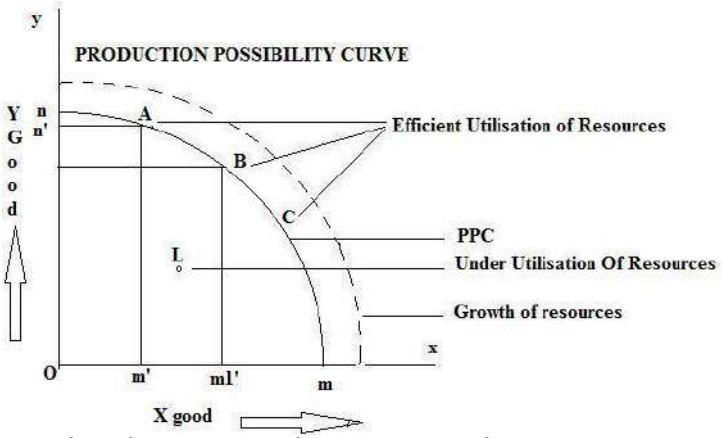
i) **Problem of what to produce & in what quantity**: is solved by selecting any point on PPC. If a producer selects point 'A' then he has decided to produce on' amount of Y & om' of Good x.

ii) **Problem of how to produce: is solved** before drawing PPC, as production technique is decided first.

iii) **For whom to produce** problem is not solved through PPC.

iv) **Best utilisation of resource :** problem is solved by producing on PPC. All the points on PPC show full utilisation of resource.

v) **Growth of resources:** When resources are increased, PPC shifts rightwards parallel to the previous PPC, showing increase in production potential.



Point ABC on PPC –shows efficient utilisation of resources

If A point is selected producer produces on' of Y & om' of X.

PPC shifts rightwards which shows growth of resources.

Q. What do you mean by Positive and Normative Economics?

Ans. **Positive Economics :** Positive economics deals with 'facts as they are'.

It deals with realistic situation 'What is, What was, and What will be',

These statements can be verified.

Example: There is poverty in India.

Normative Economics: Normative economics to the study of economic issues which involve value judgement.

It deals with idealistic situation 'What ought to be'.

These are suggestive in nature so can't verified.

Example: Rich persons should be taxed more.

Unit 2: Consumer's Equilibrium and Demand:

Consumer's equilibrium - meaning of utility, marginal utility, law of diminishing marginal utility,conditions of consumer's equilibrium using marginal utility analysis. Indifference curve analysis of consumer's equilibrium - the consumer's budget (budget set and budget line), preferences of the consumer (indifference curve, indifference map) and conditions of consumer's equilibrium.

Demand, market demand, determinants of demand, demand schedule, demand curve and its slope, movement along and shifts in the demand curve; price elasticity of demand – factors affecting price elasticity of demand; measurement of price elasticity of demand - (a) percentage change method and (b) geometric method (linear demand curve); relationship between price elasticity of demand and total expenditure.

CONSUMER'S EQUILIBRIUM (UTILITY ANALYSIS)

CONSUMER:- A consumer is one who purchases & uses goods and services for satisfaction of wants.

UTILITY:-The term utility means **want satisfying power** of a commodity. Commodity will possess utility only if it satisfies a want. Utility differs from person to person, place to place, and time to time.

EQUILIBRIUM:-Is a state of balance from where there is no tendency to change.

CONSUMER'S EQUILIBRIUM:- Consumer will be at equilibrium when he gets maximum satisfaction from spending his given income on various goods and services, given prices. There are two approaches to study the concept of consumer's equilibrium.

Cardinal Utility Approach : According to Professor Alfred Marshall Utility is measurable in terms of numerical values. Unit of measuring utility is 'Utils'. When utility is expressed in exact units (Utils), it is called cardinal utility. We get Utility analysis from cardinal approach.

Ordinal Utility Approach: According to Prof. Allen & Hicks Utility can't be measured in numeric values. Utility is measured in terms of psychological satisfaction & it can be put in the order of preference. When utility is expressed in ranks, it is ordinal utility. Sometimes when the consumer is unable to tell his preference he remains indifferent. Therefore we get Indifference Curve analysis.

MARGINAL UTILITY is the utility derived from one additional unit of a commodity or the last unit of a commodity purchased. It can also be defined as the addition to the total utility when one more unit of the commodity is consumed.

$MU = TUn - TUn\text{-}1$ or

TOTAL UTILITY is the sum of the utilities from all the units consumed.

$TU = \sum MU$

Law of Diminishing Marginal Utility (LDMU)

As a consumer consumes more & more units of a commodity, each successive unit consumed gives lesser and lesser satisfaction, after a point, i,e, marginal utility finally diminishes. It is termed as the Law of Diminishing Marginal Utility.

Explanation with the help of utility schedule

Units of an Ice Cream	Marginal Utility (MU)	Total Utility (TU)
1	20	20
2	16	36
3	10	46
4	4	50
5	0	50
6	-4	46

Here we observe that as more units are consumed marginal utility declines after a point. This is termed as the **law of diminishing marginal utility.** It is a psychological law, so it is also called as fundamental law of satisfaction/ fundamental psychological law.

Relationship Between Marginal Utility & Total Utility:

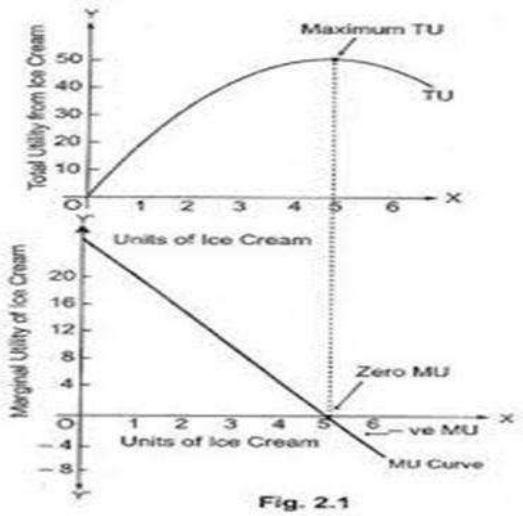


Fig. 2.1

Curve originating from zero is TU & downward sloping curve is MU curve.

Above schedule& curve shows the relationship, which is also depicted in diagram. Relationship is studied as :

i) When MU falls TU increases

ii) When MU is zero TU is Maximum iii) When MU is negative, TU falls

CONSUMER's EQUILIBRIUM (Cardinal approach- Utility Analysis)

A consumer is at equilibrium when he gets maximum satisfaction by spending his given income on purchase of good/goods**.** This can be studied in two ways:

<u>ONE COMMODITY CASE:</u> (How many units of a good to buy in order to get maximum satisfaction) In Case of single commodity a consumer attains equilibrium when

Mux = Px

Means - Marginal Utility derived from the consumption of last unit is equal to its price.

The consumer decides the level of equilibrium by comparing marginal utility (MU) with price (P).

If MU > P it means that the consumer is deriving more utility from the consumption of good x than the price paid by him, so he will buy more unit of X. As the consumer buys more, MU declines due to LDMU. The consumer stops increasing the units of X when MU becomes equal to price (i.e. MU = P).

If the consumer buys more units after MU = P, MU< P. Consumer will reduce the consumption of x. By reducing its demand its utility will increase due to LDMU till MU= P.

Explanation through Schedule & Curve:-

Quantity	Price (Rs)	Marginal Utility (Utils)	
1	10	20	Mux>Px (more consumption)
2	10	15	Mux>Px (more consumption)
3	10	10	Mux = Px (Equilibrium)
4	10	4	Mux <Px (Less consumption)
5	10	0	Mux <Px (Less consumption)
6	10	-1	Mux <Px (Less consumption)

Explanation with the help of Curve

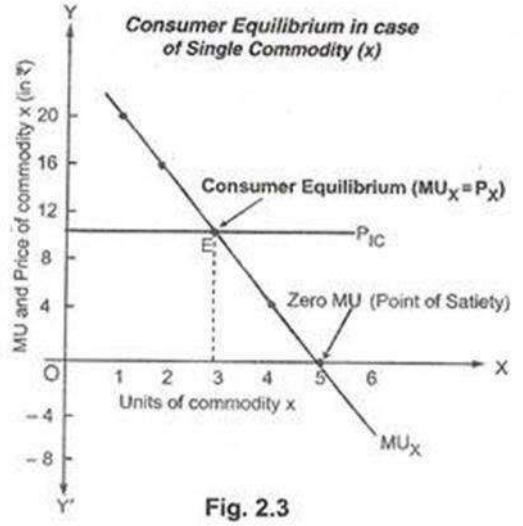


Fig. 2.3

It is clear from the above diagram that

When the consumer purchases the first unit, the utility that he gets is 20 utils worth Rs. 10. Will he buy the 1st unit? Obviously, yes, because he gets more than what he gives. Similarly, we compare the utility received from other units with the price paid. We find that he will buy 3 units as MU equals price here.

The condition for maximization of satisfaction when a good is purchased then is: MU = Price.

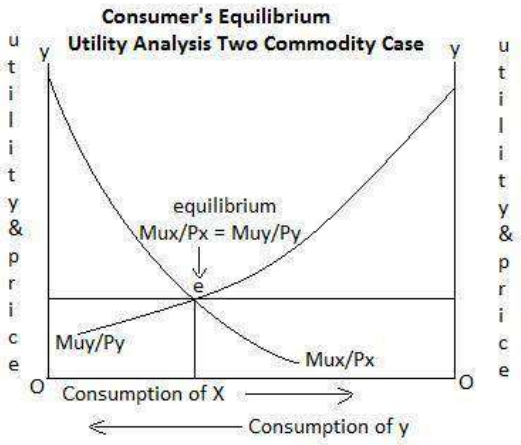
CONSUMER'S EQUILIBRIUM TWO COMMODITY CASE: (Law of equi marginal Utility)

The law states that the consumer maximises its satisfaction by spending his entire income on two or more goods. For simplification let us assume that the consumer buys only two goods x and y. Given income and prices, the consumer will be in equilibrium when the following two conditions are satisfied:

(1) Ratio Of MU & Price of a good is equal to the ratio of MU & price of another good & it is equal to the MU from the last rupee spent on each good.
Mux/ Px = MUy/ Py = MUm

(2) This is subject to budget constraint that money spent first equals income i.e.
Px.Qx + Py.Qy = M (Income)

Explanation through Curve:



Above diagram shows two curves Mux/ Px (left to right downwards) & MUy / Py curve , that intersect at point e which is equilibrium.

E= equilibrium point where consumer will get maximum satisfaction by spending his income in such a way that he gets the same utility from the last rupee spent on each good.

Consumer is satisfied when Mux/ Px = MUy/ Py = M.U. of a rupee spent on a good.

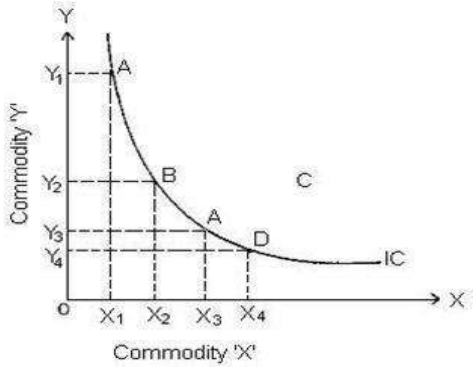
If the condition is not satisfied, what difference will it make? How is the equilibrium obtained?

Mux/ Px > MUy/Py - It means that per rupee MUx is higher than per rupee MUy. It further means that by transferring one rupee from Y to X, the consumer gains more utility than he loses. This prompts the consumer to transfer some expenditure from Y to X. Buying more of X reduces MUx, Px remaining unchanged, MUx/Px, i.e. per rupee MUx, is also reduced. Buying less of Y raises MUy. Py remaining unchanged it raises, per rupee MUy. The change continues till per rupee MUx becomes equal to per rupee MUy. In other words: Mux/ Px = MUy/Py = per rupee MU. This condition is also termed as the Law of Equi-Marginal Utility. Vice versa in case of Mux/ Px<MUy/Py

ORDINAL APPROACH

INDIFFERENCE CURVE APPROACH:-

Indifference Curve : Indifference curve represents all possible combinations of two goods which gives the same level of satisfaction to a consumer.



IC curve shows same level of satisfaction. All the points A,B,C,D.

If consumer has to increase consumption of x, he will be from X1 to X2 for which he has to sacrifice Y1Y2 amount of Y in order to remain on the same level of satisfaction.

ASSUMPTIONS OF INDIFFERENCE CURVE:

i) **Rationality:** The consumer is assumed to be rational. He aims at maximising his benefits from given income & prices & does it.

ii) **Ordinality:** Consumer can rank or order the scale of preference as per the utility derived from the consumption of goods. In case of 3 goods there are 3 possibilities i) X is preferred to Y ii) Y is preferred to X iii) X & Y are equally preferred i.e. consumer is indifferent between two goods.

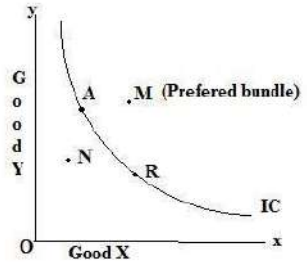
iii) **Diminishing marginal rate of substitution (MRSxy):** Slope of indifference curve is called MRSxy Amount of good Y sacrificed in order to consume one additional unit of good X is Marginal Rate of Substitution of x & y. It is assumed that MRSxy diminishes with greater quantities of X. As

consumption of good X increases, utility derived from it falls due to LDMU, so he is ready to sacrifice less of Y.

iv) **Consistency of choice:** Consumer is consistent in his choice i.e. If X is preferred to Y in a time period then Y will not be preferred over X in another time period.

v) **Transitivity of choice:** If X is preferred over Y & Y is preferred over Z then X will be preferred to Z also.

vi) **Monotonic Preference:** A consumer's choice is monotonic if between any two bundles the consumer prefers the bundle which has more of at least one of goods & no less of another good. Ex. A consumer with monotonic preference will prefer the bundle (2, 3) to bundle (2,2) (1,3) .



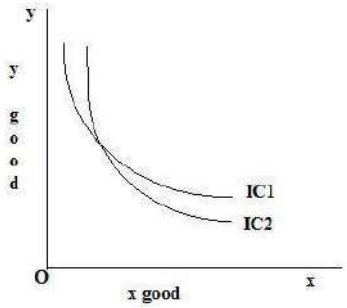
IC is indifference curve
A & R points show that consumer remains indifferent
N point shows inferior bundles
M point shows monotonic preference over A, R, & N which is above indifference curve.

Properties of Indifference curve:

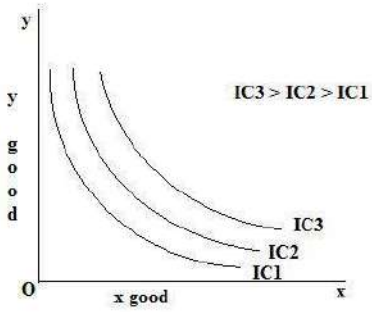
a) Indifference curve slopes downwards from left to right or negatively sloped. It shows inverse relationship i.e. in order to remain on the same level of satisfaction if consumption of one good is increased, consumption of other good to be sacrificed.

b) Indifference curve is always convex to the origin, due to reducing marginal rate of substitution.

c) Indifference curve never touches or intersects each other



d) Higher IC reflects higher level of satisfaction.

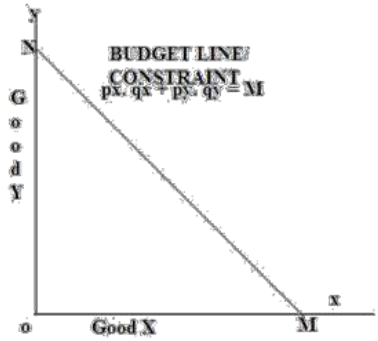


BUDGET LINE:- All possible combination of two goods that a consumer can purchase by spending his entire income when income & price of two goods are given. Equation of budget line :-

Px .Qx + Py .Qy = M

Budget line is negatively sloped because consumption of one commodity is associated with the sacrifice of another commodity.

BUDGET SET:-All the sets of two goods which are available to the consumer either spending entire income or less.



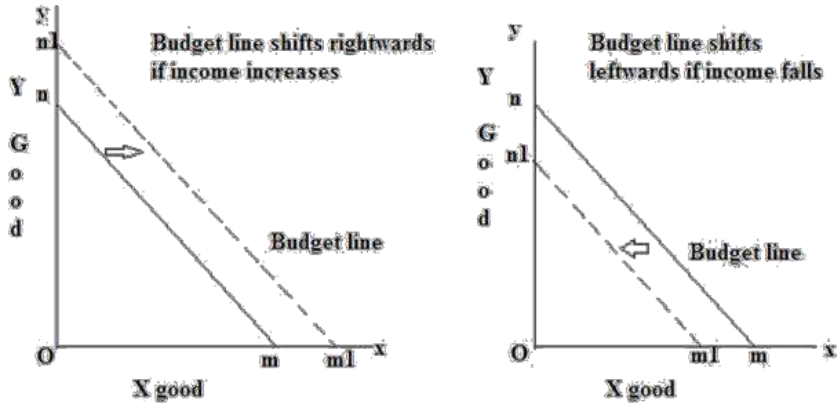
NM is budget line or Budget Constraint

Δ NOM = right angled triangle formed by the budget line with the axes is budget set. All the bundles in the positive quadrant which are below the budget line form budget set.

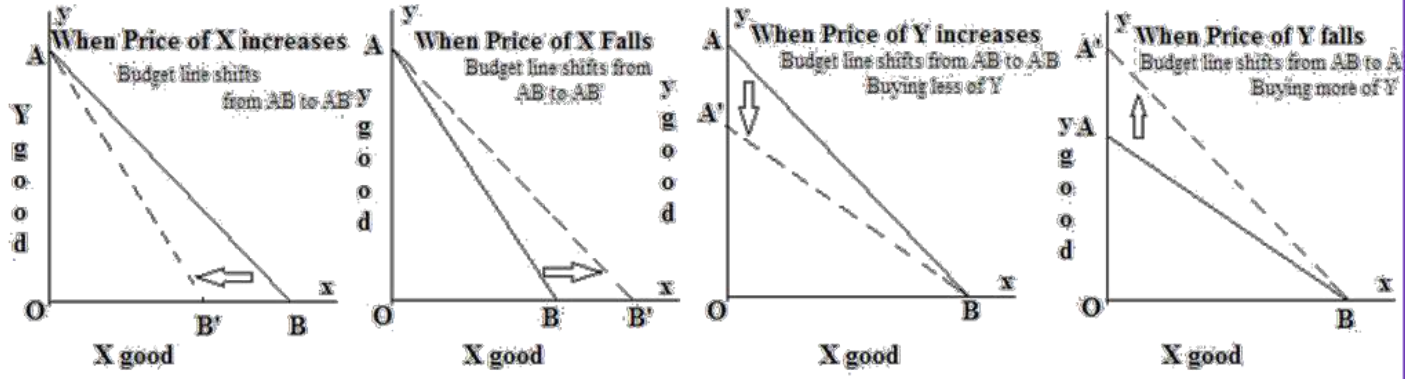
Shift of budget line:(WHEN INCOME CHANGES)

i) If Income increases: Budget line shifts rightwards parallel to the previous budget line.

ii) If Income decreases: Budget line shifts leftwards parallel to the previous budget line.



SHIFT IN BUDGET LINE WHEN PRICE OF GOODS CHANGES



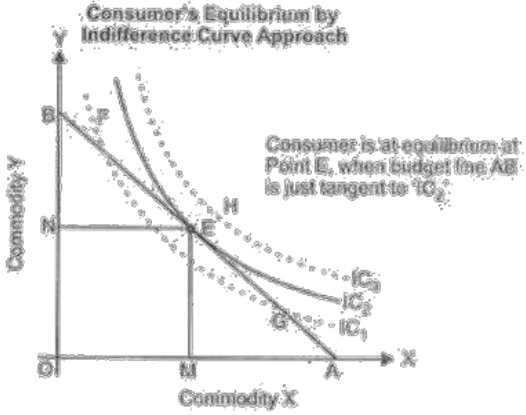
CHANGE IN BUDGET LINE WHEN PRICE OF GOODS CHANGE

CONSUMER'S EQUILIBRIUM: A consumer is in equilibrium when he maximises his utility given his income & market prices. A consumer attains equilibrium when he reaches highest possible indifference curve given his budget constraint. A consumer equilibrium conditions:

i) Slope of indifference curve = slope of budget line

MRSxy = Px/ Py

ii) Diminishing Marginal Rate of Substitution.



AB = Budget line

IC1, IC2, IC3 show scale of preference

Point E= Equilibrium where budget line is tangent to IC2 .

Both the above conditions are fulfilled. & consumer will be fully satisfied by purchasing ON amount of Y & OM amount of X.

Point F & G will be on lower IC & shows lower level of satisfaction.

Point H is beyond the affordability

CONCEPTS OF DEMAND AND DEMAND SCHEDULE

Demand for a good is the quantity of that good which a buyer is willing to buy at a particular price, during a period of time.

Demand Function:-The functional relationship between demand of a good & its factors affecting demand is called as demand function. Symbolically

Dx = f(Px, Pz, Y,T)

Dx = Demand for good x

Px = Price of good x

Pz = price of other related goods

Y = Income of household

T = Taste & preference of consumer household

LAW OF DEMAND

The Law of Demand states that, other things being constant, in case of a normal good, there is inverse relation between price of a good and its demand. The quantity demanded increases with fall in price and decreases with rise in the price of the commodity.

Law of demand can be explained with the help of following demand schedule and demand curve:

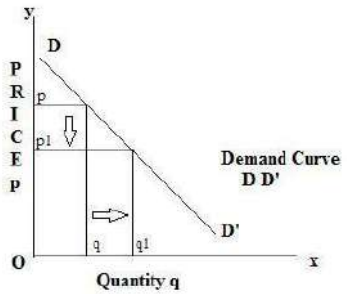
Demand schedule is a tabular presentation showing the different quantities of a good that buyers of that good are willing to buy at different prices during a given period of time.

Demand schedule of a commodity

Price (Rs per unit)	Quantity demanded (in units)
50	50
40	100
30	150
20	200

Demand curve:-Graphical representation of demand schedule is called as demand curve.

Demand curve is negatively sloped showing inverse relationship between price & demand of the good.



The diagram shows

DD' Demand curve

Negatively sloped – left to right downwards

Price falls by pp1 & demand rises by qq1

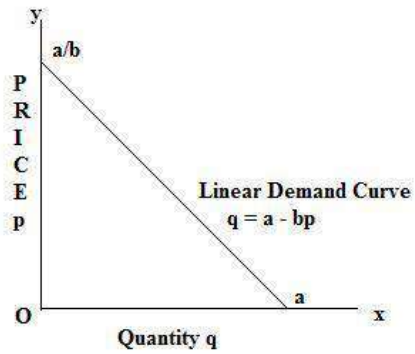
SLOPE OF DEMAND CURVE: Linear demand curve is given as Q= a- bP

Where Q= quantity demanded (dependent variable)

a= Intercept the demand curve makes with horizontal or quantity axis

b= slope of demand curve or the rate at which demand curve slopes downwards.

Slope of demand curve = Δp/Δq. It measures the rate at which demand changes with respect to its price. P= Price (independent variable)



When p = 0 , q = a – b. 0

Q = a (intercept- Distance from origin to a on x axis)

When p = a/b , q = a – b. a/b

Q = 0

These two values are shown graphically

ASSUMPTIONS OF LAW OF DEMAND:-

a) Price of related goods remain constant
b) Income of consumer does not change
c) Taste & preference of consumer remain unchanged.
d) All the units are homogeneous
e) Commodity should be a normal good

REASONS BEHIND DOWNWARD SLOPING DEMAND CURVE

i) Income effect

A change in the quantity demanded as a result of change in real income caused by change in price of the commodity is called Income effect. When the price of a commodity falls, less has to be spent on the purchase of that commodity. From that money a consumer can by more quantity of that good, thus the real income of theconsumer is increased. However increase in the price of the good decreases the real income of the consumer. Therefore he will buy less of goods from that income.

ii) Substitution effect

It means that substitution of cheaper commodity in place of the relatively expensive commodity. Example=A rise in the price of coca-cola, in relation to pepsi. The consumer will maximize his satisfaction therefore he will buy more of Pepsi than of coca cola.

iii) Law of Diminishing Marginal Utility

The law states that with the consumption of an additional unit of a commodity, the utility from each successive unit goes on diminishing. He is ready to pay more price when he has demanded less of it.

Example- Utility form first chapatti /Loaf of Bread to a hungry man is maximum, utilityfrom second chapatti is lesser, from the third still lesser, because a part of his hungeris satisfied from the first one and the second one and It goes on diminishing .The utility in terms of satisfaction derived with each successive chapatti diminishes so he is ready to pay less price of it .This depicts the Law of Diminishing Marginal Utility is behind negative relationship between Price & demand.

iv) Number of consumers

When the price of a commodity falls, consumers buys it at the reduced price, therefore the number of consumers increases because the old ones also consuming it in the same quantity or more than what they were consuming before fall in the price of thatcommodity.

v) Different uses of the commodity

A commodity used is consumed more at a lower price but if its price goes up then consumption get restricted to very essential use. For example milk is used for many purposes e.g. Drinking, Making curd, paneer, tea etc. but if the price goes up the consumption of milk is restricted to say baby food only.

EXCEPTIONS OF LAW OF DEMAND:- (Not in syllabus)

There are certain cases where law of demand is not applicable:-

a) **Giffin Goods:-** The goods which are demanded more when income is less. The good is named after Sir Robert Giffin who found that the demand of bread was reducing inspite of fall in its price, it was due to the fact that people were demanding meat (considered as superior) in place of bread (inferior). In case of giffin goods demand curve is upward sloping. Jowar, bajra etc.
b) **Veblen Goods:-** some goods are status symbol that promotes the status of a person. The goods of status are named after Thorstein Veblen (1857 – 1929) Eg. Luxury Car, Diamonds etc.
c) **Demonstration effect:**- Some sections of consumers tend to imitate the consumption pattern of high income groups. The law of demand is violated in this case as consumers buy these goods at high price also.
d) **Expectation of price rise in future:-**If consumers expect rise in prices in the future they will demand more even at high price & if they expect fall in price they demand less even at less price.
e) **Emergency :-** Emergencysituations like war, curfew, flood, famine etc. the law does not operate. General insecurity and fear of shortage results in abnormal behaviour of consumers.

INDIVIDUAL DEMAND & MARKET DEMAND:-

INDIVIDUAL DEMAND:-Individual demand is the quantity of **a commodity** which **a consumer** is ready to buy at various prices at per time period.

INDIVIDUAL DEMAND SCHEDULE:- A tabular representation of various quantities of a commodity demanded by a consumer at various prices per time period.

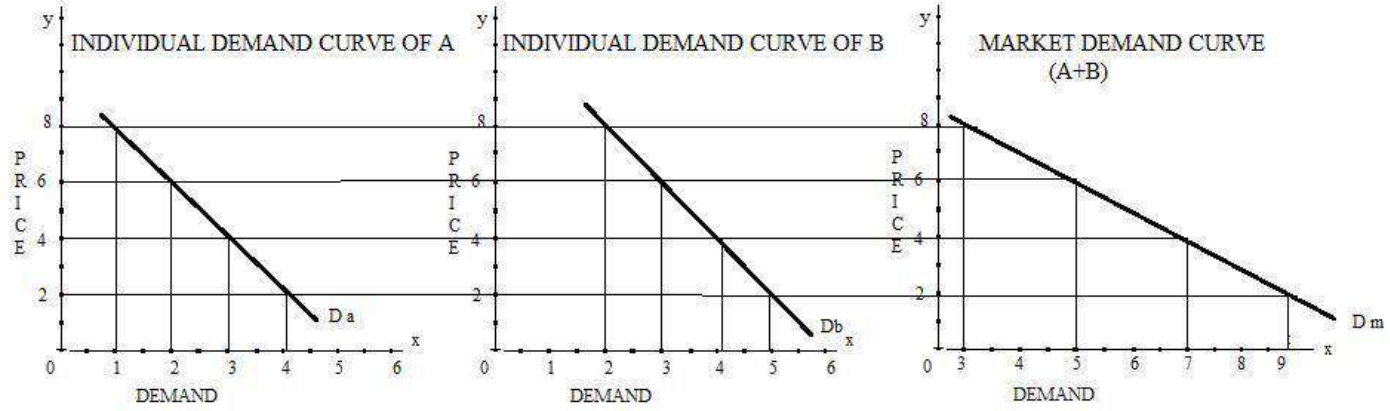
INDIVIDUAL DEMAND CURVE:- it is graphical representation of individual demand schedule. **MARKET DEMAND**:- It is the sum of quantities of **a commodity** demanded by **all the consumers** in the market at different prices per time period.

MARKET DEMAND SCHEDULE:- It is addition of the quantities of all the consumers in the market at a price at a particular time i.e. horizontal summation of individual demand.

Individual & Market Demand Schedule

PRICE (Rs. Per KG)	Individual Demand for wheat (Kg per month)		Market Demand (A+ B)
	Consumer (A)	Consumer(B)	
2	4	5	9
4	3	4	7
6	2	3	5
8	1	2	3

MARKET DEMAND CURVE:- It is graphical representation of market demand schedule i.e. horizontal summation of individual demand curves.



Above diagram shows Da as demand of consumer A, Db as individual demand of B & Market demand Dm as horizontal summation of Da &Db curves.

FACTORS AFFECTING DEMAND OF A COMMODITY:-

i) **Price of a commodity (Px) –** Price is an important determinant of Demand. Demand for a commodity rises when it is offered at low price and it falls when the commodity is available at higher price.

ii) I**ncome of the consumer (Y) -** With the rise in income of the consumer his purchasing power increases. As a result he can buy more of a commodity that he was not buying earlier due to monetary constraint. Similarly a fall in income of the consumer will force him to cut down his expenditure and he will demand less of a commodity. Demand for normal or superior goods rise with rise in income where as demand for inferior goods fall due o rise in income.

iii) **Price of related goods (Pz) -** Related goods are of two types i.e. Substitute goods and complementary good.

Substitute Goods : Substitute goods are those which can be used in place of each other with equal ease. Example - Pepsi and Coca-Cola. Of the two given goods the demand will be higher for the goods which have comparatively lower price and vice versa.

Complementary goods: Complementary Goods are those goods which are used together for consumption and are incomplete without each other. It means they complete the deficiencies of each other. Example - Car and Petrol. A fall in the price of one commodity leads to rise in the demand of its complementary good. Example: - If the price of petrol falls then demand for car will rise.

iv) **Taste and preferences (T) -** Tastes and Preferences of the consumers will also affect the demand of the commodity. A student will demand more of books and pens then utensils because of his preference for the same. Similarly old tv sets were replaced by Plasma T.V.

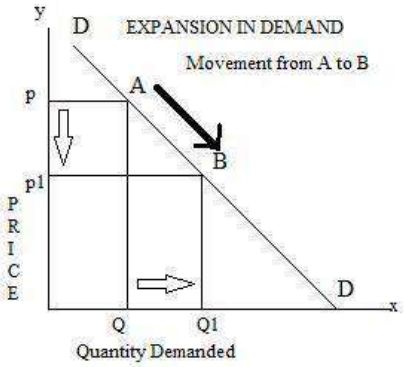
v) **Other Factors** - Some other factors that affect the demand of commodity are-

- Demand for **Seasonal Goods-** The consumer will demand woollen clothes in winter only.
- If Government reduces the **Tax Rate** then it enhances the purchasing power ofthe consumer and his demand for goods will also increase.
- If the population (size & composition) of an area increases then their demand will also increase and they will demand more consumer goods and vice versa.
- Future expectation of change in price.

CHANGE IN QUANTITY DEMANDED (Movement along demand curve) Vs CHANGE IN DEMAND (Shift)

MOVEMENT ALONG A DEMAND CURVE :- Expansion & Contraction in Demand

Expansion in Demand:-When quantity of a commodity demanded increases due to fall in price of it, keeping other factors affecting demand remains constant. In this case consumer moves rightwards on the same demand curve.



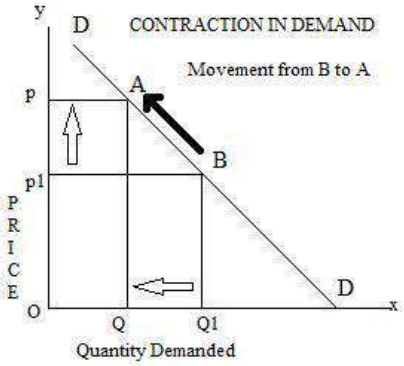
Price (Rs)	Demand
4	10
3	20

DD is demand curve

When price is op oQ quantity is demanded & consumer is at point A on demand curve

If price falls to op1 quantity demanded increases from oq to oq1 & consumer moves on the same demand curve from Point A to point B. This movement is called as Expansion in demand.

Contraction in demand:-When quantity of a commodity demanded falls due to rise in price of it, keeping other factors affecting demand remains constant. In this case consumer moves leftwards on the same demand curve.



Price (Rs)	Demand
4	10
5	05

DD is demand curve

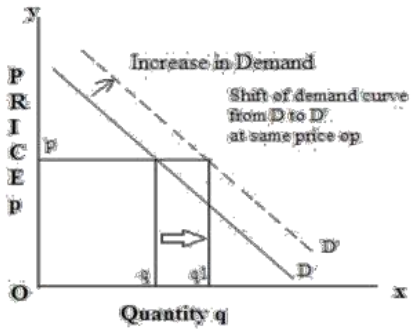
When price is op1 oQ1 quantity is demanded & consumer is at point B on the demand curve

If price rises to op quantity demanded increases from oq1 to oq & consumer moves on the same demand curve from Point B to point A.

This movement is called as Contraction in demand.

Increase In Demand:-When demand of a commodity increases due to other factors affecting demand except price, demand curve shifts rightwards. This is due to

i) increase in price of substitute good
ii) fall in the price of complimentary good
iii) Increase in income of consumer & good is normal good.
iv) Decrease in income & good is inferior good
v) favourable change in consumer's taste & preference
vi) increase in population
vii) favourable change in weather & season.



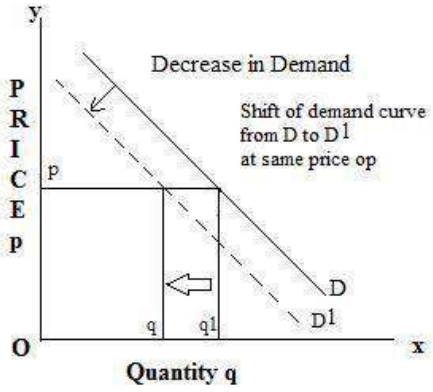
D is demand curve, oq quantity is demanded at op price.

When quantity demanded increases from oq to oq1 at same price demand curve shifts rightwards to D' this is increase in demand

Price (Rs)	Demand
4	10
4	20

Decrease In Demand: - When demand of a commodity decreases due to other factors affecting demand except price, demand curve shifts leftwards. This is due to

i) Decrease in price of substitute good
ii) Rise in the price of complimentary good
iii) Fall in income of consumer & good is normal good.
iv) Increase in income & good is inferior good
v) Un favourable change in consumer's taste & preference
vi) decrease in population
vii)unfavourable change in weather & season.



D is demand curve, oq1 quantity is demanded at op price.

When quantity demanded decreases from oq1 to oq at same price demand curve shifts leftwards to D1 this is decrease in demand

Price (Rs)	Demand
4	10
4	05

ELASTICITY OF DEMAND:-Price Elasticity of demand measures the degree of responsiveness of change in demand by change in price of the good. Law of demand measures direction of relationship between price & demand where as elasticity measures the proportional change in demand by change in price. Ed = Proportional (%) change in Demand / Proportional (%) change in price x 100

Ed = Δq/q x100 / Δp/p x100

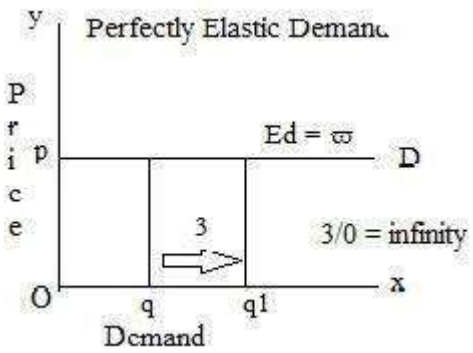
Ed = Δq /q x p/Δp

Types of Elasticity of Demand:-

1. **Perfectly Elastic Demand :-**When Demand of a commodity rises or falls to any extent without any change in price, the demand for the commodity is said to be perfectly elastic. It is an imaginary situation

Price	Demand
5	10
5	20
5	30

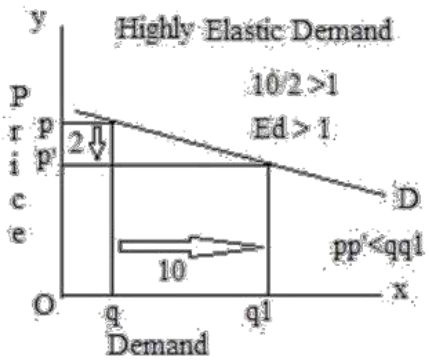
Diagram & Schedule shows that Demand changes without change in price & curve becomes horizontal to x axis.



2. **Highly Elastic Demand (Ed>1) :-** When change in price leads to more proportional change in demand, the demand is said to be highly elastic**.** This demand is in case of luxury goods.

Price	Demand
7	10
5	20

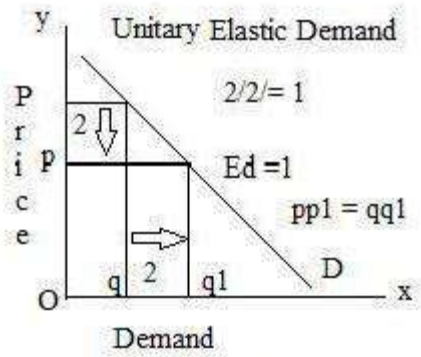
When price falls by Rs 2/- Demand falls by 10 units. The coefficient of elasticity of demand is greater that unity.



3. **Unitary Elastic Demand (Ed = 1) :-** When Proportional Change in demand is equal to proportional change in price, the demand is said to be unitary elastic.

Price	Demand
7	10
5	12

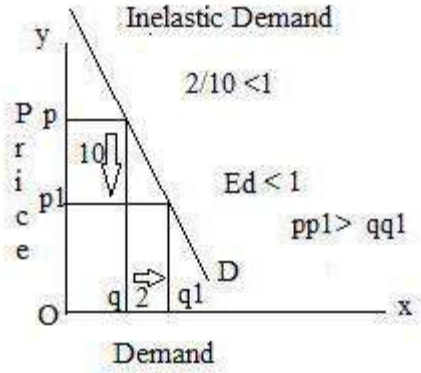
Demand curve is a straight downwards sloping line forming 45^0 angle with both the axis. However the curve may be rectangular hyperbola.



4. **Inelastic Demand (Ed< 1) :-** When Proportional change in demand is less than proportional change in price, the demand is said to be inelastic demand.

Price	Demand
20	10
10	12

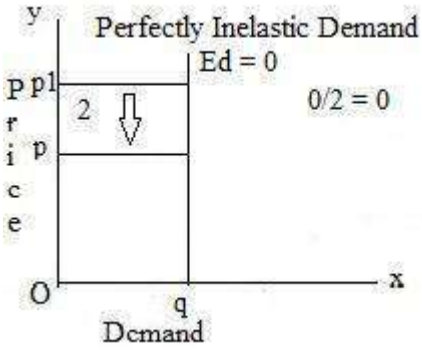
Essential goods usually have inelastic demand. Where demand changes less with the change in price. (pp1 > qq1)



5. Perfectly Inelastic Demand (Ed = 0):- When the demand for the commodity does not change as a result of change in its price, demand is said to be perfectly in elastic.

Price	Demand
7	10
5	10

Demand is constant at oq which is in case of life saving drugs, salt, match box etc.



MEASURING ELASTICITY OF DEMAND :-

There are three methods of measuring elasticity of demand:

i) **Percentage or Proportionate Method:-** elasticity of demand is measured by the ratio of proportional change in demand & proportional change in price. Symbolically
Ed = Proportional (%) change in Demand / Proportional (%) change in price x 100
Ed = $\Delta q/q$ x100 / $\Delta p/p$ x100
Ed = $\Delta q /q$ x $p/\Delta p$
The absolute value of elasticity of demand ranges from zero to infinity

ii) **Total Outlay or expenditure Method**:- It studies the relationship between total expenditure and price elasticity of demand. Expenditure { Price per unit (P) x Quantity demanded (Q)} by the consumers are the revenue earned by the sellers. When price changes it brings the change in total revenue (TR) which depends on elasticity of demand. There are three situations:

1. When a fall (rise) in the price of a commodity results in increase (decrease) in total expenditure on it, its demand is said to be 'elastic' (Ep>1).
2. When a fall (rise) in the price of the commodity does not result in any change in total expenditure on it, its demand is said to be 'unitary elastic'(Ep = 1).
3. When a fall (rise) in the price of a commodity results in a fall (rise) in total expenditure on it, its demand is said to be 'inelastic'(Ep< 1).

iii) **Geometric Method:** Elasticity on a linear demand curve is measured by using the formula:
Elasticity of demand = lower segment of demand curve/ Upper segment of demand curve

AB is a negatively sloped straight line demand curve joining two axis. Elasticity at different points can be calculated as follows:-

At point C= Lower segment / upper segment

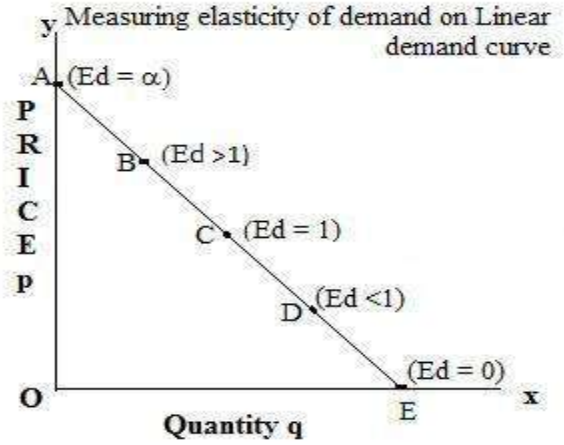
CE/ AC as CE= AC , Ed = 1

At point B = BE/ AB as BE> AB , Ed > 1

At Point A = AE / A = AE/ 0 , Ed = ω

At Point D = DE / AD as DE < AD Ed< 1

At point E = E/ AE as E = 0 , 0/AE = 0



FACTORS DETERMINING PRICE ELASTICITY

1. Nature of Goods: - The elasticity of demand is of necessary goods is less than one Ed < 1. The elasticity of demand of luxury good is greater than one ed > 1. The elasticity of demand of comfort goods is equals to one ed = 1

2. Availability of Substitutes:- If the substitutes of goods are available than elasticity of demand is high or elastic demand ed >1 and if the substitutes are not available than demand is in elastic ed<1

3. Postponement of Consumption:- If the consumption of goods can not be postponed, than elasticity of demand is less than one ed < 1 like medicines. If the consumption of goods can be postponed the demand of good is elastic ed >1.

4. Number of Uses:- If the commodity has several uses, than its demand will be elastic ed >1 like milk and if the number of uses of commodity is less than demand of commodity is in elastic ed < 1

5. Time period: - Demand is generally inelastic in the short period and more elastic in long run.

6. Habit of consumer:- If consumer is habitual for the consumption of commodity, than the demand will be inelastic ed < 1

7. Proportion of income spent on the good:- Higher the proportion, higher is the effect on the budget of the consumer. Therefore, higher the proportion of income spent on a good, higher is likely to be the price elasticity of that good. This is why the price elasticity of demand of the low priced goods is lower while those of high priced goods is higher.

UNIT 3: Producer Behaviour and Supply

Production function – Short-Run and Long-Run -Total Product, Average Product and Marginal Product.

Returns to a Factor Cost: Short run costs - total cost, total fixed cost, total variable cost; Average cost; Average fixed cost
cost, average variable cost and marginal cost-meaning and their relationships. Revenue - total, average and marginal revenue - meaning and their relationships. Producer's equilibrium- meaning and its conditions in terms of marginal revenue-marginal cost. Supply, market supply, determinants of supply, supply schedule, supply curve and its slope, movements along and shifts in supply curve, price elasticity of supply; measurement of price elasticity of supply - (a) percentage-change method and (b) geometric method.

Unit III : PRODUCER'S BEHAVIOUR AND SUPPLY

Production Function: - It is defined as the functional relationship between input and output for a given state of technique.

Q= f (L, K….) Q= Output , f = functional relationship, L,K = Factors of production (input)

i) **Short Run Production Function:-** In the short run some factors are fixed & one is variable then the proportion between fixed & variable factors change & the law which arise out of it is law of variable productions.

ii) **Long Run Production Function:-**In the long run nothing is fixed & all the factors change in the same proportion. When all the factors change it is said that the scale of production is changed & the law arises out of it is returns to scale.

Total Product:-

The total quantity of goods produced by a firm during a given period of time with given inputs.

TP= Σ MP

Average Product:- The output per unit variable input.

AP=TP/Q

Marginal Product:- The change in total output by using one more unit of variable factor .

MP = Change in TP/ Change in units of variable factors

OR **MP = Δ TP/ Δ Input** OR **MPn = TPn – TP n-1**

Law of Variable Proportions (Return to a factor) : - It is operated in short run. If some factors are constant and one factor is variable, the proportion between fixed & variable factors change & by increasing the quantity of variable factors resulting output is affected. The effect on output is called returns to factor.

Statement of the law:- The law states that as we increase the quantity of only one input keeping other input constant initially MP increases than decreases and ultimately become negative. This can be studied in three phases:

Ist Phase (phase of Increasing returns) :- As the variable factors are increased with the fixed factors, first Marginal Product (MP) increases due to division of work & specialisation & therefore Total Product (TP) increases at increasing rate. Average product (AP) also increases but below MP. MP rises & reaches maximum in this stage.

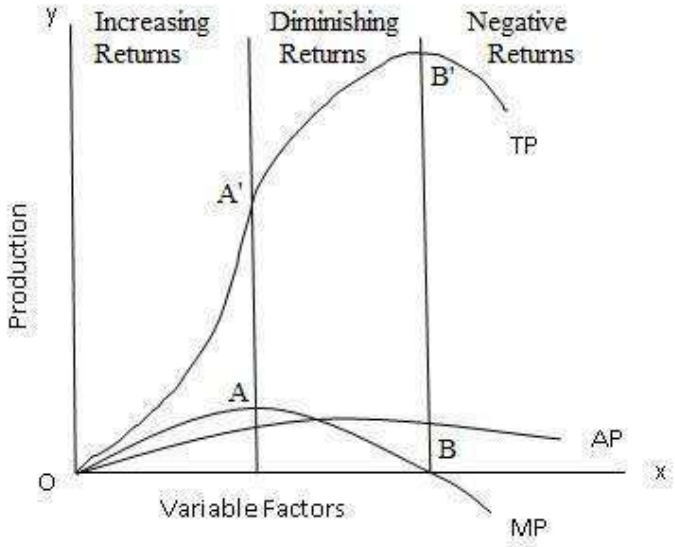
IInd Phase (Phase of Diminishing returns) :- In the second stage when optimum combination of fixed & variable factors is already achieved then every increase in variable factors will reduce MP. When MP falls TP increases at diminishing rate & AP after MP=AP starts falling. At the end of the stage MP becomes zero & TP is maximum. A rational producer operates under this stage.

III Phase (Phase of Negative returns) :- If the producer continues to increase variable factor, MP becomes negative , TP starts falling & AP also falls but never touches zero. A rational producer never operates under this stage.

Explanation Of the law By Schedule & Curve:-

Land (hectare)	Labour	TP	MP	Stage
1	1	2	2	Increasing Returns
1	2	5	3	
1	3	9	4	
1	4	12	3	Diminishing Returns
1	5	14	2	
1	6	15	1	
1	7	15	0	
1	8	14	-1	Negative Returns
1	9	12	-2	

Explanation through curve:-



The diagram shows three stages

In first stage MP increases till point A & TP increases at increasing rate till A'. AP also increases but below MP

In second stage MP starts falling, TP increases at diminishing rate & AP increases till MP=AP then AP also starts falling.

In third stage MP becomes negative after B point & TP also falls.

Assumptions of Law of variable proportions:-

i) The state of technology remains constant
ii) All units of variable factors are homogeneous
iii) There must be some fixed factors

i) **Division of labour & specialisation**:- As the no. of variable factors increase with some amount of fixed factor variable factors ensures better division of work leading towards specialisation & therefore increases production at increasing rate.

ii) **Under Utilisation Of fixed Factors**:- In the beginning when variable factors are increased with fixed factors, fixed factors are underutilised, fixed factors are better utilised with the variable factors, so Increasing returns are obtained till optimum combination of fixed & variable factors are not achieved.

iii) **Indivisibility of factors:-** The factors employed in the production process are indivisible, i.e. they cannot be divided into smaller parts, thus optimum combination is there & so increasing returns are obtained as more variable factors are used with fixed factors.

iv) **Optimum Use Of Fixed Factors:** When variable factors are increased so much that optimum combination of fixed & variable factors is achieved, then returns starts diminishing if further variable factors are increased.

v) **Lack of Perfect substitutes**:- All factors of production are in scarce supply. When there is an imperfect substitutes of a factor with another factor, returns starts diminishing.

vi) **Some factors are fixed:-** Some factors are kept constant , after a point these fixed factors are completely utilised, after which they are required to be increased. If they are constant, diminishing returns are obtained.

vii) **Over utilisation of fixed factors :**- this is due to fixity of fixed factors, which results in negative returns after a point if variable factors are continued to be increased.

Postponement of the law is possible when there is :-

i) Improvement in technology
ii) Some substitutes of fixed factors are discovered
iii) Quality of raw material is enhanced
iv) Research & development, innovations
v) Training to the workers to enhance productivity

LAW OF RETURNS TO SCALE:- Long Run Production Function:-

There is no fixed factor of production in the long run. The law of returns to scale describes the relationship between variable inputs and output when all the inputs or factors are increased in the same proportion. It has been observed that when there is a proportionate change in the amounts of inputs, the behaviour of output varies. The output may increase by a great proportion, by in the same proportion or in a smaller proportion to its inputs. This behaviour of output with the increase in scale of operation is termed as increasing returns to scale, constant returns to scale and diminishing returns to scale. These three laws of returns to scale are now explained, in brief, under separate heads.

(1) Increasing Returns to Scale:

If the output of a firm increases more than in proportion to an equal percentage increase in all inputs, the production is said to exhibit increasing returns to scale. For example, if the amount of inputs are increased by 10% and the output increases by more than 10%, it is said to be an increasing returns to scale. When there is an increase in the scale of production, it leads to lower average cost per unit produced.It is due to the fact that firm enjoys more economies of scale than its dis economies of scale.

(2) Constant Returns to Scale:

When all inputs are increased by a certain percentage, the output increases by the same percentage, the production function is said to exhibit constant returns to scale. For example, if a firm doubles inputs, it doubles output. The constant scale of production has no effect on average cost per unit produced as economies to scale are equal to dis economies to scale.

(3) **Diminishing Returns to Scale:** The term 'diminishing' returns to scale refers to scale where output increases in a smaller proportion than the increase in all inputs. For example if a firm increases inputs by 10% but the output decreases by less than 10%, the firm is said to exhibit decreasing returns to scale. In case of decreasing returns to scale, the firm faces more diseconomies of scale than economies to scale. The firm's scale of production leads to higher average cost per unit produced

ASSUMPTIONS OF THE LAW:-This law assumes that:

(1) All factors (inputs) are variable but enterprise is fixed.
(2) A worker works with given tools and implements.
(3) Technological changes are absent.
(4) There is perfect competition.
(5) The product is measured in quantities.

Explanation: Given these assumptions, when all inputs are increased in unchanged proportions and the scale of production is expanded, the effect on output shows three stages: increasing returns, constant returns and diminishing returns to scale. They are explained with the help of Schedule & Curve:

Explanation with the help of Schedule:-

S.N.	Scale	Marginal Product	Total Product	Stages
1	1 acre land+ 2 labour	2	2	Increasing Returns to scale
2	2 acre land+ 4 labour	5	7	
3	3 acre land+ 6 labour	10	17	Constant returns to scale
4	4 acre land+ 8 labour	10	27	
5	5 acre land+ 10 labour	10	37	
6	6 acre land+ 12 labour	7	44	Diminishing Returns to scale
7	7 acre land+ 14 labour	2	46	

It is clear from the table that the quantity of land and labour (Scale) is increasing in the same proportion, by 1 acre of land and 2 units of labour throughout in our example. The output increases more than proportionately when the producer is employing 3 acres of land and 6 units of labour. Output increases in the same proportion when the quantity of land is 5 acres and 10 units of labour and 6 acres of land and 12 units of labour. In the later stages, when he employs 6 & 7 acres of land and 12 & 14 units of labour, output increases less than proportionately. Thus, one can clearly understand the operation of the three phases of the laws of returns to scale with the help of the table.

Explanation with the help of curve:

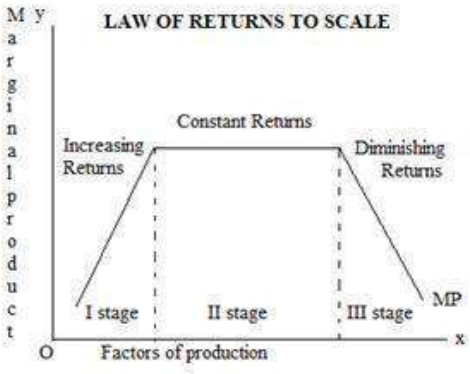


Diagram shows that as producer increases factors of production (scale) first MP Increases then remains constant & at the end it diminishes due to which three stages arise.

REASONS BEHIND OPERATION OF LAW OF RETURNS TO SCALE:-

Increasing returns to scale;- When economies to scale > diseconomies to scale

Constant Returns to scale :- When economies to scale = diseconomies to scale

Diminishing Returns to scale :- When economies to scale < diseconomies to scale

COST CONCEPTS

Meaning

Cost of production : Expenditure incurred on various inputs to produce goods and services.

Cost function : Functional relationship between cost and output.

C=f (q) Where f = functional relationship

c= cost of production

q=quantity of product

Money cost : Money expenses incurred by a firm for producing a commodity or service.

Money Cost in economics comprises of two elements: explicit cost and implicit cost.

EXPLICIT COST: Actual money expenditure on inputs is termed as **explicit cost.** Example :- Rent, interest, wages, insurance premium etc. which is recorded in the accounts book.

IMPLICIT COST :- Estimated money value of inputs supplied by the owners of production unit, including normal profit, is termed as implicit cost. Main examples are: estimated salary of the owners, estimated interest of own money invested by the owners, estimated rent of the owner's building, etc.

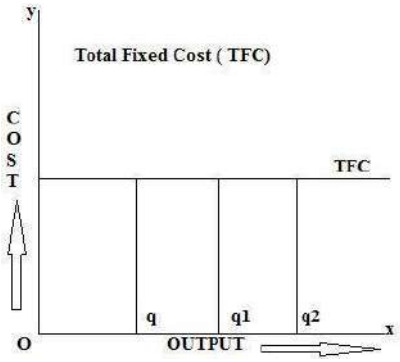
NORMAL PROFIT is that minimum profit which the owners of business must get in the long run for remaining in the current business rather than shift to the next best alternative business.

FIXED COST & VARIABLE COST :

TOTAL FIXED COST (TFC) - Fixed costs do not change with the change in output. They are sum of expenditure incurred by the producer on the purchase or hiring of fixed factors. Example: Expenditure on machinery, equipment, building, wages of permanent employees, insurance premium, rent etc. They are called as supplementary cost. The concept of TFC is explained with the help of a schedule & curve:

Output	TFC (Rs)
0	10
1	10
2	10
3	10

Curve:-



TFC curve is horizontal to x axis

As fixed cost remain constant at all levels of output- q,q1,q2 etc.

TOTAL VARIABLE COST (TVC) : Variable cost change directly with the change in output. It increases when output increases & cost decreases when cost decreases & is zero when output is zero. It is also called as prime cost. Example: Running expenses like cost of raw material, fuel, temporary labour etc.

Output	TVC (Rs)	MC
0	0	-
1	4	4
2	7	3
3	9	2
4	12	3
5	16	4
6	21	5

Curve:

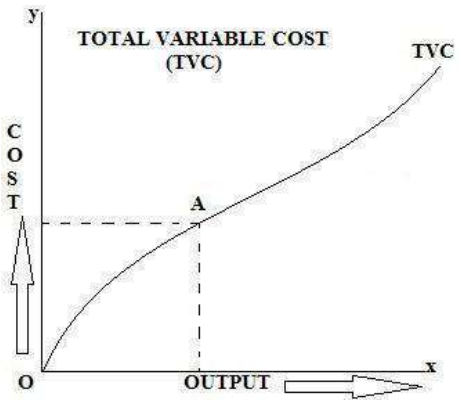


Table shows that TVC is zero at zero level of output

Curve starts from origin – as cost is zero at zero level of output

TVC is reverse 'S' shaped curve

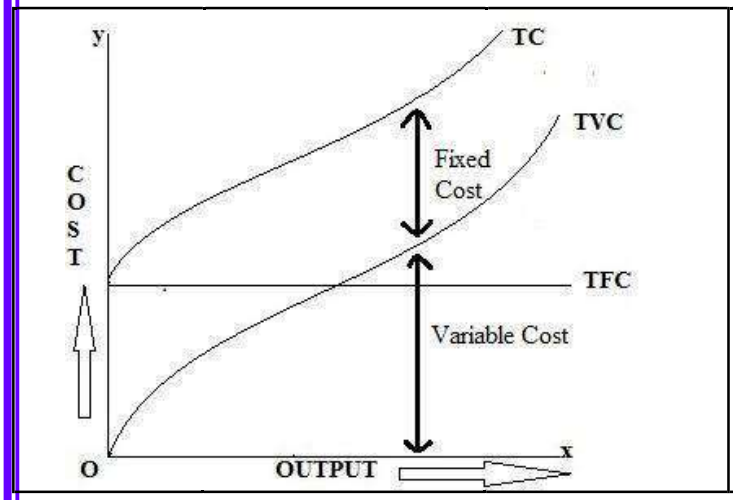
Initially it increases at diminishing rate (from O to A – up to 3 level of output) due to increasing returns to factor / MC falls.

After A point (output level 4, 5 & 6) it increases at increasing rate due to diminishing returns to factor/increasing MC.

TOTAL COST:- Total expenditure incurred by a firm for obtaining factors of production required for production of a commodity. Total Cost (TC) of production is the sum of Total Fixed Cost (TFC) & Total Variable Cost (TVC). Symbolically **TC = TFC + TVC**

TC schedule :

Units of output	TFC	TVC	TC = TFC + TVC
0	10	0	**10**
1	10	4	**14**
2	10	7	**17**
3	10	9	**19**
4	10	12	**22**
5	10	16	**26**
6	10	21	**31**



Line horizontal to x axis is TFC.

TVC is inverse 'S' shaped curve starting from origin

TC is also inverse 'S' shaped curve staring from level of TFC.

Change in TC is due to change in TVC as TFC is fixed.

Vertical distance between TC & TVC is TFC
As TC = TFC + TVC

AVERAGE FIXED COST (AFC) :- It is defined as fixed cost of producing per unit of the commodity. It is obtained by dividing TFC by the level of output. Symbolically-

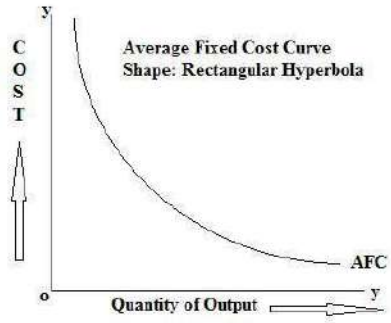
AFC = TFC / No. of units produced

AFC = TFC / Q

AFC Schedule:

Units of output	TFC	AFC
1	10	10
2	10	5
3	10	3.3
4	10	2.5
5	10	2

AFC CURVE



AFC = TFC / Q
Where TFC is Total Fixed Cost
Q is Quantity of output produced

AFC is derived from TFC which is constant. When it is divided by increasing number of output, AFC falls continuously. In fact it is rectangular hyperbola.

AVERAGE VARIABLE COST (AVC) :- AVC is defined as the variable cost of producing per unit of commodity. It is obtained by dividing TVC by the level of output. Symbolically:-

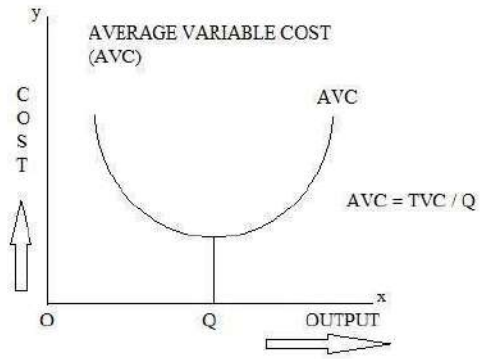
AVC = TVC / output OR

AVC = TVC / Q

Explanation by Schedule & Curve:-

Output	TVC (Rs)	AVC = TVC/Q
1	10	10
2	18	9
3	30	10
4	45	11.3

Curve:-



AVC is 'U' shaped curve.

Initially AVC falls as TVC increases at diminishing rate due to increasing returns. Increasing returns is also called as diminishing cost.

At output Q AVC is minimum

After Q it starts increasing due to the fact that TVC increases at increasing rate due to diminishing returns. Diminishing returns is also called as increasing cost.

AVARAGE TOTAL COST (AVERAGE COST) (ATC / AC) :- AC is defined as cost of producing per unit of the commodity. It is obtained by dividing TC by level of output. Symbolically;-

$AC = \frac{TC}{Q}$ Q = Output

It is also displayed as AC = AFC + AVC

Curve is also 'U' shaped curve

MARGINAL COST :- Addition made to the total variable cost or total cost when one more unit of output is produced. In other words MC is the cost of producing one additional unit of output. Symbolically:

MC = $\frac{\Delta TVC}{\Delta Q}$ OR MC = $\frac{\Delta TC}{\Delta Q}$ …….. (1)

Alternatively

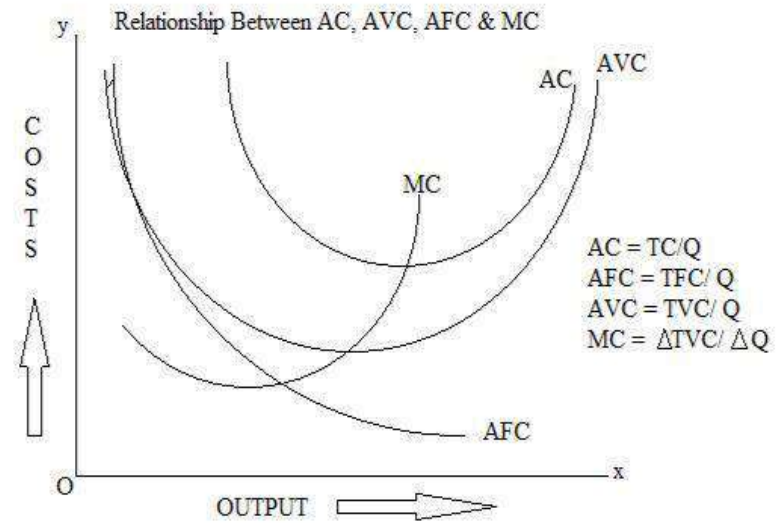
$MC = TVC_n - TVC_{n-1}$ OR $MC = TC_n - TC_{n-1}$ ……(2)

Also

$\sum MC = TVC$ ……(3)

MC Curve is also 'U' Shaped Curve due to law of variable proportions.

AC, AVC, AFC & MC CURVES :-



AFC is downward sloping curve – rectangular hyperbola.

AC, AVC & MC curves are 'U' Shaped

AVC can start below AFC as TVC starts from below TFC.

AC = AFC + AVC, so AC is above AVC & AFC

Gap between AC & AVC reduces with the increase in output, as AFC falls which shows the difference Between AVC & AC.

Minimum point of AC is towards right side of minimum point of AVC

MC cuts AVC & AC from its minimum point.

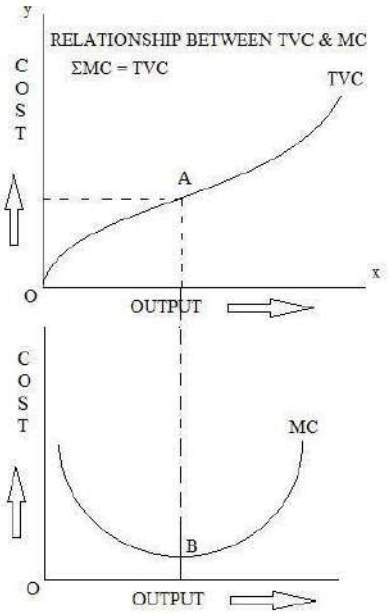
RELATIONSHIP:-Between AC & AVC :-

i) AVC is a part of AC since AC = AFC + AVC, therefore AC is above AVC.
ii) AVC & AC are 'U' Shaped curves due to law of variable proportions
iii) The difference between AC & AVC decreases with rise in the level of output because AC includes AFC & AFC falls continuously.
iv) AVC & AC never meets as AFC is rectangular hyperbola which never touches x axis.
v) Minimum point of AC is always towards the right side of minimum point of AVC.
vi) MC curve always cuts AC & AVC from its minimum points.

Relationship Between TVC & MC :-MC curve is derived from TVC & relationship is **∑ MC = TVC**

Output	TVC = ∑ MC	MC
0	0	-
1	4	4
2	7	3
3	9	2
4	12	3
5	16	4
6	21	5

MC curve is 'U' Shaped.



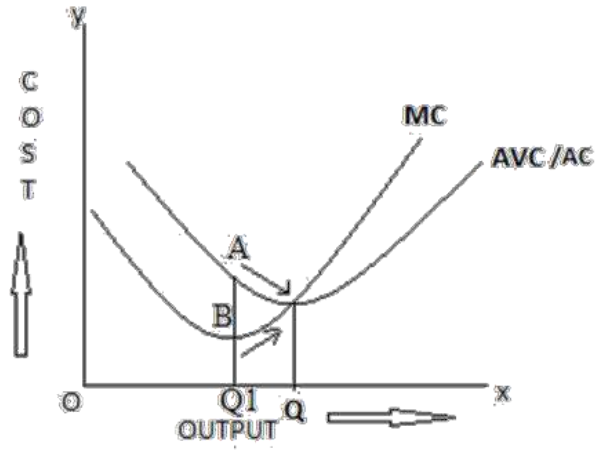
Initially TVC increases at diminishing rate from O to A due to law of variable proportions & leading to Falling MC i.e. up to Point B.

After point A TVC increases at increasing rate which leads to increasing MC after point B.

Relationship between AC/AVC & MC:-

AC/AVC & MC are 'U' Shaped curve reflecting law of variable proportions.

1. When MC is less than AC/AVC than AC/AVC tends to fall.
2. When MC is equal to AC/AVC than AC/AVC is minimum.
3. When MC is more than AC/AVC than AC/AVC tends to increase



Relationship between MC & AVC

* AVC falls till MC < AVC (till Q)
* AVC is minimum & constant when MC = AVC (at Q)
* AVC increases when MC > AVC (after Q)
* After Q1 output MC starts increasing but AVC still falls because MC < AVC

Opportunity cost : is the cost of next best alternative foregone / sacrificed. Opportunity costs are the cost which are incurred on the factors of production. It shows the minimum supply price of a factor.

HOTS

1. Why AFC curve never touches "x" axis though lies very close to x axis?

Ans :- Because TFC can never be zero.

2. Why AVC and AFC always lie below AC?

3. Why TVC curve start from origin? Ans:-

TVC is zero at zero level of output.

4. When TVC is zero at zero level of output, what happens to TFC or Why TFC is not zero at zero level of output?

Ans:- Fixed cost are to be incurred even at zero level of output.

5. Marginal cost includes both fixed cost and variable cost. Comment.

No, marginal cost is only variable cost; it does not include fixed cost. Because, marginal cost is additional cost and additional cost cannot be fixed cost.

6. ATC must fall simply because AFC always falls. Comment.

No, it is not correct. ATC = AFC +AVC. Being a component of ATC, falling AFC implies falling ATC. But this is true only in the initial stages of production when average fixed cost is a significant component of AC. In the later stages of production, average fixed cost (because it is continuously falling) reduces to an insignificant component of AC. Accordingly AC tends to rise in assonance with rising AVC, even when AFC tends to fall.

7. TC is not the sum total of marginal cost. Why?

MC is additional cost. Additional cost can only be variable cost. Accordingly sum total of marginal cost will be total variable cost, not total cost (which includes both variable cost and fixed cost). (Here, MC = Marginal Cost, TVC = Total Variable Cost, TC = Total Cost.)

These costs remain fixed whatever may be the scale of output. These costs are present even when the output is zero. These costs are present in short run but disappear in the long run.

Relationship Between MC and AC

The relationship between marginal cost and average cost is an arithmetic relationship. To understand this relationship let us take a numerical example.

The table A shows the marginal costs, total costs and average costs at different levels of output.

Table A : Cost Schedule

Units	TC	AC	MC
1	60	60	
2	110	50	55
3	162	52	54
4	216	54	54
5	275	59	55

Column 1 shows the level of output.

Column 2 shows the total cost of producing different levels of output.
Column 3 shows the increase in total cost resulting from the production of one more unit of output. (It is called marginal cost. Thus MCn = TCn - TCn-1, where n and n-1 are levels of output).
Column 4 shows the average cost at different levels of output (ACn = TCn/q)
This table shows that:

1. Average cost falls only when marginal cost is less than average cost. Upto the third unit ofoutput, the marginal cost is less than the average cost and average cost is falling. When 2 units are produced the marginal cost is Rs. 50 which is less than the previous average cost (Rs.60), now average cost falls from Rs. 60 to Rs. 55. When 3 units are produced, the marginal cost is Rs. 52 which is less than the average cost of 2 units (Rs. 55) so once again the average cost falls from Rs. 55 to Rs. 54.

2. Average cost will be constant when marginal cost is equal to average cost. When 4 units are produced, average cost does not change (it is Rs. 54 when 3 units are produced and remains Rs. 54 when 4 units are produced) because marginal cost (Rs. 54) is equal to average cost (Rs. 54).

3. Average cost will rise when marginal cost is greater than average cost. When 5 units are produced average cost rises from Rs. 54 to Rs. 55, because the marginal cost (Rs. 59) is greater than the average cost (Rs. 54). This relationship between marginal cost and average cost is a generalized relationship and holds good in case of the marginal and average values of any variable, be it revenue or product etc. In the box a simple proof of the relationship is given: This is for reference only

Revenue

Revenue:- Money received by a firm from the sale of given output in the market.

Total Revenue (TR): Total sale receipts or receipts from the sale of given output.

$$AR = \frac{TR}{Q}$$

$$AR = \frac{Q \times P}{Q}$$ Putting the value of TR

AR= price

AR and demand curve are the same.

Shows the various quantities demanded at various prices.

Marginal Revenue (MR): Additional revenue earned by the seller by selling an additional unit of output.

MRn = TR n - TR n-1 **OR** **MR n = TR n / Q**

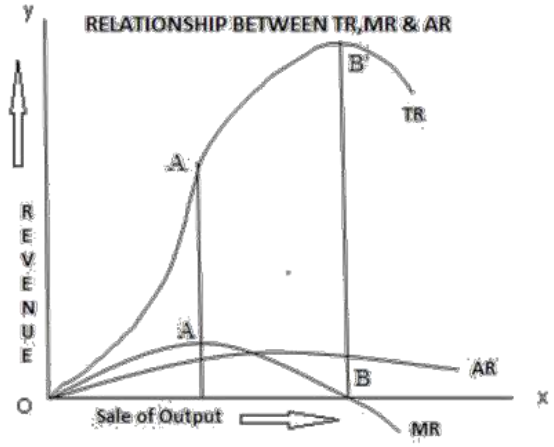
TR = Σ MR

Relationship between TR & MR

- When MR increases TR increases at increasing rate,
- When MR decreases TR increases at decreasing rate, When MR is negative TR falls,

Relationship between AR & MR

- AR also increases till MR > AR**.**
- AR is constant & maximum when MR=AR
- When MR is zero TR is maximum.
- AR falls when MR< AR



The diagram shows that till point A MR increases & TR increases at increasing rate

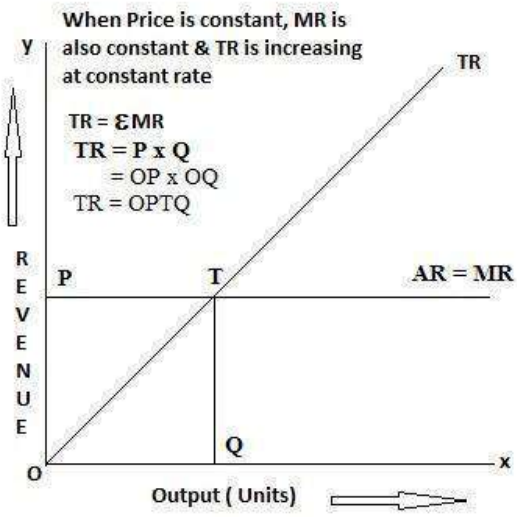
After point A MR falls, so TR increases at decreasing rate.

At point B MR is zero TR is maximum at B'
After point B MR is negative & TR falls

FIRMS REVENUE (DEMAND) CURVES

i) When Price is constant :- When Price is constant MR is also constant , TR increases at constant rate because TR = ∑ MR i.e. MR indicates the rate at which TR increases. Relationship can be studied as under:

Quantity of Output (Q)	Price Per Unit (P)	TR (Q x P)	MR = TR / Q
1	10	10	10
2	10	20	10
3	10	30	10
4	10	40	10
5	10	50	10
6	10	60	10
7	10	70	10



Constant price means constant MR & TR increases at constant rate. AR = MR = Price As Under Perfect Competition.

TR is shown by a straight line moving upward. It starts from the origin because TR is zero when output is zero.

THEORY OF SUPPLY

Meaning of supply

Supply means the quantity of a commodity which a firm or an industry is willing to produce at a particular price, during period of time.

Law of supply

This law states that 'other things remaining the same', an increase in the price of a commodity leads to an increase in its quantity supplied. Thus, more of a commodity is supplied at higher prices than at lower prices. This law can be explained with the help of a supply schedule and curve.

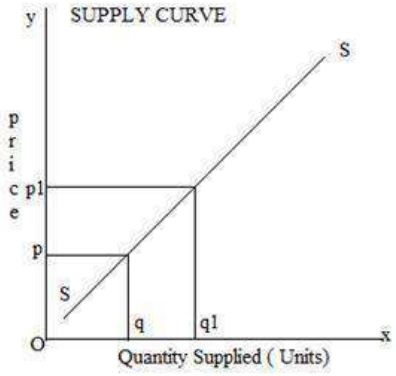
A supply schedule is a table which shows the quantities of a commodity supplied at various prices during a given time period.

Supply Schedule Supply Curve

Price (Rs)	Supply (Units)
1	100
2	200
3	300

As the price increases from Re. 1 to Rs. 3, the supply also rises from 100 units to 300 units, in response to the rising price. What is the basis of the law of supply? Other things remaining the same,

an increase in price results in higher profits for the producer. The higher the price of the commodity, the greater are the profits earned by the firms and the greater is the incentive to produce more. Similarly when the price falls, profits decline, resulting in a decrease in quantity supplied of the commodity. Thus the price and quantity supplied of a commodity are directly related, other things remaining the same.



SS is Supply curve – Positively sloped

Because when price rises from op to op1 quantity supplied also increases from oq to oq1. Direct relationship between Price & supply.

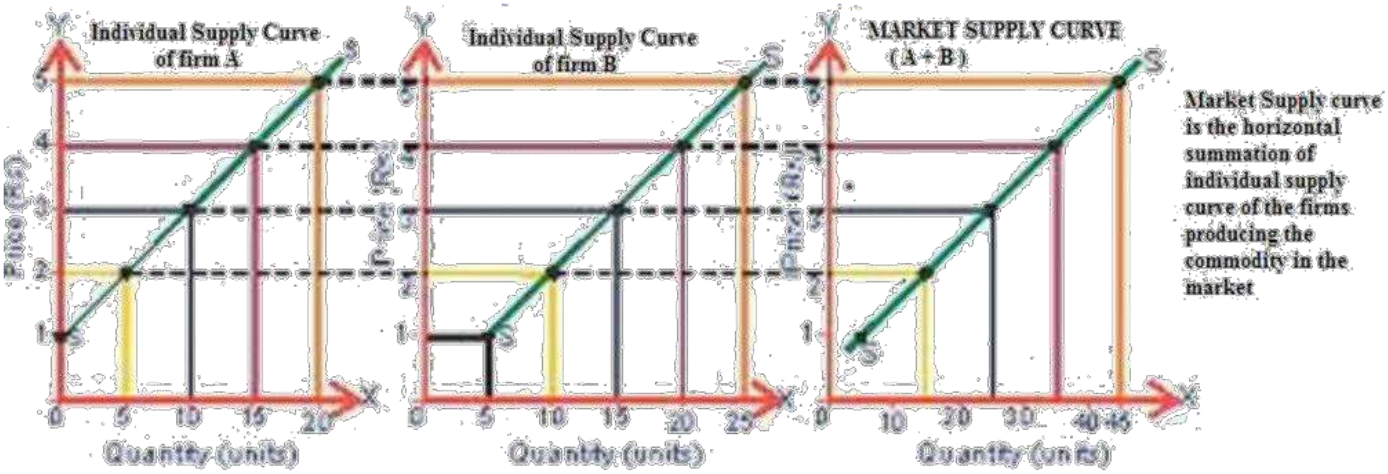
ASSUMPTIONS OF LAW OF SUPPLY:-

i) No change in price of factors & Price of related goods
ii) No change in technique of production
iii) No change in goal of firm
iv) Government policy does not change
v) Indirect taxed remain constant

MARKET SUPPLY:-It refers to quantity of a commodity that all the firms are willing and able to offer for sale at each possible price during a given period of time.

Market supply schedule: - Sum of the total production of firms producing a commodity is market supply. It is the supply of all the firms i.e. supply schedule of industry as a whole. Suppose there are two firms, supply schedule is as follows:-

Price (Rs)	Individual supply of Firm A	Individual supply of Firm B	Market Supply (A+ B)
1	0	5	5
2	5	10	15
3	10	15	25
4	15	20	35
5	20	25	45



Factors affecting the Supply of a commodity:

1. **Price of Commodity**: Higher the price of a commodity, larger is the quantity supplied and vice-versa.

2. **Technological Changes**: Improved techniques reduce the cost of production and increase the supply and vice versa.

2. **Input Prices**: A fall in prices of factors of production will increase the supply of the commodity and vice-versa.

3. **Goal of the firm:** If the goal is profit maximization, more quantity will be supplied at higher price. If the goal is sales maximization more will be supplied at same price. If its aim is to minimize risk, less will be supplied.

4. **Price of Related Goods:** If price of a substitute goods increase, supply of the commodity concerned will fall. If price of a complementary good increases, supply of the commodity concerned increases.

5. **Expectation about future prices:** If there is an expectation of increase in price of the commodity in future, supply will be less at present and vice-versa.

6. **Government Policy:** Imposition of taxes reduces supply and subsidy increases supply.

7. **Number of firm:** The larger the number of firms, greater in the market supply and vice-versa

'Change in supply' versus 'change in quantity supplied'

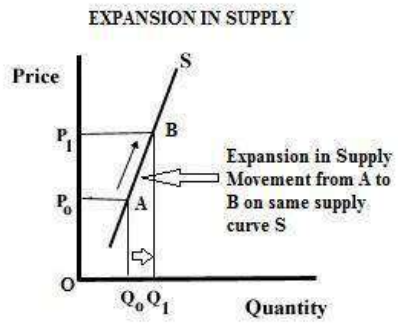
('shift of supply curve' versus 'movement along a supply curve') The supply of a commodity depends on its own price and 'other factors' like input prices, technique of production, prices of other goods, goals of the firm, taxes on the commodity etc.

Movement along a supply curve (change in quantity supplied)

The law of supply states the effect of a change in the own price of a commodity on its supply, other things remaining constant. The supply curve also carries the same assumption. Thus when other factors influencing supply do not change, and only the own price of the commodity changes, the change in supply takes place along the curve only. This is what **movement along a supply curve** means. A movement from one point to another on the same supply curve is also referred to as a **"change in quantity supplied".**

It is Expansion & Contraction

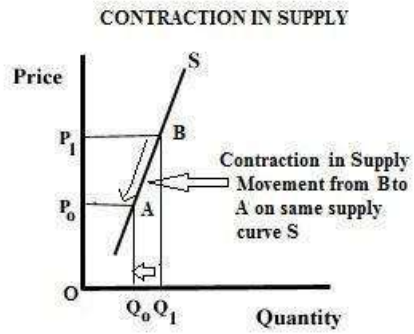
i) **Expansion in Supply:-**When price rises & quantity of commodity is supplied more, the supplier moves rightwards on the same supply curve. Other factors affecting supply remain constant. This is called as expansion in supply curve.



In figure OQ_o is the quantity supplied at price OP_o. When the price rises to OP1 the quantity supplied increases to OQ1. Thus there is a rightward movement along the supply curve from point A to B. It is extension of supply.

Due to rise in price when other factors affecting supply remain constant

ii) **Contraction in Supply**:- When price falls ,quantity of commodity supplied reduces, the supplier moves leftwards on the same supply curve. Other factors affecting supply remain constant. This is called as contraction in supply curve.



In figure OQ1 is the quantity supplied at price OP1. When the price falls to OP_0 the quantity supplied also falls to OQ_0. Thus there is a leftward movement along the supply curve from point B to A. It is Contraction of supply.

Due to fall in price when other factors affecting supply remain constant

Shifts of the supply curve (change in supply)

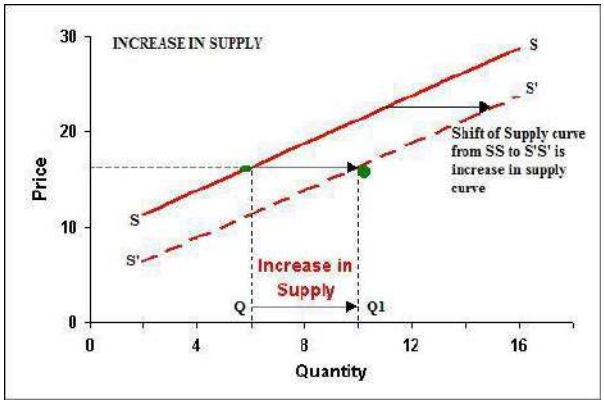
When supply changes due to changes in factors other than the own price of the commodity, it results in a **shift of the supply curve.** This is also referred to as a **"change in supply". It is increases & decrease in supply.**

i) **Increase in Supply:-** An **'increase'** in supply means more of the commodity is supplied at same price. As a result the supply curve shifts to the right. It is due to

- Fall in input price
- Technological improvement •

Fall in indirect taxes

- Fall in price of other factors affecting supply



Supply 'increases' the supply curves SS shifts to the right S'S'. The market is now willing to supply more i.e. OQ1, at the same price OP.

'Decrease' in supply means less of the commodity is supplied at the same price. As a result, the supply curve shifts inwards to the left.'Decrease' in supply of a good can be caused by a change in any one or more of the 'other factors' affecting supply, own price remaining unchanged. For example, if the input prices rise or there is an increase in the prices of other related commodities, the producers supply less at the same price resulting in a leftward shift of the supply curve.

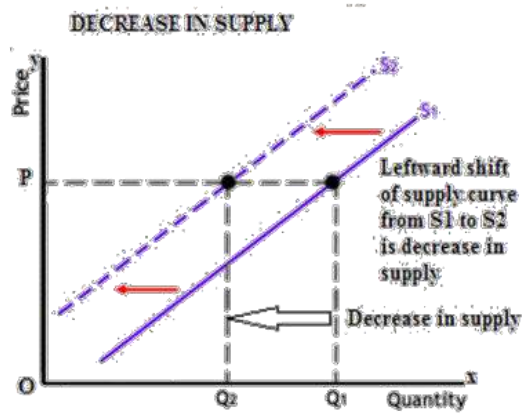


Figure at price OP, previously OQ1 units were supplied at S1 supply curve.

Which decreased to OQ2. It means that the market is now willing to supply less at the same price OP. Thus Supply curve shifts towards left to S2.

ELASTICITY OF SUPPLY:-Price Elasticity of Supply measures the degree of responsiveness of change in Supply by change in price of the good. Law of Supply measures direction of relationship between price & Supply where as elasticity measures the proportional change in Supply by change in price.

Ed = Proportional (%) change in Supply / Proportional (%) change in price x 100

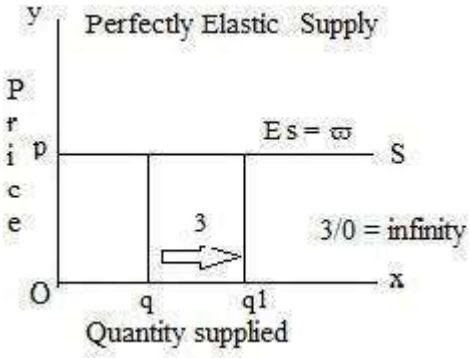
Ed = Δq/q x100 / Δp/p x100 OR Ed = Δq /q x p/Δp

Types of Elasticity of Supply:-

6. **Perfectly Elastic Supply:-**When Supply of a commodity rises or falls to any extent without any change in price, the Supply for the commodity is said to be perfectly elastic. It is an imaginary situation

Price	Supply
5	10
5	20
5	30

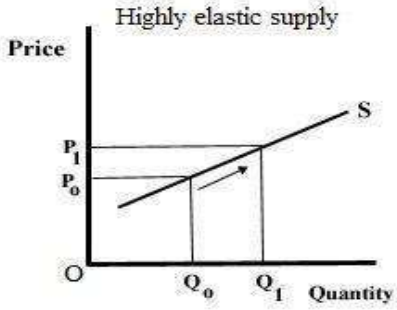
Diagram & Schedule shows that Supply changes without change in price & curve becomes horizontal to x axis.



7. **Highly Elastic Supply (Ed>1) :-** When change in price leads to more proportional change in Supply, the Supply is said to be highly elastic**.** If the supply curve is extended to the left it will touch y axis.

Price	Supply
7	20
5	10

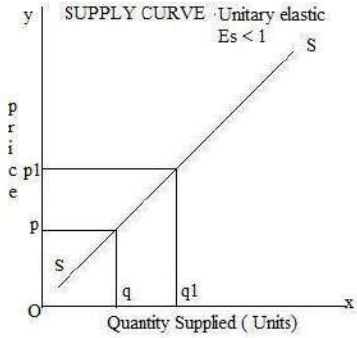
When price falls by Rs 2/- Supply falls by 10 units. The coefficient of elasticity of Supply is greater that unity.



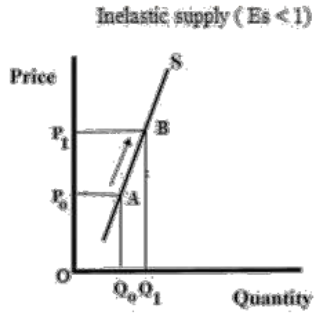
8. **Unitary Elastic Supply (Ed = 1) :-** When Proportional Change in Supply is equal to proportional change in price, the Supply is said to be unitary elastic. If supply curve is extended towards left it will touch origin.

Price	Supply
7	12
5	10

Supply curve is a straight upwards sloping line from origin.



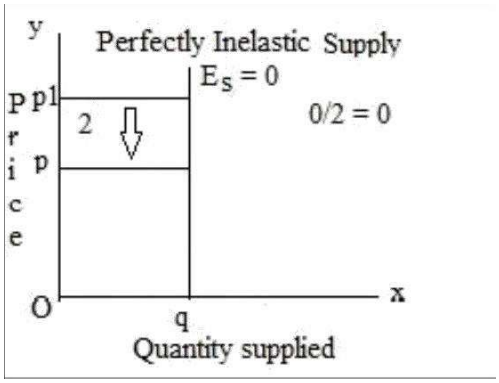
9. **Inelastic Supply (Ed< 1) :-** When Proportional change in Supply is less than proportional change in price, the Supply is said to be inelastic Supply. If supply curve is extended towards left it will touch x axis.



Price	Supply
20	12
10	10

> qq1)

10. Perfectly Inelastic Supply (Ed = 0):- When the Supply for the commodity does not change as a result of change in its price, Supply is said to be perfectly in elastic.



Price	Supply
7	10
5	10

MEASURING ELASTICITY OF SUPPLY:-

There are two methods of measuring elasticity of Supply:

PERCENTAGE OR PROPORTIONATE METHOD:- elasticity of Supply is measured by the ratio of proportional change in Supply & proportional change in price. Symbolically

Ed = Proportional (%) change in Supply / Proportional (%) change in price x 100

Ed = Δq/q x100 / Δp/p x100

OR Ed = Δq /q x p/Δp

The absolute value of elasticity of Supply ranges from zero to infinity

GEOMETRIC METHOD:-Elasticity of supply of a straight line supply curve is measured by Geometrical method. In this method elasticity of supply of a commodity depends on the 'origin' of supply curve. Suppose elasticity is to be calculated at any point (A) on the supply curve. Draw a perpendicular to the x axis (AC), also extend the supply curve to the left till it touches x axis (B). Elasticity is measured from following formula: Es = distance from Intercept on x axis to ⊥ /Distance from origin to ⊥

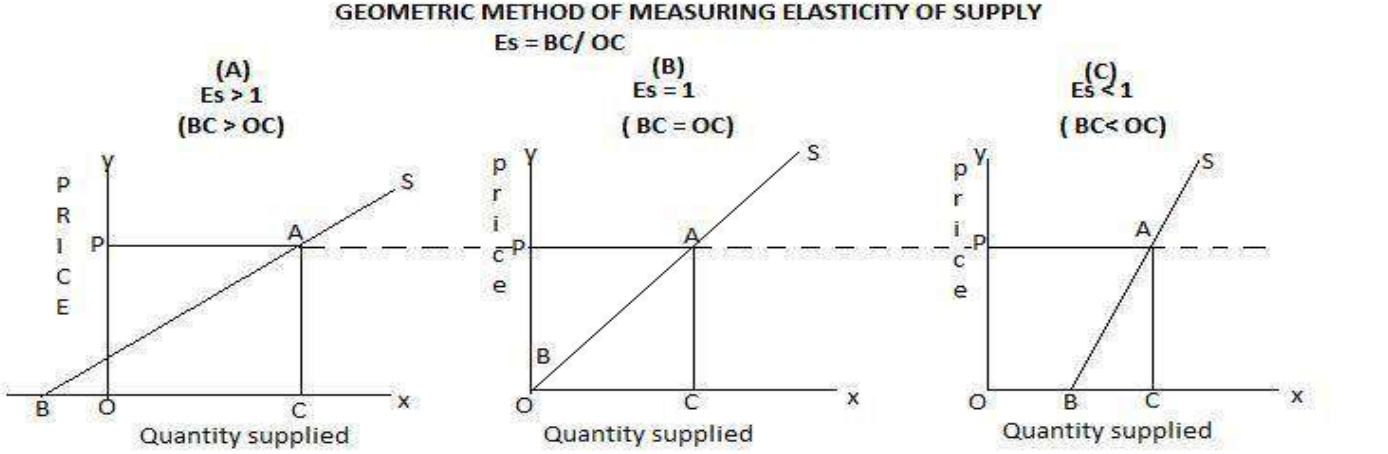


Diagram A: Supply curve intersects x axis in its negative range, supply curve starts from y axis. Supply is highly elastic

Diagram B: Supply curve starts from origin, it is unitary elastic.

Diagram C: Supply curve intersects x axis in its positive range, supply curve starts from x- axis. Supply curve is inelastic.

PRODUCER'S EQUILIBRIUM: MC = MR APPROACH

INTRODUCTION

Producer's equilibrium refers to the level of output of a commodity which gives the maximum profit to the producer of that commodity. Profit equals total revenue less total cost. Therefore, the output level

at which 'total revenue less total cost' is maximum is called the equilibrium output level. **MC = MR approach**

MC = MR approach is the way of identifying producer's equilibrium. The two conditions of MC = MR approach are:

(i) MC = MR

(ii) MC is greater than MR after the MC = MR output level.

Let us explain these conditions.

(i) MC = MR

When one more unit of output is produced, MR is the benefit in terms of more revenue and MC is the cost to the producer. Clearly, so long as benefit is greater than the cost, or MR is greater than MC, it is profitable to produce more. Therefore, so long as MR is greater than MC, the maximum profit level, or the equilibrium level is not reached. The equilibrium is not achieved because it is possible to

add to profits by producing more. The producer is also not in equilibrium when MR is less than MC because benefit is less than the cost. By producing less the producer can add to his profits.

When MC is equal to MR, the benefit is equal to cost, the producer is in equilibrium subject to that

MC becomes greater than MR beyond this level of output. When MC equals MR (subject to the supporting condition) the producer's profit would be less if he produces output more than or less than

the 'MC = MR' output as explained above. Therefore, for equilibrium to reach it is a necessary condition (but not sufficient) that MC equals MR.

(2) MC is greater than MR after MC = MR output level

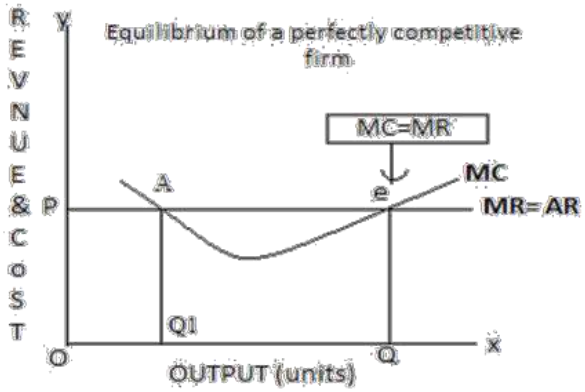
'MC = MR' is a necessary condition but not sufficient enough to ensure equilibrium. It is because the producer may face more than one MC =MR outputs. But out of these only that output beyond which MC becomes greater than MR is the equilibrium output. It is because if MC is greater than MR, producing beyond MC = MR output will reduce profits. And when it is no longer possible to add to profits the maximum profit level is reached. On the other hand, if MC is less than MR beyond the MC = MR output, it is possible to add to profits by producing more. Therefore this MC = MR level is not the equilibrium level. For a producer to be in equilibrium it is necessary that MC equals MR as well MC becomes greater than MR if more output is produced.

Explanation with the help of schedule:

Units of output	MR	MC
1	12	15
2	12	12
3	12	10
4	12	8
5	12	7
6	12	9
7	12	10
8	12	12
9	12	15

In the above schedule MC = MR condition is fulfilled at 2 & 8 levels of output, but consumer will be at equilibrium as MC is increasing at 8 level of output. Thus consumer is at equilibrium when producer produces 8 units of output.

Graphic Presentation

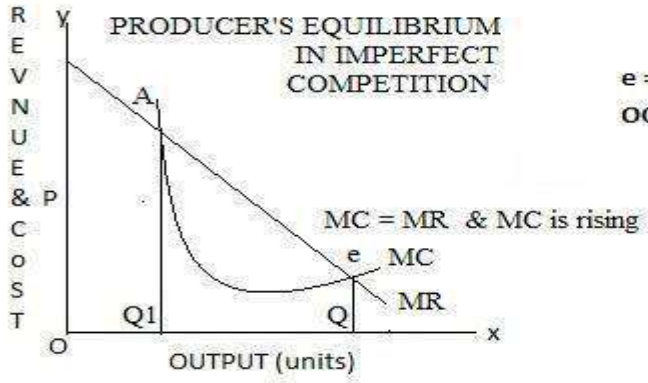


e = equilibrium point

OQ = equilibrium quantity

Note that in the above curve MC = MR condition is satisfied both at A & e both level of output (oq1&oq) But the second condition – MC becomes greater than MR – is satisfied only at OQ i.e. point e. Therefore equilibrium output level is OQ units.

When Price is not constant: When a producer can sell more only by lowering the price, the MR curve is downward sloping. Thetypical MC Curve is U-shaped.



e = equilibrium point

OQ = equilibrium quantity

Note that MC = MR condition is satisfied at both A and e. But the second condition – MC is greater than MR or MC curve cuts MR from below – is satisfied only at e. So, the equilibrium level of output is OQ.Two conditions may also exist

i) MR> MC At output level less than OQ, MR> MC which implies that firm is earning profit on the last unit of output. The marginal profit provides an incentive to the firm to increase production and move towards OQ units of output. Thus If MR> MC firm increases output to maximise profit.

ii) MR< MC At output level more than OQ, MR< MC which implies that firm is making loss on the last unit of output. Hence in order to maximise profit, a rational producer decrease production as long as MC > MR. Thus If MR< MC firm moves towards producing OQ units of output.

Unit 4: Forms of Market and Price Determination under Perfect Competition with simple applications –

Perfect competition - Features; Determination of market equilibrium and effects of shifts in demand and supply. Other Market Forms - monopoly, monopolistic competition, oligopoly - their meaning and features. Simple Applications of Demand and Supply: Price ceiling, price floor.

Meaning of equilibrium

Equilibrium, in general terms. implies (a) a balance between the opposite forces and (b) a state of rest or a situation that has a tendency to persist. Let us take examples to show the application of these meanings in microeconomics.

Let us take a market situation in which buyers and sellers are negotiating to buy and sell a good. Both have different prices to offer. But the good will be sold only when both agree to a common price and a common quantity at that price. If both agree, a market equilibrium is said to emerge. Note that buyers and sellers have opposite interests. The buyers will like to pay as low a price as possible. The sellers will like to charge as high a price as possible. Agreement on a common price and quantity creates a balance between the two opposite interests. This equilibrium price and quantity has a tendency to persist.

Equilibrium price

Equilibrium price is the price at which its two determinants demand and supply are equal. At this price there is no tendency to change.

Equilibrium quantity: At equilibrium price quantity demanded is equal to quantity supplied, this quantity is called as equilibrium quantity.

MARKET EQUILIBRIUM: Determination of equilibrium price:

Equilibrium price is determined by the equality between two market forces:-demand & supply.

DEMAND FORCE:- Consumer demands the commodity because it has utility for him & satisfies needs. The aim of every consumer is to maximise his satisfaction, the maximum price paid by the consumer depends on marginal utility obtained by the consumer (Mux = Px), thus consumer decides maximum limit of price by marginal utility of the good.

There is inverse relationship between Price & demand of the good, so demand curve is negatively sloped.

SUPPLY FORCE:- Producer supplies the commodity to maximise the profit. Profit is maximised when Revenue is maximum & cost is minimum. Minimum level of price accepted by the producer is equal to the marginal cost of production. Thus minimum price will be determined by MC of the good.

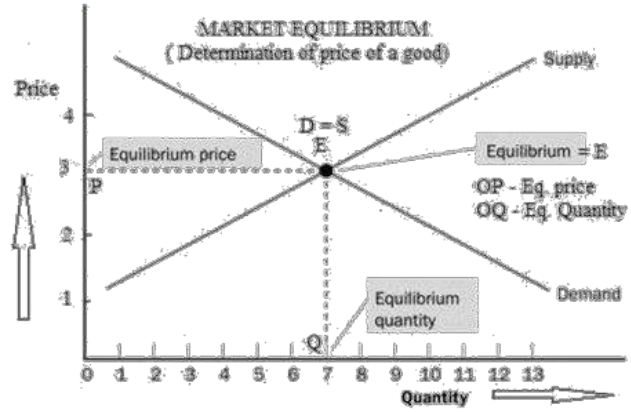
There is direct relationship between price & supply of the good, so supply curve is positively sloped.

DETERMINATION OF EQUILIBRIUM PRICE:-

Price of the commodity is determined by the forces of demand & supply. Producer wants to sell the good at maximum price to earn more & more profit (decided by MC) where as Consumer wants to buy the good at lowest price to maximise satisfaction (decided by MU). Price is determined between maximum limit of MU & minimum limit of MC & is determined at a point where demand is equal to supply of the good. We can explain this meaning with the help of demand and supply schedule of a good, given below:

Price per unit (Rs)	Demand Units	Supply Unit	Equilibrium
1	11	3	Excess Demand
2	9	5	Excess Demand
3	7	7	Equilibrium
4	5	9	Excess Supply
5	3	11	Excess Supply

The market equilibrium is established at a price of Rs. 3 per unit, because at this price both the market demand and market supply are equal (7 units). This is the price which has a tendency to persist.



Why is not any other price an equilibrium price?

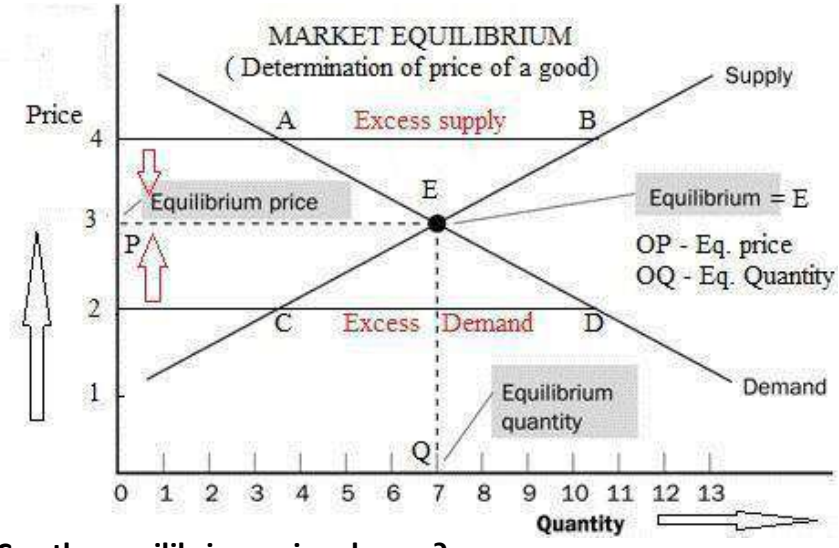
Take, for example, a price less than the equilibrium price. Suppose it is Rs. 2 per unit. At this price market demand is greater than market supply. It is called an **excess demand** situation. But this price cannot persist. It will change. Why?

It is because the buyers will not be able to buy all what they want to buy. The pressure of excess demand will push the market price up. This will have two effects. Supply will go up because the producers are willing to supply more at a higher price. Demand will go down because the buyers are willing to buy less at a higher price. In fact, this is what is required to restore equilibrium. The tendency of supply going up and demand going down will continue till market supply becomes equal to market supply once again and the excess demand becomes zero. This is achieved at Rs. 3 per unit. The equilibrium is restored.

Let us now take a price higher than the equilibrium price. Suppose it is Rs. 4 per unit. At this price now the market supply is greater than market demand. It is called an **excess supply** situation. Even this price cannot persist. It is because the sellers will not be able to sell all what they want to sell. The excess supply pressure will push the price downwards. This will have two effects. Supply will go down and demand will go up. The tendency will continue till market demand becomes equal to market supply once again, and the price settles at Rs. 3 per unit.

To sum up, the equilibrium price is the price at which market demand equals market supply. This price has a tendency to persist. If at a price the market demand is not equal to market supply there will be either excess demand or excess supply and the price will have tendency to change until it settles once again at a point where market demand equals market supply.

Graphic Presentation



The equilibrium is at E the intersection of supply and demand curves

The equilibrium price is Rs. 3 and equilibrium quantity 7 units. The price higher than Rs. 3, creates excess supply (AB) and ultimately returns to Rs. 3. The arrows indicate the tendencies.

The price below the equilibrium price creates excess demand and has a tendency to return to Rs. 3 per unit on account of the effects explained above and indicated by the arrows.

Can the equilibrium price change?

Yes, when demand or supply or both increase or decrease. 'Increase', as you know, means rise in demand or supply due to factors other than the own price of the good. Similarly the term 'decrease' is defined. Graphically, it means shift of demand curve, or supply curve or both. You are familiar with these terms. You are expected to study the chain effects of shifts in demand and supply on equilibrium price and quantity.

FORMS OF MARKET:-

MARKET:- Market does not mean a shopping complex, it refers to the whole area with in which the buyers & sellers come into contact with each other.

Depending on degree of competition or no. of firms in the market, it is categorised into following forms:

i) Perfect Competition
ii) Monopoly
iii) Monopolistic Competition
iv) Oligopoly

There are many criteria of classification, the number of sellers, similarity of products, availability of information, mobility of firms and the inputs engaged in the firm, etc. Whatever the criteria the end result is reflected in one thing: how much influence an individual seller, on his own, is able to exercise on the market. Lower the influence more the competitive nature of the market it indicates. If the influence of an individual seller is zero, or virtually zero, the market is said to be perfectly competitive.

FEATURES OF PERFECT COMPETITION

Introduction

Perfect competition is a state of a market. Anything which facilitates contact between buyers and sellers constitutes a market. It may be a face to face meeting at some place or simply verbal negotiations through telephone, internet, etc.

Meaning

Perfect competition can be defined either in terms of its characteristic features, or in terms of the unique end result of these characteristics. Unique in the sense that it is specific to a perfectly competitive market. In terms of its features, a perfectly competitive is a market where there are large number of buyers and sellers, the firms produce homogeneous products, the buyers and sellers have perfect knowledge and the firms are free to enter or make an exit in and out of industry. In terms of the end result of these features which is unique to this market, **a perfectly competitive market is one in which an individual firm cannot influence the prevailing market price of the product on its own. Features and their implications**

A perfectly competitive market has the following features:

1. Large number of sellers and buyers

Note that 'large number' is not a specifically defined number. However, it has a specific implication. 'large number' imply that the number of sellers is large enough to render a single seller's share in total market supply of the product insignificant. It has a further implication. Insignificant share means that if only one individual firm reduces or raises its own supply, the prevailing market price remains unaffected. The prevailing market price is the one which was set through the interaction of market demand and market supply forces, for which all the sellers and all the buyers together are responsible. One single seller has no option but to sell what it produces at this market determined price. This position of an individual firm in the total market is referred to as **price taker.** This is a unique feature of a perfectly competitive market.

Similarly, the 'large number' of buyers also has the same implication. A single buyer's share in total market demand is so insignificant that the buyer cannot influence the market price on his own by changing his demand. This makes a single buyer also a price taker.

To sum up, the feature 'large number' indicates ineffectiveness of a single seller or a single buyer in influencing the prevailing market price on its own, rendering him simply a price taker.

2. The products of all the firms in the industry are homogenous

It means that the buyers treat the products of all the firms in the industry as homogenous. The products produced by the firms are identical, or treated as identical, or perfectly standardized. The buyers do not distinguish the output of one firm from that of the other.

The implication of this feature is that since the buyers treat the products as identical they are not ready to pay a different price for the product of any one firm. They will pay the same price for the products of all the firms in the industry. On the other hand, any attempt by a firm to sell its product at a higher price will fail.

To sum up, the 'homogenous products' feature ensures a uniform price for the products of all the

firms in the industry.

3. Perfect knowledge about markets for outputs and inputs.

The firms have all the knowledge about the product market and the input markets. Buyers also have perfect knowledge about the product market.

The implication of perfect knowledge about the product market is that any attempt by any firms to charge a price higher than the prevailing uniform price will fail. The buyers will not pay because they have perfect knowledge. There is no ignorance factor operating in the market. The sellers do not charge a lower price due to ignorance. The buyers do not pay a higher price due to ignorance. A uniform price prevails in the market. As regards the knowledge about the input markets, the implicit assumption is that each firm has an equal access to the technology and the inputs used in the technology. No firm has any cost advantage. Cost structure of each firm is the same. All the firms have a uniform cost structure. Since there is uniform price and uniform cost in case of all firms, and since profits equal cost less price, all the firms earn uniform profits.

4. Freedom to firms to enter or to leave the industry in the long run

Freedom of entry means that there are no artificial barriers and natural barriers in the way of a new firm wishing to enter into industry. The artificial barriers may take the form of patent rights, legal restrictions, etc. The natural barrier may take the form of huge capital expenditure required to start a new firm, which the firm wishing to enter is not able to arrange.

Freedom of exit means no barriers in the way of a firm deciding to leave the industry. Government rules, labour laws, loss of huge fixed capital etc. do not come in the way.

The freedom of entry and exit of firms has an important implication. This ensures that no firm can earn above normal profits in the long run. Each firm earns just the normal profits, i.e. minimum necessary to carry on business. In Microeconomics, normal profits is treated as an opportunity cost, and therefore, counted in calculation of total cost. Since profit equals total revenue minus total cost, normal profit means zero economic profit.

If the existing firms are earning above normal profits, i.e. positive economic profits.

Attracted by the positive profits, the new firms enter the industry. The industry's output, i.e. market supply, goes up. The price comes down. New firms continue to enter and the price continues to fall till economic profits are reduced to zero.

If the existing firms are incurring losses. The firms start leaving. The industry's output starts falling, price starts going up, and all this continues till losses are wiped out. The remaining firms in the industry then once again earn just the normal profits. Only zero economic profit in the long run is the basic outcome of a perfectly competitive market.

THREE MAIN CONCLUSIONS:-

i) Perfectly competitive firm has no price policy, so firm is a price taker not the price maker.

ii) Demand curve of perfectly competitive firm is horizontal to x axis, which shows that firm can sell any amount of good at prevailing price.

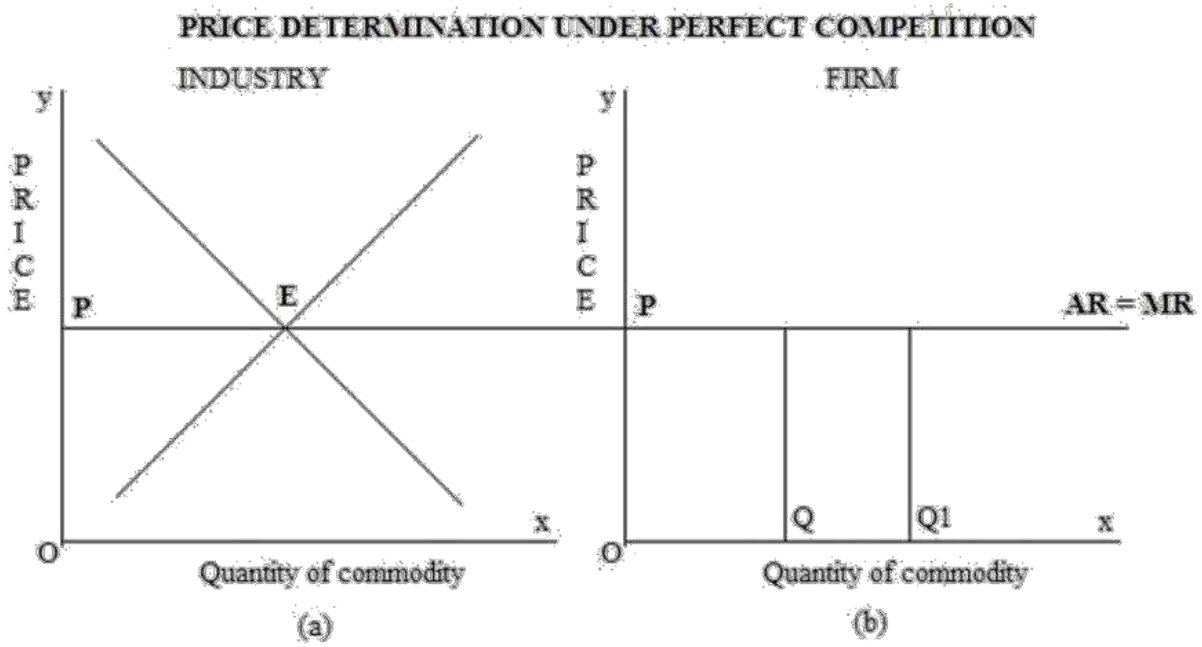
iii) Perfectly competitive firm earns only normal profit in the long run.

PRICE DETERMINATION IN PERFECT COMPETITION:-

Average Revenue and Marginal Revenue curves of a Perfectly Competitive Firm

In Perfect competition, the forces of market supply (i.e. supply by industry) and market demand (demand by all the buyers) determine the market price in the Industry. The firm, takes the price which is determined in the Industry. Being a price taker, firm adopts this price and is free to sell any quantity it likes at this price. The price taker feature determines the shape of the firms AR and MR curves. As price is same in perfect competition AR is same as MR, which is shown from a schedule:

Price	Quantity	TR	AR	MR
5	1	5	5	5
5	2	10	5	5
5	3	15	5	5
5	4	20	5	5
5	5	25	5	5



The figure (a) shows the intersection of demand and supply curves at 'E' determining the price OP. The figure (b) shows the adoption of price by the price taker firms which are free to sell any quantity, at this price. This makes the AR curve perfectly elastic and thus parallel to the X-axis. As per the average marginal relationship, when AR is constant, MR must be equal to AR. Thus, AR is also the MR of the firm.**Perfectly competitive firm is a price taker**

MONOPOLY:- Monopoly is one firm Industry which has full control over quantity supplied & price. It is single seller of a product with no close substitutes.

FEATURES OF MONOPOLY:-

i) **Single seller & Large no. of Buyers:-** There is single producer of a commodity in the market. He may be alone or he may be a group of partners or joint stock company. Being single producer of the good, firm has full control over supply and price of the commodity.
Implication; no competitor, so can change the price as per the situation & get abnormal profit.

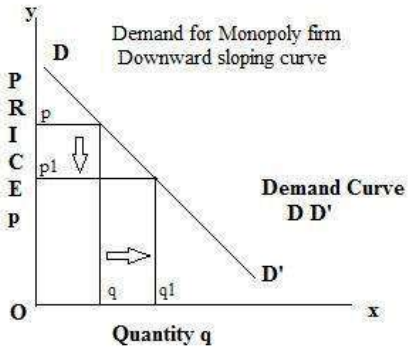
ii) **Strong barriers in the entry & exit of firms in the Industry**:- Under monopoly there are strong restrictions in the entry & exit of firm in the industry. Generally there are government controls, patent rights granted to the firm due to which new firms cannot enter.
Implication: Monopoly firm gets abnormal profit in the long run as there are no competitor.

iii) **No close substitutes are found:-** Monopoly firm maintains its monopoly status because there are no close substitutes found in the market. It restricts competition in the market & consumers have no choice.
Implication: Producer is able to charge high price which consumers have to pay & thus firm gets abnormal profit in the long run.

iv) **Price Discrimination:-** A monopolist may charge different prices from different consumers for the same product. It is called as price discrimination. It is possible for the producer to charge different price with the different consumers when the various consumers have different elasticity of their demand. Producer can charge high price from the consumer having inelastic demand. & comparatively less price may be charged from the consumers having high elasticity of demand. Due to price discrimination a monopolist increases its profit margins.

v) **Non Price Competition:-** Selling cost like expenditure on advertisement, marketing of the product is non price competition, which is not required in monopoly. Some monopoly firms incur expenditure on advertisement to maintain good relationship with their consumers. **Demand Curve for monopoly firm:-** monopolist has full control over price, it doesn't mean that the monopolist can sell any amount of commodity at any price. If monopolist is increasing the price, quantity demanded by the consumer will reduce, where as quantity demanded will increased if price is reduced. So

there is inverse relationship between price and quantity sold by monopolist firm & demand curve of monopoly firm is downward sloping curve. Monopolistic firm is a price maker.



A monopolist has to reduce the price from op to op1 if quantity is to be increased by qq1.

Demand curve for monopoly firm is downward sloping from left to right.

It is inelastic demand.

Causes of arising Monopoly structure:-

i) Patent Rights: Patent rights are the authority given by the government to a particular firm to produce a particular product for a specific time period.

ii) Formation of Cartel: Cartel refers to a collective decision taken by a group of firms to avoid outside competition and securing monopoly right.

iii) Government licensing: Government provides the license to a particular firm to produce a particular commodity exclusively.

MONOPOLISTIC COMPETITION:-

Monopoly + Competition = Monopolistic Competition

Under monopolistic competition, each firm is the sole producer of a particular brand or "product". i. It enjoys 'monopoly position' as far as a particular brand is concerned.

ii. However, since the various brands are close substitutes, its monopoly position is influenced due to stiff 'competition' from other firms.

So, monopolistic competition is a market structure, where there is competition among a large number of monopolists.

i)**Large no of buyers & sellers** :- Large no. of buyers & sellers are there, but their no. is lesser than perfect competition. So contribution of each firm or consumer is so small in total supply or demand that they can't affect the price due to this feature. There are large numbers of firms selling closely related, but not homogeneous products. Each firm acts independently and has a limited share of the market. So, an individual firm has limited control over the market price. Large number of firms leads to competition in the market.

ii)**Product Differentiation**:- It is the distinctive feature of this competition. Products which firms are selling are not perfect substitutes of each other, but close substitutes of each other. There are two types of product differentiation: Real difference when products have real qualitative difference. Imaginary difference – when goods are different only in colour, design, brand etc, but same in quality. Each firm is in a position to exercise some degree of monopoly (in spite of large number of sellers) through product differentiation. The product of a firm is close, but not perfect substitute of other firm.

Implication of 'Product differentiation' is that buyers of a product differentiate between the same products produced by different firms. Therefore, they are also willing to pay different prices for the same product produced by different firms. This gives some monopoly power to an individual firm to influence market price of its product. Product differentiation creates a monopoly position for a firm as firms are able to make their own consumer groups..

Higher degree of product differentiation (i.e. better brand image) makes demand for the product less elastic and enables the firm to charge a price higher than its competitor's products. For example, Toothpaste: Pepsodent, Colgate, Neem, Babool, closeup, sensodine etc. Cycles: Atlas, Hero, Avon, etc.Tea: Brooke Bond, Tata tea, Today tea, etc. Soaps: Lux, Hamam, Lifebuoy, Pears, cinthol, etc.

iii)Non Price Competition:-

Under monopolistic competition, products are differentiated and these differences are made known to the buyers through selling costs. Selling costs refer to the expenses incurred on marketing, sales promotion

and advertisement of the product. Such costs are incurred to persuade the buyers to buy a particular brand of the product in preference to competitor's brand. Due to this reason, selling costs constitute a substantial part of the total cost under monopolistic competition.

It must be noted that there are no selling costs in perfect competition as there is perfect knowledge among buyers and sellers. Similarly, under monopoly, selling costs are of small amount (only for informative purpose) as the firm does not face competition from any other firm. In addition to price competition, non-price competition also exists under monopolistic competition. Non-Price Competition refers to competing with other firms by offering free gifts, making favourable credit terms, etc., without changing prices of their own products.

Firms under monopolistic competition compete in a number of ways to attract customers. They use both Price Competition (competing with other firms by reducing price of the product) and Non-Price Competition to promote their sales.

iv)Freedom of Entry and Exit:

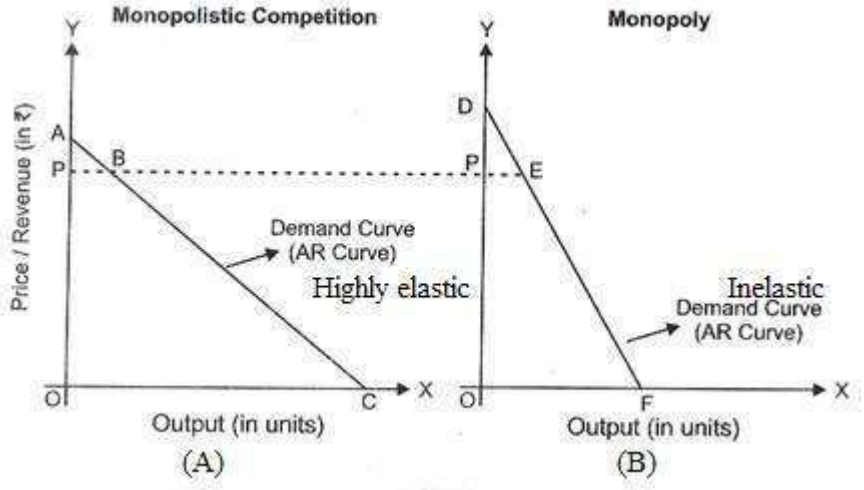
Under monopolistic competition, firms are free to enter into or exit from the industry at any time they wish. It ensures that there are neither abnormal profits nor any abnormal losses to a firm in the long run. However, it must be noted that entry under monopolistic competition is not as easy and free as under perfect competition. All the firms get normal profit in the long run. v)**Lack of Perfect Knowledge:**

Buyers and sellers do not have perfect knowledge about the market conditions. Selling costs create artificial superiority in the minds of the consumers and it becomes very difficult for a consumer to evaluate different products available in the market. As a result, a particular product (although highly priced) is preferred by the consumers even if other less priced products are of same quality. vi)**Pricing Decision:**

A firm under monopolistic competition is neither a price- taker nor a price-maker. However, by producing a unique product or establishing a particular reputation, each firm has partial control over the price. The extent of power to control price depends upon how strongly the buyers are attached to his brand.

Demand Curve under Monopolistic Competition:

Under monopolistic competition, large number of firms selling closely related but differentiated products makes the demand curve downward sloping & more elastic. It implies that a firm can sell more output only by reducing the price of its product.



output is measured along the X-axis and price and revenue along the Y-axis. At OP price, a seller can sell OQ quantity. Demand rises to OQ1, when price is reduced to OP1. So, demand curve under monopolistic competition is negatively sloped as more quantity can be sold only at a lower price.

MR < AR under Monopolistic Competition & Monopoly due to negatively sloped demand curve.

Demand Curve: Monopolistic Competition Vs. Monopoly:

At first glance, the demand curve of monopolistic competition (diagram above) looks exactly like the demand curve under monopoly, as both faces downward sloping demand curves. However, demand curve under monopolistic competition is more elastic as compared to demand curve under monopoly. This happens because differentiated products under monopolistic competition have close substitutes, whereas there are no close substitutes in case of monopoly.

We know, price elasticity of demand (by geometric method) at a point on the demand curve is given by:

Ed = Lower segment of demand curve / Upper segment of demand curve.

At price 'OP', price elasticity of demand under monopolistic competition is BC/AB and under monopoly is EF/DE. Above diagram reveals that BC > EF and DE >AB. So, BC/AB > EF/DE. It means, demand curve in case of monopolistic competition is more elastic as compared to demand curve under monopoly.

OLIGOPOLY:-MEANING

Oligopoly is a market situation in which an industry has only a few firms (or few large firms producing most of its output) mutually dependent for taking decisions about price and output. The two features of this definition – few firms and interdependence between firms – are explained in a section below. If in an oligopoly market, the firms produce homogeneous products, it is called **perfect oligopoly.** If the firms produce differentiated products, it is called **imperfect oligopoly.**

If in an oligopoly market, the firms compete with each other, it is called a **non-collusive, or non-cooperative, oligopoly.**

If the firms cooperate with each other in determining price or output or both, it is called **collusive oligopoly,** or **cooperative oligopoly.**

When there are only two firms producing a product, it is called **duopoly.** It is a special case of oligopoly.

FEATURES

i) Few firms

Few firms mean either only a few firms in number or a few big firms producing most of the output of the industry. The exact number of firms is not defined. The word 'few' signifies that the number of firms is manageable enough to make a guess of the likely reactions of rivals by a firm.

ii) Firms are interdependent in taking price and output decisions.

When there is only a limited number of firms, it is likely that rivals have some knowledge as tohow these firms operate. It one firm does something about the price and quantity of the product itproduces, the rivals are likely to take quick note of it and react by changing their own price andoutput plans. Therefore the given firm, expecting reactions from its rivals, takes into account suchpossible reactions before taking any decision about the price and output of the product it produces.It makes each firm dependent on other firms in the industry.

iii) Barriers to the entry of firms.

The main reason why the number of firms is small is that there are barriers which prevent entry offirms into industry. Patents, large capital, control over the crucial raw materials etc, prevent newfirms from entering into industry. Only those who are able to cross these barriers are able toenter.

iv) Non-price competition

Firms try to avoid price competition for the fear of price war. They use other methods like advertising, better services to customers, etc to compete with each other

v)Difficult to trace Firm's Demand curve.

Under oligopoly it is difficult to determine firm's demand curve. This is because of high degree of interdependence among competitors. When firm lower its price, demand for its product may not increase, because the rival firms may lower the price more because of which the buyers shift to the rival firms. Implies that there is no specific response of quantity demanded to change in price. This makes it impossible to draw any specific demand curve for a firm under oligopoly

MARKET EQUILIBRIUM & EFFECTS OF SHIFT IN DEMAND & SUPPLY ON EQUILIBRIUM PRICE & QUANTITY

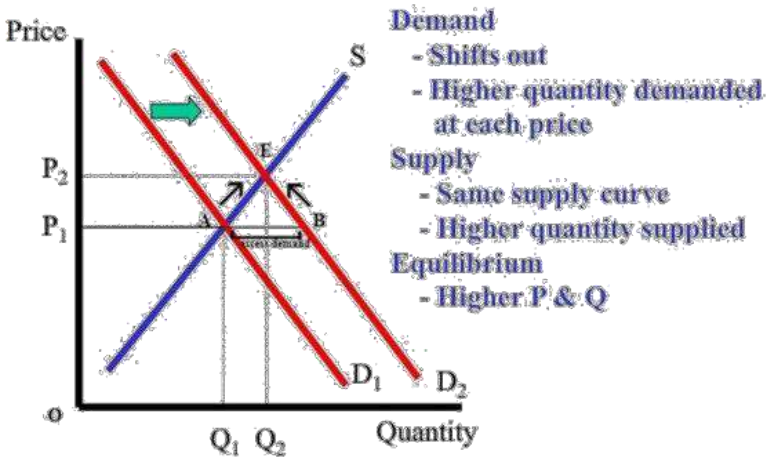
I) THE EFFECTS OF CHANGES IN DEMAND ON EQUILIBRIUM PRICE AND QUANTITY

A. **Increase in Demand**- When demand increases due to other factors affecting demand except price like Increase in income, increase in price of substitute goods, fall in the price of complimentary good, favourable change in taste , preference etc. demand curve shifts rightward The chain effects of rightward shift is as follows:-

- When demand increases demand curve shifts rightward .
- At equilibrium price there is excess demand at initial price
- Excess demand tends price to increase.

- As price increases, consumers are willing to demand less & producers are willing to supply more due to law of demand & supply.
- Increase in supply & decrease in demand reduces excess supply.
- Increase in price will continue till this excess demand is zero, which happens at new equilibrium.

Demand Shifts Right



Equilibrium of Demand & Supply is point A which shows op1 & oq1 as eq. Price &eq. quantity.

When demand increases demand curve shifts rightward from D1 to D2. At op1 price there is excess demand AB

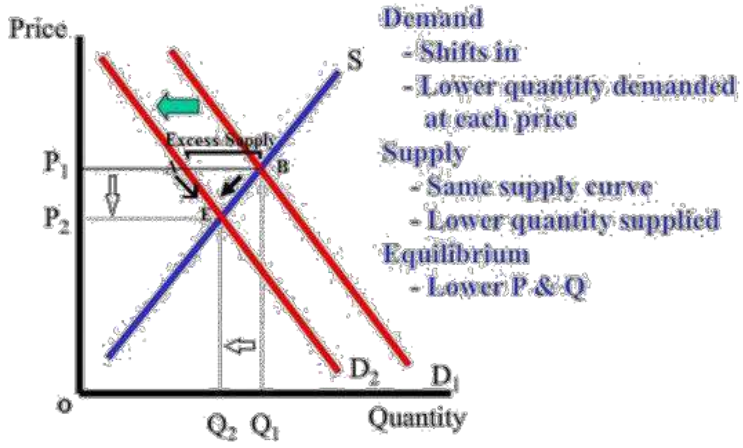
This excess demand leads price to rise towards op2, due to which supply increases & demand falls as arrows show. It reduces excess demand. Increase in price continues till point e is achieved where excess demand is zero. This is new equilibrium.

Equilibrium price rises from op1 to op2 Equilibrium quantity also rises from oq1 to oq2.

Decrease In Demand :-When demand decreases due to other factors affecting demand except price, demand curve shifts left wards which will cause a reduction in the equilibrium price and quantity of a good. Chain of reactions are as follows:

- The decrease in demand causes excess supply to develop at the initial price.
- Excess supply will cause price to fall
- as price falls producers are willing to supply less of the good, thereby decreasing output & consumers are willing to demand more due to law of demand & supply.
- Increase in demand & decrease in supply reduces excess supply.
- Decrease in price will continue till this excess supply is zero, which happens at new equilibrium.

Demand Shifts Left



Equilibrium of Demand & Supply is point B which shows op1 & oq1 as eq. Price &eq. quantity.

When demand decreases demand curve shifts leftward from D1 to D2. At op1 price there is excess supply AB.

This excess demand leads price to fall towards op2, due to which demand increases &supply falls as arrows show. It reduces excess supply. Decrease in price continues till point e is achieved where excess supply is zero. This is new equilibrium.

Equilibrium price falls from op1 to op2 Equilibrium quantity also falls from oq1 to oq2.

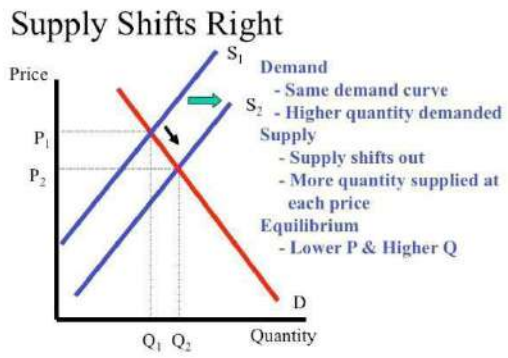
Increase in Supply

Increase in supply will cause equilibrium price and output to change in opposite directions.

When supply increases due to other factors affecting supply except price, supply curve shifts rightwards. An increase in supply will cause a reduction in the equilibrium price and an increase in the equilibrium quantity of a good.

- The increase in supply creates an excess supply at the initial price.

- Excess supply causes the price to fall and quantity demanded to increase.



Equilibrium of Demand & Supply which shows op1 & oq1 as eq. Price &eq.quantity.

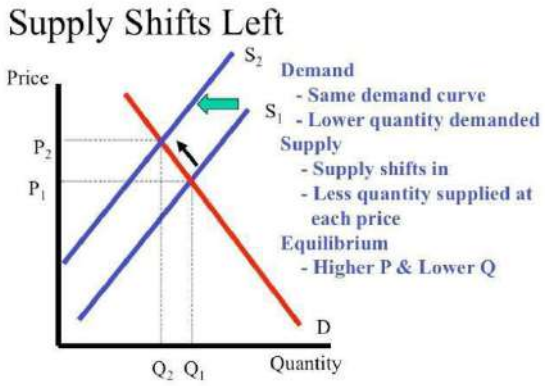
When Supply increases supply curve shifts rightward from S1 to S2. At op1 price there is excess Supply

This excess Supply leads price to fall towards op2, due to which supply decreases & demand rises as arrows show. It reduces excess supply. Increase in price continues till new equilibrium is achieved where excess supply is zero. This is new equilibrium. Equilibrium price falls from op1 to op2 Equilibrium quantity rises from oq1 to oq2.

Decrease in Supply :-Decrease in supply will cause an increase in the equilibrium price and a decrease in the equilibrium quantity of a good.

The decrease in supply creates an excess demand at the initial price.

- Excess demand causes the price to rise and quantity demanded to decrease.



Equilibrium of Demand & Supply which shows op1 & oq1 as eq. Price &eq. quantity.

When Supply falls supply curve shifts leftward from S1 to S2.

Equilibrium price rises from op1 to op2 Equilibrium quantity falls from oq1 to oq2.

Demand and Supply model is very easy to use, when there is a change in either demand or supply. However, in reality, there are number of situations which lead to simultaneous changes in both demand and supply.To predict whether the equilibrium price and the equilibrium quantity rise or fall in such cases, we need to know the magnitude of changes in both demand and supply.

4 cases of simultaneous shifts in demand and supply curves:

(I) Both Demand and Supply decrease

(II) Both Demand and Supply increase

(III) Demand decreases and Supply increases

(IV) Demand increases and Supply decreases

(I) Both Demand and Supply Decrease: Original Equilibrium is determined at point E, when the original demand curve DD and the original supply curve SS intersect each other. OQ is the equilibrium quantity and OP is the equilibrium price. The effect of decrease in both demand and supply on equilibrium price and equilibrium quantity can be better analysed under three different cases:

Case 1: Decrease in Demand = Decrease in Supply:

When decrease in demand is proportionately equal to decrease in supply, then leftward shift in demand curve from DD to D_1D_1 is proportionately equal to leftward shift in supply curve from SS to S_1S_1 (Fig. 11.10). The new equilibrium is determined at E_r As demand and supply decrease in the same proportion, equilibrium price remains same at OP, but equilibrium quantity falls from OQ to OQ_1.

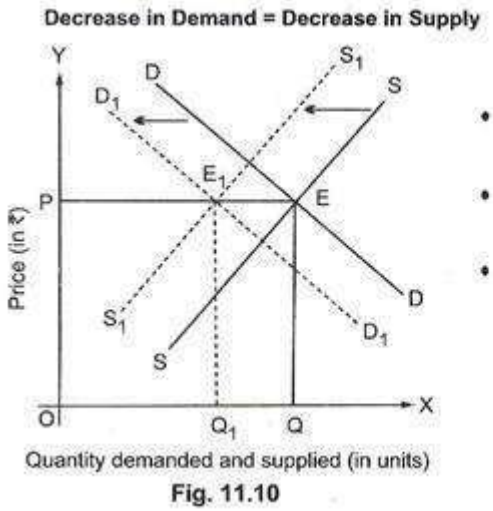


Fig. 11.10

- **New Equilibrium** is determined at E_1
- **Equilibrium Price remains same** at OP
- **Equilibrium Quantity falls** from OQ to OQ_1

Case 2: Decrease in Demand > Decrease in Supply: When decrease in demand is proportionately more than decrease in supply, then leftward shift in demand curve from DD to D_1D_1 is proportionately more than leftward shift in supply curve from SS to S_1S_1 (Fig. 11.11). The new equilibrium is determined at E_1, equilibrium price falls from OP to OP_1 and equilibrium quantity falls from OQ to OQ_1.

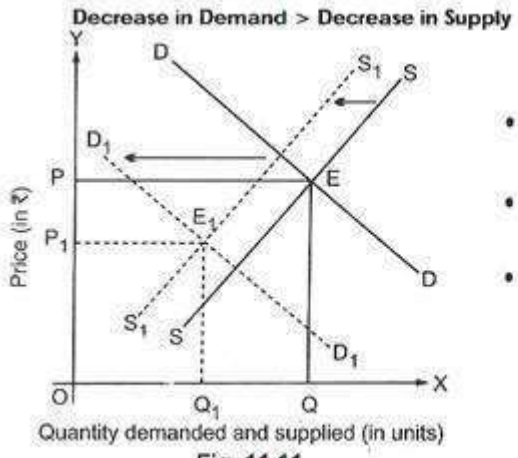
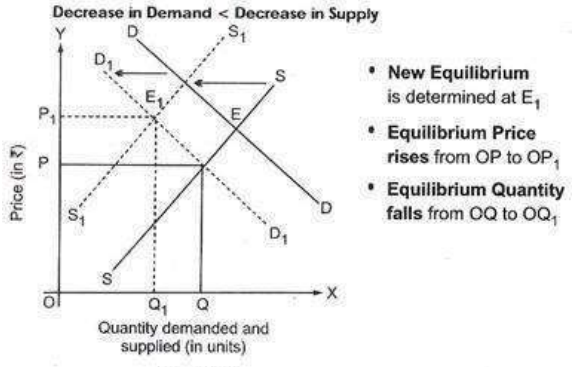


Fig. 11.11

- **New Equilibrium** is determined at E_1
- **Equilibrium Price falls** from OP to OP_1
- **Equilibrium Quantity falls** from OQ to OQ_1

Case 3: Decrease in Demand < Decrease in Supply: When decrease in demand is proportionately less than decrease in supply, then leftward shift in demand curve from DD to D_1D_1 is proportionately less than leftward shift in supply curve from SS to S_1S_1 (Fig. 11.12). The new equilibrium is determined at E_1 equilibrium price rises from OP to OP_7 whereas, equilibrium quantity falls from OQ to



- **New Equilibrium** is determined at E_1
- **Equilibrium Price rises** from OP to OP_1
- **Equilibrium Quantity falls** from OQ to OQ_1

OQ_1.

Fig. 11.12

(II) Both Demand and Supply Increase: Original Equilibrium is determined at point E, when the original demand curve DD and the original supply curve SS intersect each other. OQ is the equilibrium quantity and OP is the equilibrium price. The effect of increase in both demand and supply on equilibrium price and equilibrium quantity is discussed under three different cases:

Case 1: Increase in Demand = Increase in Supply: When increase in demand is proportionately equal to increase in supply, then rightward shift in demand curve from DD to D_1D_1 is proportionately equal to rightward shift in supply curve from SS to S_1S_1 (Fig. 11.13). The new equilibrium is determined at E_1. As both demand and supply increase in the same proportion, equilibrium price remains the same at OP, but equilibrium quantity rises from OQ to OQ_1.

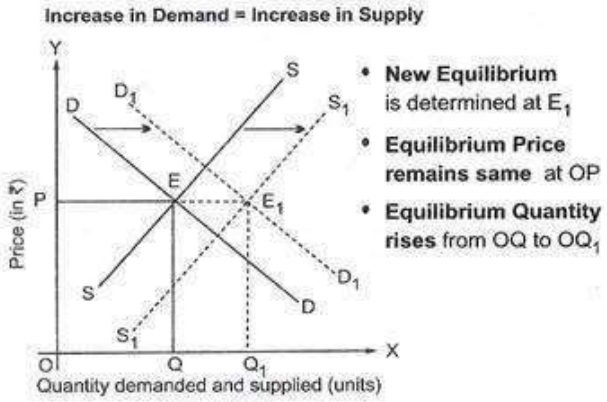


Fig. 11.13

Case 2: Increase in Demand > Increase in Supply: When increase in demand is proportionately more than increase in supply then rightward shift in demand curve from DD to D_1D_1 is proportionately more than rightward shift in supply curve from SS to S_1S_1 (Fig. 11.14). The new equilibrium is determined at E_1 equilibrium price rises from OP to OP_1 and equilibrium quantity rises from OQ to OQ_1.

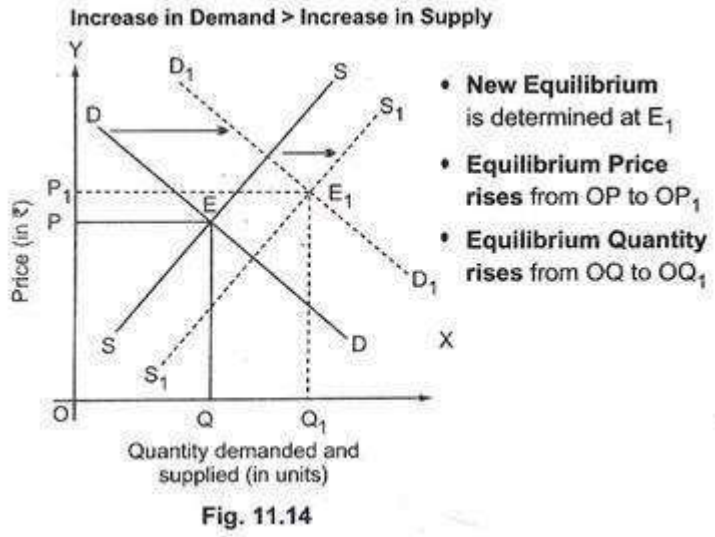


Fig. 11.14

Case 3: Increase in Demand < Increase in Supply:

When increase in demand is proportionately less than increase in supply, then rightward shift in demand curve from DD to D_1D_1 is proportionately less than rightward shift in supply curve from SS to S_1S_1 (Fig. 11.15). The new equilibrium is determined at E_1 equilibrium price falls from OP to OP_1whereas, equilibrium quantity rises from OQ to OQ_1.

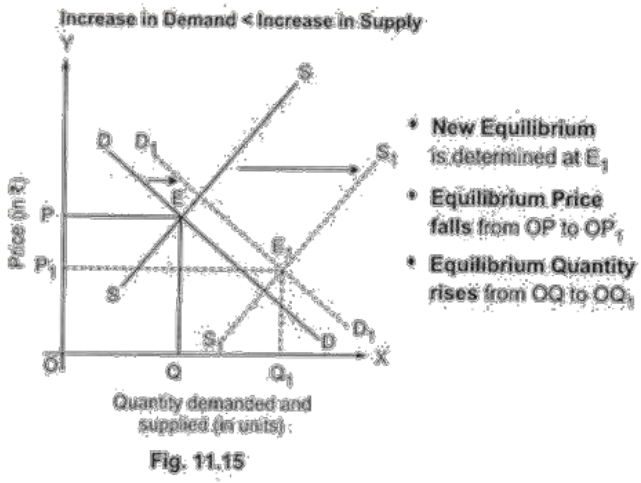


Fig. 11.15

(III) Demand decreases and Supply increases: The effect of simultaneous decrease in demand and increase in supply on equilibrium price and equilibrium quantity is analysed in the-foil owing threecases:

Case 1: Decrease in Demand = Increase in Supply: When decrease in demand is proportionately equal to increase in supply, then leftward shift in demand curve from DD to D_1D_1 is proportionately equal to rightward shift in supply curve from SS to S_1S_1 (Fig. 11.16). The new equilibrium is determined at E_1 equilibrium quantity remains the same at OQ, but equilibrium price falls from OP to OP_1.

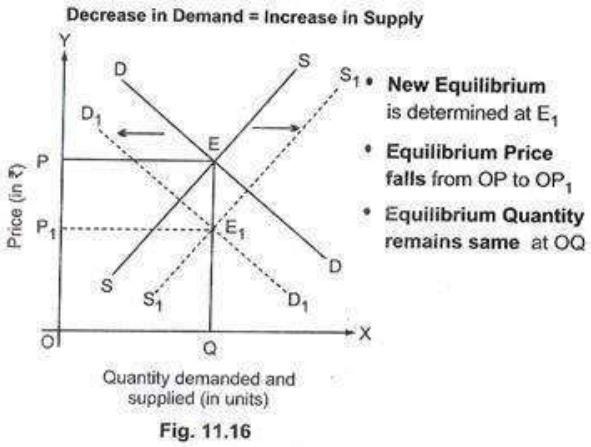


Fig. 11.16

Case 2: Decrease in Demand > Increase in Supply: When decrease in demand is proportionately more than increase in supply then leftward shift in demand curve from DD to D_1D_1 is proportionately more than rightward shift in supply curve from SS to S_1S_1 (Fig. 11.17). The new equilibrium is determined at E_1 equilibrium quantity falls from OQ to OQ_1 and equilibrium price falls from OP to OP_1.

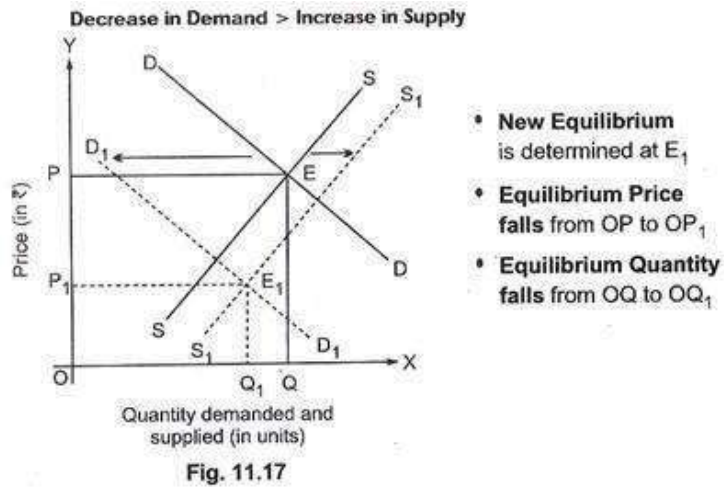


Fig. 11.17

Case 3: Decrease in Demand < Increase in Supply: When decrease in demand is proportionately less than increase in supply, then leftward shift in demand curve from DD to D_1D_1 is proportionately less than rightward shift in supply curve from SS to S_1S_1 (Fig. 11.18). The new equilibrium is determined at E_1 equilibrium quantity rises from OQ to OQ_1 whereas, equilibrium price falls from OP to OP_1.

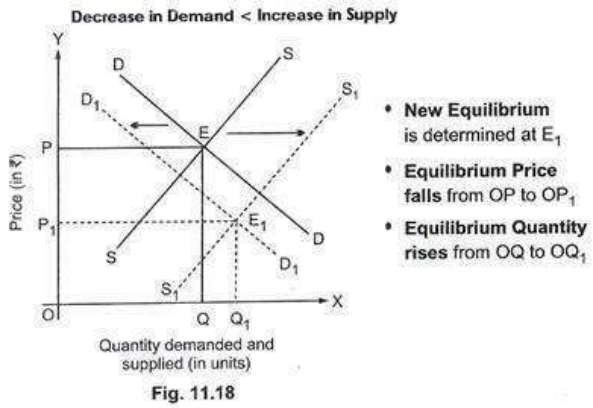


Fig. 11.18

(IV) Demand increases and Supply decreases: The effect of increase in demand and decrease in supply on equilibrium price and equilibrium quantity is discussed in the following three cases:

Case 1: Increase in demand = Decrease in supply: When increase in demand is proportionately equal to decrease in supply, then rightward shift in demand curve from DD to D_1D_1 is proportionately equal to leftward shift in supply curve from SS to S_1S_1 (Fig. 11.19). The new equilibrium is determined at E_1. As the increase in demand is proportionately equal to the decrease in supply, equilibrium quantity remains the same at OQ, but equilibrium price rises from OP to OP_1.

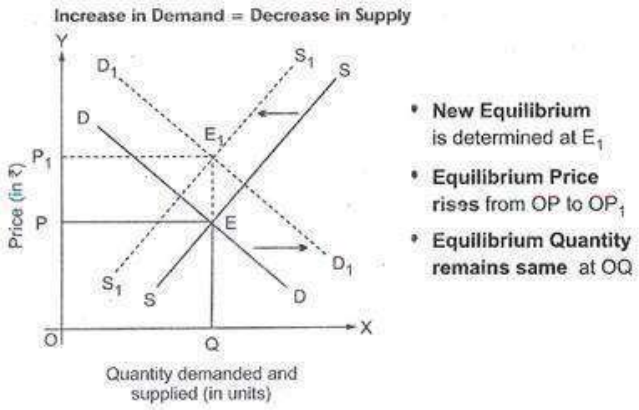


Fig. 11.19

Case 2: Increase in Demand > Decrease in Supply: When increase in demand is proportionately more than decrease in supply, then rightward shift in demand curve from DD to D_1D_1 is proportionately more than leftward shift in supply curve from SS to S_1S_1 (Fig. 11.20). The new equilibrium is determined at E_1. As the increase in demand is proportionately more than the decrease in supply, equilibrium quantity rises from OQ to OQ_1 and equilibrium price rises from OP to OP_1.

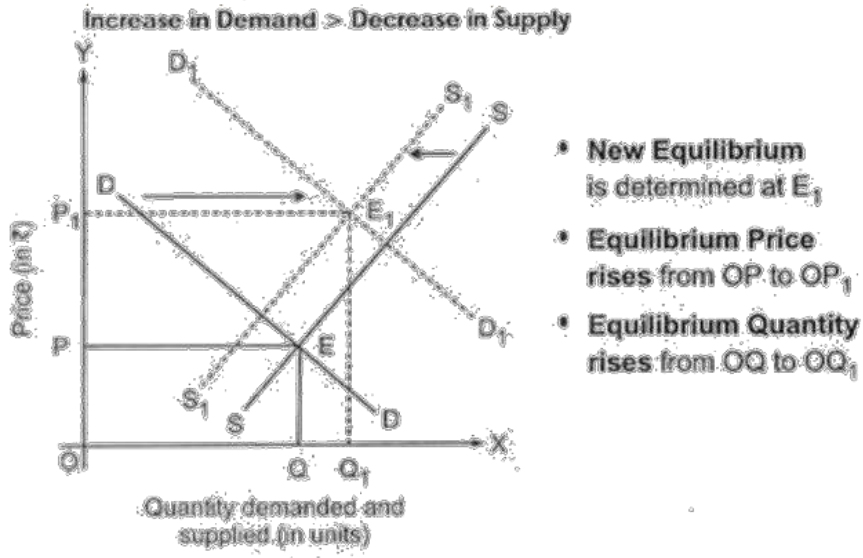


Fig. 11.20

Case 3: Increase in Demand < Decrease in Supply: When increase in demand is proportionately less than decrease in supply then rightward shift in demand curve from DD to D_1D_1 is proportionately less than leftward shift in supply curve from SS to S_1S_1 (Fig. 11.21). The new equilibrium is determined at E_1. As the increase in demand is proportionately less than the decrease in supply equilibrium quantity falls from OQ to OQ_1 whereas, equilibrium price rises from OP to op1.

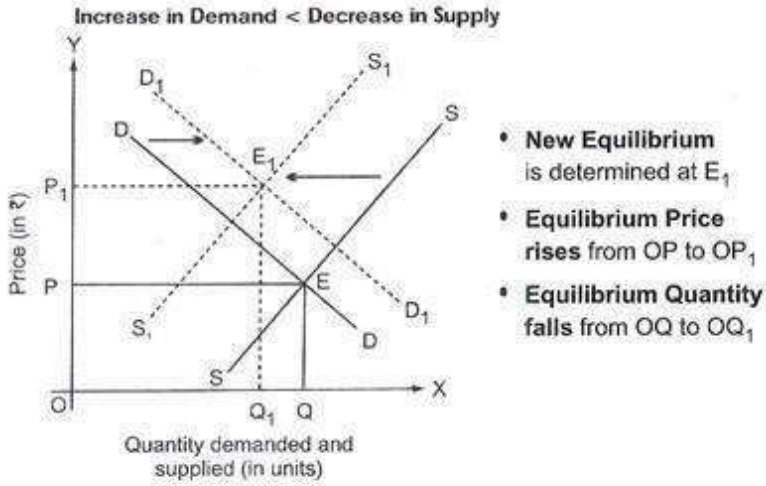


Fig. 11.21

PRICE CONTROL BY THE GOVERNMENT:-

National and local governments sometimes implement **price controls**, which are legal minimum or maximum prices for specific goods or services, in an attempt to manage the economy by direct intervention.

There are two types of price controls: i) price ceilings and ii) price floors.

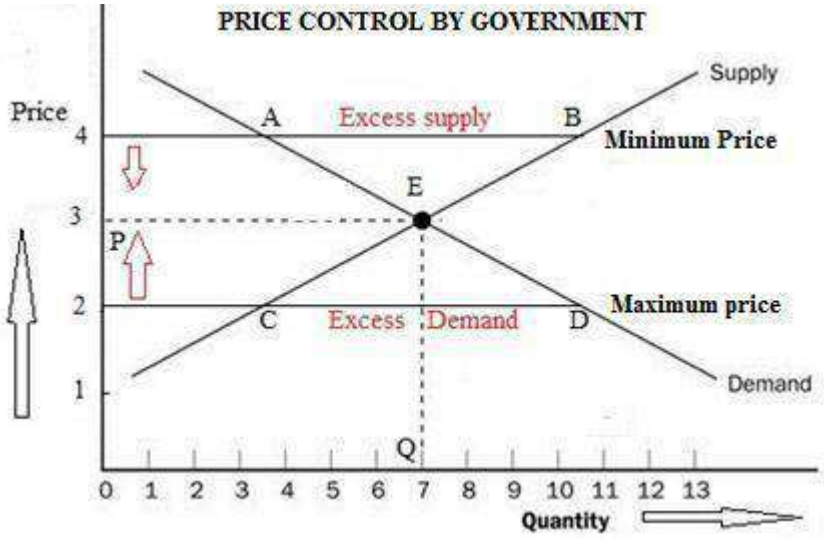
A **price ceiling** is the legal maximum price for a good or service, while a **price floor** is the legal minimum price. Although both a price ceiling and a price floor can be imposed, the government usually only selects either a ceiling or a floor for particular goods or services.

When prices are established by a free market, then there is a balance between supply and demand. When the government imposes price controls, then there will be either excess supply or excess demand, since the legal price is often very different from the market price. Indeed, the government imposes price controls for the very reason that it is not satisfied with the market price.

MAXIMUM PRICE FIXATION:- When Market equilibrium price is high enough to afford the goods by the general public, Government intervenes & fixes a price below the market price above which no one can sell the goods. This is called as maximum price fixation (Price ceiling) . A price ceiling creates a shortage when the legal price is below the market equilibrium price, A price ceiling that is below the market equilibrium price creates a shortage that causes consumers to compete vigorously for the limited supply. Supply is limited because suppliers are not getting the prices that would allow them to earn a profit.

Rationing is imposed by the government to make the policy of Maximum price fixation successful. It is a method where the quota for purchasing the goods is fixed by the government. A maximum limit is fixed beyond which no one can purchase the goods.

MINIMUM PRICE FIXATION:- When Market price of the goods is low & it is so low that producers are not getting adequate price of their product. Then government intervenes & fixes a price higher than the normal price. Fixing of Minimum price is higher to the normal price below which no one is supposed to sell the goods is also called as price floor. It creates excess supply i.e. suppliers are willing to supply more at the price floor than the market wants at that price. Excess supply is removed from the market by maintaining buffer stock by the government, so that the policy of minimum price fixation is successful.



Market price OP at Rs 3/-

Minimum price fixed by the government is at Rs 4/- at which AB excess supply is there

in order to stop further fall in the price towards market price government reduces excess supply from the market

maximum price is fixed at Rs 2/- at which CD excess demand is there &in order to reduce it government imposes rationing & restricts the demand at less price.

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