Economic Analysis for Business Decisions

By

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Syllabus

- Managerial Economics: Concept of Economy, Economics, Microeconomics, Macroeconomics. Nature and Scope of Managerial Economics, Managerial Economics and decision-making. Concept of Firm, Market, Objectives of Firm: Profit Maximization Model, Economist Theory of the Firm, Cyert and March's Behavior Theory, Marris' Growth Maximisation Model, Baumol's Static and Dynamic Models, Williamson's Managerial Discretionary Theory

Economics

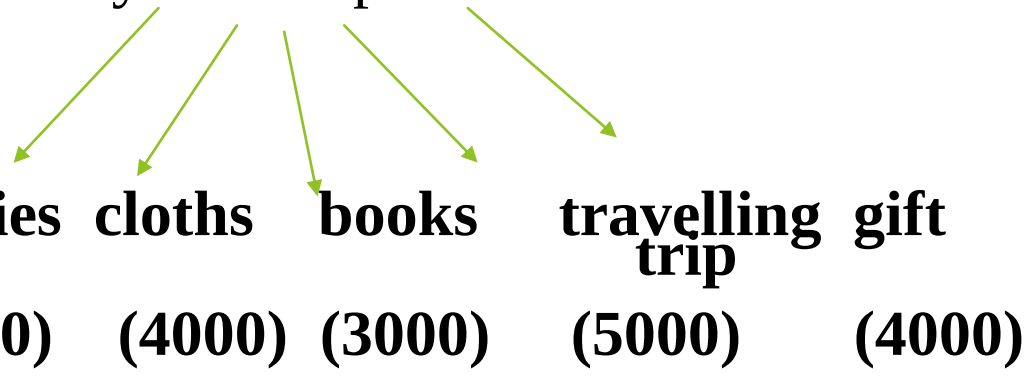
Definition of Economics

“ Optimum Utilization of scare resources which are having alternative uses“

- **Optimum**
- **scare resources**

For example

If you have 5000 Rs. then you can spent these on



Definitions

- Adam Smith

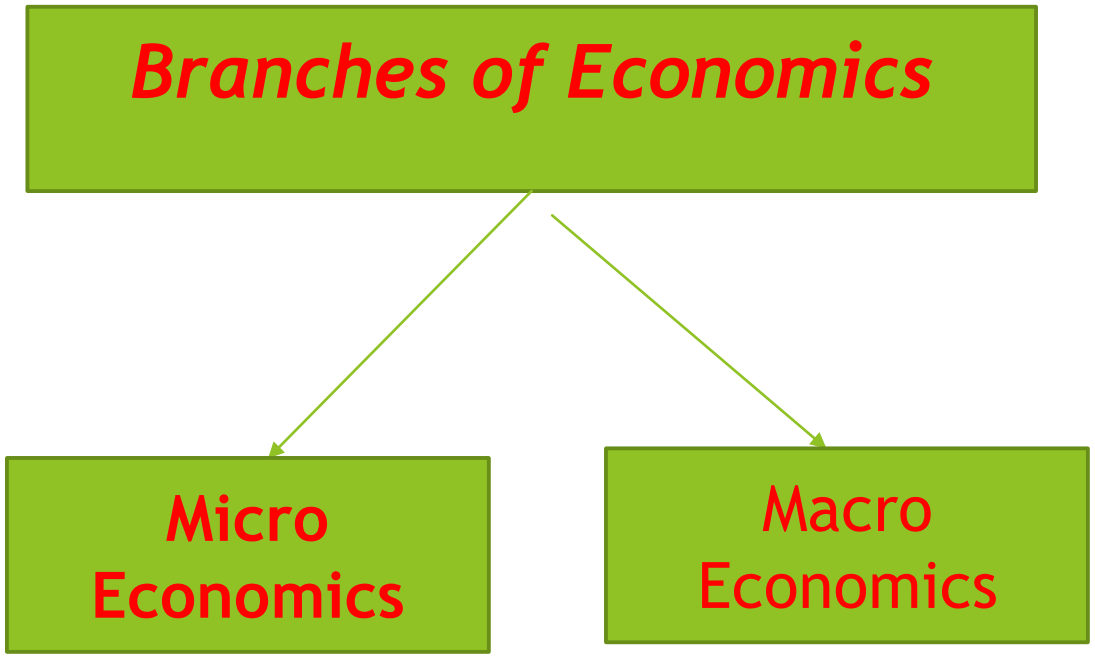
Adam Smith, the father of modern economics, defined "economics as a subject, which is mainly concern with the study of nature and causes of generation of wealth of nation."

- Alfred Marshall

Alfred Marshall defined "economics as the study of mankind in the ordinary business of life." He explained that economics is not a natural science, such as Physics or Chemistry but it is a Social science.

- Prof. Lionel Robbins

Robbins described "Economics is a social science concerned with allocation of scares resources among competing ends."


Branches of Economics
Micro Economics
Macro Economics

MICRO ECONOMICS :

‘Micro’ means small. Microeconomics is the branch of economics that deals with the individual units, company or consumer. These individual units may be either a person or a firm or a group of persons or firms. Thus, micro-economics gives a microscopic view of the economy. It is the study of individual consumers and producers in specific markets.

The micro economics is the study of an economic behaviour of a particular individual, firm or a household. It studies :

- Supply and demand.
- Pricing of output.
- Production processes.
- Cost structure.
- Distribution of income and output

Macro Economics

Macroeconomics is the study of the economy as a whole, i.e. not a single unit but the combination of all, firms, households, nation, etc. It is the study of the aggregate economy such as :

- **National Income**
- **Unemployment**
- **National output**
- **Inflation**
- **Economic growth**
- **Fiscal and Monetary policy**

Points of Difference	Microeconomics	Macroeconomics
Meaning :	Microeconomics is the study of individual economic behavior. It's the study of economics at an individual, group or company level. e.g. Income of an individual	Macroeconomicsis the study of entire economic systems. It is the study of a national economy as a whole e.g. National Income
It deals with :	Individual product, firm, household, industry, wages, prices, etc.	Aggregates like national income, national output, price level, etc.
Focus :	Individual unit	Economic aggregates
Vision :	Microscopic	Telescopic
View :	Worms eye view	Birds eye view
Study :	Tree	Forest
Scope :	Limited. It covers various issues like demand, supply, product pricing, factor pricing etc.	Broad. It covers various issues like, national income, general price level etc.
Popularity :	Alfred Marshall	J. M. Keynes
Significance :	Individual level	National level

Managerial Economics

Meaning

- Managerial economics is a branch of economics which deals with the application of economic theory to solve the business problems and decision making. It deals with the use of economic theories, tools, techniques and principles for business decision making.
- Managerial Economics is a study of economic theories, tools, techniques and methodology which are generally applied to seek solutions to the practical problems of business. It is an applied microeconomics.

Definitions

According to Haynes, Mote and Paul,

“Managerial Economics is economics applied in decision making. It is a special branch of economics bridging the gap between abstract theory and managerial practice.”

Salvatore

“Managerial economics refers to the application of economic theory and the tools of analysis of decision science to examine how an organization can achieve its objectives most effectively.”

“Managerial economics is an application of managerial theories, tools and techniques in critical business decisions”

Nature of Managerial Economics

- Managerial economics help in decision-making and planning.
- Managerial economics gives a road map for making decision regarding the particular output, pricing, capital, raw-materials etc.
- Managerial economics provide economic theory, concepts, tools and principles which can be used to solve the problems of business management.
- Thus, in brief it can be explained that Managerial Economics is both a science and an art.

Characteristics of Managerial Economics

- It is Microeconomic in Nature : Microeconomics is the branch of economics that deals with the individual units, companies or consumer. These individual units may be either a person or a firm or a group of persons or firms, hence it is microeconomics in nature.
- It is Pragmatic : Managerial economics is a practical subject. It is not static. It does not provide rigid and immaterial theoretical frameworks for managers. It is applied science.
- It is Positive and Normative : Economics can also be classified as positive or normative. Positive economics describes what is, i.e., observed economic phenomenon, whereas Normative economics explains what ought to be, i.e. it distinguishes the ideal from the actual.

positive economics is concerned with

"what'

normative economics with

"what ought to be.

It Utilizes Some Theories of Macroeconomics : When all consumers or firms are added up and it becomes a matter of examining the problems of the economy or the nation as a whole, which is called as macroeconomics. In order to arrive at logical results for consumers/firms it takes the help of some macroeconomic theories to understand the environment in which the firm operates.

It is Problem Solving in Nature : It studies the problems of managers in business units, goal of managerial economics is to find out optimal solutions to the business problems and help entrepreneurs and managers.

Scope of Managerial Economics

The scope of managerial economics is vast. It covers the following fields

- Demand Analysis and Forecasting
- Cost Analysis
- Production Analysis
- Pricing Decisions
- Profit Management
- Capital Management

Tools in Managerial Economics/Basic Principles

Economic theory offers a variety of tools and theories which assist managers and entrepreneurs in their decision making process and solving their business related problems. These tools and theories are helpful for them in solving their business related problems. These tools are taken as a guidelines in making decision.

Following are the basic economic tools for decision-making :

- Opportunity cost
- Incremental principle
- Principle of the time perspective
- Discounting principle
- Equi-marginal principle

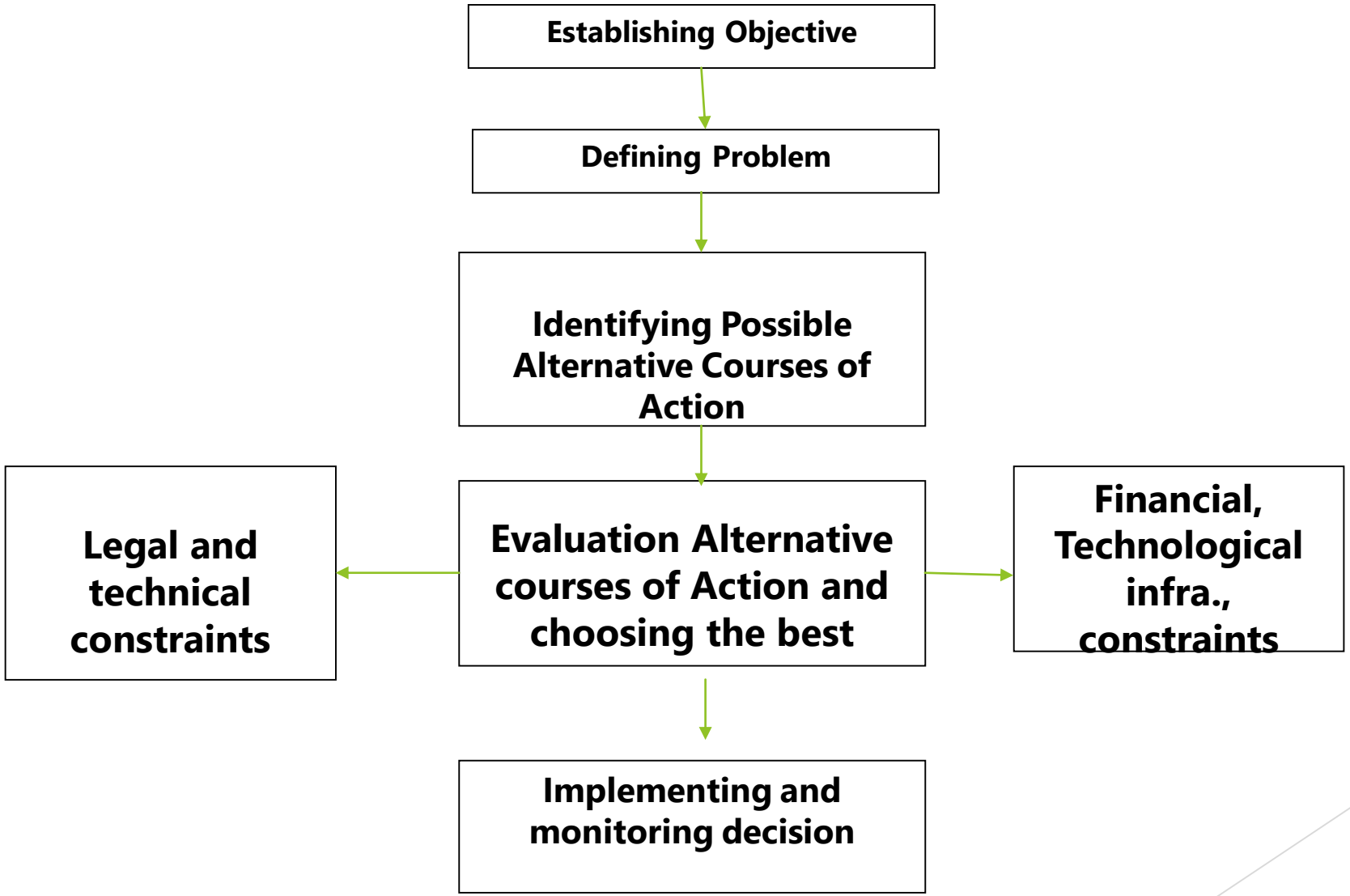
Managerial Economics in Decision-Making

Decision making is an important part of today's business organizations. Making a decision is one of the most difficult tasks faced by entrepreneurs and managers.

type of decisions required to take in Business

1. Price and Output Decision
2. Demand Estimation
3. Choice of Technique of Production
4. Advertising Decision
5. Long run Production Decisions
6. Investment Decisions

Decision Making Process



Example

- A Cotton Textile firm finds its profit declining
  - Alternative Course of action

updating and replacing old machinery

Building entirely a new plant with latest tech.

- Evaluation of alternative

  Finance constraints,
- Implementing Decision

Concept of Firm

- A firm in economics, refers to a commercial or business institution aiming at the attainment of economic objectives. A firm is a commercial enterprise, a company that buys and sells products or services to consumers with the aim of making a profit.

- A firm may be of various types such as sole proprietorship firm, partnership firm, public limited companies, private limited companies. The public or government entriprise indicates all firms owned by society or government, strive to achieve their goal.

Objectives of Firm

Following are the objectives of firm

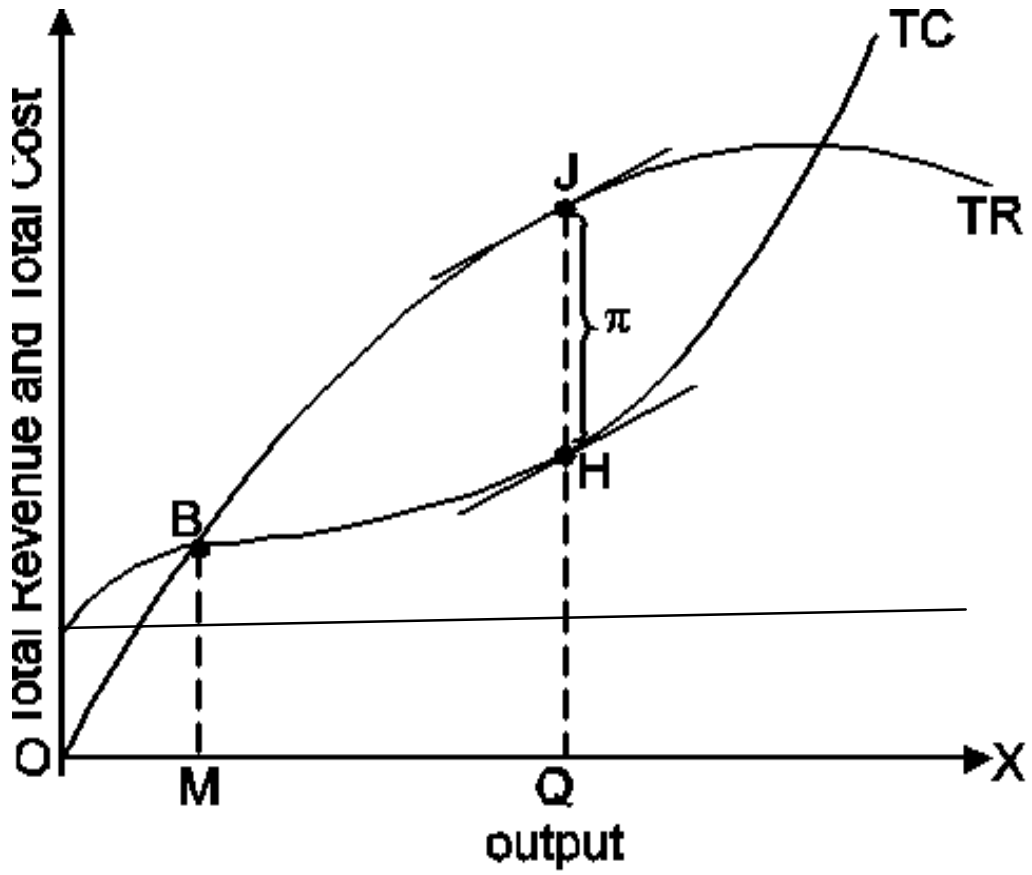
- Profit Maximization
- Wealth Maximization

Profit Maximization

- **Profit-making** is one of the most traditional, basic and **major objectives of a firm**. Profit-making is the driving-force behind all business activities of a company.

- Profit-maximization implies earning highest possible amount of profits during a given period of time**.** A firm has to generate largest amount of profits by building optimum productive capacity both in the short run and long run depending upon various internal and external factors and forces

Profit Maximization



Wealth Maximization

- In modern managerial economics business decision making by managers are guided by the objective of maximizing value of the firm.
- It is a combination of two words viz. wealth and maximization. A wealth of a shareholder maximizes when the net worth of a company maximizes.
- Since in a corporate form of business it is the shareholders who are the owners of the firm, value of a firm represents shareholders wealth.
- Thus, value maximization of a firm implies maximization of shareholder's wealth. Therefore, this model is also known as "shareholders wealth maximization model".

Value of the firm = Present Value of expected Future profits

$$PV = \frac{Profit1}{(1+i)\,1} + \frac{Profit2}{(1+i)\,2} + \frac{Profit3}{(1+i)\,3} \ldots\ldots\ldots + \frac{Profit\ n}{(1+i)\,n}$$

Where

i = discounting rate

UNIT -2

Syllabus

- 2. Utility & Demand Analysis: Utility – Meaning, Utility analysis, Measurement of utility, Law of diminishing marginal utility, Indifference curve, Consumer's equilibrium - Budget line and Consumer surplus. Demand - Concept of Demand, Types of Demand, Determinants of Demand, Law of Demand, Elasticity of Demand, Exceptions to Law of Demand. Uses of the concept of elasticity. Forecasting: Introduction, Meaning and Forecasting, Level of Demand Forecasting, Criteria for Good Demand Forecasting, Methods of Demand Forecasting, Survey Methods, Statistical Methods, Qualitative Methods, Demand Forecasting for a New Products. (Demand Forecasting methods - Conceptual treatment only numericals not expected)

Utility

- The utility is want satisfying capacity of a product or service.
- Utility is the source of consumer demand. A consumer thinks about his demand for a product or service on the basis of utility derived from the product or service.

For example: If a person went to Burger King then the demand will be depend on how satisfaction ho got after eating this burger or the utility of burger

Characteristics of Utility

1. Utility is Psychological Term
2. Utility is not Necessarily same as Usefulness

3. Utility cannot be expressed in numerical terms
4. Utility Depends on the Intensity of Want

Intense want = high Utility

Satisfied want = low utility

5. Utility is Different from Pleasure

Law of Marginal Utility

Marginal utility

Marginal utility measures the additional satisfaction derived from an addition of one extra unit consumption of a particular commodity.

Quantity	Total Utility	Marginal Utility	
1	10	10	Initial utility
2	18	18-10 = 8	
3	24	24-18 = 6	Positive utility
4	28	28-24 = 4	
5	30	30-28 = 2	
6	30	30-30 = 0	Zero utility
7	28	28-30 = -2	Negative utility

Law of Diminishing Marginal Utility

- The Law of Diminishing Marginal Utility states the marginal utility gradually decreases with the level of consumption, utility being defined as satisfaction or benefit.

Example:

Units	Total Utility	Marginal Utility
1st glass of juice	20	20
2nd glass of juice	31	11
3rd glass of juice	40	9
4th glass of juice	43	3
5th glass of juice	43	0
6th glass of juice	40	– 3

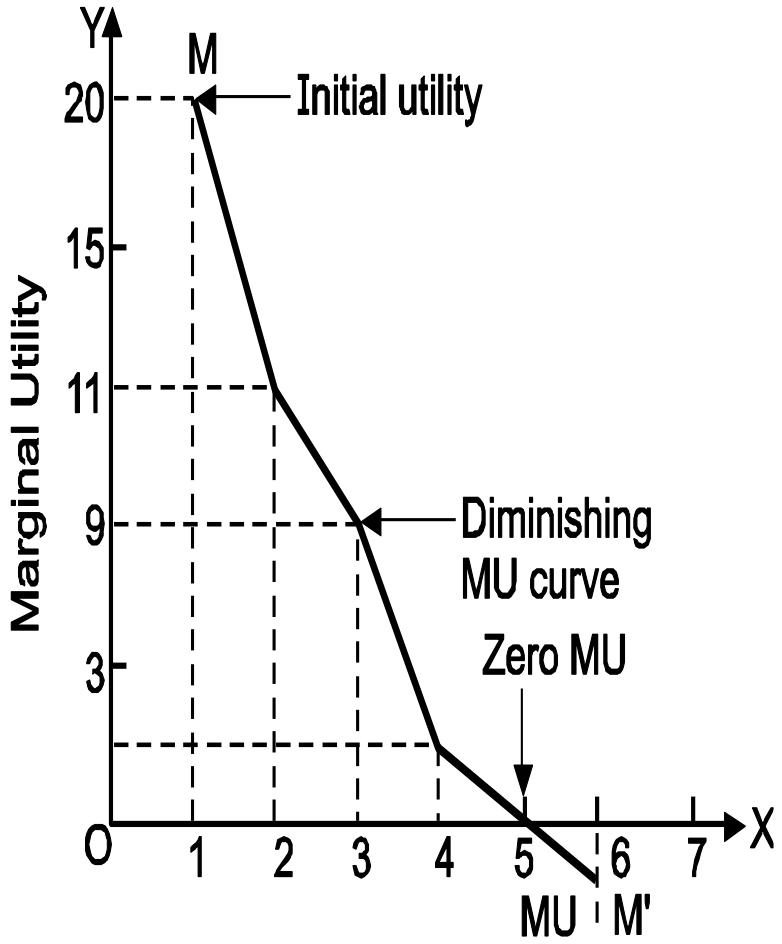


Fig. 2.1 : The Law of Diminishing Marginal Utility

MU = Marginal Utility

Assumptions of the Law of Diminishing Marginal Utility

- **Rationality**
- **Consumption should be continuous**
- **Marginal utility of money**
- **Diminishing marginal utility**
- **Character of the consumer should remain same**
- **There should be no change in fashion**
- **There should be no change in the price of the product or service**

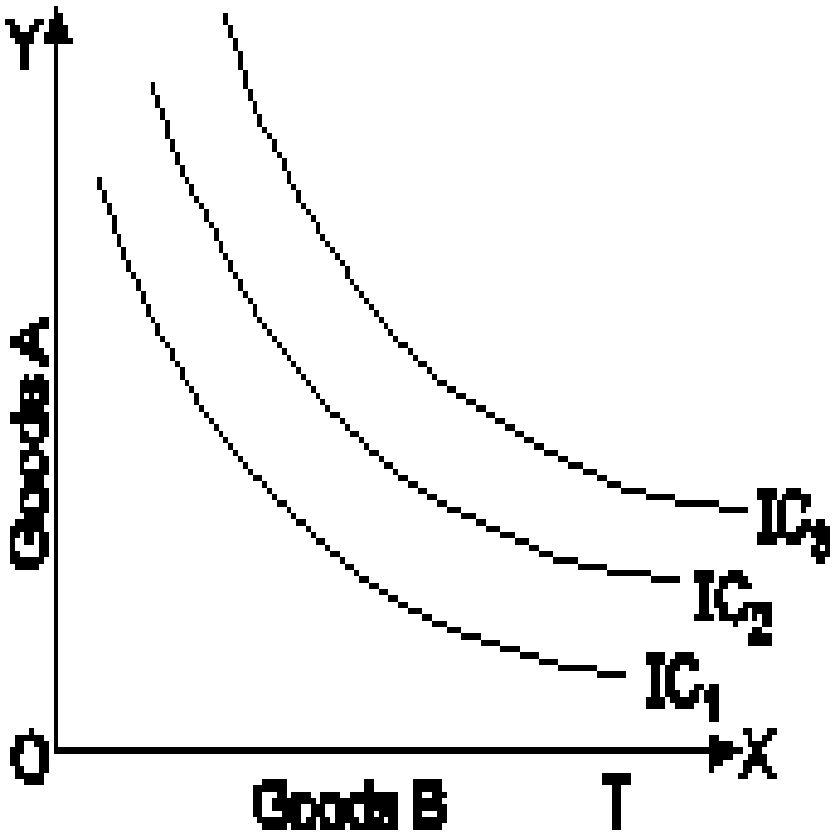
Indifference Curve

- An indifference curve is a graphical representation which shows combination of two goods that give the consumer equal satisfaction and utility

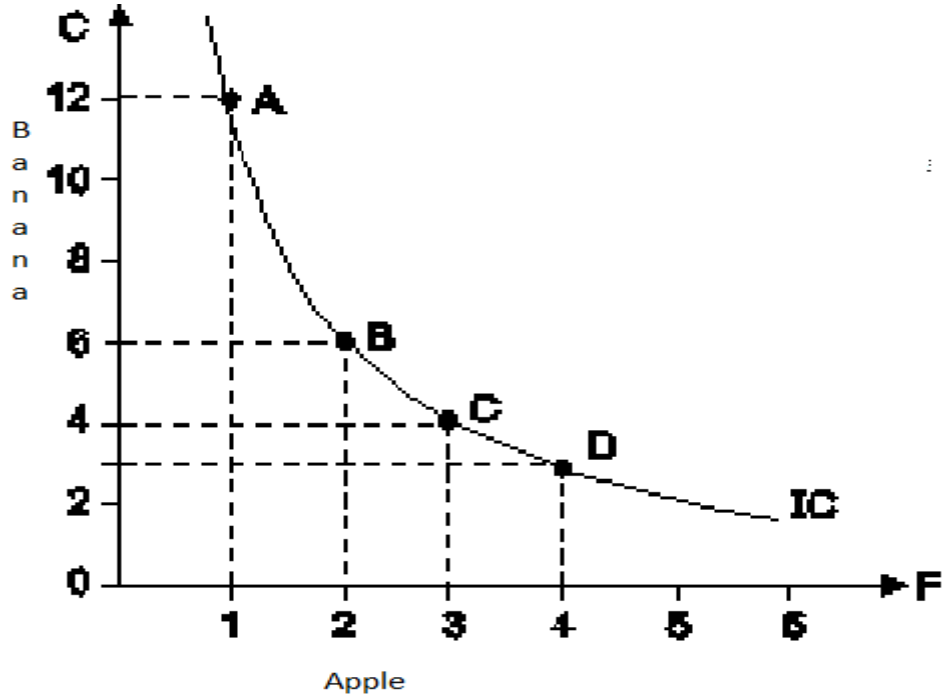
- **Properties of Indifference Curve**

1. The Indifference curve never intersects each other.
2. They have downward sloping curve to the right.
3. They are convex to the origin.
4. The upper indifference curve gives the highest level of satisfaction

Indifference Curve Map



Combination	Apples	Bananas
A	1	12
B	2	6
C	3	4
D	4	3



Demand

Demand can be Defined as

“Willingness to purchase a certain quantity of goods/service at a particular price in a defined time backed by ability to purchase ”

1. Willingness to purchase
2. Certain Quantity
3. Price
4. Ability to Purchase
5. time period

Mr. A want to purchase 1 TV @ 50000 Rs. at last of year and he is having 100000 Rs. in his bank

Law of Demand

It states that

"when price of commodity increase the demand will decrease and when the price will decrease the demand will increase **if other things remain constant**."

coffee	20 Rs.	1 cup
	25	½ cup
	10	2 cup

Price ↑ Demand ↓

Price ↓ Demand ↑

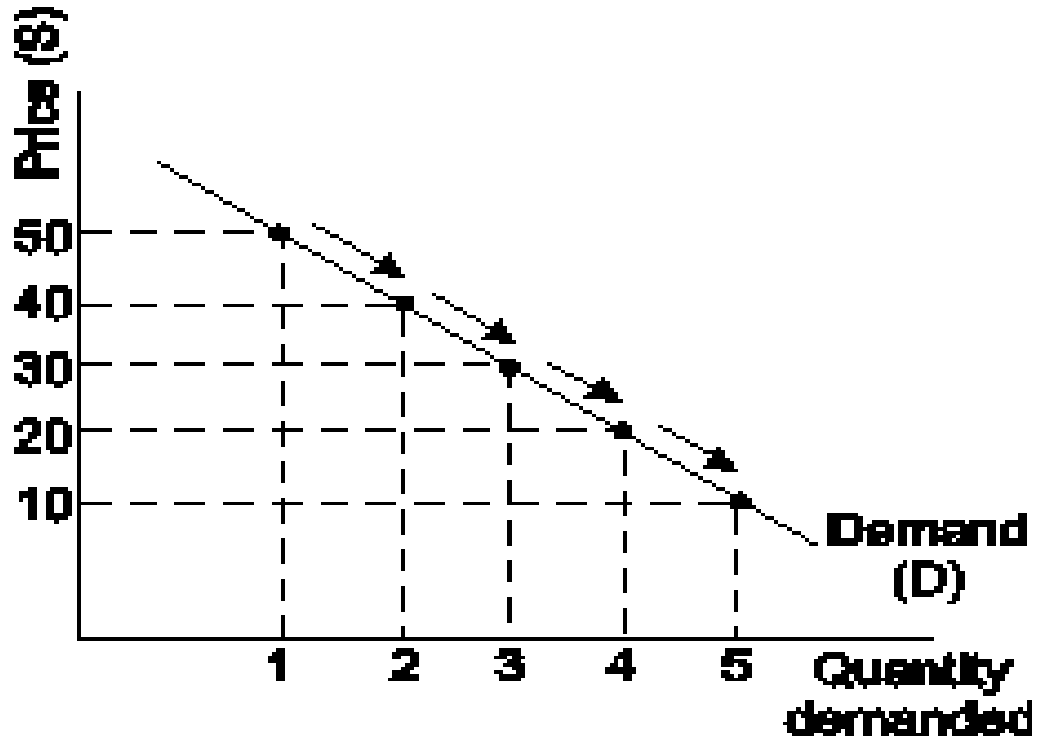
Demand Schedule

It is the tabular presentation of the Law of Demand. Let us take an example of commodity X.

Price of the commodity X per unit (Rs.)	Quantity demanded of commodity ‘X’ (kg)
50	1
40	2
30	3
20	4
10	5

Demand curve

Graphical representation of Law of demand is known as demand curve



Determinants of Demand

1. **Price of Product**
2. **Income of the consumer**
3. **Prices of related commodities**

Substitute Goods **Complementary goods** **demand car decrease**

price of the petrol increase

Petrol and car

4. **Tastes and preferences**
5. **Expectations**
6. **Climate and weather**

Cold areas woollen clothes

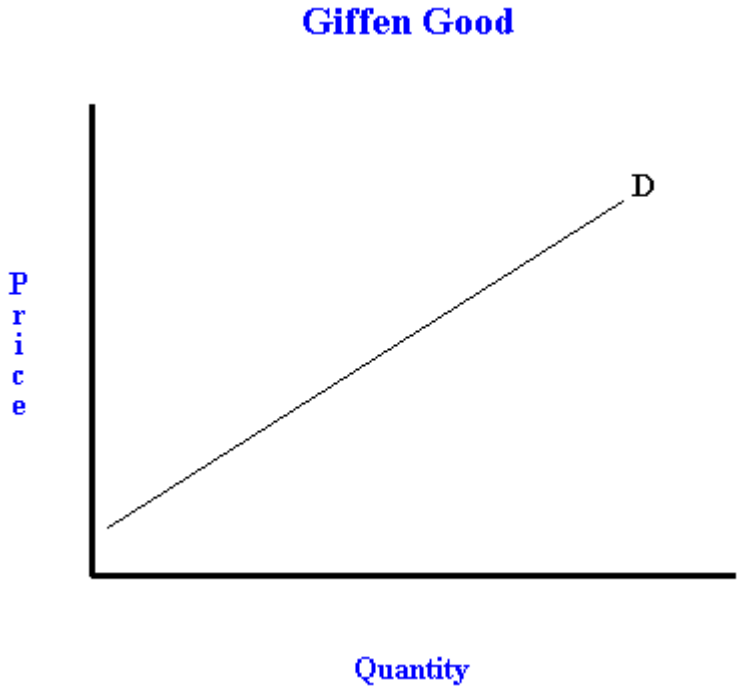
Rainy Areas Umbrella

Assumptions of Law of demand

- No change in Income
- No change in technology
- Necessity Goods
- No change in Fashion
- No change in Govt. policies
- No natural calamities
- No change in taste and preferences
- Future expectation should remain same
- No change in Substitute price/ complementary price

Exceptions of Law of Demand

- 1. **Giffen Goods :**



- 2. Commodities used as status symbols

  Price increased demand increase

- 3. Necessity Goods

- 4. Outdated Goods

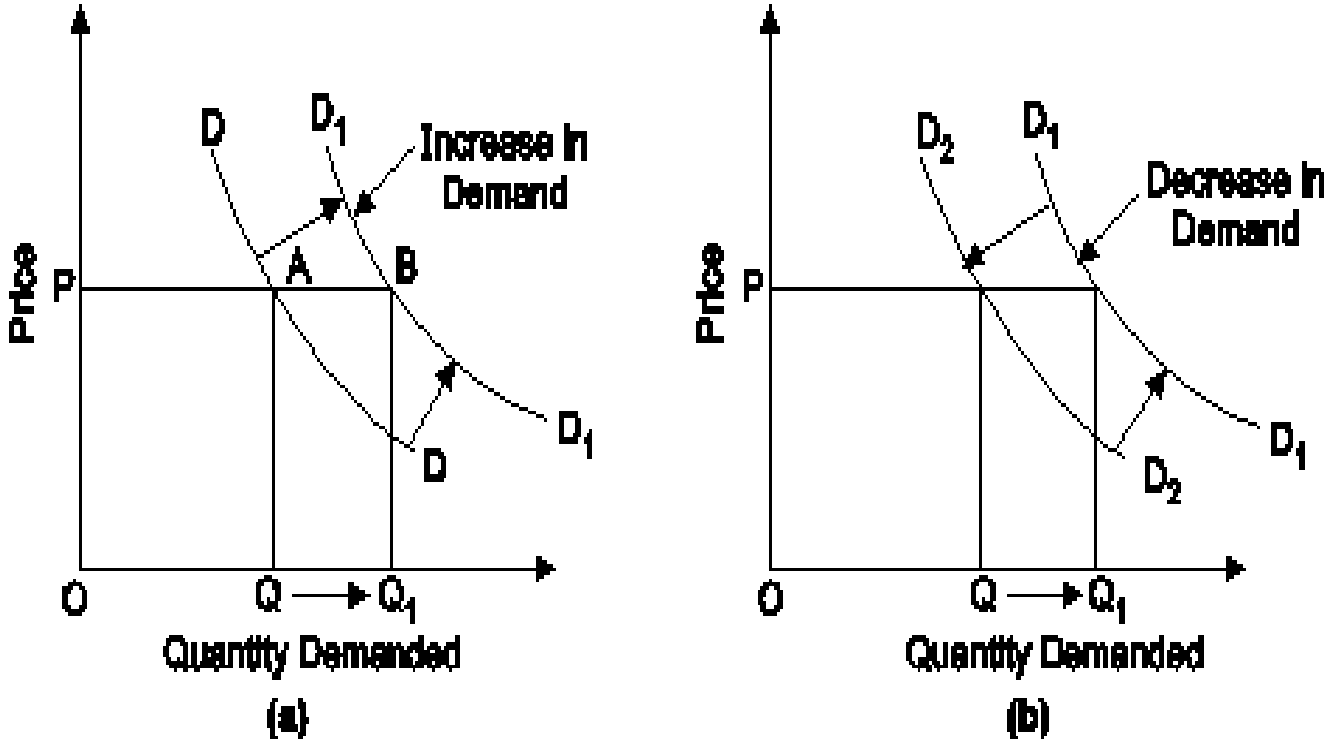
- 5. Ignorance Effect

- 6. Psychologically biased Customers

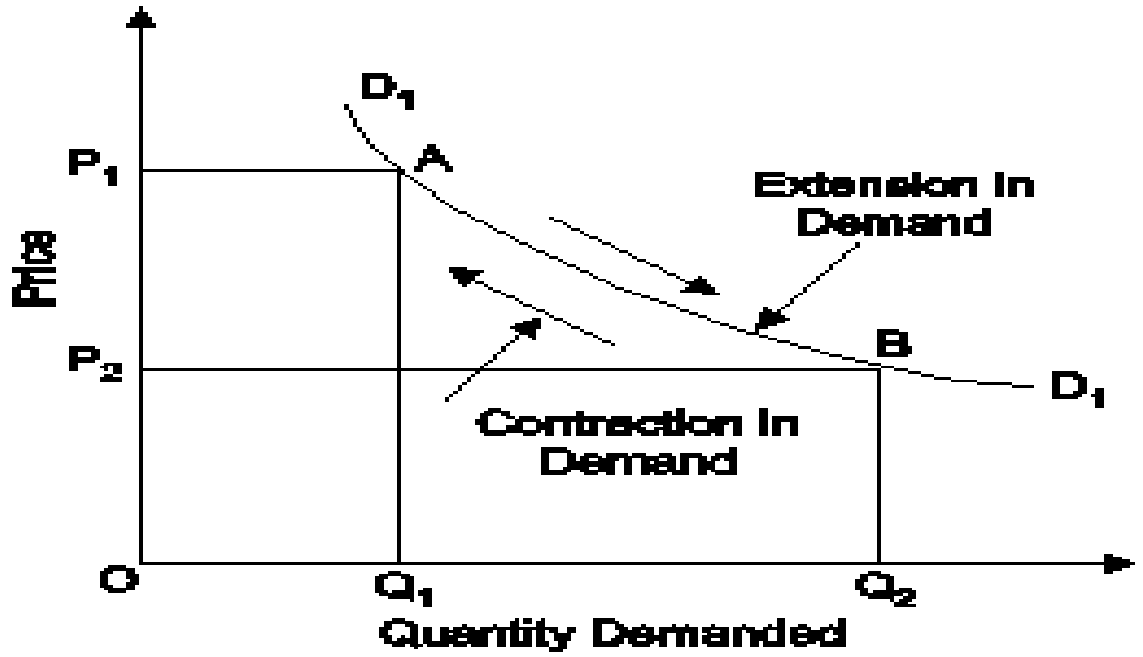
  Low price Low quality

  7. natural calamities

Increase and Decrease in Demand : shift in demand curve



Expansion and Contraction in Demand when the demand is affecting only by price



Elasticity of Demand

- **Elasticity of demand represents the responsiveness of demand due to change in its determinants (price , income , cross (substitute/ complementary))**

$$Ed = \frac{\%\ \text{change in Quantity Demanded}}{\%\ \text{change in Determinants}}$$

$$\text{or} \quad \frac{\text{change in Quantity Demanded}}{\text{Original Quantity Demanded}} \div \frac{\text{Change in Determinants}}{\text{Original Determinants}}$$

$$\text{Or} \quad \frac{\Delta Q}{Q} \div \frac{\Delta D}{D}$$

$$\text{Or} \quad \frac{\Delta Q}{Q} \times \frac{D}{\Delta D}$$

price 100 Rs 50 kg

120 Rs. 40 kg

Where :

Q = Original Quantity Demanded

D = Original Determinants (Price , Income and Cross (substitute/ Complementary))

ΔQ = Change in Quantity Demanded

ΔD = Change in Determinants (Price , Income and Cross (substitute/ Complementary))

Types of Elasticity Demand

The three main types of elasticity of demand are as follows :

(1) **Price Elasticity of Demand (Ep):**

(2) **Income Elasticity of Demand (Ei):**

(3) **Cross Elasticity of Demand (Ec) :**

Price Elasticity of Demand
responsiveness of demand due to change in its price

$$\text{Price Elasticity Of Demand} = \frac{\text{Percentage Change In Quantity Demanded}}{\text{Percentage Change In Price}}$$

For example:

If the price of Oranges is 100 Rs./Kg and on this price the demand for oranges is 50 Kg. Now if the price becomes 120 Rs./Kg then demand becomes 40 kg. find out the Price Elasticity of demand (Ep).

Solution :

Original Price = 100 Rs/kg

Original Quantity demanded = 50 kg

Change in price = 100 - 120 = -20 (20%)

Change in Quantity demanded = 50 - 40 = 10 (20%)

$$Ep = \frac{\text{change in Quantity Demanded}}{\text{Original Quantity Demanded}} \div \frac{\text{Change in Price}}{\text{Original Price}}$$

Or $\frac{10}{50} \div \frac{-20}{100}$

Or $\frac{10}{50} \times \frac{100}{20}$

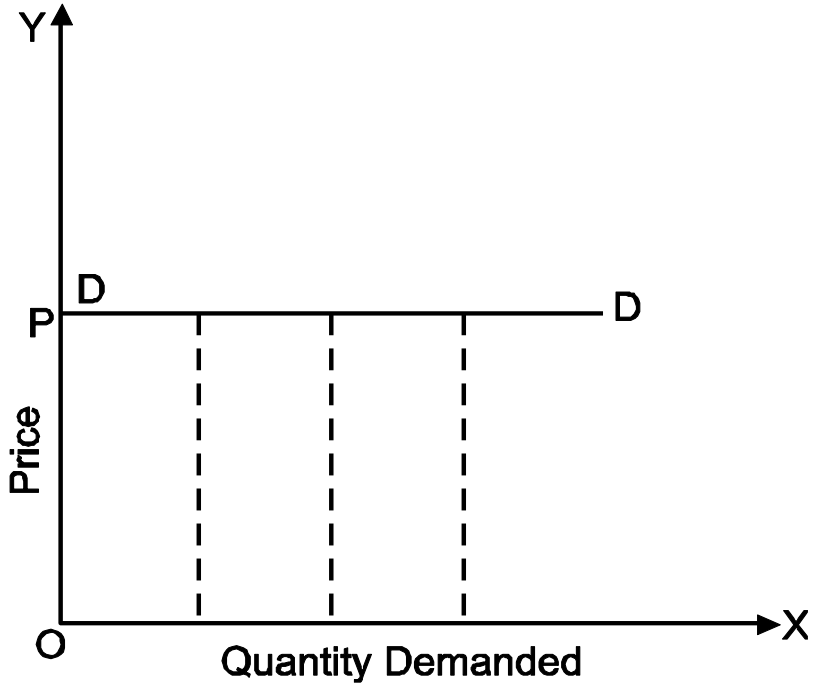
Ep = -1 (because price and demand having inverse relationship)

There are 5 types of price elasticity of demand

- •**Perfectly Elastic Demand** (EP = ∞) … 0 or 0.1 % 20 % demand
- •**Perfectly Inelastic Demand** (EP = 0) … 20 % price 0 % demand
- •**Relatively Elastic Demand** (EP > 1) … 20% price 30 % demand
- •**Relatively Inelastic Demand** (Ep < 1) … 20 % price 10 % demand
- •**Unitary Elastic Demand** (Ep = 1) 20% price 20 % demand

Perfectly Elastic Demand (EP = ∞) :

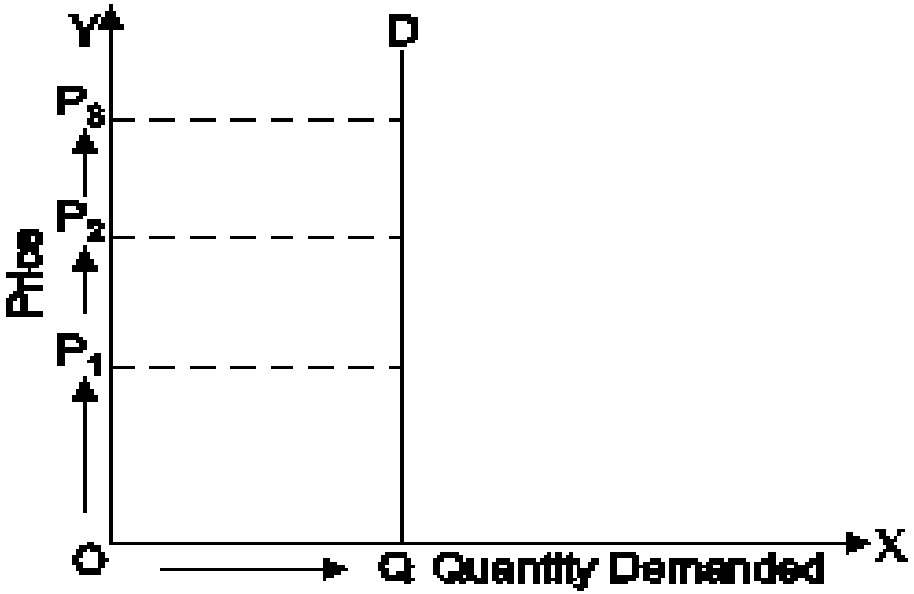
When the demand increases infinitely due to small fall or no fall in price. It is said to be perfectly Elastic Demand. It is also called as infinite elasticity.



For example: fashionable goods, perception of people, climatic

Perfectly Inelastic Demand

When the demand for a product does not increase or decrease it remains same due to change in price. It is said to be a perfectly inelastic Demand. It is also called as zero elasticity. Ep = 0

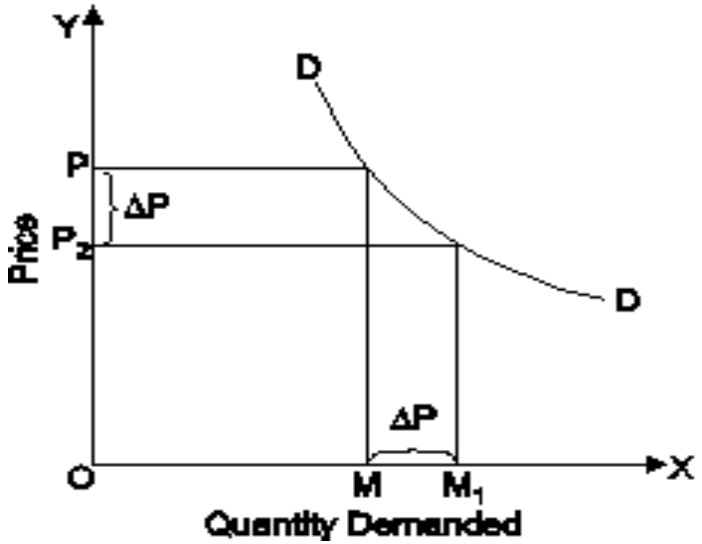


For example: basic needs like sugar, salt , wheat, medicines

if the product is not having close substitute tea

Unitary Elastic Demand (Ep = 1)

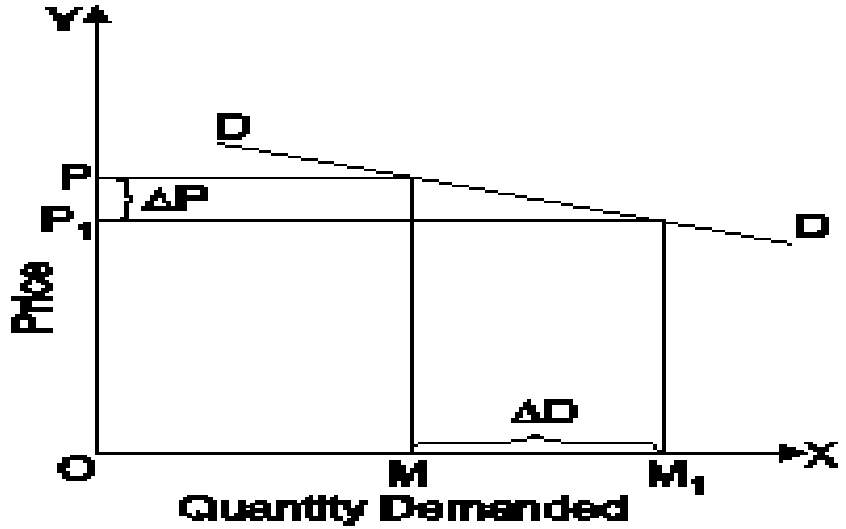
When the percentage change in quantity demanded is equal to the percentage change in price of a product. It is also called unitary elasticity of demand.



- 20 % price ↓ demand 20 % ↑ same revenue profit
- For example normal cloths, call charges , biscuits ,

Relatively Elastic Demand (EP > 1)

In some commodities, when the percentage change in demand is greater than the percentage change in price i.e. if there is a greater change in demand as compared to a small change in price. It is called highly elastic demand.

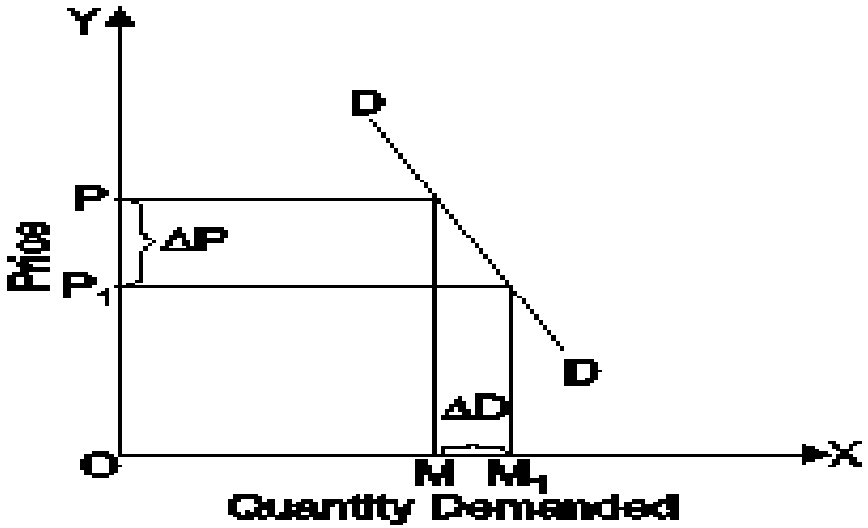


For Example: price 10% ↓ demand 30% ↑ revenue or profit will increase

Gold , phone, alcohol

Relatively Inelastic Demand (E_p < 1) .5

In some commodities, when the percentage change in demand is less than the percentage change in price i.e. if there is a relatively less change in demand as compared to change in price. It is called highly inelastic demand.



- For Example price 20% ↑ demand 10 % ↓ increase price
- Milk , Daal, petrol ,

Income Elasticity of Demand

- **Income Elasticity of demand represents the responsiveness of demand due to change in Income**

$$Ei = \frac{\text{\% change in Quantity Demanded}}{\text{\% change in Income}}$$

$$\text{or} \quad \frac{\text{change in Quantity Demanded}}{\text{Original Quantity Demanded}} \div \frac{\text{Change in Income}}{\text{Original income}}$$

$$\text{Or} \quad \frac{\Delta Q}{Q} \div \frac{\Delta i}{i}$$

$$\text{Or} \quad \frac{\Delta Q}{Q} \times \frac{i}{\Delta i}$$

Where :

Q = Original Quantity Demanded

i = Original income

ΔQ = Change in Quantity Demanded

Δi = Change in income

Example:

- **If a person buy 2 kg of rice when his income was 20000 Rs/month. Now his income increased to 25000 Rs and he purchases 3 kg rice now. So find out income elasticity of demand.**

income 25% ↑ 50 % ↑

Cross Elasticity of Demand

- **Cross Elasticity of demand represents the responsiveness of demand due to change in Price of Substitute /complementary**

$$Ec = \frac{\%\text{ change in Quantity Demanded}}{\%\text{ change in price of Substitute}}$$

$$\text{or} \quad \frac{\text{change in Quantity Demanded}}{\text{Original Quantity Demanded}} \div \frac{\text{Change in price of substitute/complementary}}{\text{Original price of substitute /complementary}}$$

$$\text{Or} \quad \frac{\Delta Q}{Q} \div \frac{\Delta Pc}{Pc}$$

$$\text{Or} \quad \frac{\Delta Q}{Q} \times \frac{Pc}{\Delta Pc}$$

Where :

Q = Original Quantity Demanded

Pc = Original Price of Substitute/ Complementary

ΔQ = Change in Quantity Demanded

ΔPc = Change in Price of Substitute/ Complementary

Example:

If in college canteen the price of 1 cup tea is 10 Rs. and price of 1 cup coffee is 20 Rs. the Demand of tea is 200 cups per month if price of coffee becomes 25 Rs. then demand of tea becomes 220 cups per months then find out the cross elasticity of demand.

Importance of Elasticity of Demand

1. **Importance for Finance Minister :**

Before preparing tax structure, the Finance Minister considers the elasticity of demand of various goods. If the demand is inelastic, he can increase the tax and thus can collect large revenue.

2. **Importance for the Monopolist :**

When a monopolist finds that the demand for his product is inelastic, he can fix the price at a higher level, otherwise he fixes a lower price for his product.

3. **Fixation of wages :**

If a demand for specific skilled labour is inelastic, it is easy to increase their wages otherwise not.

4. **International Trade :**

If the demand of commodity is inelastic, heavy duties can be imposed on its import and export.

5. **Terms of Trade :**

The terms of trade between two countries are based on the elasticity of demand of the traded goods.

6. **Importance for the Businessman and Manufacturers :**

When the demand of a particular good is elastic, businessman increases his sale by lowing the price. If the demand is inelastic then he fixes high prices. Manufacturers also studies elasticity of demand before fixing the price for their product.

Demand Forecasting

- Demand forecasting is an estimation of the future demand. Manufacturers or sellers try to find out the expected demand for their products or services in future, given the present state of demand determinants.

Importance of Demand Forecasting :

- Fulfilling objectives of the business.
- Preparing the budget.
- Taking the production decision.
- Taking the pricing decision

Methods of Demand Forecasting

- 1. **Consumer Survey Method**
  - a) Complete Enumeration
  - b) sample survey method
- 2. **Expert Opinion Method**
  - a) Delphi Method
  - b) Sales force Method
- 3. **Market Experiments**
  - a) Test Marketing
  - b) Controlled Experiments
- 4. **Time Series Analysis**
  - a) Trend Analysis
  - b) seasonal variation
  - c) Random fluctuation

- 5. **Barometric Techniques :**

This barometric method of forecasting is used by the meteorologists in weather forecasting. The weather conditions are forecasted on the basis of the movement of mercury in a barometer. Based on this, Decision makers use economic indicators as a barometer to forecast the overall trend in the business activities. In this method an index of relevant economic indicators are found and forecasting is done about future trends by analysing the movements in these indicators. E.g. by finding the numbers of tender passed in municipal corporations for the construction of buildings and bridges a managers of cement company can forecast demand for cement for next year.

Unit -3

Supply and Market Equilibrium

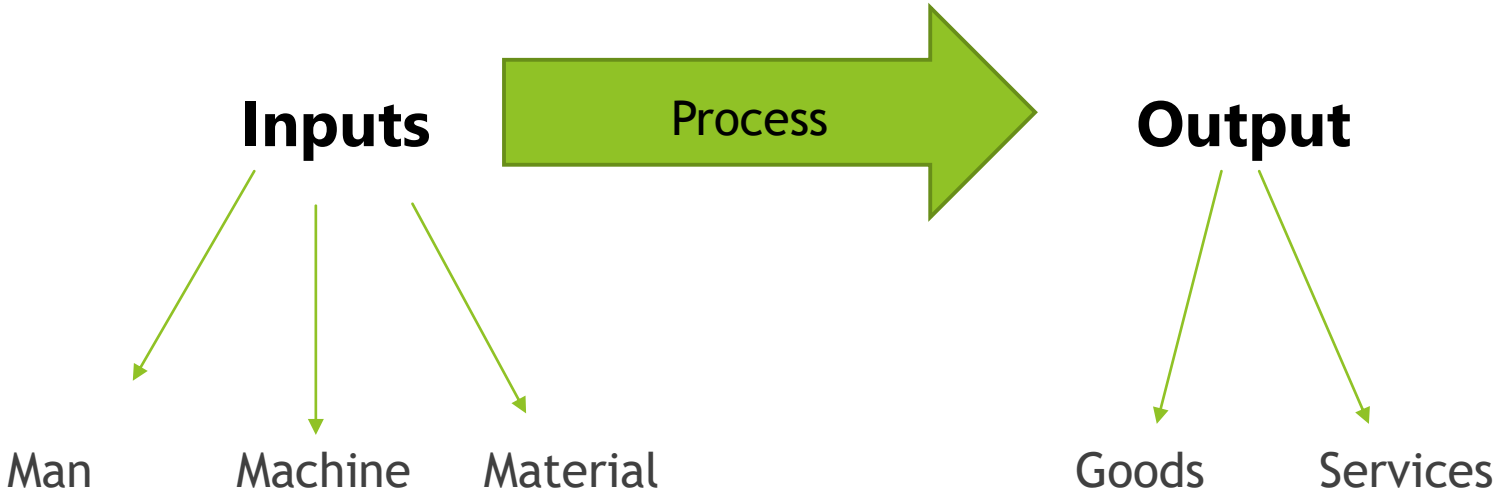
Syllabus

Supply & Market Equilibrium: Introduction, Meaning of Supply and Law of Supply, Exceptions to the Law of Supply, Changes or Shifts in Supply. Elasticity of supply, Factors Determining Elasticity of Supply, Practical Importance, Market Equilibrium and Changes in Market Equilibrium.

Production Analysis: Introduction, Meaning of Production and Production Function, Cost of Production. Cost Analysis: Private costs and Social Costs, Accounting Costs and Economic costs, Short run and Long Run costs, Economies of scale, Cost-Output Relationship - Cost Function, Cost-Output Relationships in the Short Run, and Cost-Output Relationships in the Long Run. (8+1)

Production Analysis

Production in simple language is transformation of input into output



Factors of Production

Resources which are required for the production are known as factors of production. For example :

- labour,
- capital,
- raw material,
- land etc.

Production function

Production function refers to the technical relationship between the quantity produced (outputs) and the resources which are used for producing (inputs)

Mathematically, production function can be expressed as :

$$Q = f (L, C, La, R)$$

Where :

Q = Quantity of output

L = Labour

C = Capital

La = Land.

R = Raw material

Cost of Production

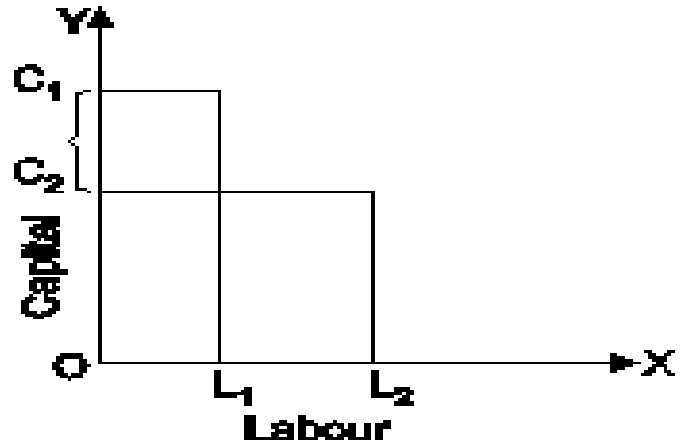
Cost of Production

- Opportunity cost

Opportunity cost is the forgone cost of taking next best alternative.

1. **"Interest"** which is sacrificed by employing capital in own business
2. **"Salary"** that an entrepreneur could get from somewhere else, if he works.
3. **"Rent"** which is sacrificed by using own land in own business

Graphical representation



Accounting cost and Economic cost :

- Accounting costs is the cost which includes all direct expenses related to the business like:

1. cost of raw material,
2. wages,
3. electricity expenses,
4. administrative expenses etc.

These direct cost are also known as explicit cost

Accounting cost = Explicit costs

- Economic costs include both explicit and implicit costs. Implicit costs is the opportunity cost in terms of revenue lost by forgoing the next best alternative,

Economic cost =Explicit cost + Implicit cost

For example :

A person running his business which includes following costs

Raw material = ` 200000/month

Salary = ` 20000/month

Administration expense = ` 10000/month

Additional information : Person is running his business in his own building and if he could rent out this land the rent could be ` 10000/ month. Then find out the accounting and economic cost.

Ans.

Accounting cost = Explicit cost (all direct cost)

= 200000 + 20000 + 10000

= 230000

Economic cost = explicit cost + implicit cost

= (200000 + 20000 +10000) + (10000)

= 240000

Cost Output Relationship

Cost output relationship shows how the cost changes if output level change. Every cost shows different type of behaviour with change level of output.

Short Run Cost

Long Run Cost

"Short run is the period where firm can vary its output by varying its variable cost only. Firm cannot change its fixed cost in short run. "

"Long run is the period where all the costs can vary. In other words in long run, no cost is fixed cost."

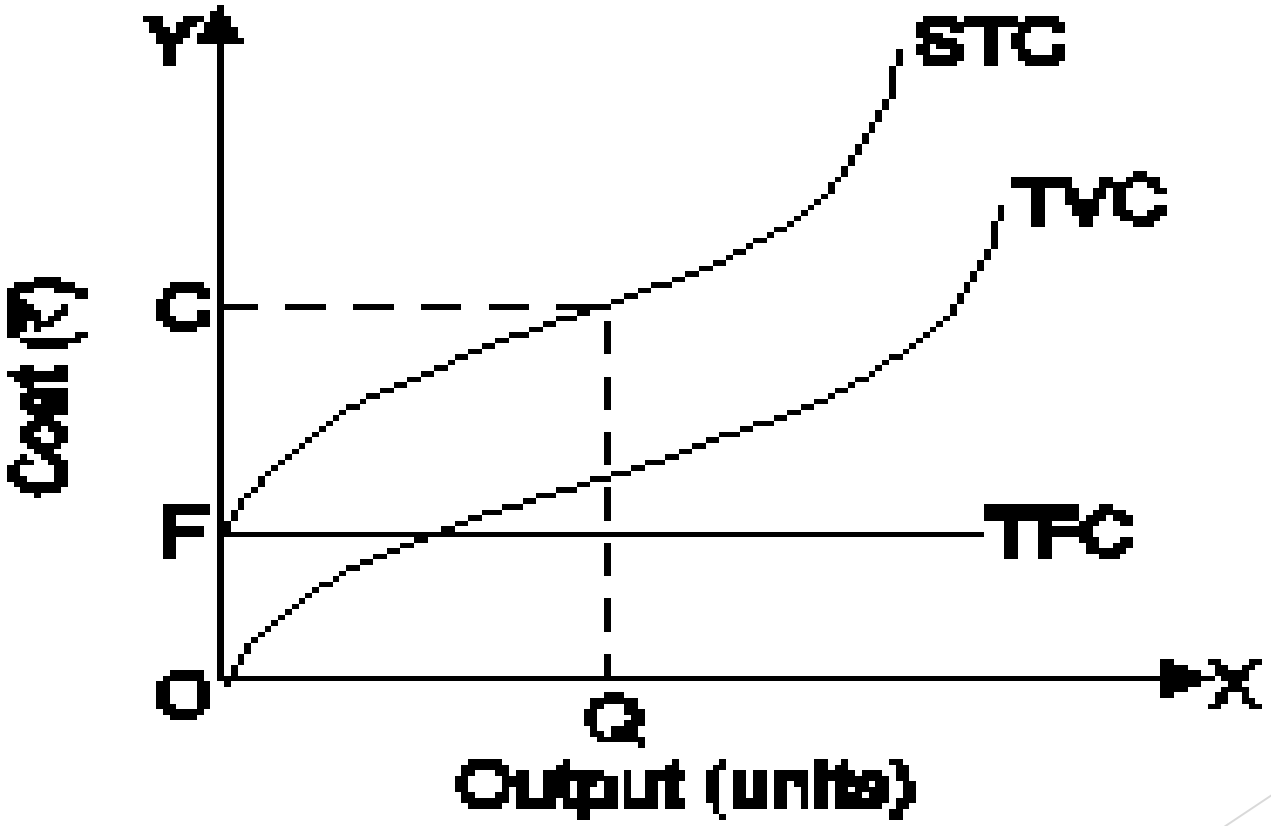
Short run Total cost

In short run the Total Cost (TC) comprises total fixed cost and total variable cost.

STC = SVC +SFC

Fixed cost is the cost which does not vary with level of production.

Variable cost is the cost which varies with the level of production.

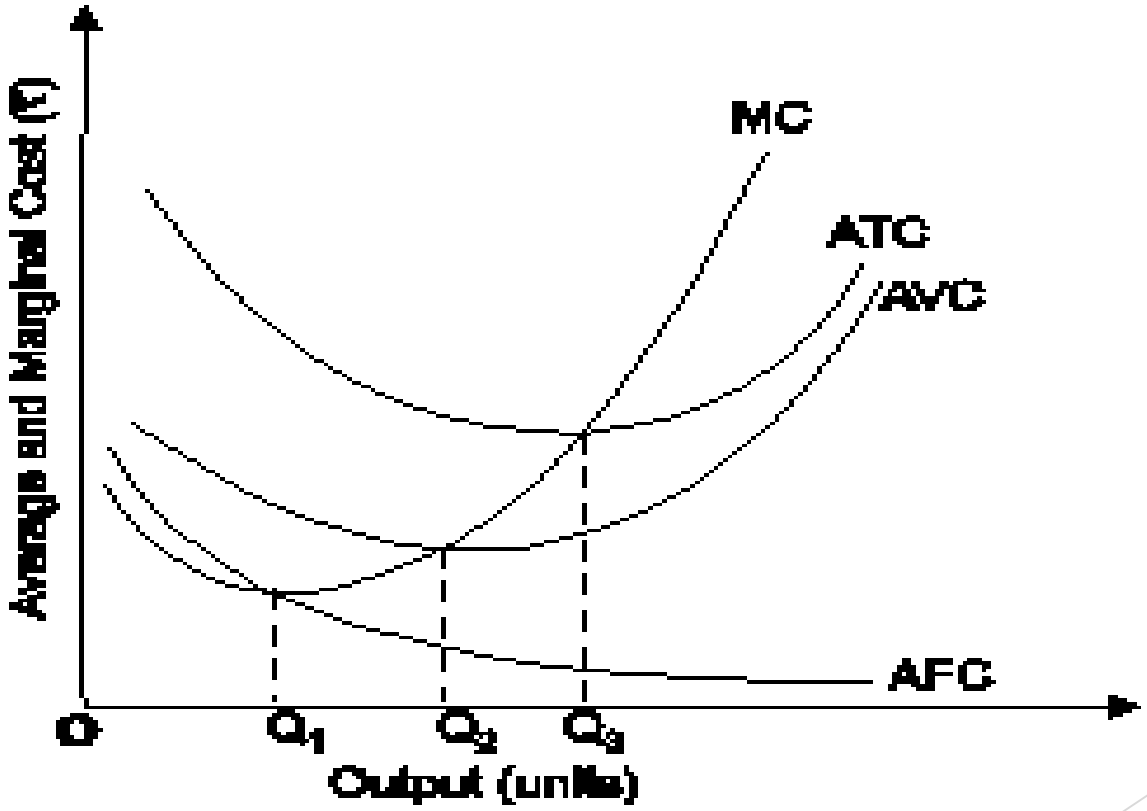


Short run Average cost :

Average fixed cost :

Average fixed cost is total fixed cost (TFC) divided by output (Q),

$$AFC = \frac{TFC}{Q}$$



- **2. Average variable cost**

Average variable cost (AVC) is found by dividing total variable cost (TVC) by output (Q)

$$AVC = TVC/Q$$

- **3. Average Cost** Average total cost (AC) is found by dividing total cost (TC) by output (Q).

$$AC = TC/Q$$

We can also say that with the help of all above cost formula

$$TC = FC + VC$$

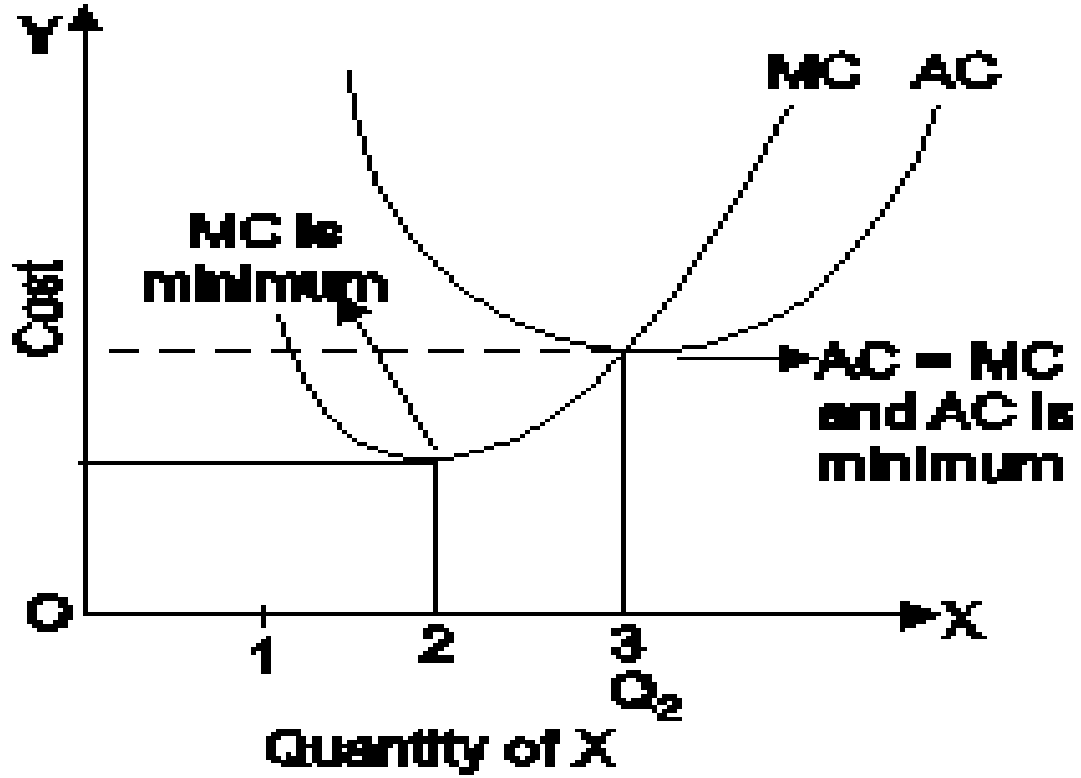
Or $$ATC = AFC + AVC$$

-

- **Short run marginal Cost**

Marginal cost (MC) is the cost of producing additional units of output.

MC = Change in total cost /change in total quantity



Short run cost and output relationship

Units of output	Total fixed cost	Total variable cost	Total cost (2) + (3)	Average fixed cost (2) ÷ (1)	Average variable cost (3) ÷ (1)	Average cost (5) + (6)	Marginal cost
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
0	30	0	30	–	–	–	–
1	30	10	40	30	10	40	10
2	30	18	48	15	9	24	8
3	30	24	54	10	8	18	6
4	30	32	62	7.5	8	15.5	8
5	30	50	80	6	10	16	18
6	30	72	102	5	12	17	22

Long Run Costs

(a) Long run total cost

As we know the total cost is the cost of production. In long run total cost is all variable.

TC = VC

(b) Long run average cost

1. **Average cost:** In long run average cost can be identified by dividing total cost (TC)to output(Q)

AC = TC/Q

2. **Average variable cost:** In long run average variable cost can be identified by dividing variable cost (VC) by output (Q)

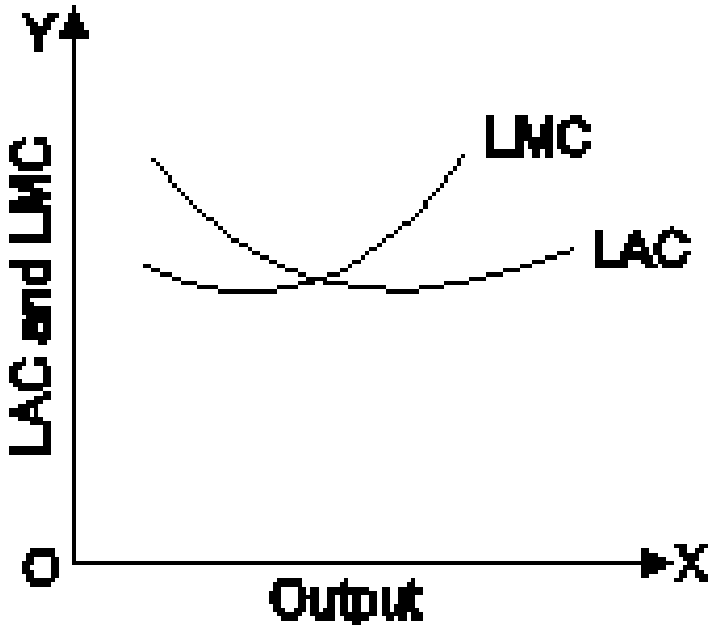
AVC = VC/Q

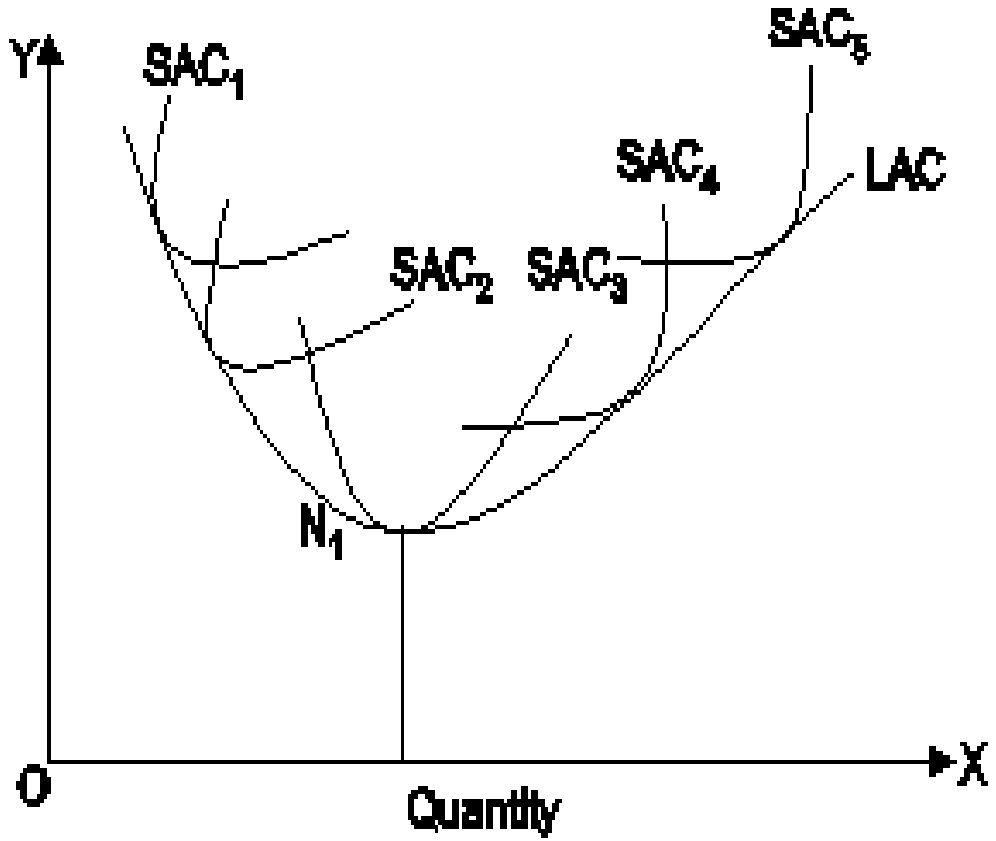
(c) Long run marginal cost

Marginal cost in long run can be calculated by the following formula

MC = Change in total cost /change in output

MC = ΔTC/ΔQ


Y
LAC and LMC
LMC
LAC
O
X
Output


Y
SAC1
SAC5
SAC4
LAC
SAC2
SAC3
N1
O
Quantity
X

- **In connection with Long run average cost curve following points are to be noted:**

1. The LAC curve is tangential to the various SAC curves. It is said to envelop them and is often called as the "envelope curve" since no point on an SAC curve can ever be below the LAC curve.
2. The LAC curve is U-shaped or like a "dish." The U-shape of the LAC curve implies lower and lower average cost in the beginning until the optimum scale of the enterprise is reached. And successively higher average costs thereafter,

i.e., with plants larger than that of the optimum scale.

Economies of Scale

In long run, due to bulk production some cost advantages come to the firm and these advantages are known as economies of scale

- **(1) Internal economies of scale**
- **(2) External economies of scale.**

- **Internal Economies :**

Internal economies of scale are those economies which are on account of the size and operations of an individual firm itself and not from the outside factors. Internal economies are available exclusively to an expanding firm.

(a) Managerial Economies : 100 units 10 labour ..... 500 units 50 labour

Managerial economies arise from

(i) specialization in management

(ii) mechanization of managerial functions.

Managerial economies means with the expansion of the firm whole expanded scale is looked after by the specialized personnel in the organization and this makes possible for the firm to divide the firm into specialized department. In case of economies, **administrative cost decreases** with the increase in output

Specialization Economies :

When firm expands more and more workers of specialized skills and qualifications are employed. With the increase in number of labour it is easy for the firm to divide the **labour according to their specialization**. This is known as division of labour which provides more efficiency to the firm production. And cost of production also reduces due to division of labour in a business firm.

- **Marketing Economies :**

Marketing economies are concerned with the bulk purchases of raw material while producing on the large scale leads to decrease in the cost of production. Marketing economies arises due to

(i) economies in advertisement cost

(ii) economies in large scale distributor through wholesaler.

With the expansion of the firm the production cost increases but the advertising expenditure does not increase proportionately.

Technical economies

Technical economies arise on account of large scale production in the use of plant, machinery and work processes. **Advanced technology** is used which reduces the cost of production when the **production is carried on a large scale.**

External Economies

External economies arise on account of the external factors and they are enjoyed by all the firms in the area or industry as a whole. When an area is industrially well developed then there will be

- development of labour market
- banking, insurance,
- Financial institutions,
- means of communication and
- transportation,
- social overhead and CSR
- cheap water,
- electricity

Diseconomies of Scale

- Like every other thing the economies have a limit too. This limit reached when the advantages of division of labour and potential personnel are fully exploited, expanded capacity of plan fully used. Then diseconomies begin and to overweigh economies and cost begins to rise.

Supply

Price of a commodity depends on two forces one is demand and other is supply.
"Supply means quantity offered for sale by producer at a particular price in particular time period."

Determinants of Supply

1. **Production technology**
2. **Cost of factors of production**
3. **Climatic conditions**
4. **Means of transport**
5. **Political Disturbance or War**
6. **Agreement among the producers**
7. **Price of substitute**
8. **Sellers' price expectations**
9. **Taxation**
10. **Objective of the firm**

Supply Function

Supply function is merely the mathematical relationship between the supply and its determinants.

The supply function can be put as under :

$$Q_x = F(P_x, P_y, P_i, T, Tax)$$

where

Q_x = quantity supplied

P_x = price of commodity

P_y = price of substitute

P_i = price of factor of production

T = technology

Tax = rate of taxation

F = it shows the functional relationship between quantity supply and its determinants

Law of Supply

- “if other things remain same (**ceteris paribus**) when price of the commodity will increase the supply of commodity will also increase and vice versa. Thus it defines a positive relationship between the supply and price.

P ↑ S ↑

20 Rs. 100 units

25 Rs. 150 units

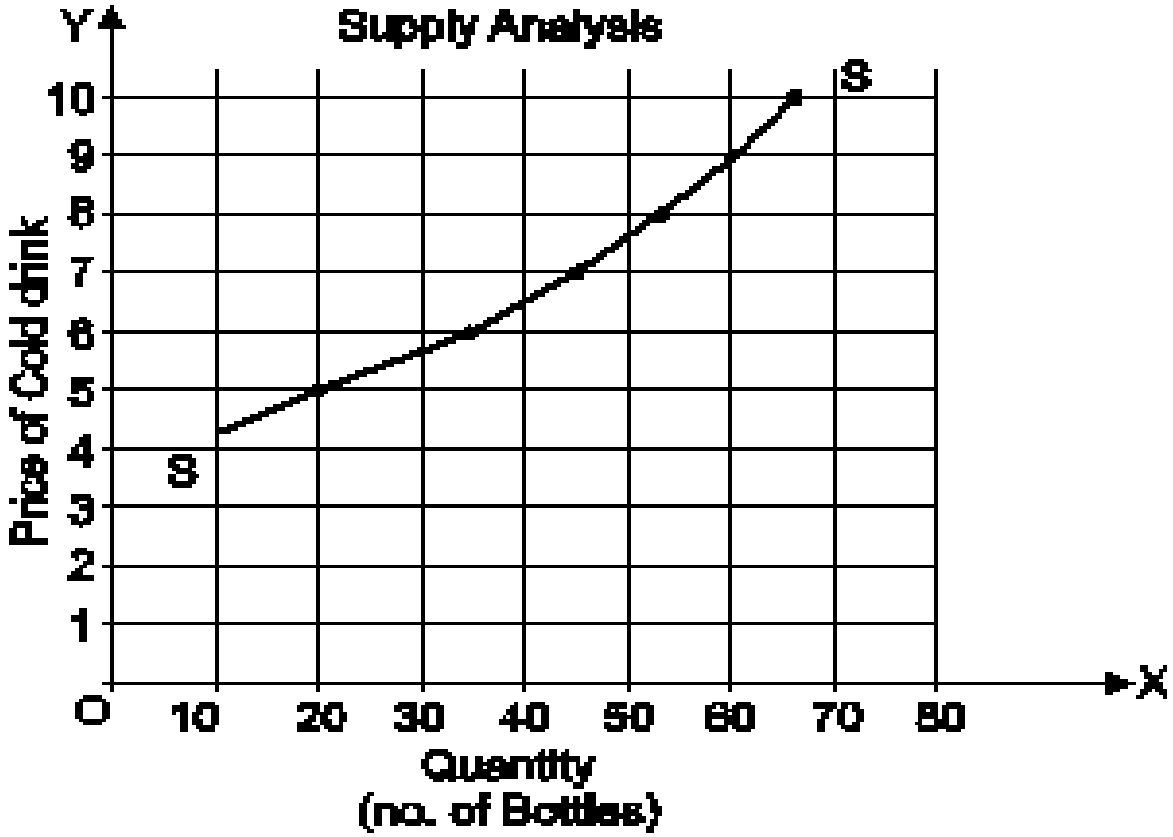
Supply Schedule

- It is the tabular presentation of Law of Supply. To explain the Supply schedule we are taking the example of cold drink.

Price of the Cold Drink (Rs)	Quantity Supplied of Cold Drink (Number of Bottles)
5	20
6	35
7	45
8	53
9	60
10	66

Supply Curve

- It is the Graphical presentation of Law of Supply



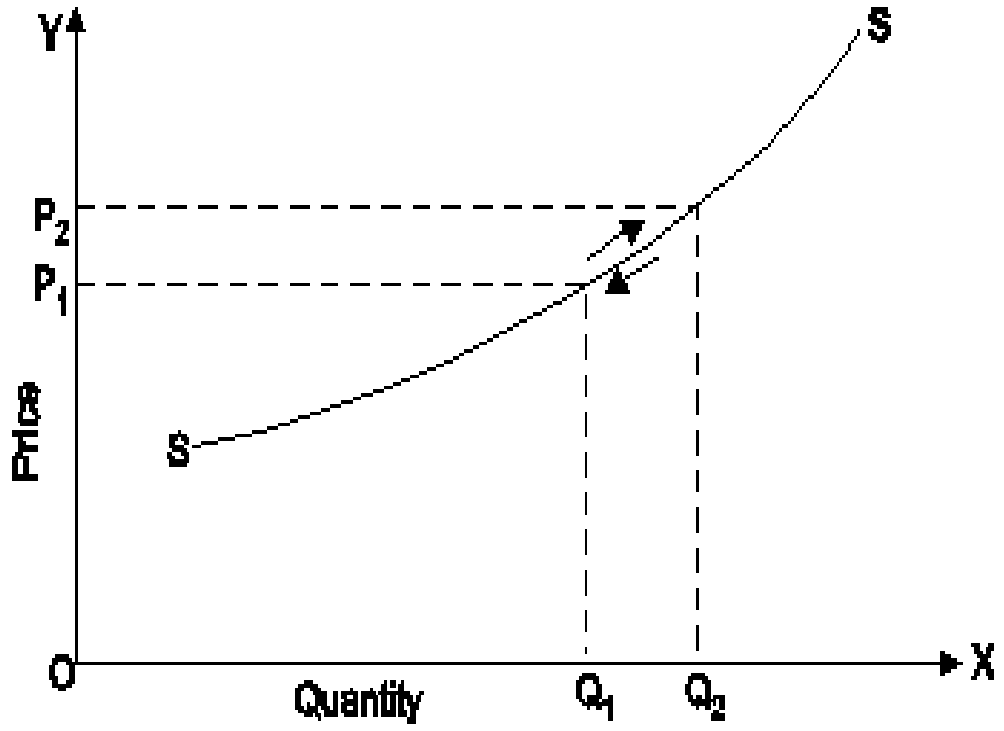
Assumptions of Law of Supply

There are following assumptions of law of supply :

1. No change in the state of technology.
1. No change in the price of factors of production.
2. No change in the number of firms in the market.
3. No change in the objective of the firm.
4. No change in the seller's expectations regarding future prices.
5. No change in the taxation policy of the products.
6. No change in the price of substitute goods.

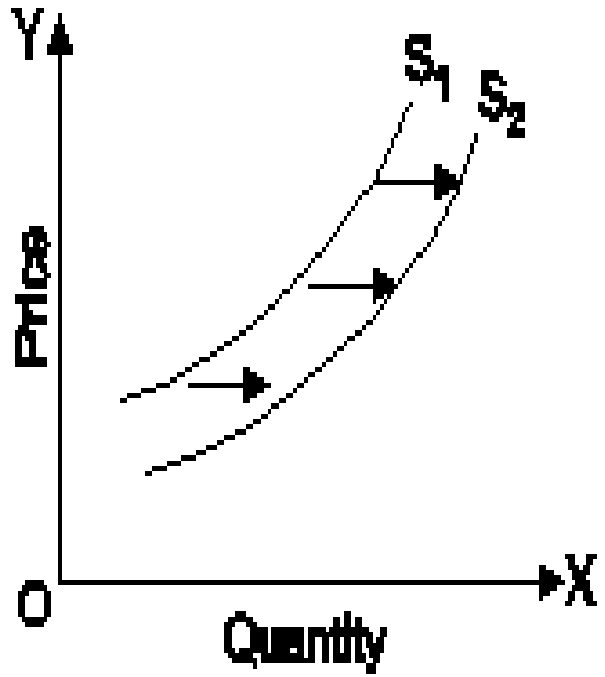
Extension or Contraction of Supply

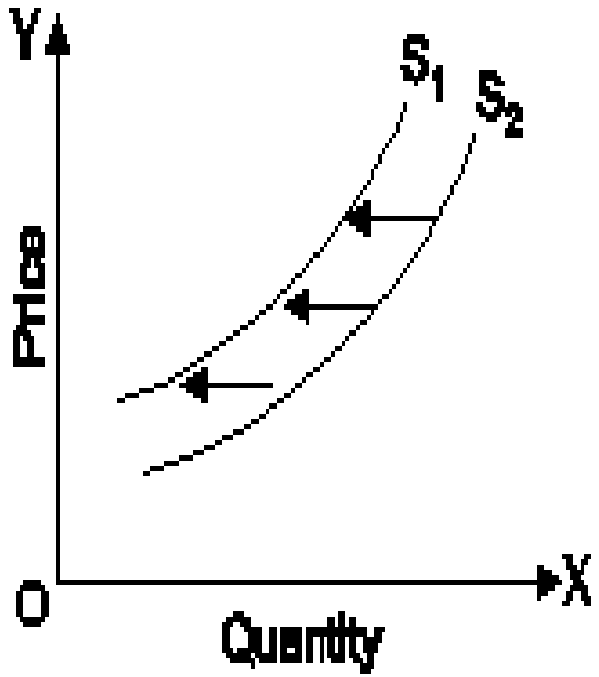
- When supply of a commodity changes due to the change in its price, it is known as Extension or contraction of supply and it is shown on the same supply curve.



Increase or Decrease in Supply (Shift in Supply)

- When supply of commodity changes due to change in non price factors we call it “increase or decrease” in supply and this we show on different supply curve.





Exceptions to the Law of Supply

- Expectation of a fall in price
- Sellers who are in need of cash
- When leaving the industry
- Agricultural output
- Cost of factors of production
- Perishable goods

Elasticity of Supply

- Elasticity is a measure which shows the responsiveness of one factor due to change in other factor. In Elasticity of supply we show the responsiveness of supply due to change in price. Elasticity of supply is defined as percentage change in quantity supplied because of percentage change in price. Elasticity of supply is symbolized as “Es”.

$$Es = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

Or

$$Es = \frac{\text{Change in quantity supplied}}{\text{Original quantity supplied}} \div \frac{\text{Change in price}}{\text{Original price}}$$

Or

$$Es = \frac{\Delta Q}{Q} \div \frac{\Delta P}{P}$$

Or

$$\frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

Where

Q = Original Quantity supplied

P = Original Price

ΔQ =Change in Quantity Supplied

ΔP =Change in Price

For example

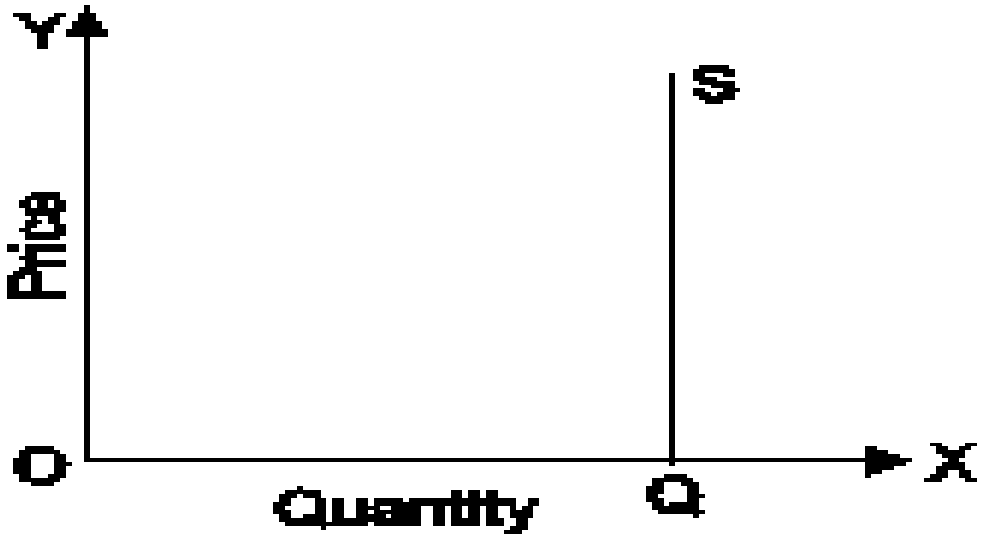
Price of commodity X is 10 `/unit and on this price the quantity supplied is 100 units and when price increases to 20 `/unit the quantity supplied also increases to 200 units. Then the elasticity of supply will be :

Types of Elasticity of Supply

Zero elasticity of supply

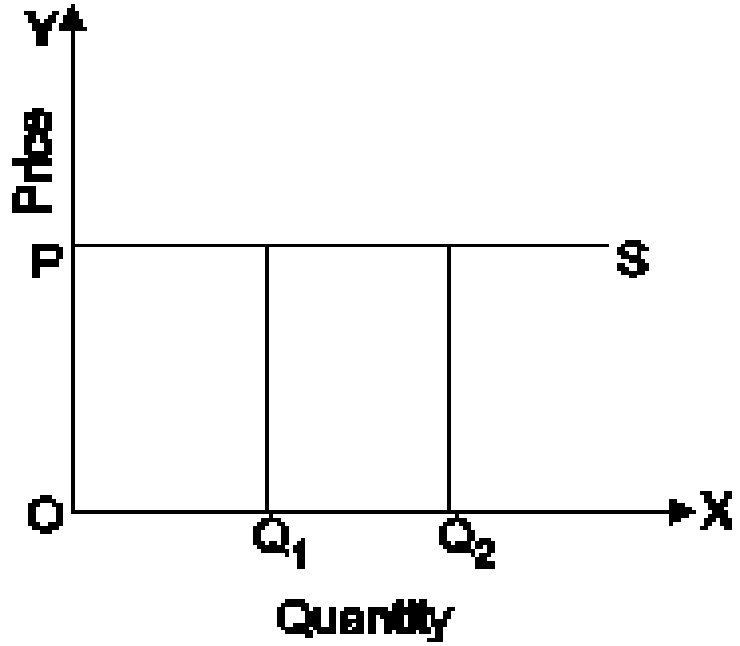
This means no change in supply due to change in price. In other words quantity of supply remains same even after change in price. Symbolically

Es = 0



Perfectly Elasticity of supply

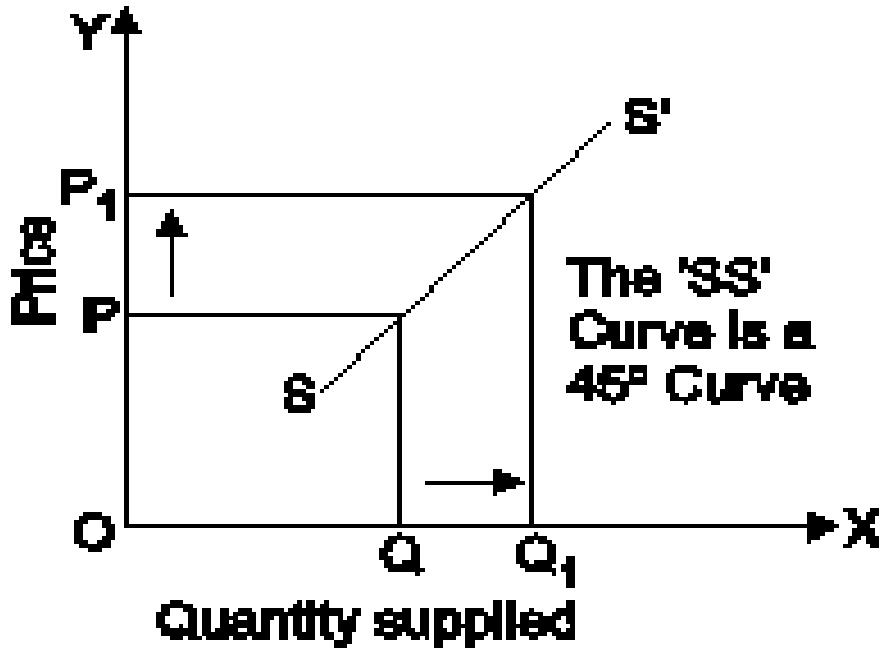
- If there is no change in price but supply still get change then this case is known as perfectly elastic supply. In this case, supply change due to change in other factors like production technology, government policy, future expectations etc. but not in price will remain same. Here price will remain same but quantity will change. Symbolically Es = ∞ (infinite)



Unitary Elasticity of supply

- If the supply changes in the same proportion of price then it is known as unitary Elasticity of supply. In other words we can say that if percentage change in supply is equal to the percentage change in price it is known as unitary elasticity of supply. Symbolically

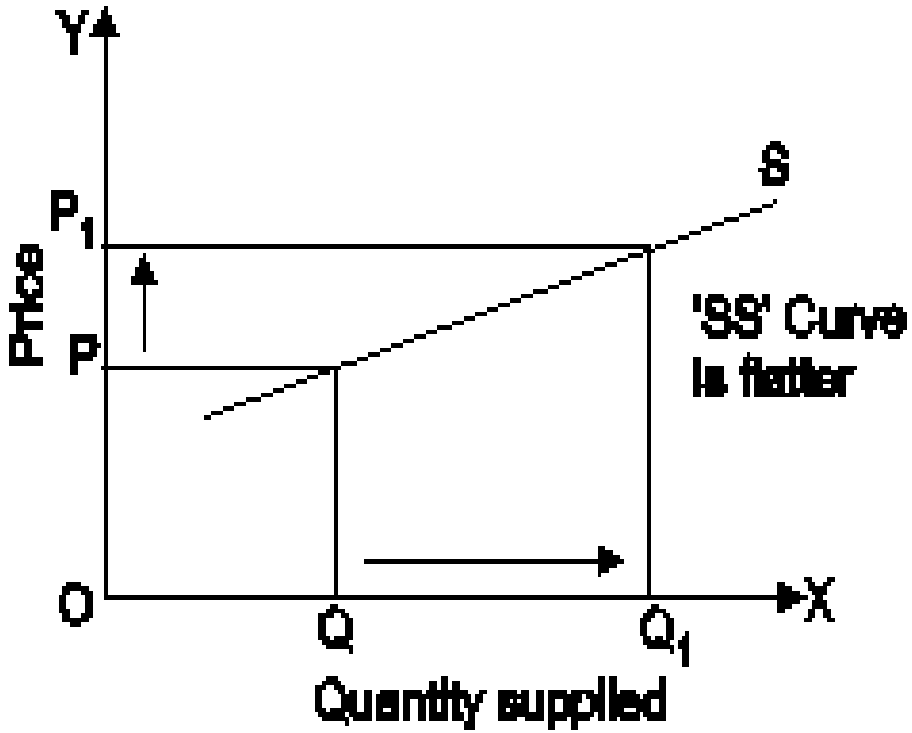
$$Es = 1$$



Elasticity of supply or Elastic Supply

If change in supply is more than the change in price then it is known as highly elasticity of supply. In other words, percentage change in supply will be more than percentage change in price. Symbolically

$$E_s > 1$$

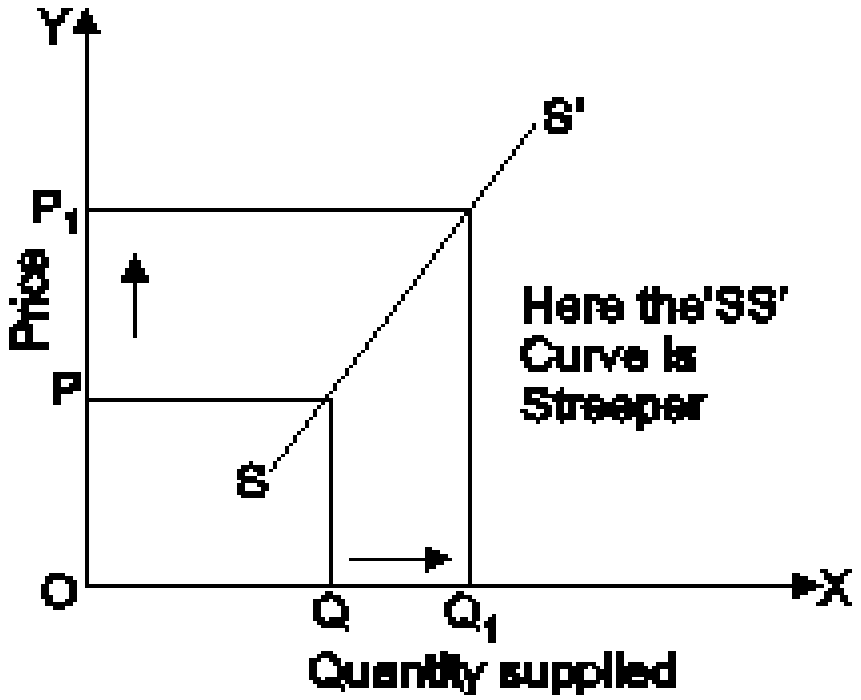


Inelasticity of Supply or Inelastic supply :

If change in supply is less than the change in price then it is known as relatively less Elasticity of supply. In other words percentage in change in supply will be more than percentage change in price is known as relatively less Elasticity of supply.

Symbolically

$E_s < 1$



Practical Importance of Elasticity of Supply

These are the following areas where Elasticity of supply is having importance

1. **Housing property** : Inelastic supply of new houses in response to rising demand can push up the prices of the property.

2. **Oil industry** : OPEC cannot increase the supply of oil in response to increase in demand because the oil supply is inelastic.

3. **Commodity price** : Inelastic supply of many commodity can make the price more volatile.

4. **Labour Market** : Elasticity of labour supply decides the wage price in labour market.

Unit-4

Syllabus

- **Revenue Analysis and Pricing Policies:** Introduction, Revenue: Meaning and Types, Relationship between Revenues and Price Elasticity of Demand, Pricing Policies, Objectives of Pricing Policies, Cost plus pricing. Marginal cost. Cyclical pricing. Penetration Pricing.
- Price Leadership, Price Skimming. Transfer pricing. Price Determination under Perfect Competition- Introduction,
- **Market and Market Structure**, Perfect Competition, Price-Output Determination under Perfect Competition, Short-run Industry Equilibrium under Perfect Competition, Short-run Firm Equilibrium under Perfect Competition, Long-run Industry Equilibrium under Perfect Competition, Long-run Firm Equilibrium under Perfect Competition. Pricing Under Imperfect Competition- Introduction, Monopoly, Price Discrimination under Monopoly, Bilateral Monopoly, Monopolistic Competition, Oligopoly, Collusive Oligopoly and Price Leadership, Pricing Power, Duopoly, Industry Analysis.
- **Profit Policy:** Break Even analysis. Profit Forecasting. Need for Government Intervention in Markets. Price Controls. Support Price. Preventions and Control of Monopolies. System of Dual Price.

Price output relationship under different market structure

Market

Generally , the term “market” refers to a particular place where goods are purchased and sold.

But, in economics, market is used in a wide perspective. In economics, the term “market” does not mean a particular place but the whole area where the buyers and sellers of a product are spread.

Essential characteristics of market

1. The existence of buyers and sellers
2. A commodity for which buyer and seller will deal.
3. A place, it may be a certain region, a country or the entire world.
4. Interaction of buyers and seller for purchase and sales.

Classification of market

1. **On the basis of area :**
   (a) Local
   (b) National
   (c) International

2. **On the basis of time :**
   (a) Short period
   (b)Long period

3. **On the basis of competition :**
   (a) Perfect competitive market

   (b) Imperfect competitive market

      I. Monopolistic market
      II. Perfect Oligopoly
      III. Imperfect Oligopoly
      IV. Monopoly

Type of the Market	No. of Firms	Nature of the Commodity	Example
(a) Perfect competitive market			
Perfect competition	Infinite	Homogeneous	Vegetable
(b) Imperfect market			
I. Monopolistic competition	Many	Differentiated	Retail trade
II. Perfect oligopoly	A few	Homogeneous	Steel, bread
III. Imperfect oligopoly	A few	Differentiated	Tea, soap
IV. Monopoly	one	Homogeneous	Defense

Market Structure

Market structure refers to the nature and degree of competition in the market for goods and services. The structures of market both for goods market and service (factor) market are determined by the nature of competition prevailing in a particular market.

Market structure is generally classified on the basis of competition

Price Determination Under Perfect Competition

Perfect Competition

Perfect competition is a kind of market structure where large number of buyers and sellers interact with each other for purchase or sale of homogeneous good or services

Characteristics of perfect completion

- **Large number of buyer and seller :**
- **Homogeneous product :**
- **Perfect mobility of factors of production**
- **Free entry and free exit**
- **Perfect knowledge**
- **No government interference .**
- **Absence of collusion**
- **Absence of Selling Costs**

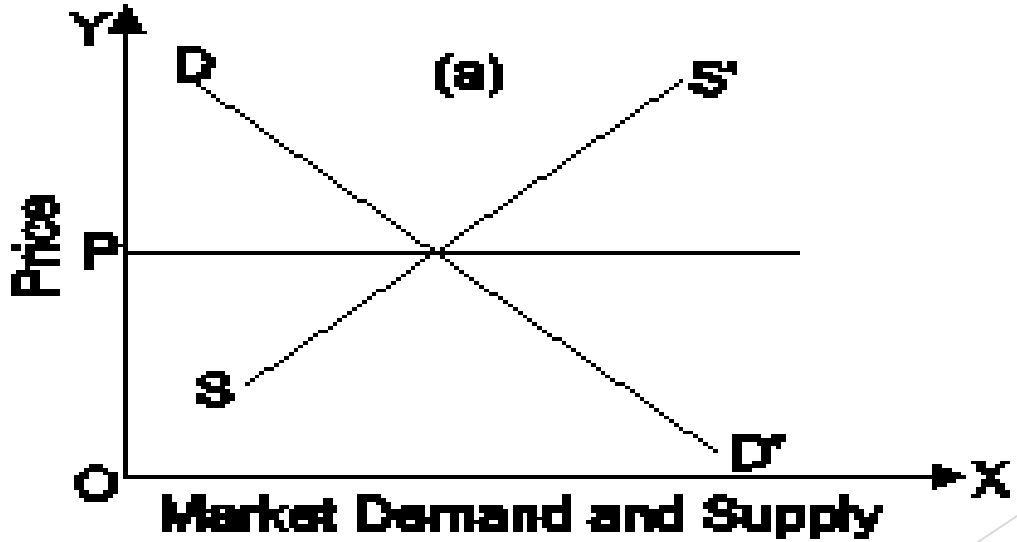
Price Determination

- In Short Run
- In Long Run

Price Determination under Perfect Competition in short run or firms equilibrium under perfect market in short run

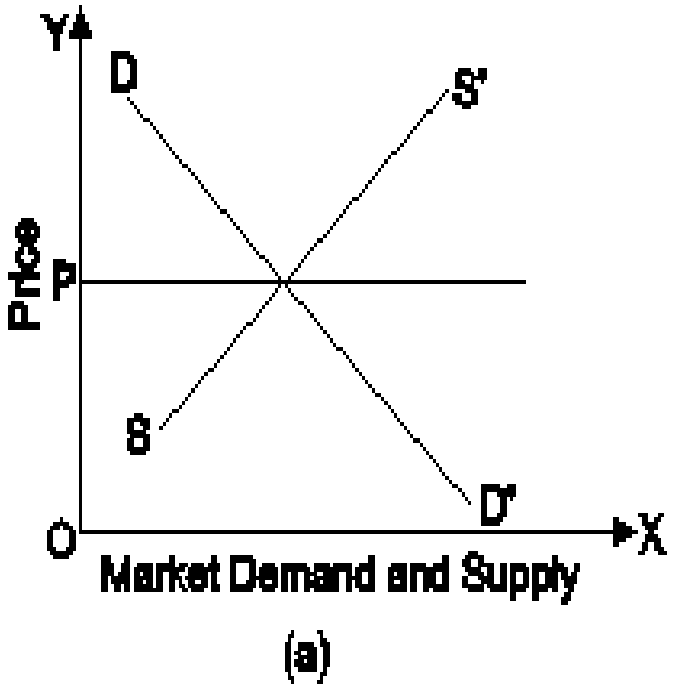
Under perfect completion in short run price determination can be understand in two segment

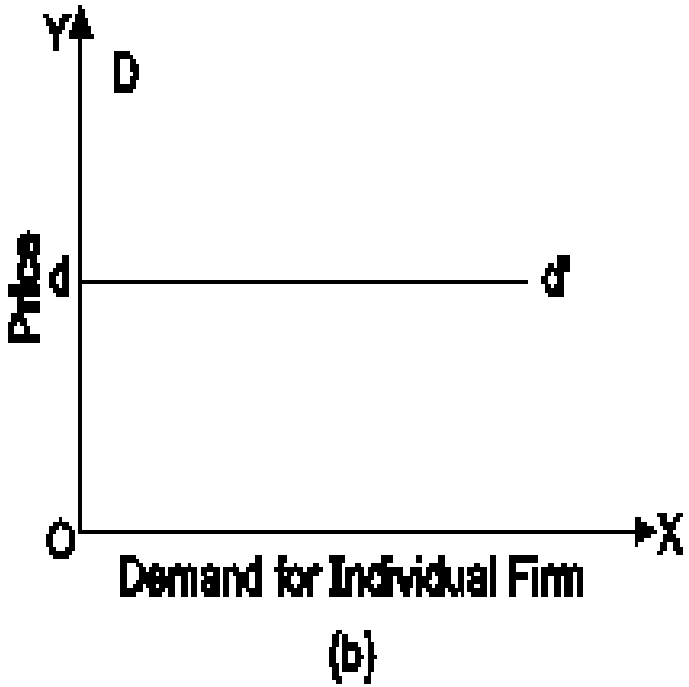
- 1. Price determination in industry.
- 2. Price determination in firm.
- **Price determination in Industry**
- In perfect completion the industry is price maker and price is determined by the interaction of demand and supply curve.



Determination of Market Price and Demand for Individual Firms

Price determination in firm





- Under perfect competition price is decided by the industry and firms follow the price.
- So here on given price the firm is required to decide its output level.

In short run the firm can face one of the following situations :

1. Firm's equilibrium – facing normal profit
2. Firms' equilibrium – facing losses.
3. Firm's equilibrium – facing supernormal profit.

- 50 Rs./kg Lady finger 100 kg 110 kg 90

Price determination or firms' equilibrium is find out in all the market conditions on the following principles :

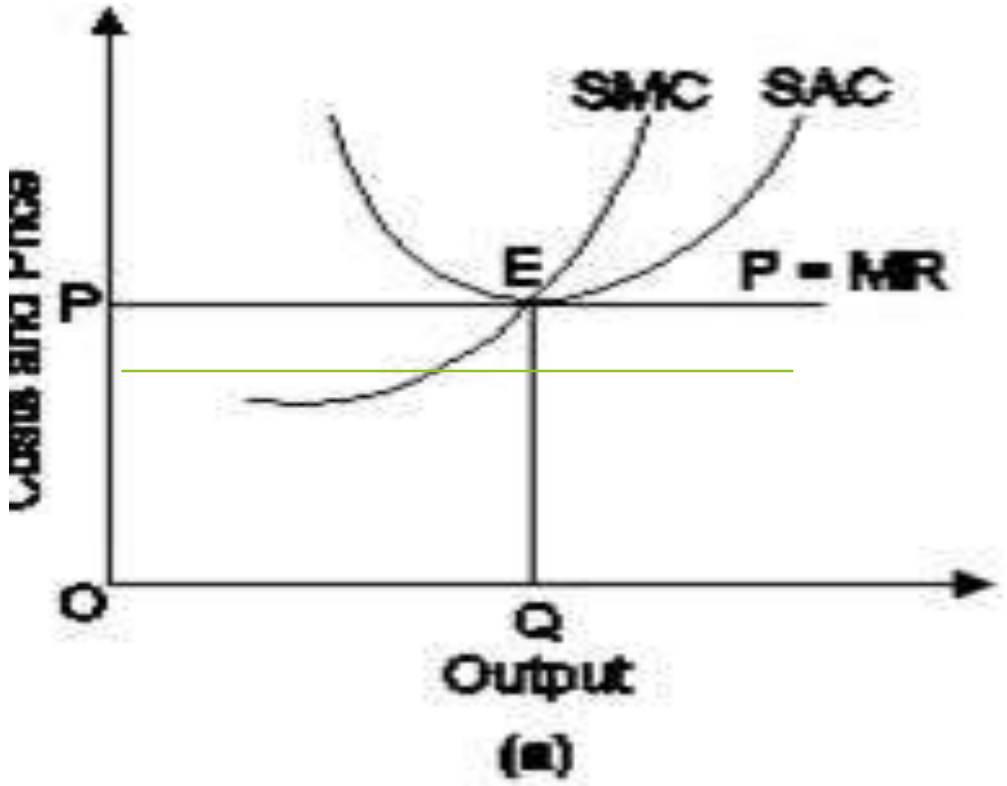
1. **Output is determined where MC = MR.**
2. **Price is determined by the straight perpendicular line drawn on X axis from output to AR.**
3. **Profit or loss find out by the following criteria :**

(a) Supernormal profit : when AC < AR

(b) Normal profit : when AC = AR

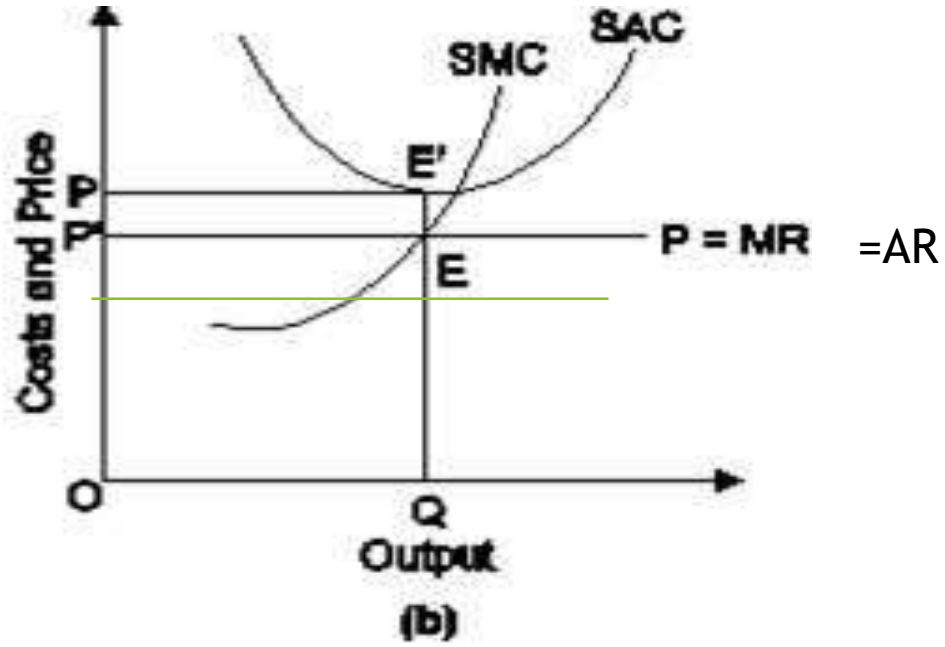
(c) Losses : when AC > AR

Following graph is related to Normal Profit



P = MR = AR
MC MR
AC AR
Price = P
Output = OQ
Ac = AR normal profit

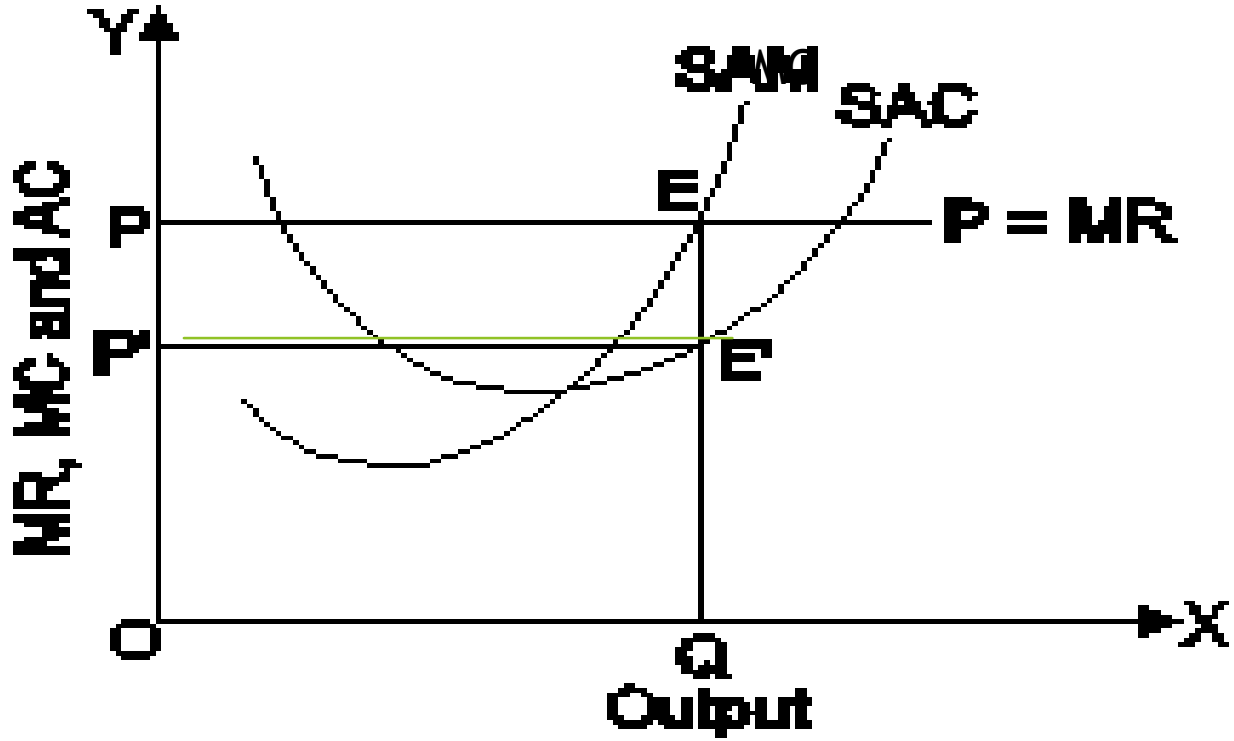
Following graph is related to Losses



=AR

Price= OP
Output = OQ
When AC more than AR = losses
Losses = PE'EP

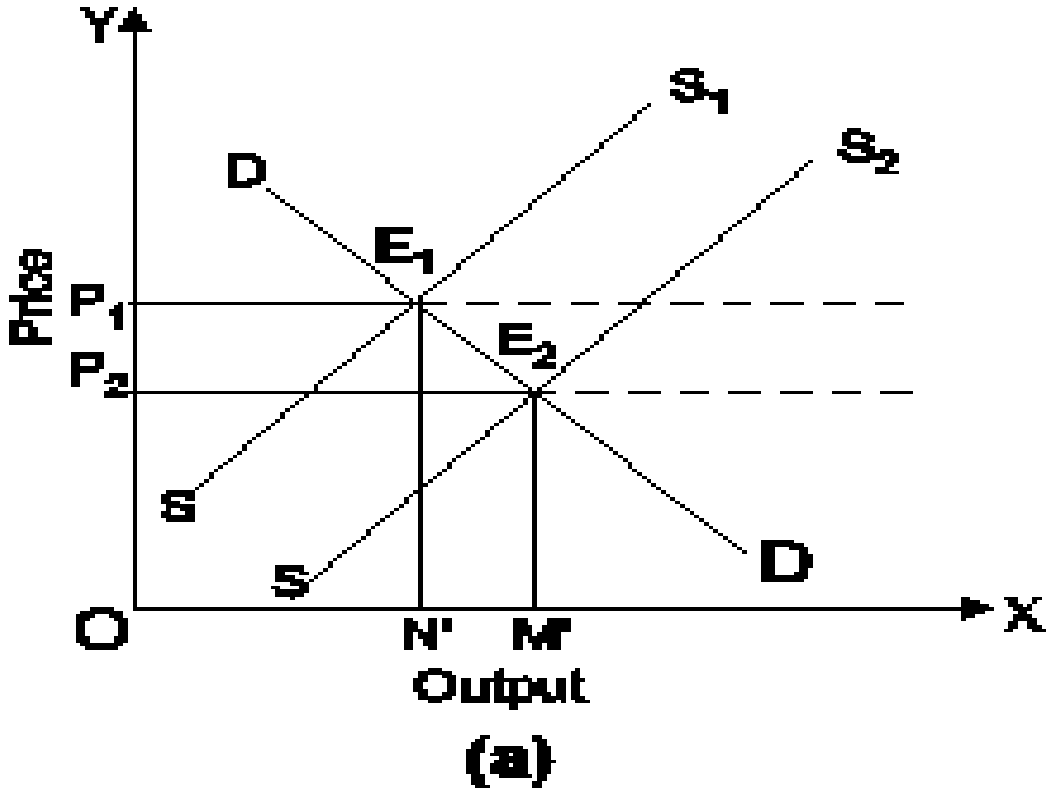
Following graph is related Super normal Profit



Price = OP
Output= OQ
Supernormal profit = AC is less than AR
SP = PEE'P'

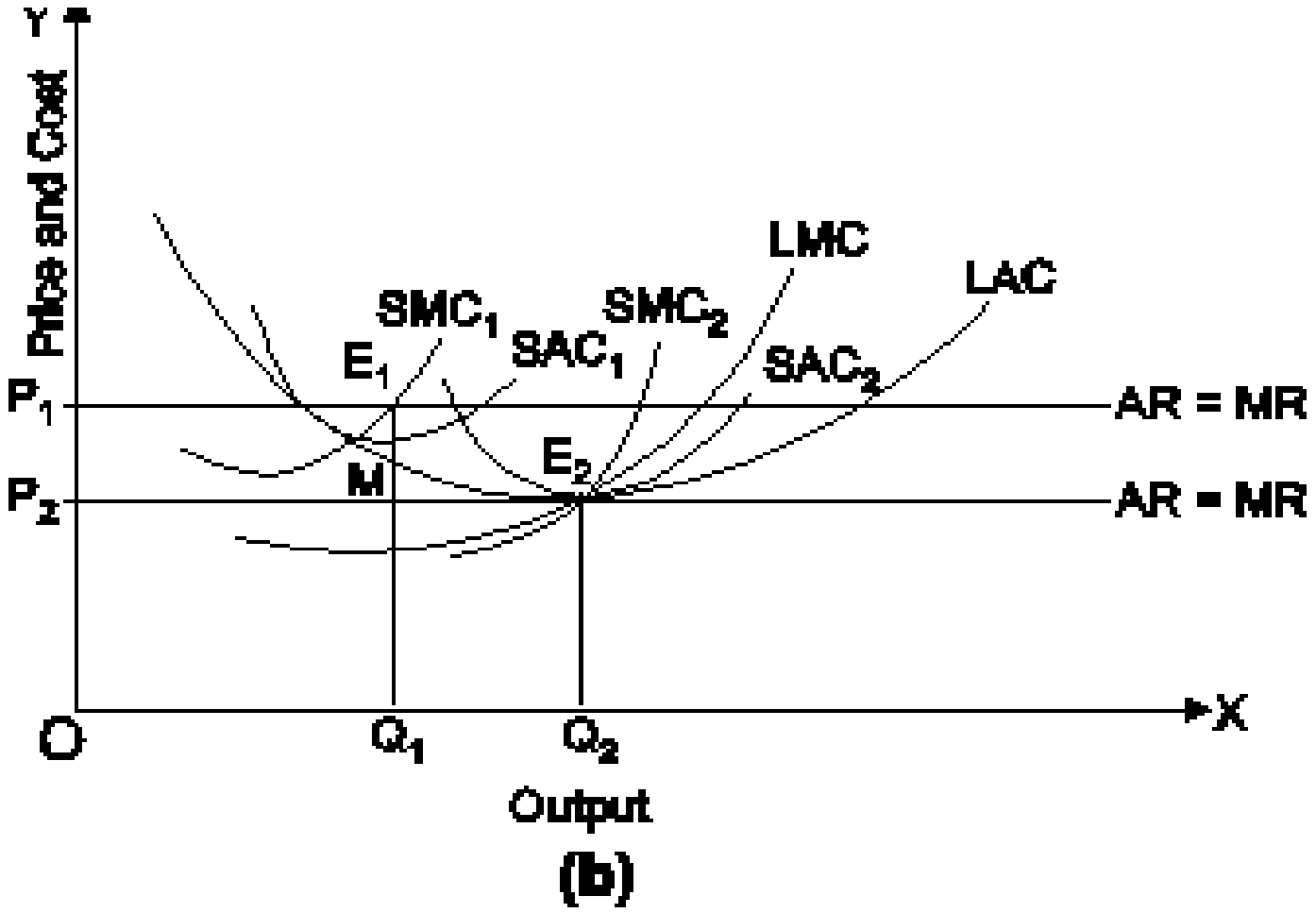
Price Determination under Perfect Competition in long run or firms equilibrium under perfect market in long run :

- **Price determination in Industry**



Normal profit

Price determination in Firm



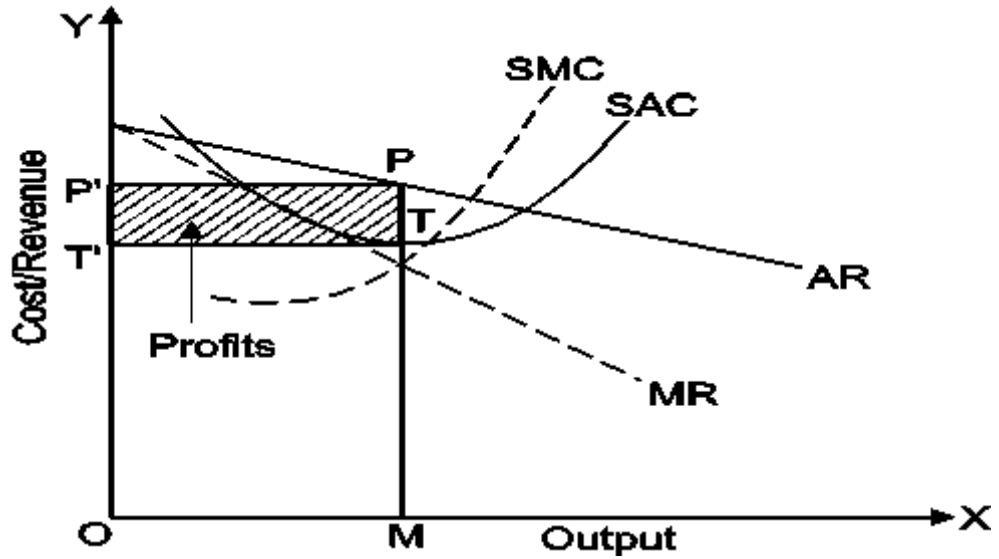
Monopolistic Competition

Features of Monopolistic Competition

- Large Number of Sellers
- Product Differentiation
- Freedom of Entry or Exit
- Independent Behaviour
- Selling Costs
- Control Over Price

Price Determination under Monopolistic Competition

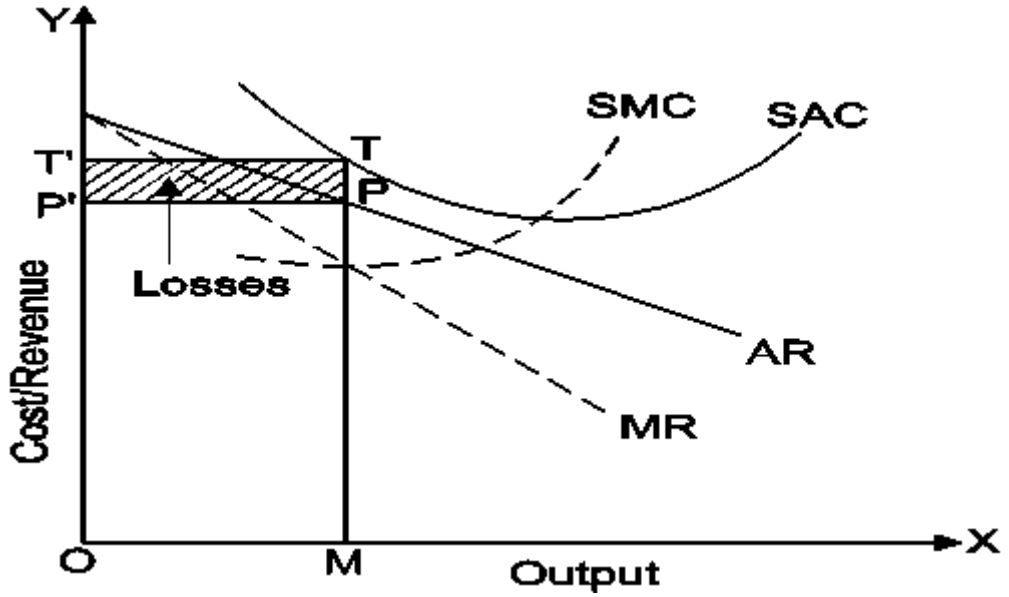
In short run



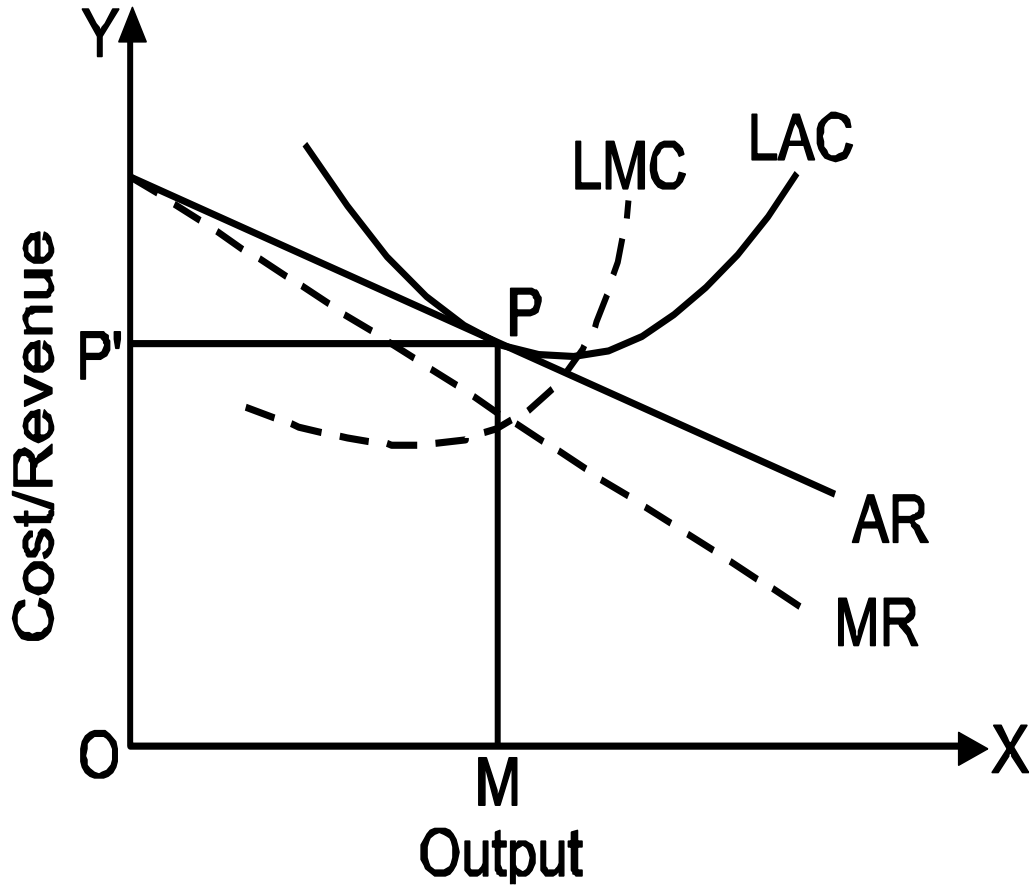
: Firm's Equilibrium under monopolistic competition : Short-run

Price =OP' where the output line will touch the AR the price will be determined
Output= OM (MC =MR)
Profit = P'PTT'

Equilibrium under monopolistic, competition : Short-run (with losses)



In long run :



Price Determination Under Oligopoly

- **Oligopoly**
- Oligopoly is market where a few large firms compete against each other and there is an element of interdependence in the decision-making of these firms. Each firm in the oligopoly recognizes this interdependence. Any decision one firm makes (be it on price, product or promotion) will affect the trade of the competitors and so results in countermoves
- **Characteristics of Oligopoly Market**
- **1. Interdependence**
- **2. Importance of Advertising and Selling Costs**
- **3. Group Behaviour**
- **4. Identical or Differentiated Products**
- **5. Few Sellers**
- **6. Small Number of Large Firms**

Price determination under Oligopoly

Kinked Demand Curve

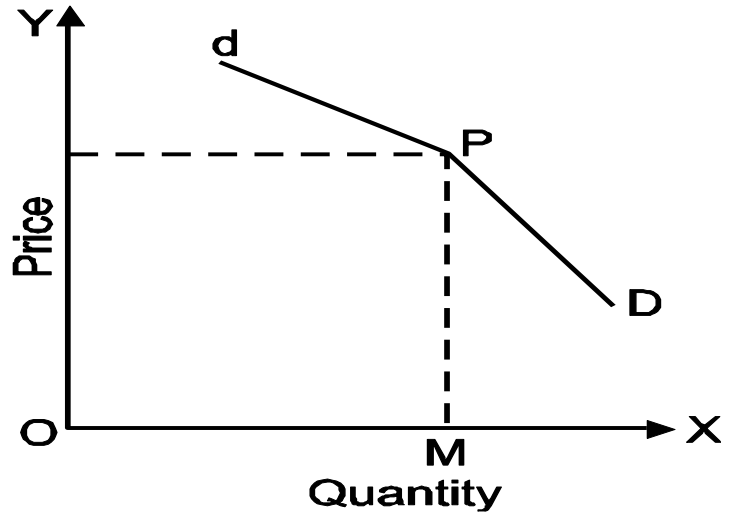
This is one of the prevailing models for price determination under Oligopoly.

Assumptions :

There are following assumptions in kinked demand curve :

1. There are few firms in the oligopolistic industry.
2. The product produced by one firm is a close substitute for the other firms.
3. The product is of the same quality. There is no product differentiation.
4. There are no advertising expenditures.
5. There is an established or prevailing market price for the product at which all the sellers are satisfied.
6. Each seller's attitude depends on the attitude of his rivals.
7. Any attempt on the part of a seller to push up his sales by reducing the price of his product will be counteracted by the other sellers who will follow his move, if he raises the price, others will not follow him. Rather they will stick to the prevailing price and cater to the customers, leaving the price raising seller.

- Each oligopolistic believes that if he lowers the price below the prevailing level; its competitors will follow him and will accordingly lower prices, whereas if he raises the price above the prevailing level, its competitors will not follow its increase in price.
- The Prevailing price level is MP and the firm produces and sells output OM. Now the upper segment dP of the demand curve dD is relatively elastic and lower segment PD is relatively inelastic. This difference in elasticity is due to the particular competitive reaction pattern assumed by the kinked demand curve hypothesis.



Pricing under Collusion (Collusive Oligopoly) :

When competing firms make some kind of agreement about pricing and output they are said to collude. The agreements may be formal or facet. But formal or open agreements are illegal in most countries. The agreement between oligopolists is generally tacit or secret. When firms enter into collusive agreement, collusive oligopoly comes into existence. Collusion can be of two types :

(A) Perfect collusion (Cartels).

(B) Imperfect collusion (Price leadership).

- When rival firms enter into price competition with each other, they will make the market price down to the level of production cost. Therefore there is a strong incentive for the oligopolists to collude, raise price and restrict output. Collusion is just the opposite of competition. A cartel is an agreement among independent firms on subjects like prices, output, market sharing, etc. The desire of the firms to have large joint profits gives impulse to form cartels. But such a desire is short-lived and, therefore, the formal arrangement of cartels cannot be a long-term phenomenon.

Conditions for a Successful Collusion :

Agreements to raise prices are not equally possible in all industries. The collusion can be successful only if the following conditions exist :

1. Small Number of Firms.
2. Threat of Entry Potential Rivals.
3. Stable Demand Conditions.
4. Less Fear of Anti-Trust Action.

Imperfect Collusion (Price Leadership)

- In an oligopolistic situation, there are more than two or a few sellers who are able to exercise monopolistic influence. In such a market situation, we generally find that there exists what is called the 'price leadership'. Under price leadership, one firm assumes the role of a price leader and fixes the price of the product for the entire industry. The other firms in the industry simply follow the price leader and accept the price fixed by him and adjust their output to this price. The price leader is generally a very large or a dominant firm or a firm with !he lowest cost of production.

Duopoly

A duopoly is a type of oligopoly where two firms have dominant or exclusive control over a market. The key components of a duopoly are :

(a) How the firms interact with one another.

(b) How they affect one another.

Characteristics of Duopoly

1. Existence of only two sellers.

2. Independence.

3. Presence of monopoly elements : so long as products are differentiated, the firms enjoy some monopoly power, as each product will have some loyal customers.

Price Determination Under Monopoly

- The word monopoly has been derived from Greek word *monos*, meaning “alone” amd *polein* meaning “seller”. Monopoly is market situation in which there is a single seller of a commodity of ‘lasting distinction’ without close substitute. Monopoly is that market condition which is hard to exist in the market nowadays. Now in the age of competition monopoly in any industry is hard to find.
- **Feature of Monopoly Market**

Single Seller of the Product

Restrictions to Entry

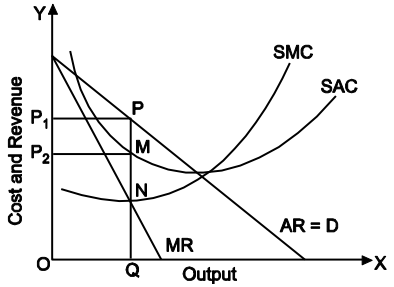
No Close Substitutes

Market Power

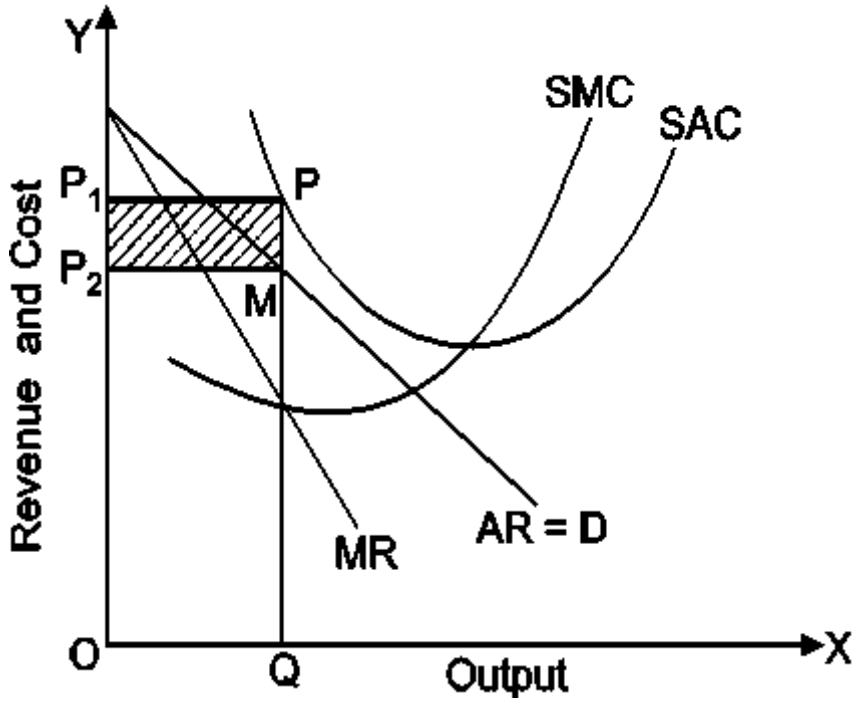
Abnormal Profits.

Economies of Scale

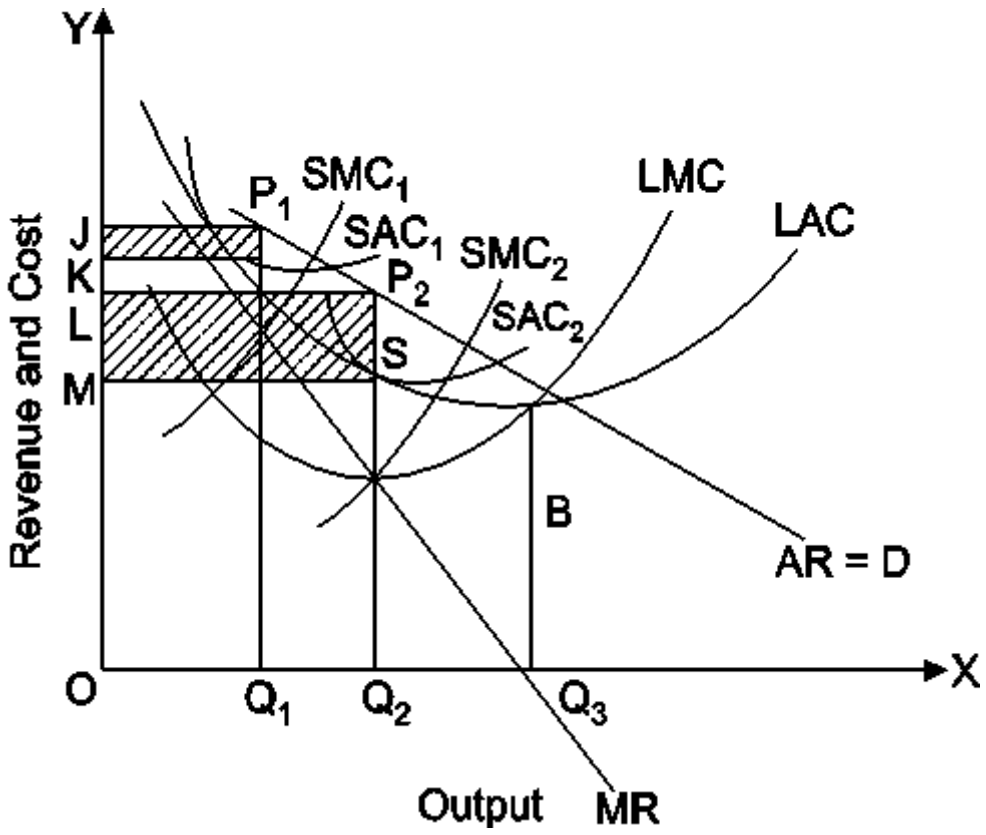
Price Determination under Monopoly :
In short run



- It is not necessary that monopoly firm will always have the supernormal profit sometimes it may have the losses too depends on its cost and revenue conditions and government policy. In the following figure it is shown that monopoly firm is facing losses :

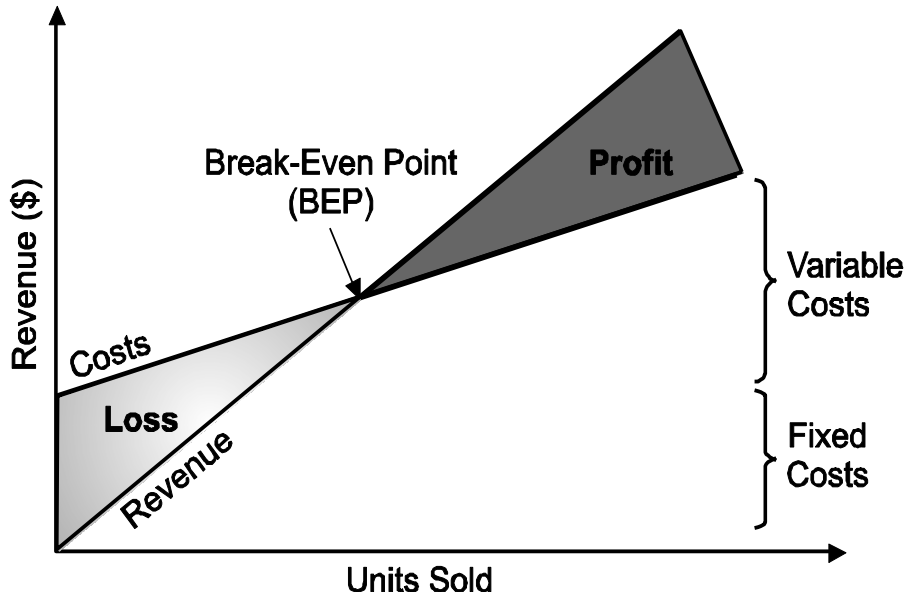


In long run


Y
Revenue and Cost
J
K
L
M
P1
SMC1
SAC1
P2
SMC2
SAC2
S
LMC
LAC
B
AR = D
O
Q1
Q2
Q3
X
Output
MR

Break Even Analysis

A break-even analysis is a financial tool which helps to determine at what stage a company, or a new service or a product, will be profitable. In other words, it's a financial calculation for determining the number of products or services a company should sell to cover its costs (particularly fixed costs). Break-even is a situation where company is having no loss no profit.



Calculation of break even analysis

Following formulas are used for calculation of Break Even Point (BEP)

Contribution per unit = Selling price per unit – Variable cost per unit

Break Even Point = Fixed cost / contribution

- Variable costs per unit : ` 400, Sale price per unit : ` 600 Desired profits : ` 4,00,000 Total fixed costs : ` 10,00,000. First we need to calculate the break-even point per unit, so we will divide the ` 10,00,000 of fixed costs by the ` 200 which is the contribution per unit (` 600 – ` 200). Break Even Point = ` 10,00,000/` 200 = 5000 units. Next, this number of units can be shown in rupees by multiplying the 5,000 units with the selling price of ` 600 per unit. We get Break Even Sales at 5000 units × ` 600 = ` 30,00,000. (Break-even point in rupees).