CA Foundation

Business Economics
and Business
and Commercial Knowledge

IndigoLearn

Paper-4

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NATURE AND SCOPE OF BUSINESS ECONOMICS

UNIT-1: INTRODUCTION

The term 'Economics' owes its origin to the Greek word 'Oikonomia' which means 'household'. So, we can also refer to Economics as 'household management'

Before we start with the meaning of Business Economics, it is important for us to understand what Economics is about. For this, consider the following situation:

It is your birthday and your mother give you Rs 1000 as birthday gift.

You are free to spend the money as you like. What will you do?

You have many options before you, such as:
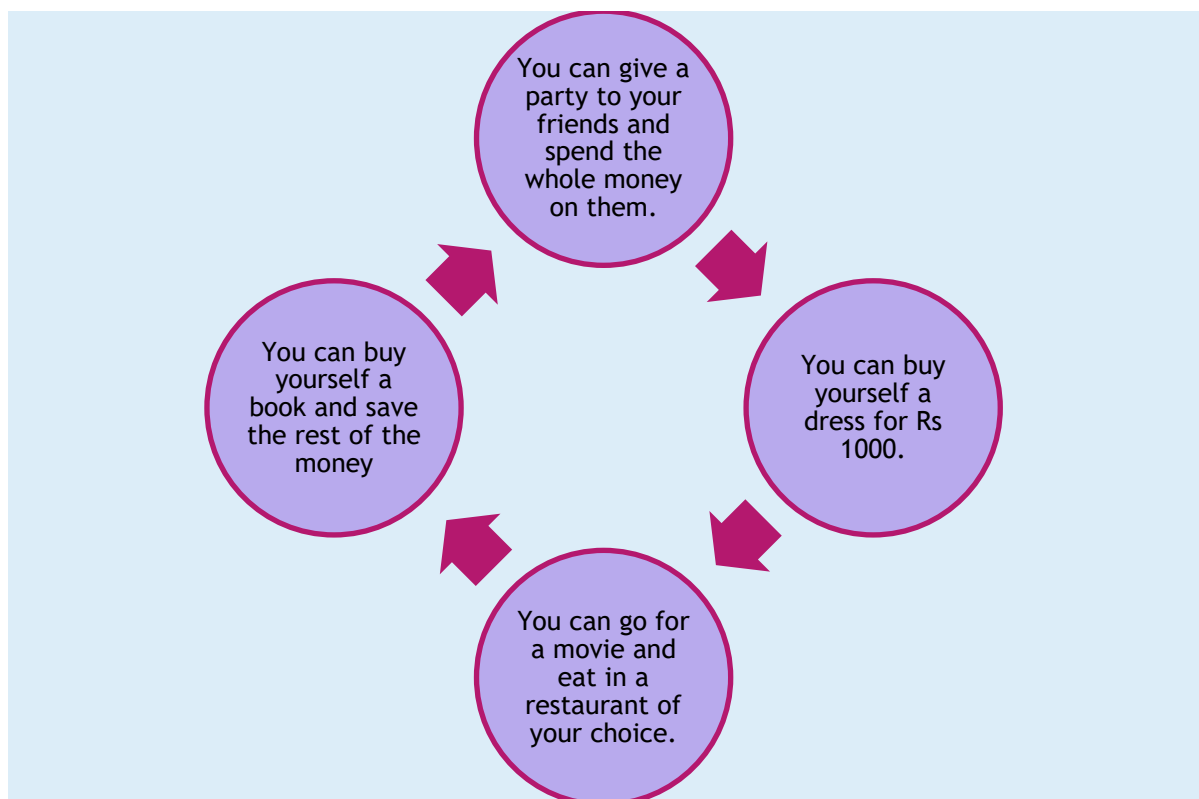
You evaluate the various alternatives and choose the one that gives you the greatest satisfaction. Similar dilemma is faced by every individual, every society and every country in this world. Life is like that. Since we cannot have everything, we want with the resources we have, we are forever forced to make choices.

Therefore, we choose to satisfy only some of our wants leaving many other wants unsatisfied.

These two fundamental facts that:

    (i)   Human beings have unlimited wants; and

    (ii)   The means to satisfy these unlimited wants are relatively scarce form the subject matter of Economics

Economics is, thus, the study of how we work together to transform the scarce resources into goods and services to satisfy the most pressing of our infinite wants and how we distribute these goods and services among ourselves
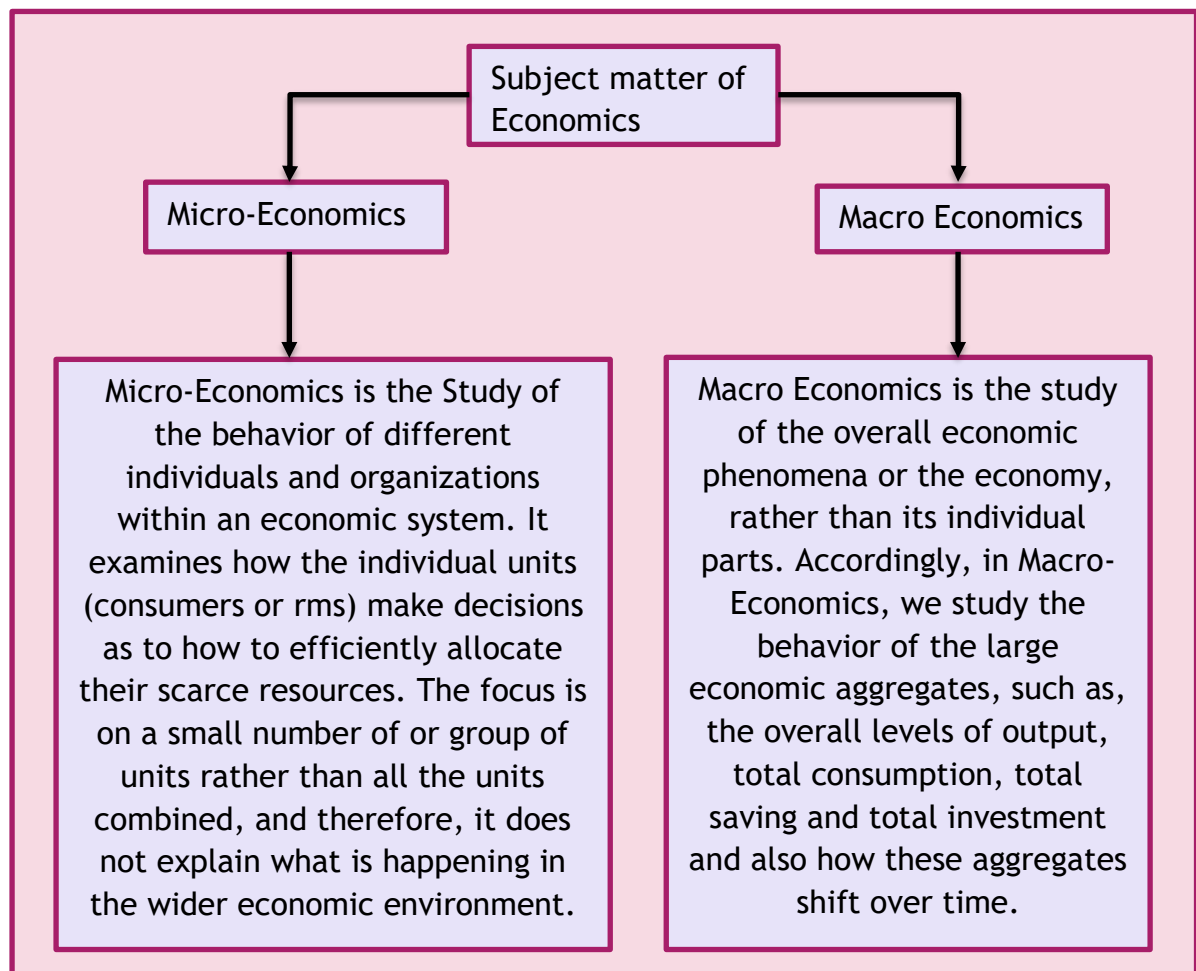
Business Economics, also referred to as Managerial Economics, generally refers to the integration of economic theory with business practice. While the theories of Economics provide the tools, which explain various concepts such as demand, supply, costs, price, competition etc.,

Business Economics applies these tools in the process of business decision making. Thus, Business Economics comprises of that part of economic knowledge, logic, theories and analytical tools that are used for rational business decision making. In brief, it is Applied Economics that fills the gap between economic theory and business practice.

Joel Dean defined Business Economics in terms of the use of economic analysis in the formulation of business policies. Business Economics is essentially a component of Applied Economics as it includes application of selected quantitative techniques.
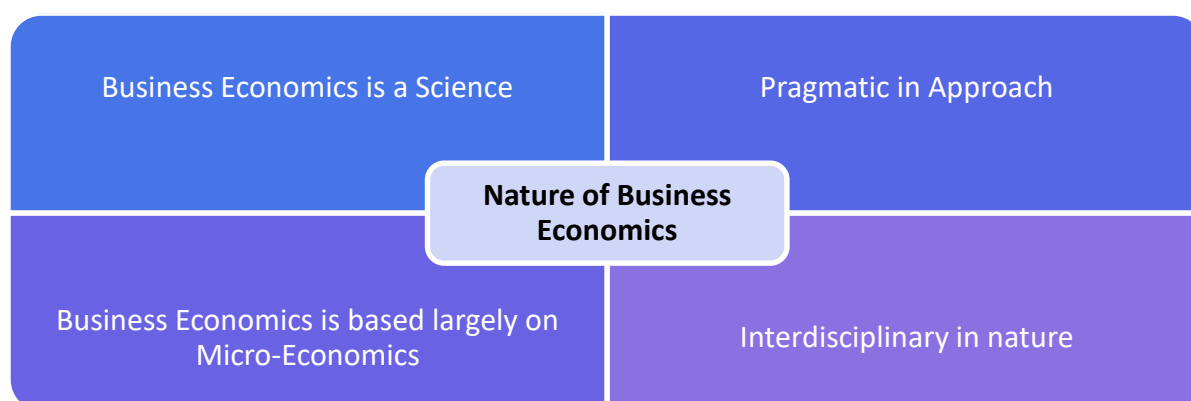
Subject matter of Economics

Economics has been broadly divided into two major parts i.e. Micro-Economics and Macro Economics.

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                    ┌──────────────────────┐
                    │  Subject matter of   │
                    │  Economics           │
                    └──────────────────────┘
           ┌────────────┘              └────────────┐
           ▼                                        ▼
  ┌──────────────────┐                    ┌──────────────────┐
  │  Micro-Economics │                    │  Macro Economics │
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Micro-Economics is the Study of the behavior of different individuals and organizations within an economic system. It examines how the individual units (consumers or rms) make decisions as to how to efficiently allocate their scarce resources. The focus is on a small number of or group of units rather than all the units combined, and therefore, it does not explain what is happening in the wider economic environment.	Macro Economics is the study of the overall economic phenomena or the economy, rather than its individual parts. Accordingly, in Macro-Economics, we study the behavior of the large economic aggregates, such as, the overall levels of output, total consumption, total saving and total investment and also how these aggregates shift over time.

Nature of Business Economics

there is a gap between the propositions of economic theory and happenings in the real economic world in which the managers make decisions. Business Economics enables application of economic logic and analytical tools to bridge the gap between theory and practice.

The following points will describe the nature of Business Economics:

Business Economics is a Science	Pragmatic in Approach
Nature of Business Economics	
Business Economics is based largely on Micro-Economics	Interdisciplinary in nature

SCOPE OF BUSINESS ECONOMICS

Scope of Business Economics is quite wide. It covers most of the practical problems a manager or a firm faces. There are two categories of business issues to which economic theories can be directly applied, namely

Microeconomics applied to operational or internal Issues	Macroeconomics applied to environmental or external issues

Demand analysis and forecasting	Type of economic system
Production and Cost Analysis	Stage of business cycle (Chapter 5)
Inventory Management	General trends in national income
Market Structure and Pricing Policies	General trends in employment
Resource Allocation	Economic policies like industrial policy
Theory of Capital and Investment Decisions	Organizations like trade unions
Profit Analysis	Social and political environment
Risk and Uncertainty Analysis	

Let us discuss the above points in detail

Microeconomics applied to operational or internal Issues

1. **Demand analysis and forecasting**

   It studies the nature of consumer preferences and the effect of changes in the determinants of demand such as, price of the commodity, consumers' income, prices of related commodities, consumer tastes and preferences etc.

2. Production and Cost Analysis

Production theory explains the relationship between inputs and output. The rm will be able to identify ways to maximize profits by producing the desired level of output at the minimum possible cost.

3. Inventory Management

Inventory management theories pertain to rules that rms can use to minimize the costs associated with maintaining inventory in the form of 'work-in-process,' 'raw materials', and 'finished goods'. Inventory policies affect the profitability of the firm

4. Market Structure and Pricing Policies

Analysis of the structure of the market provides information about the nature and extent of competition which the firms have to face.

5. Resource Allocation

Business Economics, with the help of advanced tools such as linear programming, enables the rm to arrive at the best course of action for optimum utilization of available resources.

6. Theory of Capital and Investment Decisions

For maximizing its profits, the firm has to carefully evaluate its investment decisions and carry out a sensible policy of capital allocation.

7. Profit Analysis

Profits are, most often, uncertain due to changing prices and market conditions. Profit theory guides the rm in the measurement and management of profits under conditions of uncertainty.

8. Risk and Uncertainty Analysis

Analysis of risks and uncertainties helps the business rm in arriving at efficient decisions and in formulating plans on the basis of past data, current information and future prediction.

THEORY OF DEMAND AND SUPPLY

UNIT-1: LAW OF DEMAND & ELASTICITY OF DEMAND

Demand and supply are the two main pillars of micro economic theory. A good understanding of the concepts of demand and supply would help in understanding how the price of a particular product is determined in the market. Some of the sub-topics covered under the topic of demand are demand function, law of demand, expansion & contraction in demand, increase & decrease in demand, and elasticity of demand.

MEANING OF DEMAND

The concept 'demand' refers to the quantity of a good or service that consumers are willing and able to purchase at various prices during a period of time. It is to be noted that demand in economics is something more than desire to purchase though desire is one element of it.

In the classroom example we had seen categorically that to constitute demand 3 things are utmost necessary

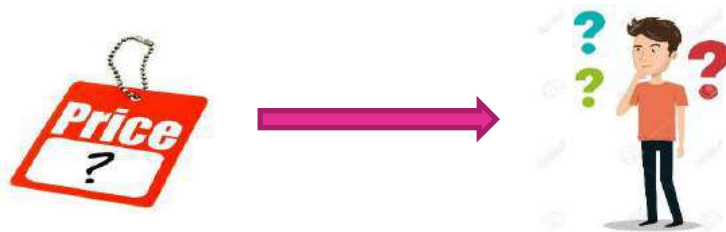1. Thus, effective demand for a thing depends on

Unless demand is backed by purchasing power or ability to pay, it does not constitute demand.

WHAT DETERMINES DEMAND?

There are a number of factors which influence household demand for a commodity. Important among these are

Price of the commodity:

Ceteris paribus i.e. other things being equal, **the demand of a commodity is inversely related to its price.** It implies that **a rise in price of a commodity brings about a fall in its purchase and vice-versa.**

Price of related commodities: **Related commodities are of two types**

Complementary Goods   **Competitive Goods**
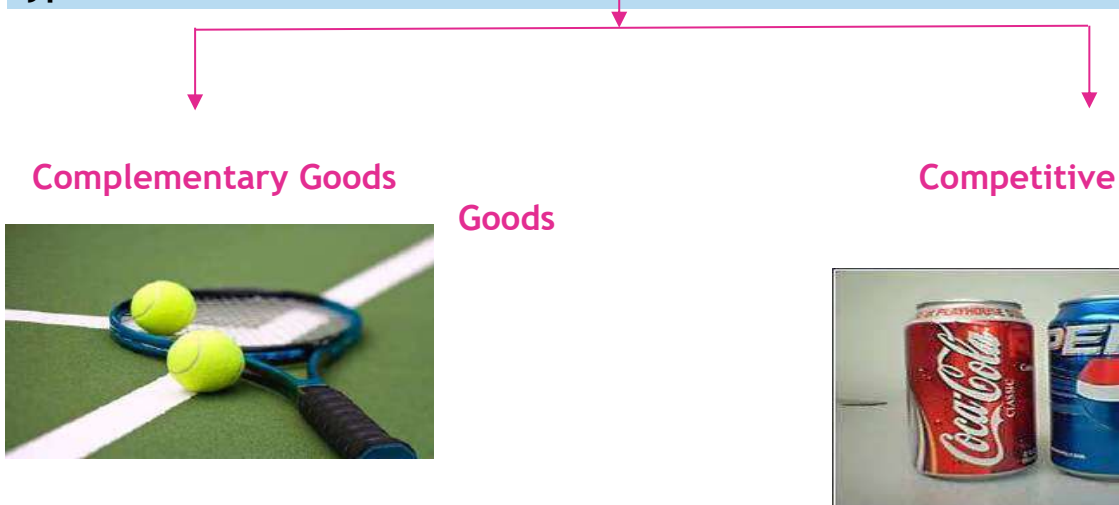
Complementary goods are those goods which are consumed together or simultaneously. For example, Tennis ball and racket, automobiles and petrol, pen and ink are used together. When commodities are complements, a fall in the price of one (other things being equal) will cause the demand of the other to rise.

Competing goods or substitutes are those goods which can be used with ease in place of one another. For example, Pepsi and Coke, ink pen and ball pen, are substitutes for each other and can be used in place of one another easily. When goods are substitutes, a fall in the price of one (ceteris paribus) leads to a fall in the quantity demanded of its substitutes.

Level of income of the household:

Other things being equal, the demand for a commodity **depends upon the money income of the household.**

In most cases, the **larger the average money income** of the household, the **larger is the quantity demanded** of a particular good. Thus, generally there is a **direct relationship** between income and demand for goods.

However, there are certain commodities for which quantities demanded decrease with an increase in money income. These goods are called inferior goods.

Tastes and Preferences of Consumers:

The demand for a commodity also depends upon **tastes and preferences** of consumers and changes in them over a period of time. **Goods which are more in fashion have higher demand than goods which are out of fashion.**

Demonstration effect: plays an important role in affecting the demand for a product. An individual's demand for color television may be affected by his seeing a T.V. in neighbor's or friend's house. A person may develop a taste or preference for wine after tasting some, but he may also develop it after discovering that serving it raises his prestige. In any case, people have tastes and preferences and they change, due to various external and sometimes due to internal causes.

Other Factors:
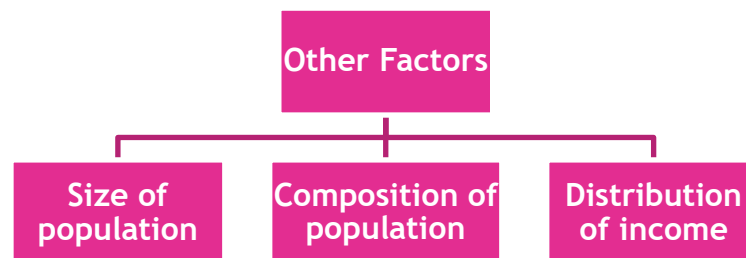
Size of population:

Generally, larger the size of population of a country or a region, greater is the demand for commodities in general.

Composition of population:

If there are more old people in a region, the demand for spectacles, walking sticks, etc. will be high, Similarly, if the population consists of more of children, demand for toys, baby foods, toffees, will be more.

Distribution of income:

The wealth of a country may be so distributed that there are a few very rich people while the majority are very poor. Under such conditions the propensity to consume of the country will be relatively less as the propensity to consume of the rich people is less than that of poor people.

LAW OF DEMAND:

The law of demand is a qualitative statement because it shows the quality of demand to change with the changes in prices. There is an inverse relationship between price and quantity demanded, other things being same.

These other things are known as assumptions of the law of demand they are as under

Prices of all other goods remain constant

no. of the consumers remains constant

income of the buyers is constant.

product is a normal product

tastes and preferences are constant

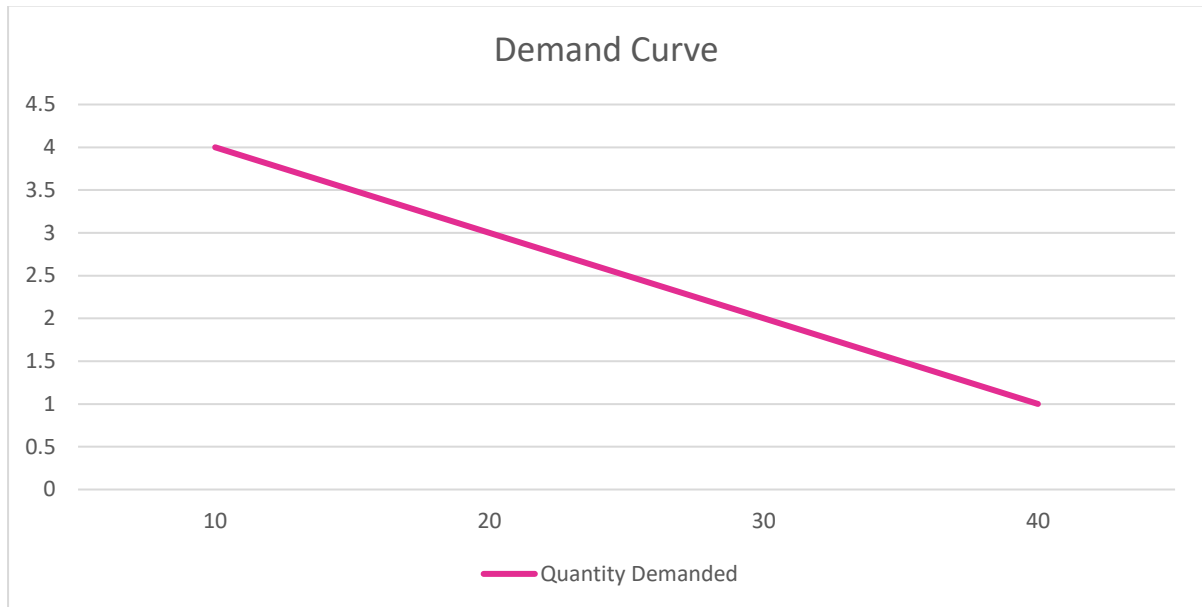future prices of the product do not change

Buyers behave rationally

Let us understand what **Demand Curve** is

As we already know, demand and price have inverse relationship. Following data related to the price level and quantity demanded

Demand schedule of an individual consumer

	Price (₹)	Quantity demanded (Units)
A	4	10
B	3	20
C	2	30
D	1	40

Demand Curve

When we add quantities demanded at each price by all consumers, we get total market demand. The market demand schedule also indicates inverse relationship between price and quantity demanded. Demand curve will look similar to the above diagram

Why does demand curve slope downwards'?

Law of diminishing marginal utility	Income Effect	Substitution effect
According to Marshall people will buy more quantity at lower price because they want to equalize the marginal utility of the commodity and its price. So a rational consumer will not pay more for lesser satisfaction.	When the price of a commodity falls, the consumer can buy the same quantity of the commodity with lesser money or he can buy more of the same commodity with the same money.	When the price of a commodity falls, it becomes relatively cheaper than other commodities. It induces consumers to substitute the commodity whose price has fallen for other commodities which have now become relatively expensive.

Exceptions to the Law of Demand:

Giffen goods : Sir Robert Giffen, an economist, was surprised to find out that as the price of bread increased, the British workers purchased more bread and not less of it.

The reason given for this is that when the price of bread went up it caused such a large decline in the purchasing power of the poor people that they were forced to cut down the consumption of meat and other more expensive foods. Since bread, even when its price was higher than before was still the cheapest food article, people consumed more of it and not less when its price went up.

Conspicuous necessities : The demand for certain goods is affected by the demonstration effect of the consumption pattern of a social group to which an individual belongs. These goods, due to their wide use, have become necessities of life.

Irrationality of buyers : at times consumers behave in an irrational manner and make impulsive purchases without any cool calculations about price and usefulness of the product.

Misconceptions in the minds of the consumers : Some times consumers believe that high price means good quality and low price means inferior quality.

Speculative goods : In the speculative market, particularly in the market for stocks and shares, more will be demanded when the prices are rising and less will be demanded when prices decline.

Habit forming products : Even when the price of habit forming products like cigarettes, tobacco, and alcohol increases, those who are addicted are not in a position to reduce the demand.
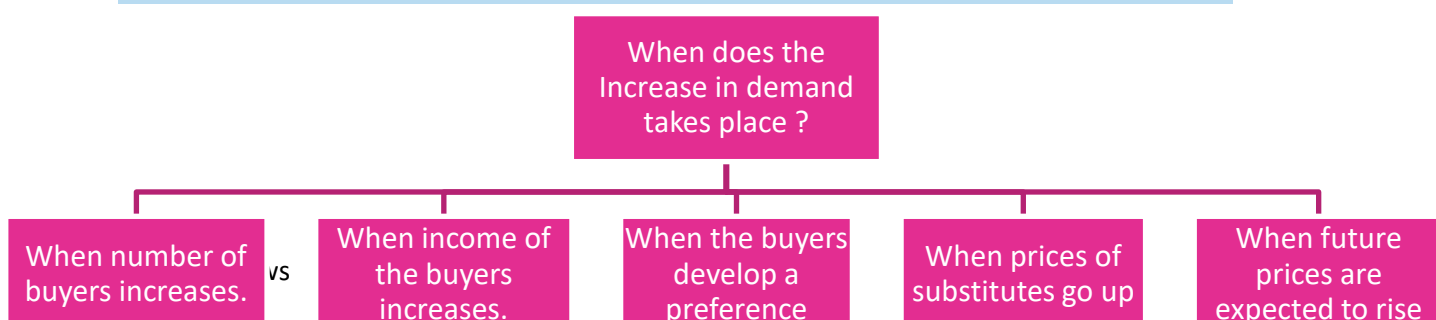
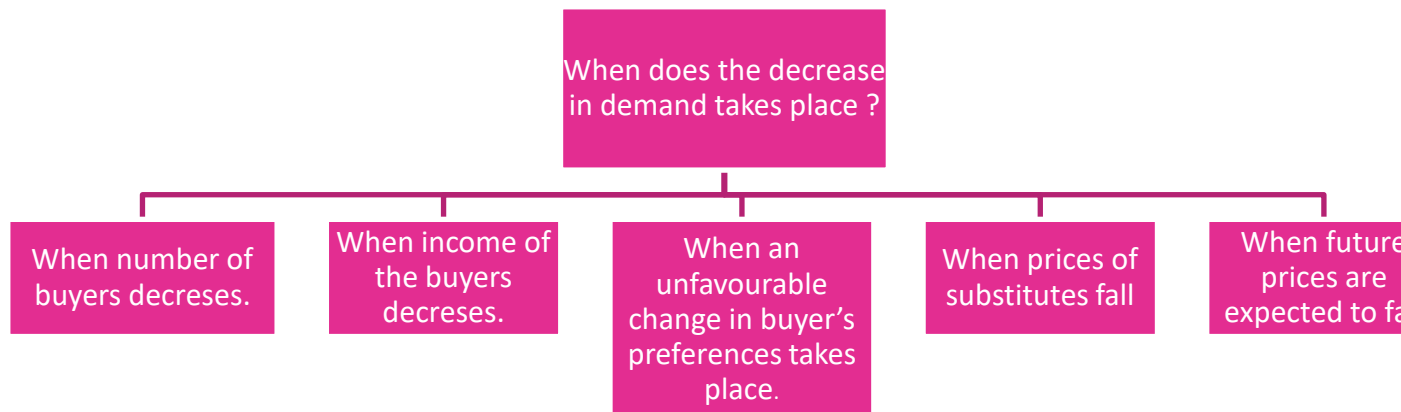## Expansion and Contraction of demand

There is a difference between the expansion and contraction and increase and decrease in demand.

According to the law of demand when the price of a commodity decreases its quantity demanded increases. This result is known as expansion of demand.

On the other hand, when the price of the commodity goes up its quantity demanded decreases. We have already discussed that in the previous segments.

Increase and Decrease in Demand

When does the Increase in demand takes place ?

| When number of buyers increases. | When income of the buyers increases. | When the buyers develop a preference | When prices of substitutes go up | When future prices are expected to rise |

When does the decrease in demand takes place ?

| When number of buyers decreses. | When income of the buyers decreses. | When an unfavourable change in buyer's preferences takes place. | When prices of substitutes fall | When future prices are expected to fa |

The increase in demand can be said to have taken place when the price of the product remaining constant, its quantity demanded increases due to other various factors, e.g. increase in the no. of the buyers, favorable changes in the tastes and preferences of buyers, increase in the prices of substitutes and decrease in the prices of the complementary goods or due to an increase in exports or in the future prices etc.

On the other hand decrease in demand can be said to have taken place when the quantity demanded of the product decreases at the same price due to the factors like decrease in population, a decrease in the income of the buyers, an unfavorable change in the tastes and preferences of buyers of the product, decrease in exports, decrease in the prices of substitutes, increase in the prices of complementary goods etc.

Graphically it looks like this:
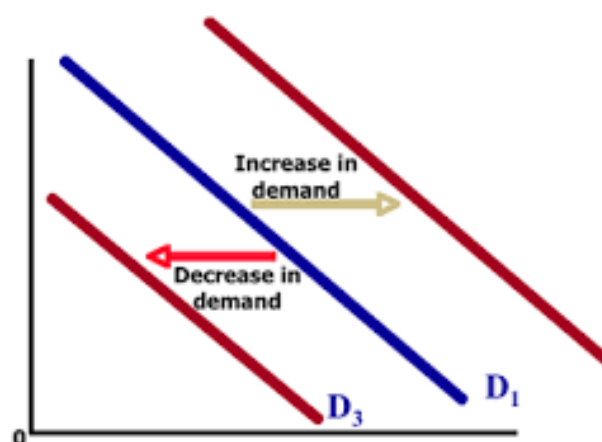
Thus, expansion and contraction are the changes in quantity demanded and they are movements along a demand curve. On the other hand, the increase and decrease in demand are the changes in demand and they show either a right-hand side or a left hand side movement of the demand curve itself.

Price Elasticity of demand and its types

According to the law of demand there is an inverse relationship between price and quantity demanded. However, the law does not tell us anything about the proportion in which the demand would change as a result of a given change in price. This idea is given by the concept of Elasticity of Demand. The elasticity of demand is a quantitative statement.

Elasticity of Demand or Price Elasticity of Demand

According to Marshall, the elasticity of demand measures the responsiveness of demand to price changes. Greater the responsiveness of demand to price changes, greater is said to be elasticity of demand.

Definition:
Elasticity of demand or price elasticity of demand for a commodity can be defined as the number or numerical coefficient which shows that by how many times the percentage change in quantity demanded is greater than the percentage change in price, or it is the measure of the ratio of percentage change in quantity demanded of a commodity and the percentage change in the price of the commodity.

Ed is always negative because price and quantity demanded are inversely related but the sign of minus (-) is ignored in the real practice.

According to Marshall,

$$Ed = \frac{\%\ Change\ in\ Quantity\ demanded}{\%\ change\ in\ Price}$$

Types of Ed:

On the basis of differences in the elasticities the Ed can be divided in to five categories.

Ed = 1 = Unity or Unit elasticity of demand. OR Unitary Elastic Demand.

When the % change in quantity demanded is equal to % change in price, the demand is said to be unitary elastic.

Ed > 1 or elastic demand:

When the % change in quantity demanded is greater than the % change in price, the elasticity of demand, can be said to be greater than one or the demand is said to be elastic.

Ed < 1 or inelastic demand:

When % change in the quantity demanded is smaller than the % change in price, the demand is said to be inelastic.

Ed = 0 or Perfectly Inelastic Demand:

When the quantity demanded remains constant irrespective of the price change, the demand is said to be perfectly inelastic.

Infinitely or Perfectly Elastic Demand:

When even a minor change in price brings about an unlimited change in quantity demanded, the demand is said to be perfectly elastic.

In real practice the unitary elastic demand, and the perfectly elastic and the perfectly inelastic demand are rarely found. We come across either an elastic demand or an inelastic demand. **The demand is said to be elastic when even a minor change in price brings about a substantial change in quantity demanded. Conversely the demand is said to be inelastic when even a major change in price brings about very little changes in quantity demanded.**

Measurement of price elasticity of demand

1. **Price Elasticity:** Price elasticity of demand expresses the response of quantity demanded of a good to a change in its price, given the consumer's income, his tastes and prices of all other goods. There are four methods of measuring the elasticity of demand. The most popular is what is known as Marshallian method or percentage method. Here,

   ### Percentage method of Marshall

   $$Price\ Elasticity = Ep\ = \frac{\%\ Change\ in\ Qty\ demanded}{\%\ Change\ in\ price}$$

   $$Ep = \frac{Change\ in\ Qty}{Original\ Qty} \times \frac{Original\ Price}{Change\ in\ Price}$$

   Or in symbolic terms,

   $$Ep = \frac{\Delta q}{q} \times \frac{p}{\Delta p}$$

   $$Ep = \frac{\Delta p}{\Delta q} \times \frac{p}{q}$$

   Where Ep stands for price elasticity, q stands for quantity ,p stands for price & Δ stands for a very small change.
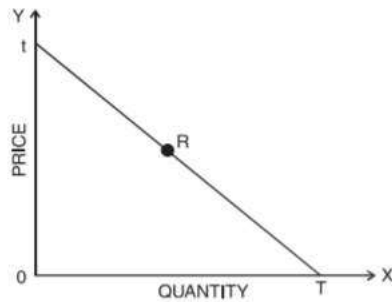
2. **Point elasticity:** In point elasticity, we measure elasticity at a given point on a demand curve.

   Point elasticity makes use of derivative rather than finite changes in price and quantity. It may be defined as:

   $$\frac{-dq}{dp} \times \frac{p}{q}$$

   where $\frac{dq}{dp}$ is the derivative of quantity with respect to price at a point on the demand curve, and p and q are the price and quantity at that point.
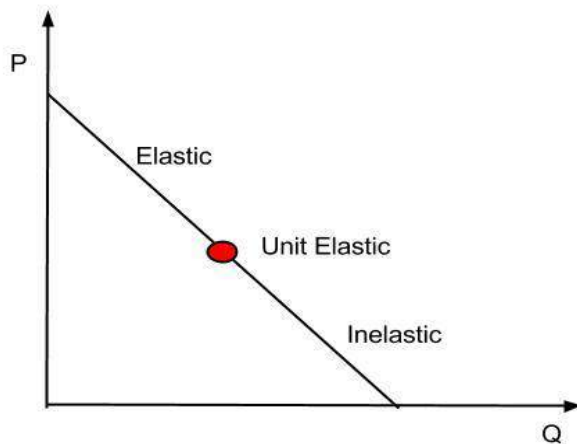
It is to be noted that elasticity is different at different points on the same demand curve. Given a straight line demand curve tT, point elasticity at any point say R can be found by using the formula

$$Elasticity\ of\ Demand = \frac{RT}{Rt} = \frac{Lower\ segement}{Upper\ segment}$$
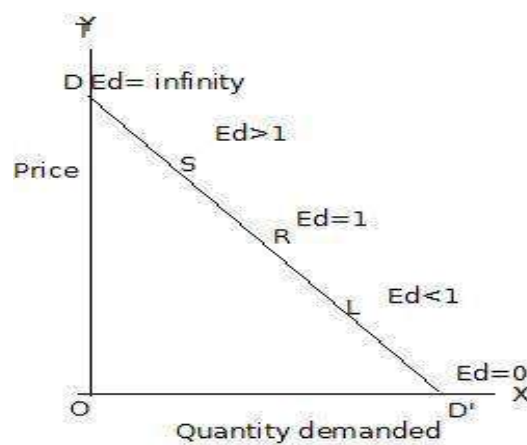
Using the above formula we can get elasticity at various points on the demand curve.

Elasticity at a point on the demand curve
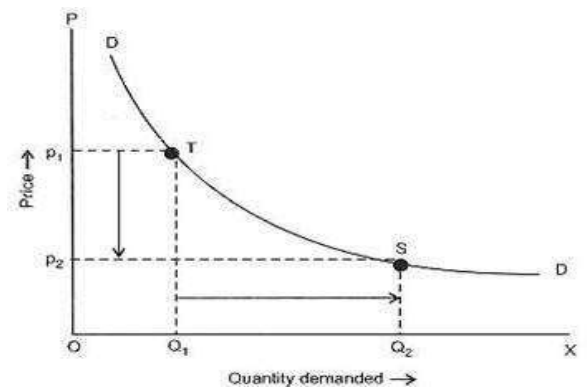
Arc Elasticity

Elasticity at different points on the demand curve

Thus, we see that as we move from T towards t, elasticity goes on increasing. At the mid-point it is equal to one, at point t it is infinity and at T it is zero.

3. Arc-elasticity:

This is the third method of measuring the elasticity of demand. When the price change is somewhat larger or when price elasticity is to be found between the two 'prices [or two points on the demand curve say A and B], the question arise which price and quantity should be taken as base. This is because elasticities found by using original price and quantity figures as base will be different from the one derived by using new price and quantity figures. Therefore, in order to avoid confusion, generally averages of the two prices and quantities are taken as (i.e. original and new) base. The arc elasticity can be found out by using the formula :

$$Ep = \frac{q1 - q2}{q1 + q2} \times \frac{p1 + p2}{p1 - p2}$$

where p1, q1 are the original price and quantity and p2, q2 are the new ones.

4. Total outlay or Total expenditure method:

This is the fourth method of measuring the elasticity of demand.

According to this method the demand is said to be **inelastic** when total expenditure on a product increases with increase in price and decreases with a decrease in price.

According to this method, the demand is said to be **elastic** when total expenditure on a product increases with a decrease in price and decreases with an increase in price.

According to this method, the demand is said to be **unitary elastic** when the total expenditure on a product remains constant irrespective of price change.

However this method does not give exact measurement of elasticity of demand.

Factors affecting elasticity the price elasticity of demand

Price elasticity of demand for a commodity can be defined as the measure of the ratio of percentage change in quantity demanded and percentage change in price of a commodity. There are many factors which affect the price elasticity. They are known as determinants of elasticity of demand.

Determinants of Price Elasticity of Demand:

Nature of commodity: For all basic needs such as milk, food, electricity, telephone, medicines etc. the demand is inelastic. While for various comforts such as Washing machine, Refrigerators, etc. the demand is elastic.

Availability of substitutes: One of the most important determinants of elasticity is the degree of availability of close substitutes. Some commodities like butter, cabbage, Maruti, Coca Cola, have close substitutes — margarine, other green vegetables, Santro or other cars, Pepsi or any other cold drink.

Position of a commodity in a consumer's budget: The greater the proportion of income spent on a commodity, generally the greater will be its elasticity of demand and vice-versa.

Storable or Perishable: If product is storable e.g. soaps then the demand for it would be elastic. The buyers would buy more of them and stock them at a low price. On the other hand the demand for perishable goods like green vegetables, milk, curd etc. would be inelastic because they cannot be stored for a long period.

Number of uses to which a commodity can be put: The more the possible uses of a commodity the greater will be its price elasticity and vice versa.

The duration of time period: The longer the time period one has, the more completely one can adjust.

Consumer habits: If a consumer is a habitual consumer of a commodity no matter how much its price change, the demand for the commodity will be inelastic.

Tied demand: The demand for those goods which are tied to others is normally inelastic as against those whose demand is of autonomous nature.

Price range: Goods which are in very high range or in very low price range have inelastic demand but those in the middle range have elastic demand.

Unavoidability of consumption: There are many goods whose consumptions cannot be postponed to some future date even when their prices are high. They are to be purchased compulsorily even at high prices. Naturally the demand for them is found to be inelastic.

Income Elasticity of Demand: Income elasticity of demand is the degree of responsiveness of quantity demanded of a goods to a small change in the income of consumers. In symbolic form,

$$E_i = \frac{\%\ Change\ in\ Quantity\ demanded}{\%\ change\ in\ Income}$$

There is a useful relationship between income elasticity for a goods and proportion of income spent on it. The relationship between the two is described in the following propositions:

- If the percentage change in quantity demanded is smaller than the percentage change in income then income elasticity for the goods is less than one. Such goods are known as necessities.

- If the percentage change in quantity demanded is greater than the percentage change in income then the income elasticity for the goods is greater than one. Such goods are known as luxury goods.

- If there is inverse relationship between the percentage changes in income and the percentage change in the quantity demanded of a commodity the income elasticity of demand is said to be negative.

- If the percentage change in quantity demanded is the same as the percentage change in income then income elasticity for the goods is equal to one.

- If there is no change in quantity demanded in response to the changes in income then the income elasticity of demand is said to be zero.
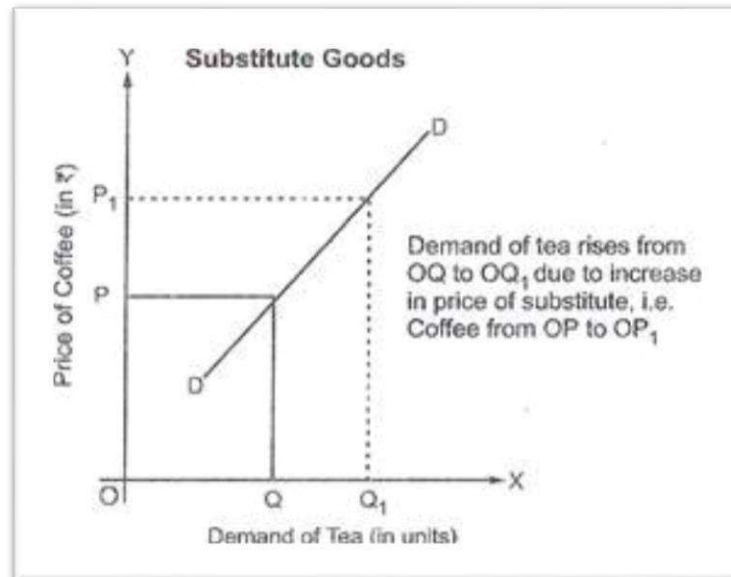
Cross elasticity of demand & its types

The cross elasticity of demand shows the relationship between the percentage change in quantity demanded of a commodity X with reference to the percentage change in price of some other commodity Y. The formula for finding out the cross elasticity of demand is as follows:

$$Ec = \frac{Change\ in\ q_x}{change\ in\ p_y} \times \frac{p_y}{q_x}$$

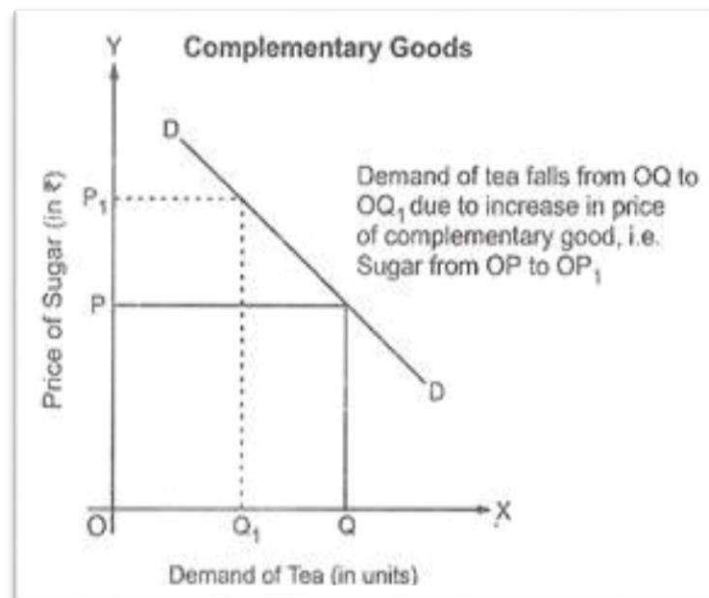| Ec	Cross elasticity
$Change\ in\ q_x$	Change in quantity demanded of x
$change\ in\ p_y$	Change in price of y
q_x	Original quantity demanded for x
p_y	Original price of y

The following are various types of cross elasticity of demand

➢ When two goods are ordinary substitutes then the cross elasticity of demand would be positive.

Substitute Goods

Demand of tea rises from OQ to OQ$_1$ due to increase in price of substitute, i.e. Coffee from OP to OP$_1$

➢ When two goods are complements then the cross elasticity of demand would be negative.

Complementary Goods

Demand of tea falls from OQ to OQ$_1$ due to increase in price of complementary good, i.e. Sugar from OP to OP$_1$

➢ When two goods are independent goods the cross elasticity of demand would be zero.
➢ When two goods are perfect substitutes then the cross elasticity of demand would be positive infinity.

Advertisement Elasticity

Meaning: Advertisement elasticity of demand (sales) or promotional elasticity of demand is the responsiveness of a good's demand to changes in firm's spending on advertising.

The advertising elasticity of demand measures the percentage change in demand that occurs given a one percent change in advertising expenditure. Advertising elasticity measures the effectiveness of an advertisement campaign in bringing about new sales.

Advertising elasticity of demand is generally positive.

Higher the value of advertising elasticity greater will be the responsiveness of demand to change in advertisement. Advertisement elasticity varies between zero and infinity.

It is measured by using the formula;

$$E_a = \frac{\%\ change\ in\ demand}{\%change\ in\ spending\ on\ advertisement}$$

$$Ea = \frac{\Delta Qd}{Qd} \div \frac{\Delta A}{A}$$

ΔQd	Change in demand
ΔA	Change in expenditure on Advertisement
Qd	Initial demand
A	Initial expenditure on advertisement

Advertisement Elasticity Interpretation

$E_a = 0$	Demand does not respond to increase in advertisement expenditure
$E_a > 0\ but < 1$	Change in demand is less than proportionate to the change in advertisement expenditure
$E_a = 1$	Demand changes in the same proportion in which advertisement expenditure changes
$E_a > 1$	Demand changes at a higher rate than change in advertisement expenditure.

DEMAND DISTINCTIONS

Certain important demand distinctions are as follows:

> ➢ Producers' goods and Consumer's goods
> ➢ Durable goods and Non-durable goods
> ➢ Derived demand and Autonomous demand
> ➢ Industry demand and Company demand
> ➢ Short-run demand and Long-run demand

Factors a-ffecting demand for non-durable consumer goods: There are three basic factors which influence the demand for these goods:

> ➢ **Consumer's disposable income:** Other things being equal, the demand for a commodity depends upon the disposable income of the household. Disposable income is found out by deducting personal taxes from personal income.
> ➢ **Prices:** Other things being equal, the demand for a commodity depends upon its own price and the prices of related goods (its substitutes and complements). While the demand for a good is inversely related to its own price and the price of its complements, it is positively related to the price of its substitutes.
> ➢ **Demographic factors:** This involves the characteristics of the population, human as well as non-human, using the product concerned.

Factors affecting the demand for durable-consumer goods: Demand for durable goods has certain special characteristics. Following are the important factors that a-ffect the demand for durable goods.

> ➢ A consumer can postpone the replacement of durable goods. Whether a consumer will go on using the good for a long time or will replace it depends upon factors like his social status, prestige, level of money income, rate of obsolescence etc.
> ➢ These goods require special facilities for their use e.g. roads for automobiles. The existence and growth of such factors is an important variable that determines the demand for durable goods
> ➢ As consumer durables are used by more than one person, the decision to purchase may be influenced by family characteristics like income of the family, size, age distribution and sex composition. Likely changes in the number of households should be considered while determining the market size of durable goods.
> ➢ Replacement demand is an important component of the total demand for durables. Greater the current holdings of durable goods, greater will be the replacement demand.
> ➢ Demand for consumer durables is very much influenced by their prices and credit facilities available to buy them.

Factors affecting the demand for producer goods: Since producers' goods or capital goods help in further production, the demand for them is derived demand, derived from the demand of consumer goods they produce. The demand for them depends upon the rate of profitability of user industry and the size of the market of the user industries. Hence data required for estimating demand for producer goods (capital goods) are:

- Growth prospects of the user industries;

- Norms of consumption of capital goods per unit of installed capacity.

- An increase in the price of a substitutable factor of production, say labour, is likely to increase the demand for capital goods. On the contrary, an increase in the price of a factor which is complementary may cause a decrease in the demand for capital.

- Higher the profit making prospects, greater will be the inducement to demand capital goods. If firms are optimistic about selling a higher output in future, they will have greater incentive to invest in producer goods.

- Advances in technology enabling higher efficiency at reduced cost on account of higher productivity of capital will have a positive impact on investment in capital goods.

- Investments in producer goods will be greater when lower interest rates prevail as firms will have lower opportunity cost of investments and lower cost of borrowing.

DEMAND FORECASTING

Meaning:

Forecasting of demand is the art and science of predicting the probable demand for a product or a service at some future date on the basis of certain past behavior patterns of some related events and the prevailing trends in the present.

Usefulness

➢ Good forecasts help in efficient production planning, process selection, capacity planning, facility layout and inventory management.

- A firm can plan production scheduling well in advance and obtain all necessary resources for production such as inputs, and finances.
- Capital investments can be aligned to demand expectations and this will check the possibility of overproduction and underproduction, excess of unused capacity and idle resources.
- Marketing relies on sales forecasting in making key decisions. Demand forecasts also provide the necessary information for formulation of suitable pricing and advertisement strategies.

Scope of Forecasting

- Demand forecasting can be at the international level depending upon the area of operation of the given economic institution.
- It can also be confined to a given product or service supplied by a small firm in a local area.
- The scope of the forecasting task will depend upon the area of operation of the firm in the present as well as what is proposed in future.
- Much would depend upon the cost and time involved in relation to the benefits of the information acquired through the study of demand. The necessary trade-off has to be struck between the cost of forecasting and the benefits owing from such forecasting.

Types of forecasts

Macro-level forecasting deals with the general economic environment prevailing in the economy as measured by the Index of Industrial Production (IIP), national income and general level of employment etc.

Industry- level forecasting is concerned with the demand for the industry's products as a whole. For example, demand for cement in India.

Firm- level forecasting refers to forecasting the demand for a particular firm's product, say, the demand for ACC cement.

Based on **time period**, demand forecasts may be **short-term demand forecasting and long-term demand forecasting.**

Methods of demand Forecasting

The following are the commonly available techniques of demand forecasting:

Survey of Buyers' Intentions: The most direct method of estimating demand in the short run is to ask customers what they are planning to buy during the forthcoming time period, usually a year. This method involves direct interview of potential customers.

Collective opinion method: This method is also known as sales-force opinion method or grass roots approach. Firms having a wide network of sales personnel can use the knowledge, experience and skills of the sales-force to forecast future demand. Under this method, salesmen are required to estimate expected sales in their respective territories.

Expert Opinion method: In general, professional market experts and consultants have specialized knowledge about the numerous variables that affect demand. This, coupled with their varied experience, enables them to provide reasonably reliable estimates of probable demand in future. Information is extracted from them through appropriately structured unbiased tools of data collection such as interviews and questionnaires.

Statistical methods: Statistical methods have proved to be very useful in forecasting demand. Forecasts using statistical methods are considered as superior methods because they are more scientific, reliable and free from subjectivity. The important statistical methods of demand forecasting are: *Graphical Method and Fitting trend equation*

Regression analysis: This is the most popular method of forecasting demand. Under this method, a relationship is established between the quantity demanded (dependent variable) and the independent variables (explanatory variables) such as income, price of the good, prices of related goods etc. Once the relationship is established, we derive regression equation assuming the relationship to be linear. The equation will be of the form Y = a + b X.

Controlled Experiments: Under this method, future demand is estimated by conducting market studies and experiments on consumer behavior under actual, though controlled, market conditions. This method is also known as market experiment method.

Barometric Method of Forecasting: The various methods suggested till now are related with the product concerned. These methods are based on past experience and try to project the past into the future. Such projection is not effective where there are economic ups and downs.

THEORY OF DEMAND AND SUPPLY

UNIT-2: THEORY OF CONSUMER BEHAVIOUR

Theory of consumer behavior is a part of demand theory. The topic is divided between two main parts. Marshal's utility analysis and Hicks and Allan Indifference curve analysis.

The focus would be on understanding the law of diminishing marginal utility, consumer's surplus, and consumer's equilibrium. The second section focuses on characteristics of indifference curves and budget lines.

WHAT IS UTILITY?

Utility is the want satisfying power of a commodity. It is a subjective entity (concept) and differs from person to person. **Thus, in Economics, the concept of utility is ethically neutral**.

All desires, tastes and motives of human beings are called wants in Economics. Wants mal arise due to elementary and psychological causes. Since, the resources are limited; he must choose between urgent wants and not so urgent wants.

All wants of human beings exhibit some characteristic features.

- Wants are unlimited
- Every want is satiable
- Wants are competitive
- Wants are complementary
- Wants are alternative
- Wants vary with time, place, and person
- Some wants recur again
- Wants are influenced by advertisement
- Wants become habits and customs.

In Economics wants are classified into three categories, viz., necessaries, comforts and luxuries.
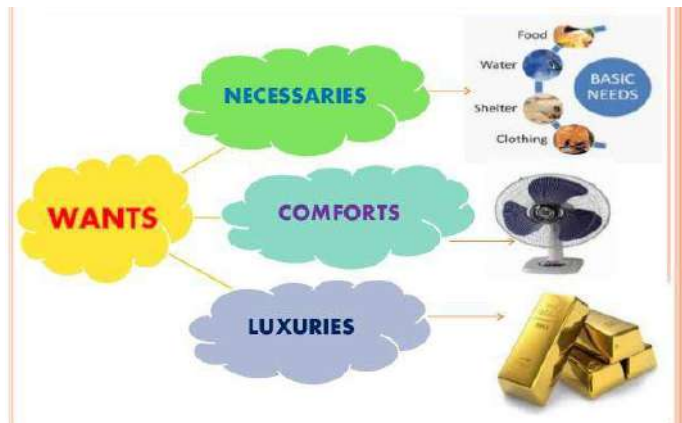
Necessaries:

Necessaries are those which are **essential for living.** Man cannot do well with barest necessaries of life alone. He requires some more necessaries to keep him fit for taking up productive activities. These are called necessaries of efficiency. There is another type of necessaries are called conventional necessaries. By custom and tradition, people require some wants to be satisfied

Comforts:

Comforts refer to those goods and services which are **not essential for living** but which are required for a happy living. It lies between the 'necessaries' and 'luxuries'.

Luxuries:

Luxuries are those wants which are **superfluous and expensive**. They are not essential for living; however, they may add efficiency to the consumer.

THEORY OF CONSUMER BEHAVIOR

Marginal utility analysis:

This theory, which is formulated by Alfred Marshall, a British economist, **explains how a consumer spends his income on different goods and services to attain maximum satisfaction**. This theory is based on certain assumptions. But before stating the assumptions, let us understand the meaning of total utility and marginal utility.

Total utility: It is the sum of the utility derived from different units of a commodity consumed by a consumer.

Marginal utility: It is the additional utility derived from additional unit of a commodity.

Assumptions of marginal utility analysis:

1. **The Cardinal Measurability of Utility:** According to this theory, utility is a cardinal concept i.e. utility is a measurable and quantifiable concept. Thus, a person can say that he derives utility equal to 10 units from the consumption of 1 unit of commodity A and 5 from the consumption of I unit of commodity B. Since, he can express his satisfaction quantitatively, he can easily compare different commodities and express which commodity gives him more utility or satisfaction and by how much compared to some other commodity.

2. **According to this theory, money is the measuring rod of utility:** The amount of money which a person is prepared to pay for a unit of a good rather than go without it is a measure of the utility which he derives from the good.

3. **Constancy of the Marginal Utility of Money:** The marginal utility of money remains constant throughout when the individual is spending money on a good. This assumption although not realistic, has been made in order to facilitate the measurement of utility of commodities in terms of money.

4. **The hypothesis of Independent Utility:** The total utility which a person gets from the whole collection of goods purchased by him is simply the sum total of the separate utilities of the goods. The theory ignores complementary between goods.

According to Marshall the utility of a commodity depends upon the quantity of that commodity only and is not affected by the presence or the absence of the substitutes and the complements.

Diminishing marginal utility analysis:
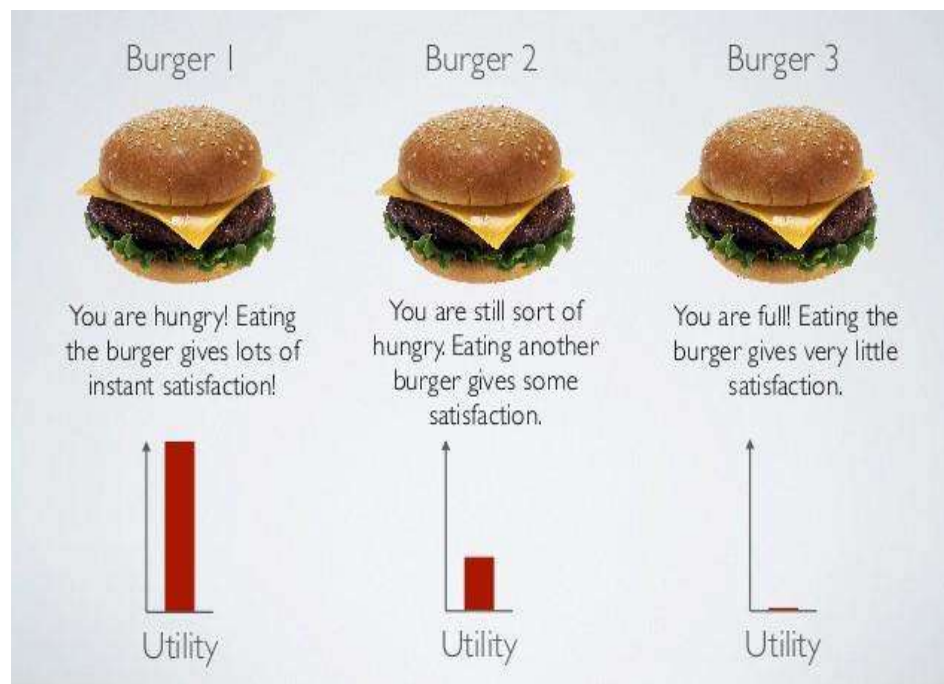
The law of diminishing marginal utility is based on an important fact that while total wants of a person are virtually unlimited, each single want is satiable i.e., each want is capable of being satisfied.

Since each want is satiable, as a consumer consumes more and more units of a good, the intensity of his want for the good goes on decreasing and ultimately a point is reached where the consumer no longer wants it. His marginal utility from the product becomes zero.

Statement of the law:

In simple words according to this law as a consumer consumes more and more of homogeneous units of a commodity, the extra or additional or marginal utility or the extra satisfaction that he derives from each of the successive units goes on decreasing.

Explanation: The following table would be useful to understand the law:

Units of x	Marginal Utility = MU	Total Utility = TU
1	10	10
2	8	18
3	6	24
4	4	28
5	2	30
6	0	30
7	- 2	28
8	- 4	24
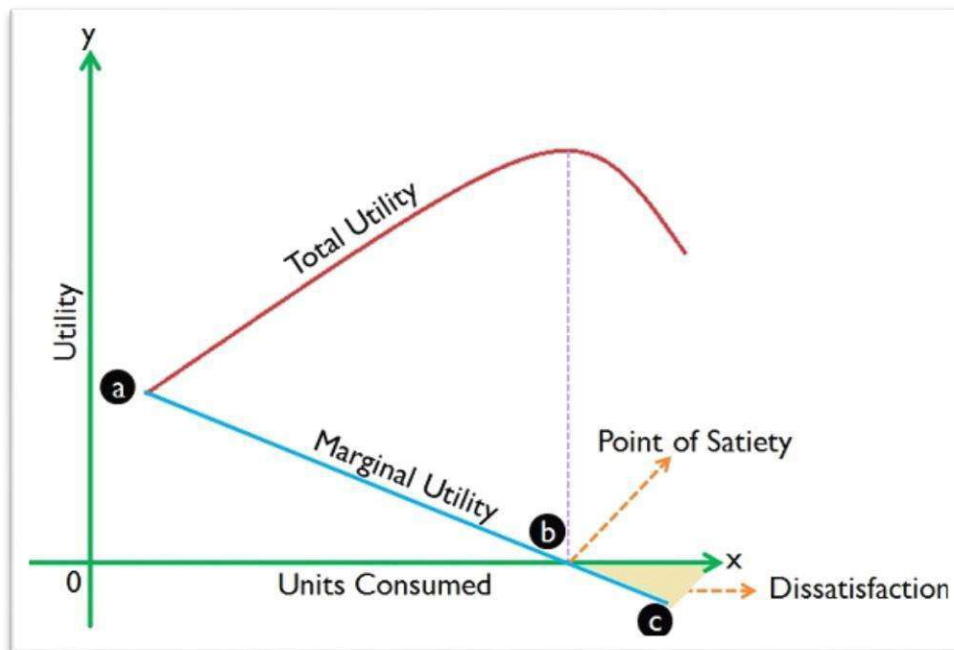
LIMITATIONS OF THE LAW

The law of diminishing marginal utility is applicable only under certain assumptions.

Homogenous units : The different units consumed should be identical in all respects. The habit, taste, temperament and income of the consumer also should remain unchanged.

Standard units of Consumption : The different units consumed should consist of standard units. If a thirsty man is given water by successive spoonful's, the utility of the second spoonful of water may conceivably be greater than the utility of the first.

Continuous Consumption : There should be no time gap or interval between the consumption of one unit and another unit i.e. there should be continuous consumption.

The Law fails in the case of prestigious goods : The law may not apply to articles like gold, cash where a greater quantity may increase the lust for it.

Case of related goods : The shape of the utility curve may be affected by the presence or absence of articles which are substitutes or complements. The utility obtained from tea may be seriously affected if no sugar is available.

PRINCIPLE OF EQUI-MARGINAL UTILITIES

There are two laws pertaining to utility. One is the law of diminishing marginal utilities and the other is the law of Equi-marginal utilities. This second law is the extension of the first law. It tells us about the conditions under which the consumer would derive the maximum possible satisfaction out of his income. This law can be stated as follows :

> **Statement of The Law:** According to this law, a consumer would maximize his satisfaction when a rupee spent on various commodities gives him an equal amount of marginal utilities.

Assumptions of The Law:

- The consumer has a given amount of income and it remains constant.
- He purchases two goods. However, the law would equally apply when there are more than two goods.
- He behaves rationally.
- He is fully aware of his utility schedules.
- The goods are divisible and substitutable.
- The prices of the goods do not change.

> **Two rules:**
> ➢ If prices of the goods consumed are identical their marginal utilities must also be identical.
> ➢ When prices of the goods consumed are different their respective marginal utilities must be proportionate to their prices.

Criticisms:

- The criticisms of the law are based upon its unrealistic assumptions.
- The behavior of the consumer is not always rational. Many things he must buy according to social traditions and conventions.
- Many things are there which the buyer buys on an impulse without any logic.
- The goods are not always divisible and substitutable e.g. Car and Mangoes.
- The law will hold good only when prices, buyers' utility schedules etc. are constant.

Marshall's definition of the concept:

Marshall defined the concept of consumer's surplus as **"excess of the price which a consumer would be willing to pay rather than go without a thing over that which he actually does pay, is the economic measure of this surplus satisfaction may be called consumer's surplus".**

> Thus, consumer's surplus = What a consumer is ready to pay for a commodity rather than going without it - What he pays.
> Or
> Marginal utility of the product - Price of the product.
> Or
> Use value of the product - Exchange value of the product

Explanation of the concept:

The concept of consumer's surplus is derived from the law of diminishing marginal utility. As we know from the law of diminishing marginal utility, the more of a thing we have, the lesser marginal utility it has. In other words, **as we purchase more of a good, its marginal utility goes on diminishing**. The consumer is in equilibrium when marginal utility is equal to given price i.e., he purchases that many numbers of units of a good at which marginal utility is equal to price . The consumer gets extra satisfaction from all the units compared to the price before the unit at which he reaches equilibrium. This extra satisfaction is known as **consumer's surplus**.

Table:

Consider the Table given here in which we have illustrated the measurement of consumer's surplus in case of commodity X. The price of X is assumed to

be ₹20. In case of the first unit the marginal utility (willingness to pay by the buyer) is ₹30 and the actual price is ₹20. So, the consumer surplus is ₹10.

Measurement of Consumer's Surplus

No. of units	Marginal Utility	Price (₹)	Consumer's Surplus
1	30	20	10
2	28	20	8
3	26	20	6
4	24	20	4
5	22	20	2
6	20	20	0

In the same manner we can calculate consumer surplus for all units.

In the above table we can see that the total utility from the six units of the commodity is ₹150 and the total price that he pays for the six units is ₹120 and therefore, his surplus is ₹30 as shown by the last column.
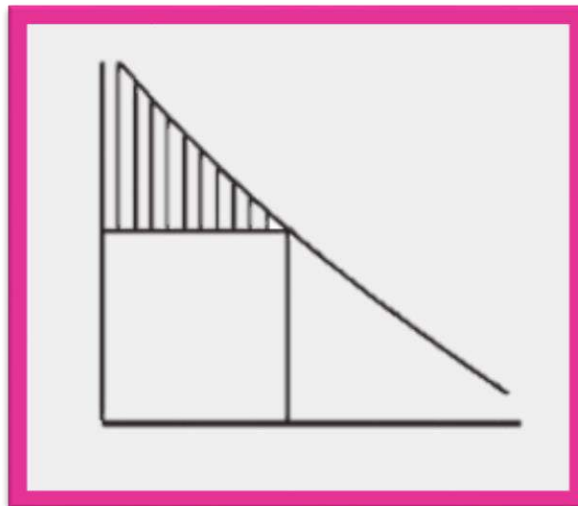
In Figure given here, the total utility is equal to the area under the marginal utility curve up to point Q i.e. ODRQ. But given the price equal to OP, the consumer pays OPRQ. The consumer derives extra utility equal to DPR which is nothing but consumer's surplus.

Limitations:

• Consumer's surplus cannot be measured precisely - because it is difficult to measure the marginal utilities of different units of a commodity consumed by a person.
• In the case of necessaries, the marginal utilities of the earlier units are infinitely large. In such case the consumer's surplus is always infinite.
• The consumer's surplus derived from a commodity is affected by the availability of substitutes.

- There is no simple rule for deriving the utility scale of articles which are used for their prestige value (e.g., diamonds).
- Consumer's surplus cannot be measured in terms of money because the marginal utility of money changes as purchases are made and the consumer's stock of money diminishes. (Marshall assumed that the marginal utility of money remains constant. But this assumption is unrealistic).
- The concept can be accepted only if it is assumed that utility can be measured in terms of money or otherwise. Many modern economists believe that this cannot be done.

INDIFFERENCE CURVE ANALYSIS

A very popular alternative and more realistic method of explaining consumer's demand is the Indifference Curve Analysis. This approach to consumer behavior is based on consumer preferences. It believes that human satisfaction being a psychological phenomenon cannot be measured quantitatively in monetary terms as it was done by Marshall's utility analysis. In this approach it is felt that it is much easier and scientifically sounder to order preferences than to measure them in terms of money.

The consumer's preference approach, is, therefore an ordinal concept based on ordering of preferences compared with Marshall's approach of cardinality.

Assumptions Underlying Indifference Curve Approach:

- The consumer is rational and possesses full information about all the relevant aspects of economic environment in which he lives.
- The consumer can rank all possible combinations of goods according to the satisfaction they yield. Thus, if he is given various combinations say A, B, C, D, U he can rank them as first preference, second preference and so on. If a consumer happens to prefer A to B, he cannot tell quantitatively how much he prefers A to B.
- If the consumer prefers combination A to B, and B to C, then he must prefer combination A to C. In other words, he has a consistent consumption pattern behavior.
- If combination A has more commodities than combination B, then A must be preferred to B.
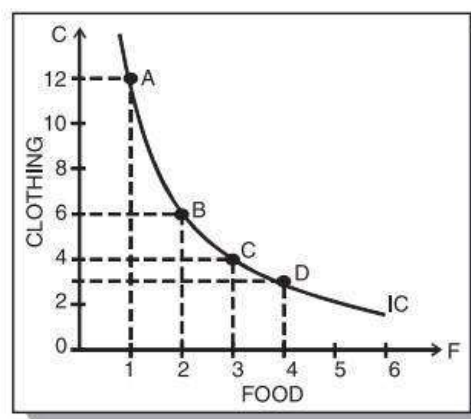
Indifference schedule and indifference curves:

An indifference curve is a curve which represents all those combinations of goods which give same satisfaction to the consumer. Since all the combinations provide same level of satisfaction the consumer prefers them equally and does not mind which combination he gets.

To understand indifference curves let us consider the example of a consumer who has one unit of food and 12 units of clothing. Now we ask the consumer how many units of clothing he is prepared to give up getting an additional unit of food, so that his level of satisfaction does not change. Suppose the consumer says that he is ready to give up 6 units of clothing to get an additional unit of food. We will have then two combinations of food and clothing giving equal satisfaction to consumer Combination A has I unit of food and 12 units of clothing combination.

B has 2 units of food and 6 units of clothing. Similarly, by asking the consumer further how much of clothing he will be prepared to forgo for successive increments in his stock of food so that his level of satisfaction remains unaltered, we get various combinations as given below.

| Combination	Food	Clothing	MRS
A	1	12	0
B	2	06	06
C	3	04	02
D	4	03	01

Indifference Map:

A set of indifference curves is called indifference map.

An indifference map depicts (shows) a complete picture of consumer's tastes and preferences. In Figure, an indifference map of a consumer is shown which consists of three indifference curves.

We have taken good X on X-axis and good Y on Y-axis. It should be noted that while the consumer is indifferent among the combinations lying on the same indifference curve, he certainly prefers the combinations on the higher indifference curve to the combinations lying on a lower indifference curve because a higher indifference curve signifies a higher level of satisfaction. Thus, while all combinations of IC1 give same satisfaction, all combinations lying on IC2 give greater satisfaction than those lying on IC1.
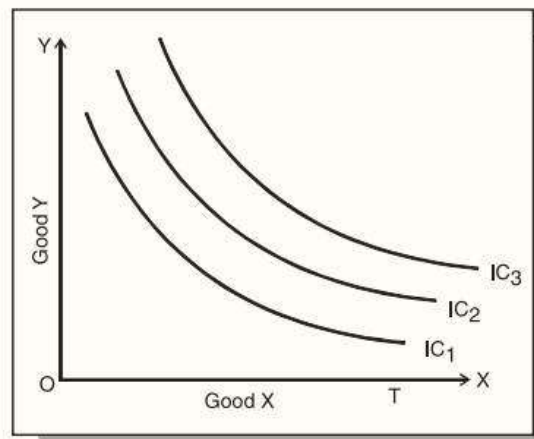
Marginal Rate of Substitution:

Marginal Rate of Substitution (MRS) is the rate at which the consumer is prepared to exchange goods X and Y. Consider Table. In the beginning the consumer is consuming 1 unit of food and 12 units of clothing. Subsequently, he gives up 6 units of clothing to get an extra unit of food, his level of satisfaction remaining the same. The MRS here is 6. Likewise, when he moves from B to C and from C to D in his indifference schedule, the MRS are 2 and 1 respectively. Thus, we can define MRS of X for Y as the amount of Y whose loss can just be compensated by a unit gain of X in such a manner that the level of satisfaction remains the same. We notice that MRS is falling i.e., as the consumer has more and more units of food, he is prepared to give up less and less units of cloths. There are two reasons for this.

The want for a good is satiable so that when a consumer has its more quantity, his intensity of want for it decreases. Thus, when consumer in our example, has more units of food, his intensity of desire for additional units of food decreases. In the same manner when he gives up more and more clothing for food, the quantity of clothing with him goes on decreasing and so he wants to give up less and less of clothing for each marginal unit of food.

Most of the goods are imperfect substitutes of one another. If they could substitute one another perfectly. MRS would remain constant.

Features of Indifference curves:

An indifference curve is a curve showing various combinations of any two goods which give an equal amount of satisfaction to the buyer, and so the consumer is indifferent between any two of these combinations. The following features or properties of indifference curves would give a better idea about the nature of indifference curves.

An indifference curve slopes downwards from the left to the right or it has a negative slope.

An IDC slopes downwards from the left to the right as shown in the diagram given here. We can see that on the X –axis there are apples, and, on the Y-axis, there are mangoes. An IDC is the one which shows the same level of satisfaction and therefore when the consumer has more of apples with him, he must give up some of mangoes with him. Otherwise his satisfaction would not remain constant. Conversely when he has more mangoes with him, he must have less of the apples. Thus, mangoes and apples are inversely related and therefore the IDC must have a negative slope.
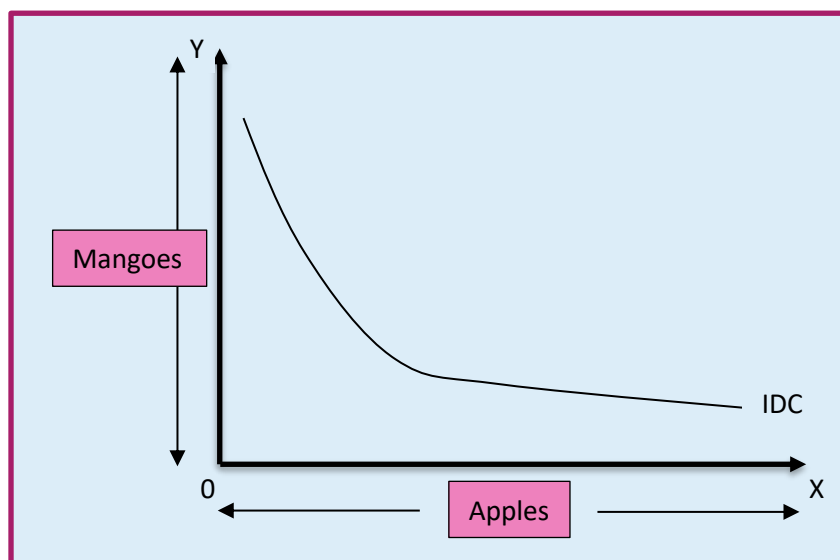
Indifference curve is Convex to the origin : An IDC is a curve showing those combinations of any two goods, which give an equal amount of satisfaction to the buyer. There are many properties of the IDCs. One of them is that the IDC is convex to the origin. It is explained here.

Indifference Curve

| Combinations	Mangoes	Apples	MRS
1	15	1	-
2	11	2	4:1
3	08	3	3:1
4	06	4	2:1
5	05	5	1:1

Here we can see a schedule. The last column of the schedule shows the marginal rate of substitution. It is the rate at which the consumer is willing to give up mangoes for each of the marginal apple.

For the 1st marginal apple, he is willing to give up 4 mangoes. For the next apple, he wants to give up 3 mangoes and so on. Thus, the MRS goes on falling.

This is because as the consumer has more and more of apples, its MU goes on falling. On the other hand, as he has less and less of mangoes, their MU goes on increasing and so for each extra apple, he wants to sacrifice less and less of mangoes.
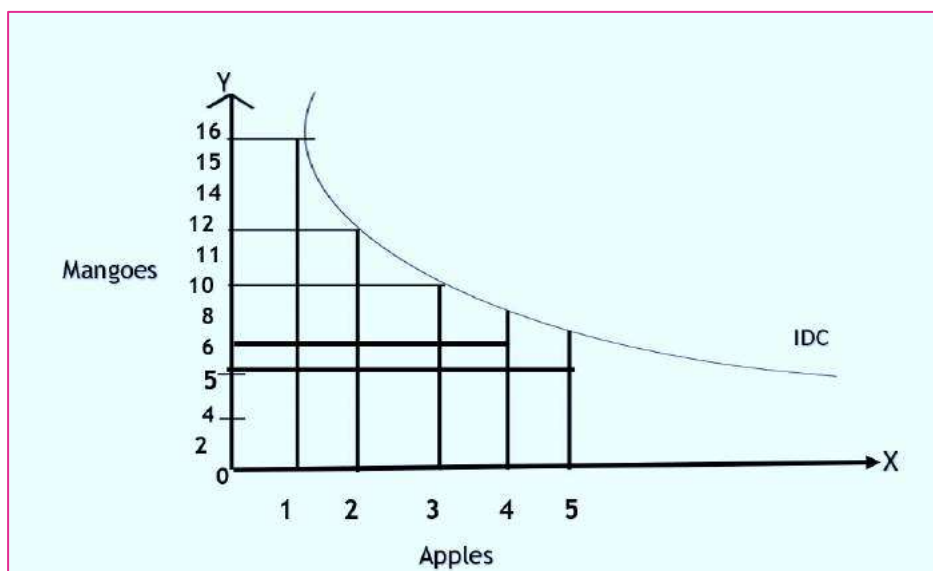
Higher the IDC higher is the level of satisfaction :
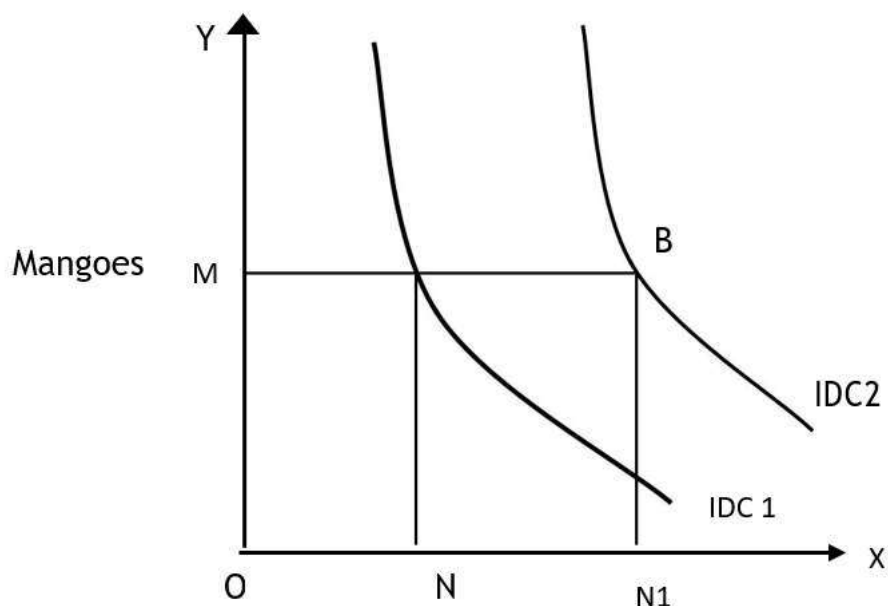
One more feature of the IDC is that the higher an IDC, the higher will be the level of satisfaction represented by it. A right hand IDC shows more satisfaction than a left hand side IDC. Here we can see two IDCs. The point A is on IDC1 and the point B is on IDC2.

= OM Mangoes + ON apples

= OM Mangoes + ON1 apples

Thus B > A

Now the rule is that all the points on any one IDC give an equal amount of satisfaction; and so, the satisfaction of IDC2 is greater than the satisfaction represented by IDC1. Thus, higher the IDC higher is the level of satisfaction.

Two Indifference Curves cannot intersect each other:

Two IDC represent two different levels of satisfaction and therefore two IDCs cannot intersect each other.

Indifference curve will not touch either axes:

Another characteristic feature of indifference curve is that it will not touch the X axis or Y axis. This is born out of our assumption that the consumer is considering different combination of two commodities. If an indifference curve touches the Y axis at a point P as shown in the figure 16, it means that the consumer is satisfied with OP units of y commodity and zero units of x commodity. This is contrary to our assumption that the consumer wants both commodities although in smaller and in larger quantities. Therefore, an indifference curve will not touch either the X axis or Y axis.
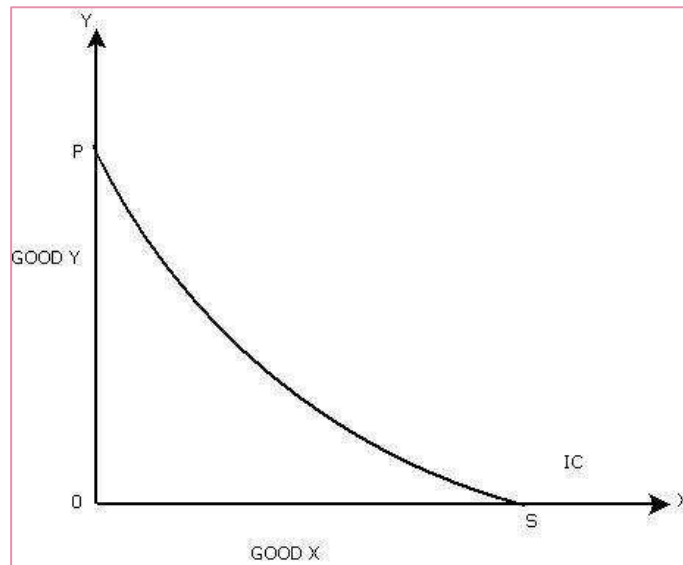
Budget line and its properties :

Budget Line : A higher indifference curve shows a higher level of satisfaction than a lower one. Therefore, a consumer in his attempt to maximize satisfaction will try to reach the highest possible indifference curve. But in his pursuit of buying more and more goods and thus obtaining more and more satisfaction he must work under two constraints firstly, he must pay the prices for the goods and, secondly, he has a limited money income with which to purchase the goods.
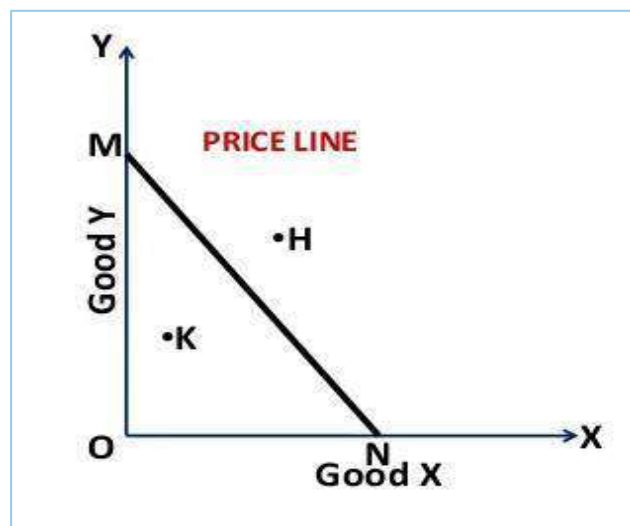
It should be noted that any point outside the given price line, like H, will be beyond the reach of the consumer and any combination lying within the line, like K, shows under spending by the consumer.

Important points about the budget line :

- A budget line is also known as price line, price-income line, or opportunity line.

- The consumer concerned can buy any of the combinations on the price line.
- In order to buy more of any one commodity he will have to buy the less of the other commodity.
- In each price income situation, he cannot buy any of the combinations outside the price line.
- The slope of the price line shows the ratio of commodity prices. i.e. PX / PY.
- While the indifference map is a psychological phenomenon, the price line is a reality.

Consumer's Equilibrium with the help of IDC analysis:

Consumer's income is limited in relation to the wants that he must satisfy and therefore every consumer tries to maximize his satisfaction out of his income.

Consumer's equilibrium position is that position where he maximizes his satisfaction out of his given income and once he reaches that position, he does not like to change it. He can change his position only at the cost of reducing his satisfaction.

According to the IDC analysis, the consumer's equilibrium position is the one where he reaches the highest level of satisfaction – i.e. the highest indifference curve.

Assumptions : The equilibrium analysis is based upon the following assumptions.

- The income of the consumer is given and constant.
- The prices of the goods purchased by the buyer are also given and constant.
- The consumer is a rational person.
- He has a full knowledge of market prices and his scale of preferences.

Two Tools : In order to explain the equilibrium position of a consumer, the IDC analysis uses two tools. They are

(1) consumer's Indifference map

(2) Price Line.

The following is the Indifference map of the consumer.

Indifference map
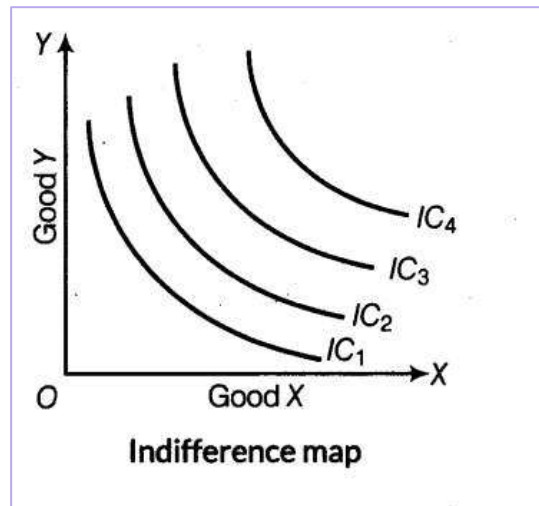
The above diagram shows the ID Map of the buyer. It is a psychological phenomenon. It is independent of the market prices of the goods. It shows the mental conditions of the buyer in the sense that it shows the various levels of satisfaction that the consumer wants to reach.

Price Line : Now let us see the price line of the consumer. In the following diagram A B is the price line of the buyer. It shows that consumer can either purchase OA quantity of the commodity Y or OB quantity of the commodity X at the given prices of the two goods and at his given income. He can as well purchase anyone of the combinations G.F.P.C.D.
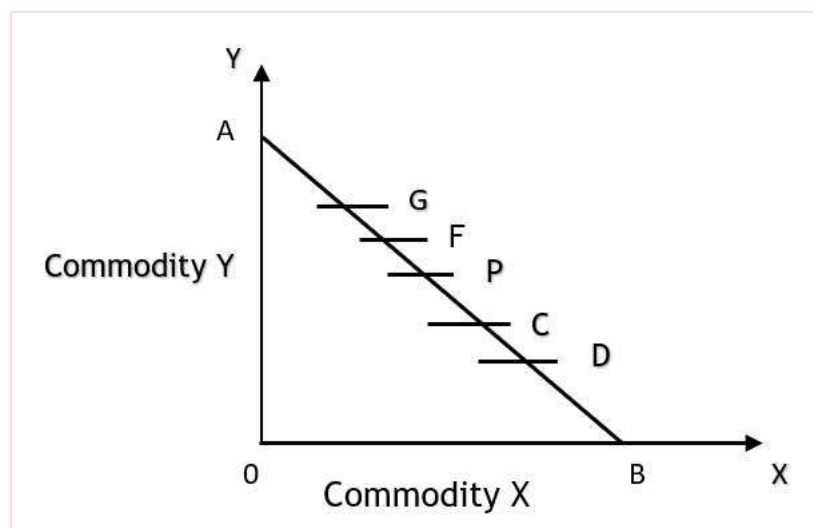
However, he cannot purchase any of the combinations falling outside the price line. The price line is objective as against the IDC which is subjective. It shows the actual conditions prevailing in the market.

Consumer's equilibrium : The following diagram shows the equilibrium position of the consumer.
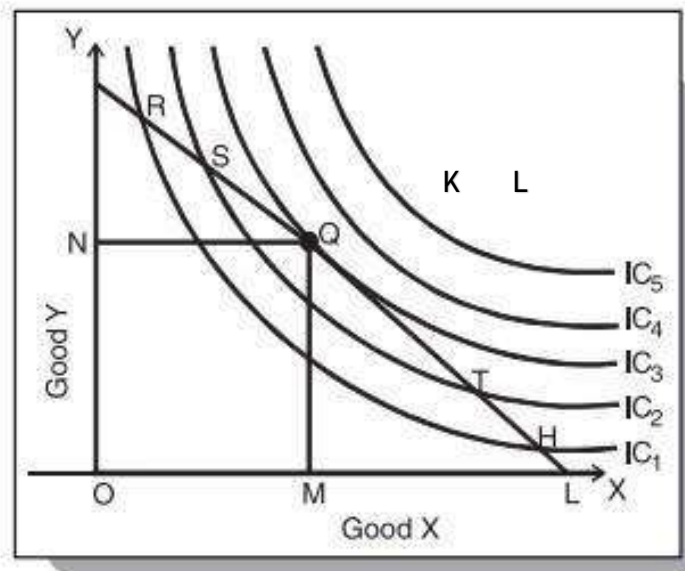
In the above diagram Q is the equilibrium point. It is known as the tangency point. It is the highest point that the consumer can attain with his income. The consumer can also buy the combinations represented by R & S as well as the combinations shown by T and H but as compared with Q, they represent a relatively lower level of satisfaction.

At Q point the subjective conditions as shown by the IDC and the objective conditions as shown by the price line both coincide. So, Q is the equilibrium point of the buyer.

Q is the tangency point. Here the ratio of prices becomes equal to MRS. Thus, Q is the equilibrium point of the buyer.

Here MRS = Ratio of prices

The Utilities of goods are proportionate to their prices.

The consumer wants to buy the combinations represented by the points K and L but as they fall outside his price line, he cannot buy them.

Thus,

The buyer can buy the combinations, R,T,H & S but he does not want to buy them as they represent a lower level of satisfaction. He wants to buy combinations K and L, but he cannot buy them as they fall outside his price line.

Thus, P is the only point that he wants to buy and can buy.

> Equilibrium condition:
>
> Thus, we can say that the consumer is in equilibrium position when price line is tangent to the indifference curve or when the marginal rate of substitution of goods X and Y is equal to the ratio between the prices of the two goods.

THEORY OF DEMAND & SUPPLY

Supply is one of the fundamental topics in microeconomics. It is the second blade of the scissors which explains the determination of price and output. The topic covers concepts of supply function, law of supply, expansion & contraction in supply, increase & decrease in supply, and elasticity of supply.

SUPPLY AND LAW OF SUPPLY

Supply and demand both play a more or less equal role in the process of price determination. Therefore, the study of law of Supply is as important as that of the law of Demand.

The supply of any commodity can be defined as the quantity of the product brought to the market for sale at a given price and given point of time. It is but natural that at different prices the quantities supplied are different. **Therefore, supply is a flow concept.**

Thus, we can make a distinction between stock and supply of a product. The stock of a product can be defined as the total quantity that the producers have for offering in the market. **The supply is that part of stock which is brought to the market for sale at a given price**. Thus, stock is independent of price while the supply is a function of price.

STATEMENT OF LAW OF SUPPLY

According to law of supply, other things remaining constant, when the price of a commodity rises, its quantity supplied increases and when the price falls, its quantity supplied decreases.

### EXPLANATION OF LAW OF SUPPLY

A Schedule known as supply schedule can be prepared to explain the law. It is a hypothetical table showing various quantities supplied at different prices. Here such a schedule is given :

Price (₹)	Quantity Supplied
2	1000
4	2000
6	3000
8	4000
10	5000

This is indeed a very simple schedule. It simply points out to the fact that higher the price, larger would be the quantity supplied.

Supply Curve : When the same information is presented in the form of a diagram, it becomes a curve known as the supply curve. In the diagram given here, we can see that the price of the product is taken on the Y-axis and its quantity supplied is taken on the X-axis. At various prices, there are various quantities supplied. Each point on the supply curve represents a unique price-quantity situation. When we join all these points, we get the supply curve for the product.

Quantity ('000)
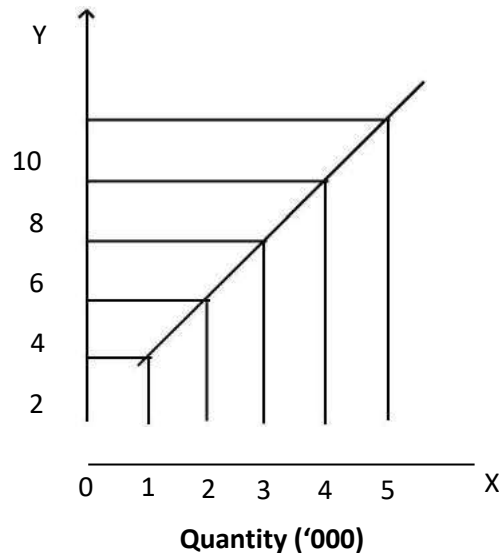
In the diagram, we can see that the supply curve has a positive slope. It rises upwards from the left to the right. It means that larger and larger quantities would be offered in the market for sale only when the price goes up. It is necessary to understand the rationale of the supply curve.

Rationale (Logic) Of the Supply Curve: One must understand the reason for direct relationship between price and quantity supplied. In other words, we want to understand why the slope of the supply curve is positive.

More Profit : Given the stock of the product with the producers, higher the price of the product, higher will be the margin of profit for producers and so greater will be their willingness to sell their product.

Rising Average Cost : If more output is to be produced, beyond a certain limit, the extra output can be obtained only at a higher average cost due to the operation of the law of diminishing returns and so unless price goes up, the supply would not increase.

Different Firms : With the rising price, even those firms which are relatively inefficient and have a higher average cost of production, would be able to put their supply in the market. So also, the quantity supplied increases.

Assumptions :

However, like the other laws of economics, the law of supply is also based upon certain assumptions. These are as under :

- ❖ The prices of other goods should not change.
- ❖ The future prices of the product itself should not change.
- ❖ The technology of production should not change to bring about a decrease in the average cost of production.
- ❖ The factor prices should remain constant.
- ❖ There should not be changes in the objectives of the firm.
- ❖ The natural factors governing supply should not change.
- ❖ There should not be any change in transport and communication.
- ❖ The government policies must not change.

Exceptions to the Law :

While discussing, the law of supply, it would be useful to mention some exceptions also to the law.

Rare Articles : The supply of rare articles e.g. original manuscripts of books, paintings of deceased artists etc. are exception to the law. An increase in their price does not bring about an increase in their quantity supplied.

Supply of Food : The farmers bring a smaller quantity of food to the market when the food prices go up because now, they can get the desired income by selling a smaller amount of food. Moreover, they are afraid that if they dispose of the food at rising prices, they will have to buy the same food at a higher price later for their own use.

Supply of Labour : People want to earn income as well as they want to enjoy leisure. So, when the price of labour i.e. wages go up significantly the workers stop working for extra hours or some family members are told not to work. So, over all supply of labour decreases.

Factors affecting supply :

Supply is that part of the stock, which the dealers bring to market for sale at a particular price. There are many factors which influence supply. These are as under:

Price of The Product : This is the most important factor affecting supply. Other things given, higher the price, greater is the quantity supplied. Given the stock of the product, higher the price, higher would be the profit of the dealers and so greater is the willingness of the dealers to sell.

Prices Of Other Goods : The supply of any product X is affected by the price of other products, Y, Z also e.g. if price of wheat rises, the wheat production becomes more profitable and so, the farmers would start producing more wheat resulting into a decreased supply of other food articles like rice, bajri, etc.

Future Prices of The Product : If the price of the product is rising and the dealers think that it is going to rise further then they would hold back the stock in anticipation of better price. As a result, the supply would decrease in the market.

Technology : Technology makes it possible to increase supply. Innovative technology helps the producers to produce more output from a given quantity of resources, and as a result, the supply increases in the market. The production under capital intensive technology is always more than under labour intensive technology.

Factor Prices : Other things given, when the factor prices fall, there is a decrease in the cost of production and increase in the profits of the producers. This encourages them to bring a larger quantity of product to the market.

Changes in Objectives of Firm : Generally, the objective of a firm is to maximize profit. However sometimes the firms operate with other objectives. E.g. The firm might be willing to increase its market share and so may sell more even at a decreased price, or a dealer may be willing to dispose of his stocks which would induce him to supply more even at a low price.

Government Policy : If the government raises taxes like excise duty, sales tax etc. the price of the product will go up and it is possible that the demand for it may fall. This will force the firm to reduce its supply to accommodate it to demand. On the other hand, if the government offers subsidy on the product, it becomes cheaper and the demand for it increases. This will encourage the producers to produce a greater quantity of output.

Time period : In the long run supply can be increased through existing firms and by entry of new firms.

Other Factors : We may also mention some other factors affecting supply. These are natural factors, development of transport and communication, nature of competition in the market, infrastructure, foreign trade policy of

the govt. etc. However as compared with the above, these factors are of minor importance.

According to law of supply, other things given, when price of a commodity increases, its quantity supplied increases and when the price falls, the quantity supplied also falls.

In this context, it would be useful to have an idea regarding the meanings of the term's extension (or expansion) & contraction **and** increase and decrease in supply.

Extension and contraction of supply

When price of a commodity rises and its quantity supplied increases, it is known as extension of supply and conversely when the price falls, and the quantity supplied decreases, it is known as contraction of supply. The idea regarding these is given in the following diagram.
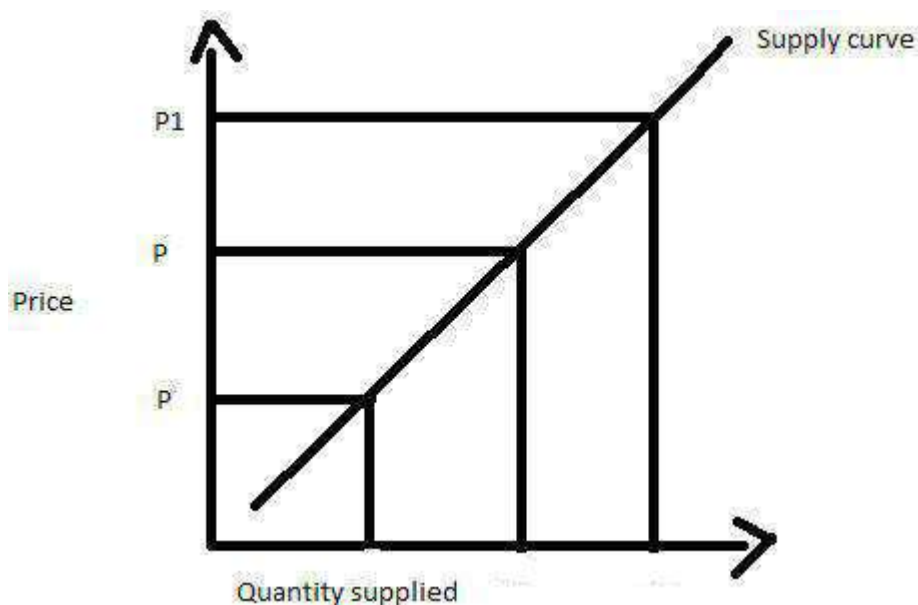
In the above diagram when the price rises from OP to OP_1, the quantity supplied increases from OM to OM1. The movement from A to B is the expansion of supply. Likewise, when the price falls from OP to OP2, the quantity supplied falls from OM to OM2. This is known as contraction of supply. The movement from A to C is the contraction of supply.

Extension and contraction are due to price changes.

They are the movements on the same supply curve.

Now let us see the meaning of increase and decrease in supply.

Increase in supply takes place, when a larger quantity is supplied even when the price is constant due to changes in the factors such as changes in government policies, technology etc. and likewise the decrease in the supply takes place when the price remaining constant, the supply decreases due to the factors, such as the changes in government policies, factor prices, transportation etc. See the following diagram.
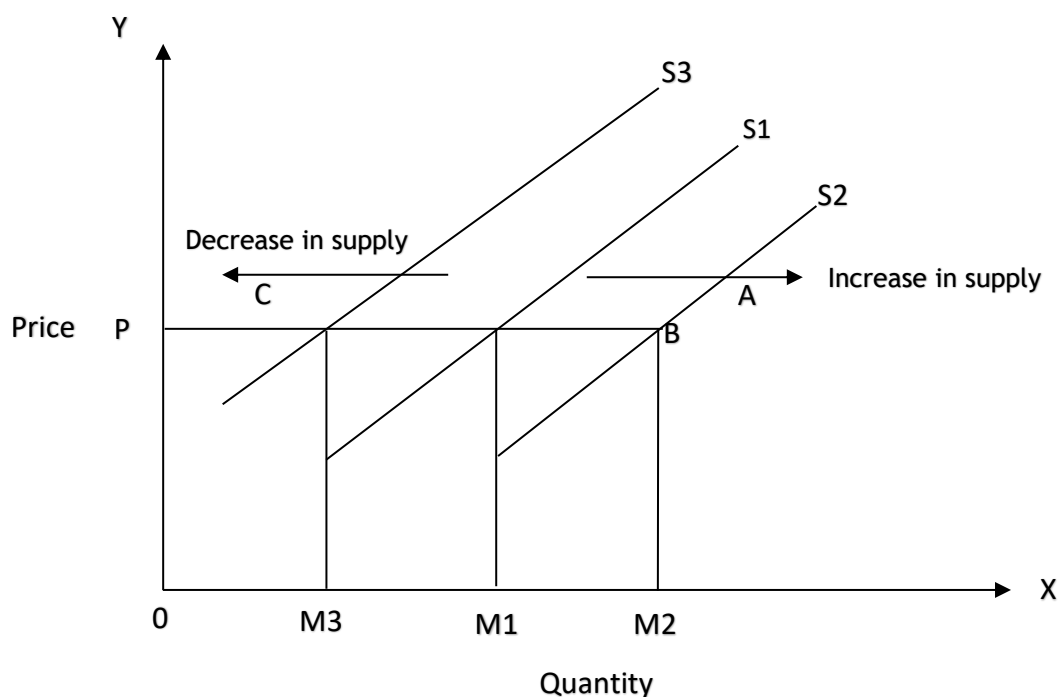
Here movement of the supply curve on the right hand side, is known as increase in supply. In the same manner, when the supply curve moves to the left hand side. It is known as decrease in supply.

Thus :

Increase and decrease in supply are due to changes in the factors other than the price of the product. These are the factors affecting supply.

They are the movement of the entire supply curve.

When increase in supply takes place, the supply curve moves in the right hand direction and when decrease in supply takes place, the supply curve moves in the left-hand direction.

According to the law of supply there is a direct relationship between price of a product and its quantity supplied. However, the law does not tell us anything about the changes that would take place in the quantity supplied of a product when there is a given change in the price. This idea is given by the concept of elasticity of supply.

Meaning:

> **Elasticity of supply can be defined as the measure of the ratio of percentage change in the quantity supplied of a product and percentage change is its price.**

Measurement: There are two popular methods for measuring the elasticity of supply. One is the percentage formula given by Prof. Marshall. The percentage formula can be used to estimate the elasticity of supply as follows:

$$ES = \frac{\% \text{ Change in quantity supplied}}{\% \text{ Change in Price}}$$

OR

$$ES = \frac{\text{Change in quantity supplied/ Original quantity supplied}}{\text{Change in price/ Original Price}}$$

Measurement of supply-elasticity : The elasticity of supply can be considered with reference to a given point on the supply curve or between two points on the supply curve.

When elasticity is measured at a given point on the supply curve, it is called point elasticity.

Just as in demand, point-elasticity of supply can be measured with the help of the following formula :

$$E_s = \frac{dq}{dp} \times \frac{p}{q}$$

Where dq/dp is differentiation of the supply function with respect to price and p and q refer to price and quantity respectively.

Arc – Elasticity Method is also used for measuring the elasticity of supply. According to this method;

$$E_s = \frac{q_1-q_2}{q_1+q_2} \div \frac{p_1-p_2}{p_1+p_2}$$

OR

$$E_s = \frac{q_1-q_2}{q_1+q_2} \times \frac{p_1+p_2}{p_1-p_2}$$

Where p1 q1 are original price and quantity and p2 q2 are new price and quantity supplied.

Thus, in other words the elasticity of supply is the measure of the responsiveness of the supply to price changes.

Greater the change in the quantity supplied of a product for a given change in price, greater is said to be the elasticity of supply and smaller the change in the quantity supplied of the product for a given change in price, smaller is said to be the elasticity of supply.

Types of Elasticity of Supply :

Unitary Elastic Supply :

This is a situation where percentage change in quantity supplied is equal to percentage change in price. The diagram given here represents this type of elasticity of supply. Here change in supply. M1M2 is equal to change in the price = P1P2.
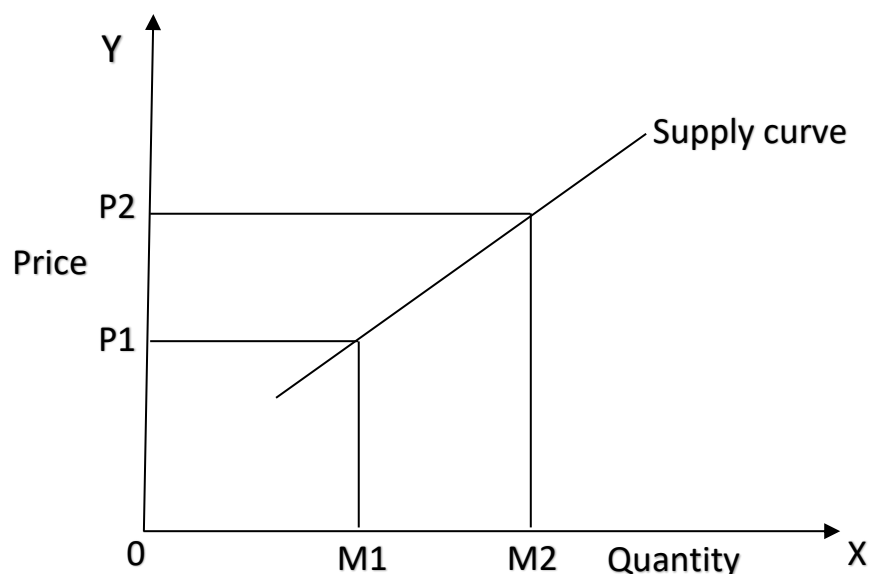
Elastic Supply or Elasticity of Supply > 1 :

This is a situation where the percentage change in quantity supplied is greater than percentage change in price. The diagram given here shows this type of situation. Here the change in supply M1M2 > P1P2 .
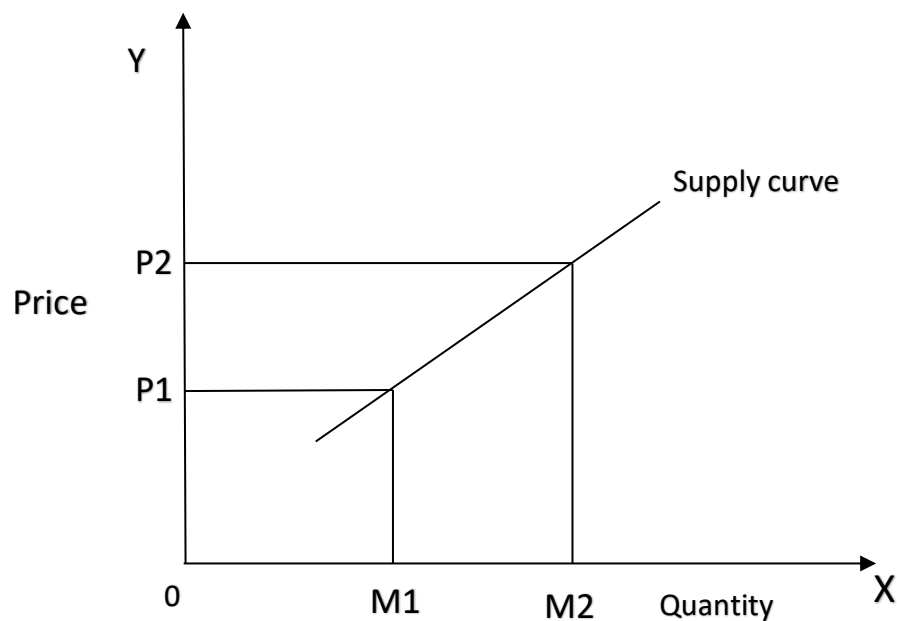
Inelastic Supply or Elasticity of Supply < 1 :

This can be described as a situation where the percentage change in quantity supplied is less than the percentage change in price. The diagram given here shows this type of situation. The change in the quantity supplied M1M2 is smaller than the change in the price P1P2 .
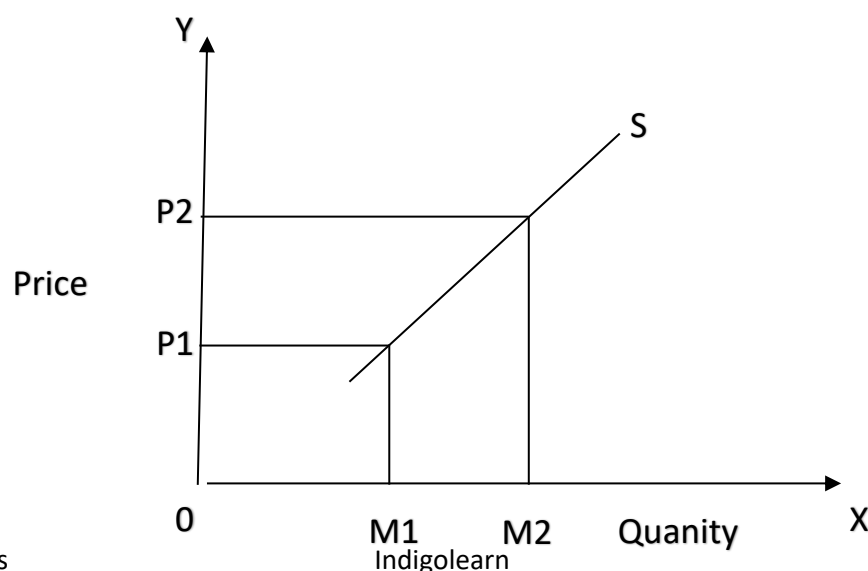
Perfectly Inelastic Supply :

This is a rare situation where the quantity supplied remains constant irrespective of the price changes. The diagram given here shows that the supply is constant at OM whatever may be the change its price. Here the supply curve is a vertical straight line parallel to Y-axis, Here ES = 0
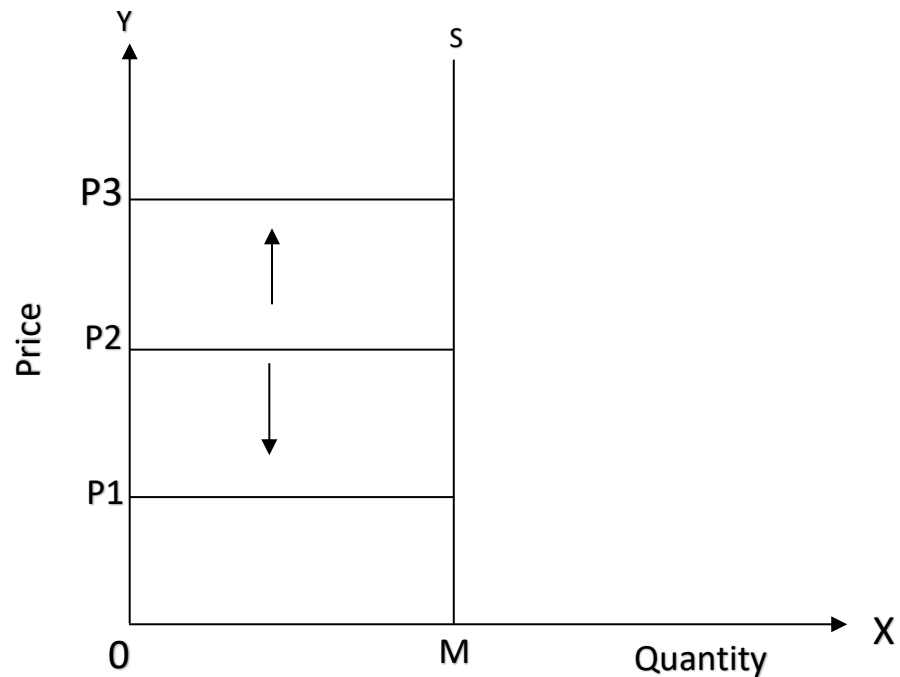
Perfectly Elastic Supply :

This is also a rare situation where the supply is highly sensitive to price changes. The quantity supplied changes in an unlimited proportion even with a minor change in price. Here the supply curve is a horizontal straight line parallel to the X-axis. Here ES is infinity.
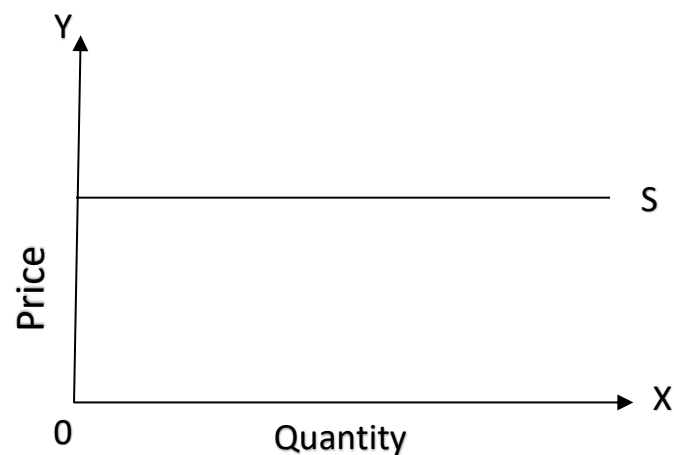
Factors Affecting Elasticity of Supply :

The following factors determine the elasticity of supply.

Natural Factors : The supply of certain products depends upon natural factors e.g. apples, rice, etc. Here the supply is inelastic. E.g. Even if the price of apples goes up, its supply cannot be increased. On the other hand, the supply of product the supply of which depends upon human efforts. E.g. pencils, furniture, etc. is highly elastic. The production of these goods can be immediately and significantly increased in response to price change.

Availability of Complementary Factors : The supply of goods will also be inelastic if complementary factors are not available e.g. even if the price of cotton textiles increases, their supply cannot be increased if complementary factors like electricity, transport etc. are not available in enough quantity.

Unused Production Capacity : If the industries in the country operate with excess unused capacities, their supply would be highly elastic because as soon as prices of the goods of these industries go up producers would start producing more by using unused capacities.

Nature of Products : Certain products require a great degree of skill and training which cannot be immediately acquired e.g. marble statues, carpets, hand-woven silk sarees etc. Their supply cannot be immediately increased because the workers to produce these goods are not easily available and also, they cannot be easily trained.

Time Period : Generally, the supply of various products is inelastic during a short period and highly elastic in the long run. This is because the supply can be easily increased in the long run by expanding production capacities of the existing units and setting up new units in various industries.

Rare Articles : The supply of rare articles is perfectly inelastic e.g. the supply of the things like Gandhiji's handwriting or paintings of deceased (dead) painters cannot be increased whatever may be the increase in their price. The supply of such goods is fixed and so cannot respond to price changes.

Additional Cost : Sometimes due to the operation of the law of Diminishing returns, the additional cost of production is high, then the supply of the product would not increase even if the price of the product goes up, e.g. if the additional cost of bringing out coal from the coal mines is very high compared to the increase in price, the supply would not increase even if the price goes up.

Technology : The firms employing capital intensive technology can easily increase the production with the increase in demand and so the supply of such firms is highly elastic. The supply of goods in whose production labor intensive technology is used is relatively inelastic.

REMEMBER THE FOLLOWING POINTS

Law of supply :

❖ Supply refers to the amount of a good or a service that the producers are willing and able to offer to the market at various prices during a given time period.

❖ Supply is a flow. Different quantities are supplied at different prices.

❖ The law of supply shows the direct relationship between price of a commodity and its quantity supplied.

❖ Normally the supply curve has a positive slope.

❖ The supply curve of labor is backward bending curve.

❖ The law of supply does not apply to the commodities like food, labor etc.

❖ The extension and contraction of supply are the result of the changes in the price of a commodity. They are movements along a supply curve.

❖ The increase and decrease in supply are due to the changes in the factors other than the price of the commodity. They show either a right ward or left ward shift of the supply curve.

Elasticity of supply :

❖ The elasticity of supply is the responsiveness of the quantity supplied of a commodity to changes in its price.

❖ When supply is perfectly inelastic the supply curve is a vertical straight line parallel to the Y axis.

❖ When supply is perfectly elastic the supply curve is a horizontal straight line parallel to the X axis.

❖ The supply of labor intensive products is inelastic and that of the capital intensive products is elastic.

❖ The supply of storable commodities is elastic, and the supply of perishable commodities is inelastic.

CLASS WORK

1. Demand for a commodity refers to :
   a. desire for the commodity.
   b. need for the commodity.
   c. quantity demanded of that commodity.
   d. quantity of the commodity demanded at a certain price during any period.

2. Contraction of demand is the result of:
   a. decrease in the number of consumers.
   b. increase in the price of the good concerned.
   c. increase in the prices of other goods.
   d. decrease in the income of purchasers.

3. All but one of the following are assumed to remain the same while drawing an individual's demand curve for a commodity. Which one is it?
   a. The preference of the individual.
   b. His monetary income.
   c. Price.
   d. Price of related goods.

4. Which of the following pairs of goods is an example of substitutes?
   a. Tea and sugar.
   b. Tea and coffee.
   c. Pen and ink.
   d. Shirt and trousers.

5. In the case of a straight-line demand curve meeting the two axes, the price-elasticity of demand at the mid-point of the line would be
   a. 0
   b. 1
   c. 1.5
   d. 2

6. The Law of Demand, assuming other things to remain constant, establishes the relationship between:
   a. income of the consumer and the quantity of a good demanded by him.
   b. price of a good and the quantity demanded.
   c. price of a good and the demand for its substitute.
   d. quantity demanded of a good and the relative prices of its complementary goods.

7. Identify the factor which generally keeps the price-elasticity of demand for a good low:
   a. Variety of uses for that good.
   b. Its low price.
   c. Close substitutes for that good.
   d. High proportion of the consumer's income spent on it.

8. Identify the coefficient of price-elasticity of demand when the percentage increase in the quantity of a good demanded is smaller than the percentage fall in its price:
   a. Equal to one.
   b. Greater than one.
   c. Smaller than one.
   d. Zero.

9. In the case of an inferior good, the income elasticity of demand is:
   a. positive.
   b. zero.
   c. negative.
   d. infinite.

10. If the demand for a good is inelastic, an increase in its price will cause the total expenditure of the consumers of the good to:
    a. remain the same.
    b. increase.
    c. decrease.
    d. any of these.

11. If regardless of changes in its price, the quantity demanded of a good remains unchanged, then the demand curve for the good will be:
    a. horizontal.
    b. vertical.
    c. positively sloped.
    d. negatively sloped.

12. The law of demand is:
    a. a quantitative statement.
    b. a qualitative statement.
    c. both a quantitative and a qualitative statement.

THEORY OF PRODUCTION AND COST

UNIT 1: THEORY OF PRODUCTION

INTRODUCTION

In this chapter we will learn Production, factors of production, short-run and long-run production, Law of production, Law of returns to scale.

A) MEANING OF PRODUCTION

➢ **Production is a very important economic activity**. As we are aware, the survival of any firm in a competitive market depends upon its ability to produce goods and services at a competitive cost. One of the principal concerns of business managers is the achievement of optimum efficiency in production by minimizing the cost of production. The performance of an economy is judged by the level of its production. Thus, the U.S.A. is a rich country just because its level of production is high.

➢ In common parlance, the term 'production' is used to indicate an activity of making something material. In Economics the word 'production' is used in a wider sense to denote the **process by which man utilizes resources such as men, material, capital, time etc. working upon them to transform them into commodities and services to make them satisfy human wants**. In other words, production is any economic activity which converts inputs into outputs which are capable of satisfying human wants.

➢ According to James Bates and J.R. Parkinson "Production is the **organized activity of transforming resources into finished products** in the form of goods and services; and the objective of production is to satisfy the demand of such transformed resources".

➢ It should be noted that production should not be taken to mean as creation of matter because, according to the fundamental law of science, man cannot create matter. What a man can do is only to create or add utility

to things that already exist in nature. Production can also be defined as **creation or addition of utility**. <u>For example</u>, when a carpenter produces a table, he does not create the matter of which the wood is composed of; he only transforms wood into a table. By doing so, he adds utility to wood which did not have utility before.

Production consists of various processes to add utility to natural resources for gaining greater satisfaction from them by

Changing the form of natural resources	• Most manufacturing processes consist of use of physical inputs such as raw materials and transforming them into physical products possessing utility.
Changing the place of the resources	• from a place where they are of little or no use to another place where they are of greater use.
Making available materials at times	• when they are not normally available e.g., harvested food grains are stored for use till next harvest. Canning of seasonal fruits is undertaken to make them available during off season.
Making use of personal skills	• in the form of services, e.g., those of organizers, merchants, transport workers etc.

The fundamental purpose of all these activities is the same, namely, to create utility in some manner.   Thus, production is nothing but creation of utilities in the form of goods and services.

FACTORS OF PRODUCTION

Factors of production refer to inputs. An input is a good or service which a firm buys for use in its production process. Production process requires a wide variety of inputs, depending on the nature of output. A good must pass through many stages and many hands until it reaches the consumers' hands in a finished form. Land, labour, capital and entrepreneurial ability are the four factors or resources which make it possible to produce goods and services. While land is a gift of nature and refers to natural resources, the human endeavor is classified functionally and qualitatively into three main components namely, labour, capital and entrepreneurial skills.

1. Land

The term 'land' is used in a special sense in Economics. It does not mean soil or earth's surface alone, but refers to all free gifts of nature which would include besides land in common parlance, natural resources, fertility of soil, water, air, light, heat natural vegetation etc. It becomes difficult at times to state precisely as to what part of a given factor is due solely to gift of nature and what part belongs to human effort made on it in the past. **The following characteristics which would qualify a given factor to be called land:**

Land is a free gift of nature

Supply of land is fixed

Land is permanent and has indestructible powers

Land is passive factor

Land is immobile

Land has multiple uses

Land is heterogeneous

2. Labour:

The term 'labour', means any mental or physical exertion directed to produce goods or services. All human efforts of body or of mind undergone partly or wholly with a view to secure an income apart from the pleasure derived directly from the work is termed as labour. In other words, it refers to various types of human efforts which require the use of physical exertion, skill and intellect.

Characteristics of labour:

Human Effort

Labour is Perishable

Labour is an active factor

Labour is inseparable from the labourer

Labour power differs from labourer to labourer

All labour may not be productive

Labour has poor bargaining power

Labour is mobile

There is no rapid adjustment of supply of Labour to the demand for it

Choice between hours of Labour and hours of leisure

3. Capital:

➢ We may define capital as that part of wealth of an individual or community which **is used for further production of wealth**. In fact, capital is a stock concept which yields a periodical income which is a flow concept.

➢ Capital has been rightly defined as **'produced means of production' or man-made instruments of production'.** In other words, capital refers to all manmade goods that are used for further production of wealth. **Capital is a produced factor of production**. It has been produced by man by working with nature. Machine tools and instruments, factories, dams, canals, transport equipment etc., are some of the examples of capital. All of them are produced by man to help in the production of further goods.

Types of Capital:

- Fixed capital
- Ciculating capital
- Real capital
- Human Capital
- Tangible Capital
- Individual Capital
- Social Capital
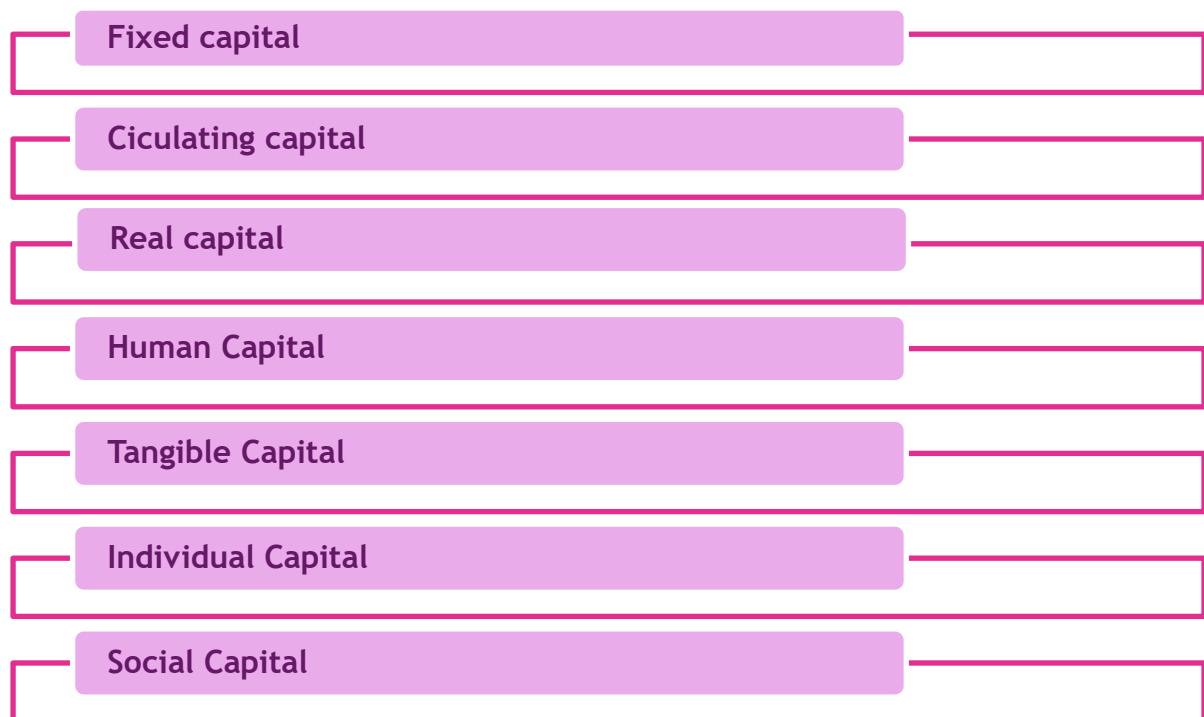
Capital Formation:

Capital formation means a sustained increase in the stock of real capital in a country. In other words, capital formation involves production of more capital goods like, machines, tools, factories, transport equipment's, electricity etc. which are used for further production of goods. Capital formation is also known as investment.

Stages of capital formation: There are mainly **three stages** of capital formation which are as follows:

Savings → Mobilization of Savings → Investment

4. Entrepreneur:

It is not enough to say that production is a function of land, capital and labour. There must be some factor which mobilizes these factors, combines them in the right proportion, initiates the process of production and bears the risks involved in it. This factor is known as the entrepreneur. He has also been called the organizer, the manager or the risk taker.

Functions of an entrepreneur:

Initiating business enterprise and resource co-ordination.

Risk bearing or uncertainty bearing

Innovation

Enterprise's objectives and constraints

The standard assumption about an enterprise is that its business activity is carried out with the sole objective of earning profits. However, in the real world, enterprises do not make decisions based exclusively on pro t maximization objective alone. Since an enterprise functions in the economic, social, political and cultural environment, its objectives will have to be set up in relation to its survival and growth in such environments.

Thus, the objectives of an enterprise may be broadly categorized under the following heads:

| Organic Objectives | Economic Objectives | Social Objectives | Human Objectives | National Objectives |
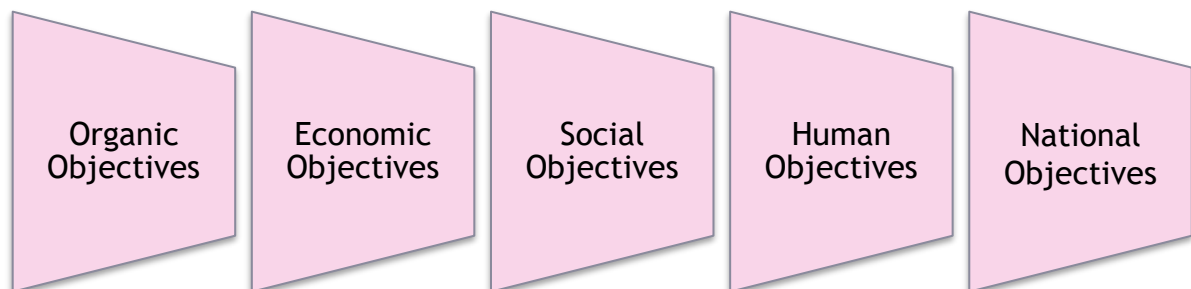
Enterprise's Problems

An enterprise faces several problems from its inception, through its lifetime and till its closure. We shall try to get a few insights about them from the following discussion.

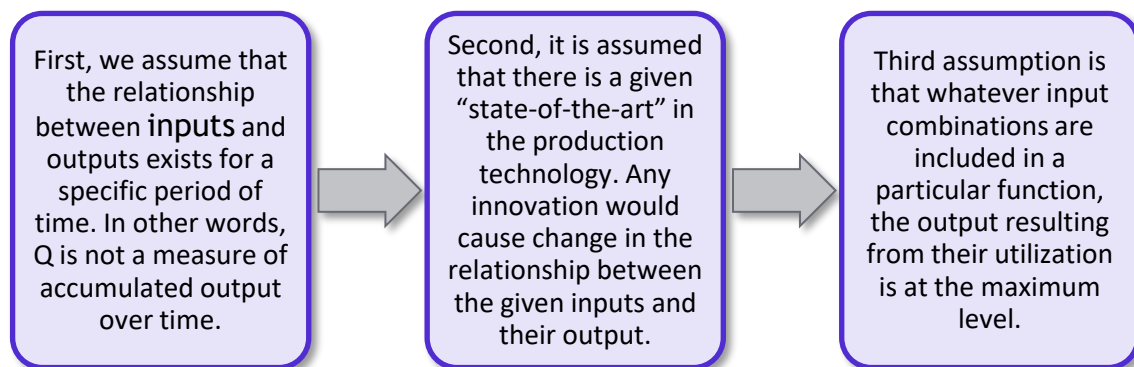|	
Problems relating to objectives:	• As mentioned earlier, an enterprise functions in the economic, social, political and cultural environment. Therefore, it has to set its objectives in relation to its environment. The problem is that these objectives are multifarious and very often conflict with one another.
Problems relating to location and size of the plant:	• An enterprise has to decide about the location of its plant. It has to decide whether the plant should be located near the source of raw material or near the market. It has to consider costs such as cost of labour, facilities and cost of transportation
Problems relating to selecting and organizing physical facilities:	• A firm has to make decision on the nature of production process to be employed and the type of equipment's to be installed. The choice of the process and equipment's will depend upon the design chosen and the required volume of production. As a rule, production on a large scale involves the use of elaborate, specialized and complicated machinery and processes
Problems relating to Finance:	• An enterprise has to undertake not only physical planning but also expert financial planning.
Problems relating to organization structure:	• An enterprise also faces problems relating to the organizational structure. It has to divide the total work of the enterprise into major specialized functions and then constitute proper departments for each of its specialized functions.
Problems relating to marketing:	• Product: variety, quality, design, features, brand name, packaging, associated services, utility etc. • Promotion: Methods of communicating with consumers through personal selling, social contacts, advertising, publicity etc. • Price: Policies regarding pricing, discounts, allowance, credit terms, concessions, etc. • Place: Policy regarding coverage, outlets for sales, channels of distribution, location and layout of stores, inventory, logistics.
Problems relating to legal formalities:	• A number of legal formalities have to be carried out during the time of launching of the enterprise as well as during its life time and its closure.
Problems relating to industrial relations:	• With the emergence of the present-day factory system of production, the management has to devise special measures to win the co-operation of a large number of workers employed in industry.

B) PRODUCTION FUNCTION

The production function is a statement of the relationship between a firm's scarce resources (i.e. its inputs) and the output. More specifically, it states technological relationship between inputs and output. The production function can be algebraically expressed in the form of an equation in which the output is the dependent variable and inputs are the independent variables. The equation can be expressed as:

$$Q = f (a, b, c, d \text{ ....} n)$$

Where 'Q' stands for the rate of output of given commodity and a, b, c, d.......n, are different factors (inputs) and services used per unit of time.

Assumptions of Production Function:

There are three main assumptions underlying any production function.

First, we assume that the relationship between **inputs** and outputs exists for a specific period of time. In other words, Q is not a measure of accumulated output over time.

→

Second, it is assumed that there is a given "state-of-the-art" in the production technology. Any innovation would cause change in the relationship between the given inputs and their output.

→

Third assumption is that whatever input combinations are included in a particular function, the output resulting from their utilization is at the maximum level.

The production function can be defined as:

> The relationship between the maximum amount of output that can be produced, and the input required to make that output. It is defined for a given state of technology i.e., the maximum amount of output that can be produced with given quantities of inputs under a given state of technical knowledge. (Samuelson)
> It can also be defined as the minimum quantities of various inputs that are required to yield a given quantity of output.

Short-Run Vs Long-Run Production Function

The production function of a firm can be studied in the context of short period or long period. It is to be noted that in economic analysis, the distinction between short-run and long-run is not related to any measurement of time (e.g. days, months, or years). In fact, it refers to the extent to which a firm can vary the amounts of the inputs in the production process.

The production function can also be studied in the long run. It is a time period when the firm will be able to install new machines and capital equipment's apart from increasing the variable factors of production. A long-run production function shows the maximum quantity of a good or service that can be produced by a set of inputs, if the firm is free to vary the amount of all the inputs being used.

Short-Run Period - at least one of the inputs used remains unchanged during that period

Long-Run Period - is a period in which all factors of production are variable

Cobb-Douglas Production Function

A famous statistical production function is Cobb-Douglas production function. Paul H. Douglas and C.W. Cobb of the U.S.A. studied the production function of the American manufacturing industries. In its original form, this production function applies not to an individual firm but to the whole of manufacturing in the United States. In this case, output is manufacturing production and inputs used are labour and capital.

Cobb-Douglas production function is stated as $Q = KL^a C^{(1-a)}$

where 'Q' is output, 'L' the quantity of labour and 'C' the quantity of capital. 'K' and 'a' are positive constants.

The conclusion drawn from this famous statistical study is that labour contributed about 3/4th and capital about 1/4th of the increase in the manufacturing production. Although, the Cobb-Douglas production function suffers from many shortcomings, it is extensively used in Economics as an approximation.

C) THE LAW OF VARIABLE PROPORTIONS OR THE LAW OF DIMINISHING RETURNS:

In the **short run**, the input output relations are studied with one variable input (labour) with all other inputs held constant. The laws of production under these conditions are known under various names as the law of variable proportions (as the behavior of output is studied by changing the proportion in which inputs are combined) the law of returns to a variable input (as any change in output is taken as resulting from the additional variable input) or the law of diminishing returns (as returns eventually diminish).

The law states that as we increase the quantity of one input which is combined with other fixed inputs, the marginal physical productivity of the variable input must eventually decline. In other words, an increase in some inputs relative to other fixed inputs will, in each state of technology, cause output to increase; but after a point, the extra output resulting from the same addition of extra input will become less and less.

Before discussing this law, if would be appropriate to understand the meaning of total product, average product and marginal product.

Total Product (TP):

Total Product (TP): Total product is the total output resulting from the efforts of all the factors of production combined together at any time. If the inputs of all but one factor are held constant, the total product will vary with the quantity used of the variable factor. Column (1) of Table 1 presents the quantity of variable factor (labour) used along with the factors whose quantity is held constant and column (2) represent the total product at various levels of use of the variable input.

PRODUCT SCHEDULE

Quantity of labour	Total Product (TP)	Average Product (AP)	Marginal Product (MP)
(1)	(2)	(3)	(4)
1	100	100.0	100
2	210	105.0	110
3	330	110.0	120
4	440	110.0	110
5	520	104.0	80
6	600	100.0	80
7	670	95.7	70
8	720	90.0	50
9	750	83.3	30
10	750	75.0	0
11	740	67.3	–10

We find that when one unit of labour is employed along with other factors of production, the total product is 100 units. When two units of labour are employed, the total product rises to 210 units. The total product goes on rising as more and more units of labour are employed. With 10 units of labour, the total product rises to 750 units. When 11 units of labour are employed, total product falls to 740 units due to negative returns from the 11th unit of labour.

Average Product (AP):

Average Product (AP):

- Average product is the total product per unit of the variable factor.
- AP = $\dfrac{\text{Total Product}}{\text{No. of units of variable factor}}$
- It is shown as a schedule in column (3) of Table 1. When one unit of labour is employed, average product is 100, when two units of labour are employed, average product rises to 105. This goes on, as shown in Table 1.
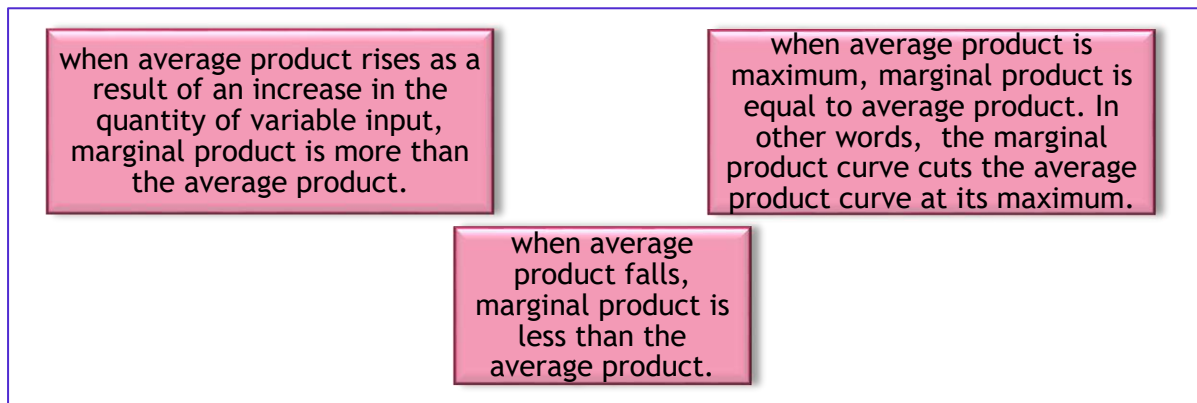
Marginal Product (MP):

Marginal Product (MP):

- Marginal product is the change in total product per unit change in the quantity of variable factor. In other words, it is the addition made to the total production by an additional unit of input. Symbolically, MP = TPn – TPn-1
- The computed value of the marginal product appears in the last column of Table 1. For example, the MP corresponding to 4 units is given as 110 units. This reflects the fact that an increase in labour from 3 to 4 units, has increased output from 330 to 440 units.

Relationship between Average Product and Marginal Product:

Both average product and marginal product are derived from the total product. Average product is obtained by dividing total product by the number of units of the variable factor and marginal product is the change in total product resulting from a unit increase in the quantity of variable factor. The relationship between average product and marginal product can be summed up as follows:

when average product rises as a result of an increase in the quantity of variable input, marginal product is more than the average product.	when average product is maximum, marginal product is equal to average product. In other words, the marginal product curve cuts the average product curve at its maximum.

when average product falls, marginal product is less than the average product.

Table 1 and Figure 1 confirm the above relationship:

The Law of Variable Proportions or the Law of Diminishing Returns examines the production function with one factor variable, keeping quantities of other factors fixed. In other words, it refers to input- output relationship, when the output is increased by varying the quantity of one input. This law operates in the short run when all factors of production cannot be increased or decreased simultaneously (for example, we cannot build a plant or dismantle a plant in the short run).

The law operates under certain assumptions which are as follows:

The state of technology is assumed to be given and unchanged. If there is any improvement in technology, then marginal product and average product may rise instead of falling.	There must be some inputs whose quantity is kept fixed. This law does not apply to cases when all factors are proportionately varied. When all the factors are proportionately varied, laws of returns to scale are applicable.
The law does not apply to those cases where the factors must be used in fixed proportions to yield output. When the various factors are required to be used in fixed proportions, an increase in one factor would not lead to any increase in output i.e., marginal product of the variable factor will then be zero and not diminishing.	We consider only physical inputs and outputs and not economic profitability in monetary terms.

The behavior of output when the varying quantity of one factor is combined with a fixed quantity of the others can be divided into three distinct stages or laws. In order to understand these three stages or laws, we may graphically illustrate the production function with one variable factor. This is done in Figure 1.

In this figure, the quantity of variable factor is depicted on the X axis and the Total Product (TP), Average Product (AP) and Marginal Product (MP) are shown on the Y-axis. As the figure shows, the TP curve goes on increasing up to a point and after that it starts declining. AP and MP curves first rise and then decline; MP curve starts declining earlier than the AP curve.

The behavior of these Total, Average and Marginal Products of the variable factor consequent on the increase in its amount is generally divided into three stages (laws) which are explained below.
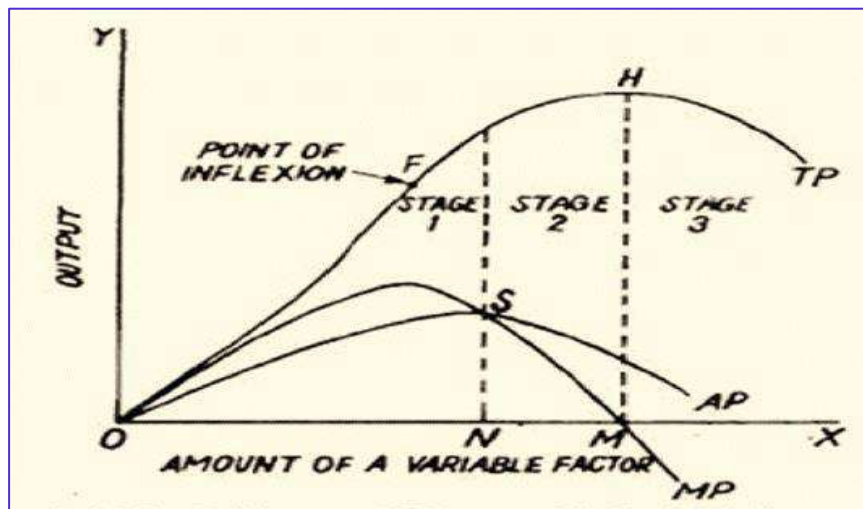
Stage 1: The Stage of Increasing Returns:

In this stage, the total product increases at an increasing rate up to a point (in figure up to point F), marginal product also rises and is maximum at the point corresponding to the point of inflexion and average product goes on rising. From point F onwards during the stage one, the total product goes on rising but at a diminishing rate. Marginal product falls but is positive. The stage 1 ends where the AP curve reaches its highest point.

Thus, in the first stage, the AP curve rises throughout whereas the marginal product curve first rises and then starts falling after reaching its maximum. It is to be noted that the marginal product although starts declining, remains greater than the average product throughout the stage so that average product continues to rise.

Explanation of law of increasing returns:
The law of increasing returns operates because in the beginning, the quantity of fixed factors is abundant relative to the quantity of the variable factor. As more units of the variable factor are added to the constant quantity of the fixed factors, the fixed factors are more intensively and effectively utilized i.e., the efficiency of the fixed factors increases as additional units of the variable factors are added to them. This causes the production to increase at a rapid rate.

For example, if a machine can be efficiently operated when four persons are working on it and if in the beginning we are operating it only with three persons, production is bound to increase if the fourth person is also put to work on the machine since the machine will be effectively utilized to its optimum. **This happens because, in the beginning some amount of fixed factor remained unutilized and, therefore, when the variable factor is increased, fuller utilization of the fixed factor becomes possible and it results in increasing returns.**

Generally, those factors which are indivisible are taken as fixed. Indivisibility of a factor means that due to technological requirements, a minimum amount of that factor must be employed whatever be the level of output. Thus, as more units of the variable factor are employed to work with an indivisible fixed factor, output greatly increases due **to fuller utilization of the latter**.

Stage 2: Stage of Diminishing Returns:

In stage 2, the total product continues to increase at a diminishing rate until it reaches its maximum at point H, where the second stage ends. In this stage, both marginal product and average product of the variable factor are diminishing but are positive. At the end of this stage i.e., at point M (corresponding to the highest point H of the total product curve), the marginal product of the variable factor is zero. Stage 2 is known as the stage of diminishing returns because both the average and marginal products of the variable factors continuously fall during this stage. This stage is very important because the firm will seek to produce within its range.

Explanation of law of diminishing returns:

The question arises as to why we get diminishing returns after certain amount of the variable factor has been added to the fixed quantity of that factor. As explained above, increasing returns occur primarily because of more efficient use of fixed factors as more units of the variable factor are combined to work with it. Once the point is reached at which the amount of variable factor is enough to ensure efficient utilization of the fixed factor, any further increases in the variable factor will cause marginal and average product to decline because the fixed factor then becomes inadequate relative to the quantity of the variable factor.

The phenomenon of diminishing returns, like that of increasing returns, rests upon the indivisibility of the fixed factor. Just as the average product of the variable factor increases in the first stage when better utilization of the fixed indivisible factor is being made, so the average product of the variable factor diminishes in the second stage when the fixed indivisible factor is being worked too hard. **Another reason offered for the operation of the law of diminishing returns is the imperfect substitutability of one factor for another.**

Stage 3: Stage of Negative Returns:

In Stage 3, total product declines, MP is negative, average product is diminishing. This stage is called the stage of negative returns since the

marginal product of the variable factor is negative during this stage.

Explanation the law of negative returns:

As the amount of the variable factor continues to be increased to a constant quantity of the other, a stage is reached when the total product declines and marginal product becomes negative. This is because the quantity of the variable factor becomes too excessive relative to the fixed factor so that they get in each other's ways with the result that the total output falls instead of rising. In such a situation, a reduction in the units of the variable factor will increase the total output.

Stage of Operation:

An important question is in which stage a rational producer will seek to produce. A rational producer will never produce in stage 3 where marginal product of the variable factor is negative. This being so, a producer can always increase his output by reducing the amount of variable factor. Even if the variable factor is free of cost, a rational producer stops before the beginning of the third stage.

A rational producer will also not produce in stage 1 as he will not be making the best use of the fixed factors and he will not be utilizing fully the opportunities of increasing production by increasing the quantity of the variable factor whose average product continues to rise throughout stage 1. Even if the fixed factor is free of cost in this stage, a rational entrepreneur will continue adding more variable factors.

It is thus clear that a rational producer will never produce in stage 1 and stage 3. These stages are called stages of 'economic absurdity' or 'economic non-sense'.

A rational producer will always produce in stage 2 where both the marginal product and average product of the variable factors are diminishing. At which point in this stage, the producer will decide to produce depends upon the prices of factors. The optimum level of employment of the variable factor (here labour) will be determined by applying the principle of marginalizm in such a way that the marginal revenue product of labour is equal to the marginal wages.

D) Law of Returns to Scale:

Returns to scale may be constant, increasing or decreasing. If we increase all factors i.e., scale in each proportion and output increases in the same proportion, returns to scale are said to be constant.

But, if the increase in all factors leads to more than proportionate increase in output, returns to scale are said to be increasing. Thus, if all factors are doubled and output increases more than double, then the returns to scale are said to be increasing. On the other hand, if the increase in all factors leads to less than proportionate increase in output, returns to scale are decreasing

It should be remembered that increasing returns to scale is not the same as

increasing marginal returns. Increasing marginal returns refers to the short run in which at least one input is fixed. The existence of fixed inputs in the short run gives rise to increasing and later to diminishing marginal returns.

Constant Returns to Scale:

As stated above, constant returns to scale means that with the increase in the scale in some proportion, output increases in the same proportion. Constant returns to scale, otherwise called as "Linear Homogeneous Production Function", may be expressed as follows:

$$kQx = f(kK, kL)$$
$$= k (K, L)$$

If all the inputs are increased by a certain amount (say k) output increases in the same proportion (k). It has been found that an individual firm passes through a long phase of constant returns to scale in its lifetime.

Increasing Returns to Scale:

As stated earlier, increasing returns to scale means that output increases in a greater proportion than the increase in inputs. When a firm expands, increasing returns to scale are obtained in the beginning. For example, a wooden box of 3 ft. cube contains 9 times greater wood than the wooden box of 1 foot-cube. But the capacity of the 3 foot- cube box is 27 times greater than that of the one foot cube. Another reason for increasing returns to scale is the indivisibility of factors.

Decreasing Returns to Scale:

When output increases in a smaller proportion with an increase in all inputs, decreasing returns to scale are said to prevail. When a firm goes on expanding by increasing all inputs, decreasing returns to scale set in.

The Cobb-Douglas production function explained earlier is used to explain "returns to scale" in production. Originally, Cobb and Douglas assumed that returns to scale are constant. The function was constructed in such a way that the exponents summed to a+1-a=1. However, later they relaxed the requirement and rewrote the equation as follows:

$$Q = K La C b$$

Where 'Q' is output, 'L' the quantity of labour and 'C' the quantity of capital, 'K' and 'a' and 'b' are positive constants.

| If a + b > 1	Increasing returns to scale result i.e. increase in output is more than the proportionate increase in the use of factors (labour and capital).
a + b = 1	Constant returns to scale result i.e. the output increases in the same proportion in which factors are increased.
a + b < 1	Decreasing returns to scale result i.e. the output increases less than the proportionate increase in the labour and capital.

E) PRODUCTION OPTIMISATION

Normally, a profit maximizing firm is interested to know what combination of factors of production (or inputs) would minimize its cost of production for a given output.

Isoquants: Isoquants are like indifference curves in the theory of consumer behavior. Since an isoquant curve represents all those combinations of inputs which yield an equal quantity of output, the producer is indifferent as to which combination he chooses. Therefore, Isoquants are also called equal-product curves, production indifference curves or iso-product curves. The concept of isoquant can be easily understood with the help of the following schedule.

Various combinations of X and Y to produce a given level of output:

Factor combination	Factor X	Factor Y	MRTS
A	1	12	-
B	2	08	4
C	3	05	3
D	4	03	2
E	5	02	1

When we plot the various combinations of factor X and factor Y, we get a curve IQ as shown in Figure 2.
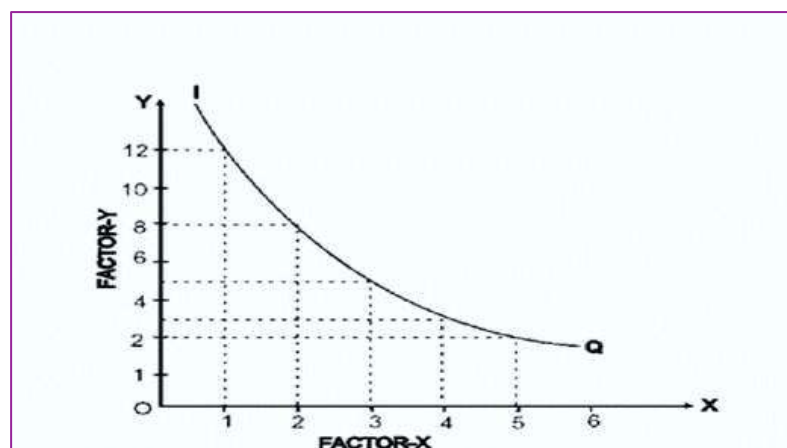
Isoquants have properties like indifference curves. Isoquants are negatively sloped, convex to the origin due to diminishing marginal rate of technical substitution (MRTS) and are non- intersecting. However, there is one important difference between the two: whereas in an indifference curve it is not possible to quantify the level of satisfaction acquired by the consumer, the level of production acquired by the producer is easily quantified. Thus, while isoquant IQ1 represents 100 units, curves IQ2, IQ3 etc.

Isocost or Equal-cost Lines: Iso-cost line, also known as budget line or the budget constraint line, shows the various alternative combinations of two factors which the firm can buy with given outlay. Suppose a firm has Rs 1,000 to spend on the two factors X and Y. If the price of factor X is Rs. 10 and that of Y is Rs. 20, the firm can spend its outlay on X and Y in various ways. It can spend the entire amount on X and thus buy 100 units of X and zero units of Y or it can spend the entire outlay on Y and buy 50 units of it with zero units of X factor. In between, it can have any combination of X and Y. Whatever be the combination of factors the firm chooses, the total cost to the firm remains the same.
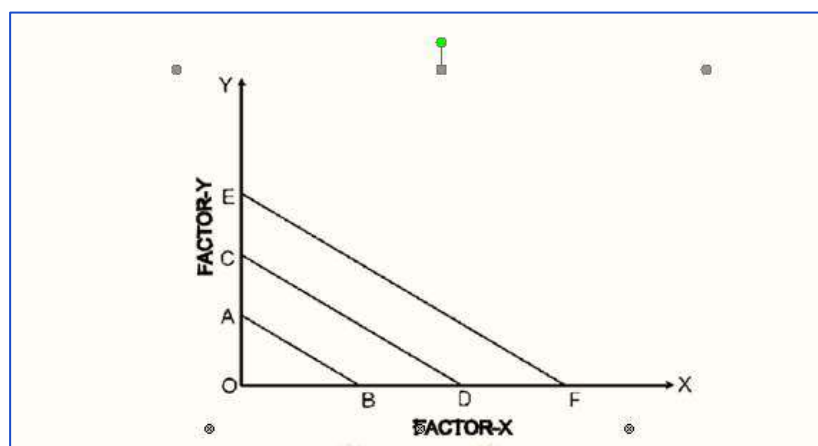

Figure 3 shows various isocost lines representing different combinations of factors with different outlays. Isoquants, which represent the technical conditions of production for a product and isocost lines which represent various 'levels of cost or outlay' (given the prices of two factors) can help the firm to optimize its production.

Least-cost Combination of Factors: Producer's Equilibrium

Suppose the firm has decided to produce 1,000 units (represented by iso-quant P). These units can be produced by any factor combination lying on P such as A, B, C, D, E, etc. The cost of producing 1,000 units would be minimum at the factor combination represented by point C where the iso-cost line MM1 is tangent to the given isoquant P. At all other points such as A, B, D, E the cost is more as these points lie on higher isocost lines Compared to MM1. Thus, the factor combination represented by point C is the optimum combination for the producer. It represents the least-cost of producing 1,000 units of output.

➢ Factors of Production

- In economics production means creation of utilities by changing the form, the place of supply, the time of supply etc. of a commodity with the object of satisfying human wants.
- In economics land means all the natural resources given to the mankind by the providence free of charge which it uses directly or indirectly to produce goods and services required for its consumption.
- The supply of land is perfectly inelastic.
- The land does not have physical mobility, but it always has occupational mobility.
- Land is known as specific factor because it cannot produce anything by itself without the employment of human efforts.
- The labour in economics means any kind of mental and/ or physical efforts of human beings directed to produce goods and services.
- Any effort in economic would be regarded as labour only when it is undertaken with the object of earning some economic reward.
- Labour is a perishable factor in the sense that the labour lost cannot be recovered forever.
- The supply curve of individual labour is a backward sloping curve.
- Capital in economics means all the produced means of production.

➢ Education, skills, training, etc. are known as human capital and materials, machines, factories and various equipment are known as physical capital.
- Capital is a stock while income is a flow.
- Capital formation means a sustained increase in the stock of real capital assets. It is also known as investment.
- An entrepreneur is a factor which mobilizes other factors of production, combines them in right proportion and initiates the process of production bearing the risk and uncertainties associated with production.
- Innovations means new or improved methods of production, new or improved sources of materials or new or improved forms of organization, technology, markets etc.

➢ *Laws of production*

A production function can be defined as the function showing the

relationship between various inputs and outputs. It shows the maximum quantities of a commodity that can be produced from a given quantity of inputs under the given conditions of technology.

✓ When average product rises as a result of an increase or the quantity of variable input, marginal product is more than the average product

✓ when average product is maximum, marginal product is equal to average product. In other words, the marginal product curve cuts the average product curve at its maximum.

✓ when average product falls as a result of a decrease in the quantity of variable input, marginal product is less than the average product.

➢ *The point of inflexion is the point from where marginal product starts falling.*

- In law of diminishing return at least one factor of production is constant, and the other factor is variable.

- In laws of returns all the factors of production are variable.

- The stage of diminishing returns is known as the stage of economic rationality. This is because a producer would not stop producing output in the stage of increasing returns and he would not produce output in the stage of negative returns.

- The internal economies of production are the advantages of the large-scale production which accrue to an individual firm when its own scale of production expands. These economies bring about a decrease in its average cost of production.

- The external economies of production are the advantages of the large-scale production which accrue to an individual firm when the industry in which the firms operates expands. They also bring about a decrease in its average cost of production.

- The concept of internal economies and diseconomies is very useful to understand the nature long run average cost curve of the firm.

THEORY OF PRODUCTION AND COST

UNIT 2: THEORY OF COST

INTRODUCTION

In this chapter we will learn different short-run and long-run cost concepts.

A) COST CONCEPTS

Accounting Costs (Explicit cost) and Economic costs:

An entrepreneur must pay price for the factors of production which he employs for production. He thus pays wages to workers employed, prices for the raw materials, fuel and power used, rent for the building he hires and interest on the money borrowed for doing business. All these are included in his cost of production and are termed as accounting costs. Accounting costs relate to those costs which involve cash payments by the entrepreneur of the firm.

However, it generally happens that an entrepreneur invests a certain amount of capital in his business. If the capital invested by the entrepreneur in his business had been invested elsewhere, it would have earned a certain amount of interest or dividend. Accounting costs do not include these costs. These costs form part of economic cost. Thus, economic costs include:

- The normal return on money capital invested by the entrepreneur himself in his own business.
- The wages or salary not paid to the entrepreneur but could have been earned if the services had been sold somewhere else.

Outlay costs and Opportunity costs:

Outlay costs involve actual expenditure of funds on, say, wages, materials, rent, interest, etc. Opportunity cost, on the other hand, is concerned with the cost of the next best alternative opportunity which was foregone in order to pursue a certain action. It is the cost of the missed opportunity and involves a comparison between the policy that was chosen and the policy that was rejected. For example, the opportunity cost of using capital is the interest that it can earn in the next best use with equal risk.

Direct or Traceable costs and Indirect or Non-Traceable costs:

Direct costs are those which have direct relationship with a component of operation like manufacturing a product, organizing a process or an activity etc. Direct costs are costs that are readily identified and are traceable to a particular product, operation or plant. Even overhead costs can be direct as to a department; manufacturing costs can be direct to a product line, sales territory, customer class etc.

Indirect costs are those which are not easily and identifiable in relation to a plant, product, process or department. Therefore, such costs are not visibly traceable to specific goods, services, operations, etc.

Incremental costs and Sunk costs:
Incremental costs are related to the concept of marginal cost. Incremental cost refers to the additional cost incurred by a firm as result of a business decision. For example, incremental costs will have to be incurred by a firm when it decides to change its product line, replace worn out machinery, buy a new production facility or acquire a new set of clients.
Sunk costs refer to those costs which are already incurred once and for all and cannot be recovered. They are based on past commitments and cannot be revised or reversed if the firm wishes to do so.

Historical costs and Replacement costs:
Historical cost refers to the cost incurred in the past on the acquisition of a productive asset such as machinery, building etc. Replacement cost is the money expenditure that must be incurred for replacing an old asset.

Private costs and Social costs:
Private costs are costs actually incurred or provided for by firms and are either explicit or implicit. Social cost, on the other hand, refers to the total cost borne by the society on account of a business activity and includes private cost and external cost. It includes the cost of resources for which the firm is not required to pay price such as atmosphere, rivers, roadways etc. and the cost in terms of dis-utility created such as air, water and environment pollution.

Fixed and Variable costs:
Fixed or constant costs are not a function of output; they do not vary with output up to a certain level of activity. These costs require a fixed expenditure of funds irrespective of the level of output, e.g., rent, property taxes, interest on loans and depreciation when taken as a function of time and not of output. However, these costs vary with the size of the plant and are a function of capacity. Therefore, fixed costs do not vary with the volume of output within a capacity level.

Variable costs are costs that are a function of output in the production period. For example, wages of casual labourer's and cost of raw materials and cost of all other inputs that vary with output are variable costs. Variable costs vary directly and sometimes proportionately with output. Over certain ranges of production, they may vary less or more than proportionately depending on the utilization of fixed facilities and resources during the production process.

B) COST FUNCTION

Cost function refers to the mathematical relation between cost of a product and the various determinants of costs. In a cost function, the dependent variable is unit cost or total cost and the independent variables are the price of a factor, the size of the output or any other relevant phenomenon which has a bearing on cost, such as technology, level of capacity utilization, efficiency and time period under consideration.

Total, fixed and variable costs:

There are some factors which can be easily adjusted with changes in the level of output. A firm can readily employ more workers if it must increase output. Similarly, it can purchase more raw materials if it must expand production. Such factors which can be easily varied with a change in the level of output are called variable factors.

On the other hand, there are some factors such as building, capital equipment, or top management team which cannot be so easily varied. It requires comparatively longer time to make changes in them. It takes time to install new machinery. Similarly, it takes time to build a new factory. Such factors which cannot be readily varied and require a longer period to adjust are called fixed factors. Corresponding to the distinction between variable and fixed factors, we distinguish between short run and long run periods of time. Short run is a period in which output can be increased or decreased by changing only the number of variable factors such as, labour, raw materials, etc. In other words, all factors become variable in the long run.

Completely Fixed Cost
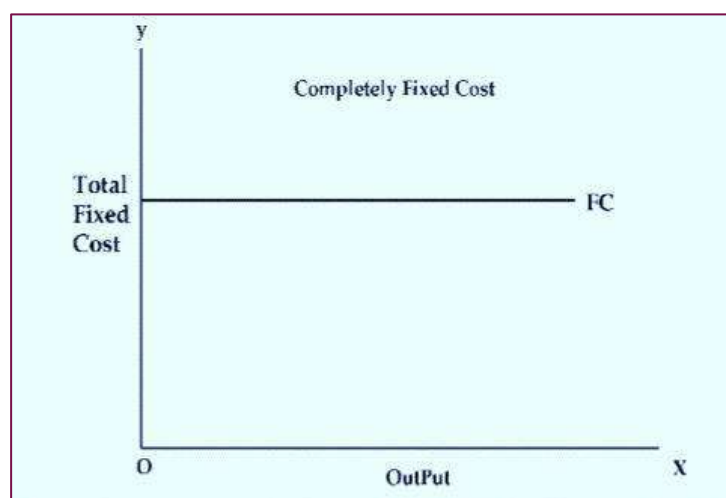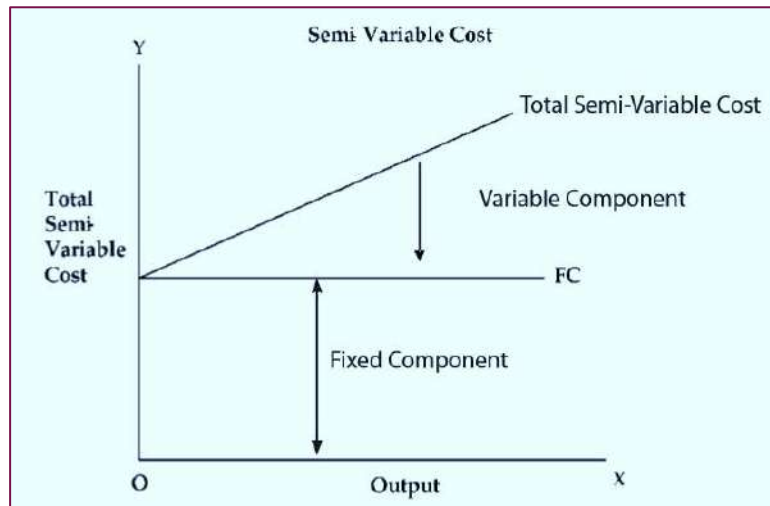
Completely Variable Cost
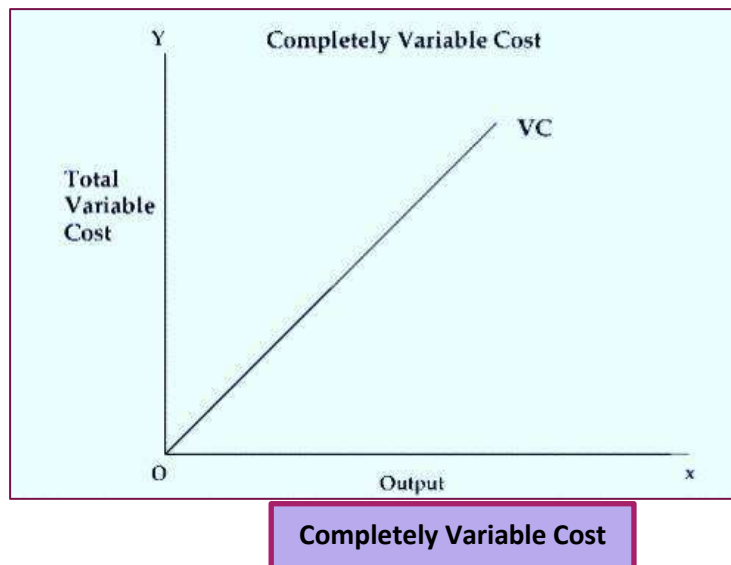
Thus, we find that fixed costs are those costs which are independent of output, i.e., they do not change with changes in output. These costs are a "fixed amount" which are incurred by a firm in the short run, whether the output is small or large. Even if the firm closes for some time in the short run but remains in business, these costs must be borne by it.

Fixed costs include such charges as contractual rent, insurance fee, maintenance cost, property taxes, interest on capital employed, managers' salary, watchman's wages etc. The fixed cost curve is presented in figure.

Variable costs, on the other hand are those costs which change with changes in output. These costs include payments such as wages of casual labour employed, prices of raw material, fuel and power used, transportation cost etc. If a firm shuts down for a short period, it may not use the variable factors of production and therefore, will not therefore incur any variable cost.

Figure above presents completely variable cost curve drawn under the assumption that variable costs change linearly with changes in output.

Semi Variable Cost

There are some costs which are neither perfectly variable, nor absolutely fixed in relation to the changes   in the size of output. They are known as semi-variable costs.

Example: Electricity charges include both a fixed charge and a charge based on consumption.

There are some costs which may increase in a stair-step fashion, i.e., they remain fixed over certain range of output; but suddenly jump to a new higher level when output goes beyond a given limit.
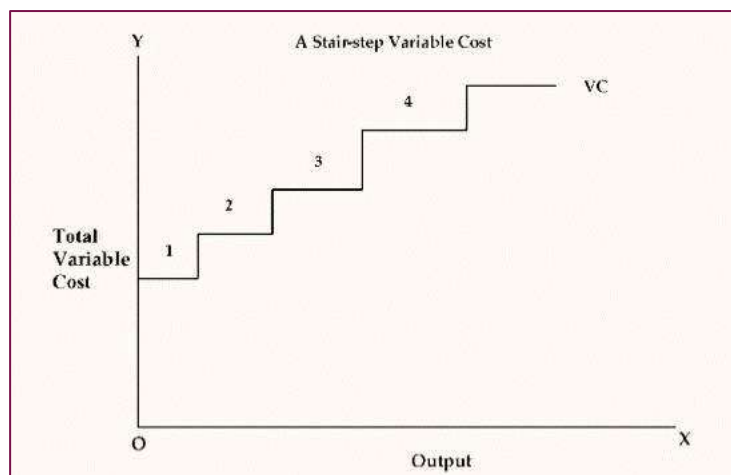
Stair-step Variable Cost
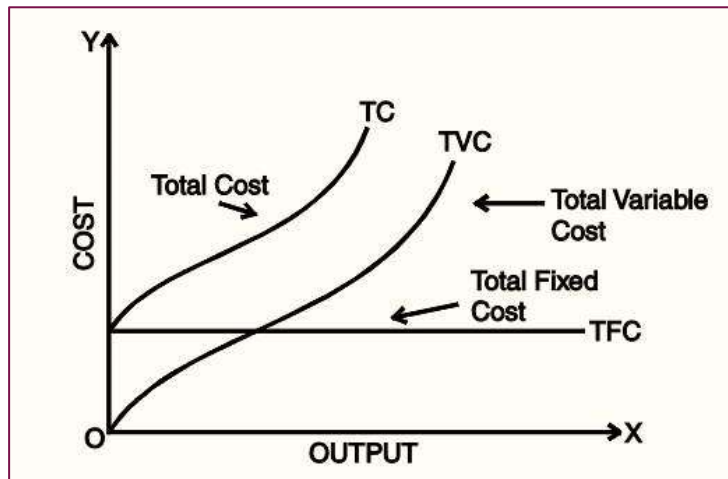
Short run Total cost curves

The total cost of a business is defined as the actual cost that must be incurred for producing a given quantity of output. The short run total cost is composed of two major elements namely, total fixed cost and total variable cost. Symbolically TC = TFC + TVC. We may represent total cost, total variable cost and fixed cost diagrammatically.

In the diagram above, the total fixed cost curve (TFC) is a horizontal straight line parallel to X-axis as TFC remains fixed for the whole range of output. This curve starts from a point on the Y-axis meaning thereby that fixed costs will be incurred even if the output is zero. On the other hand, the total variable cost curve rises upward indicating that as output increases, total variable cost increases. The total variable cost curve starts from the origin because variable costs are zero when the output is zero. It should be noted that the total variable cost initially increases at a decreasing rate and then at an increasing rate with increases in output. The total cost curve has been obtained by adding vertically the total fixed cost curve and the total variable cost curve. Its position reflects the amount of fixed costs and its slope reflects variable costs.

Short run average costs:-

Average fixed cost (AFC) :

AFC is obtained by dividing the total fixed cost by the number of units of output produced. i.e. AFC = $\frac{TFC}{Q}$ where Q is the number of units produced.

Thus, average fixed cost is the fixed cost per unit of output. For example, if a firm is producing with a total fixed cost of Rs.2,000/-. When output is 100 units, the average fixed cost will be Rs.20. And now, if the output increases to 200 units, average fixed cost will be Rs.10. Therefore, if we draw an average fixed cost curve, it will slope downwards throughout its length but

will not touch the X-axis as AFC cannot be zero. (Convex and rectangular hyperbola)

Average variable cost (AVC):

Average variable cost is found out by dividing the total variable cost by the number of units of output produced, i.e. AVC = $\dfrac{TVC}{Q}$ where Q is the number of units produced.

But beyond the normal capacity output, average variable cost will rise steeply because of the operation of diminishing returns (the concepts of increasing returns and diminishing returns have already been discussed earlier). If we draw an average variable cost curve, it will first fall, then reach a minimum and then rise.
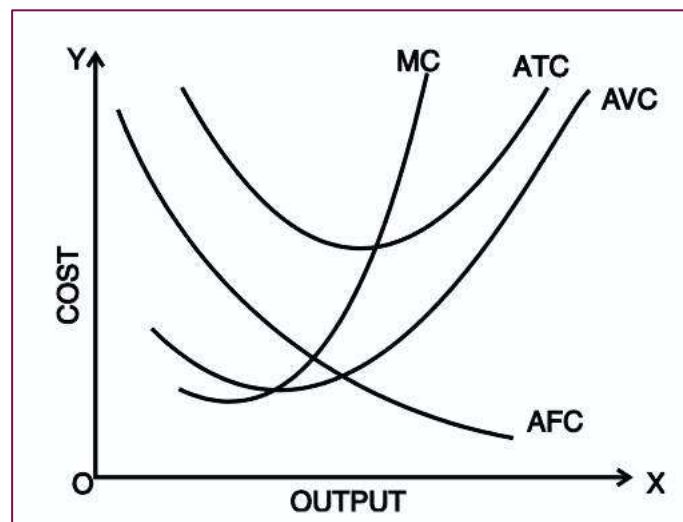
Short run Average and Marginal Cost

Average total cost (ATC):

Average total cost is the sum of average variable cost and average fixed cost. i.e., ATC = AFC + AVC. It is the total cost divided by the number of units produced, i.e. ATC = TC/Q. The behavior of average total cost curve depends upon the behavior of the average variable cost curve and the average fixed cost curve. In the beginning, both AVC and AFC curves fall, therefore, the ATC curve will also fall sharply. When AVC curve begins to rise, but AFC curve still falls steeply, ATC curve continues to fall. This is because, during this stage, the fall in AFC curve is greater than the rise in the AVC curve, but as output increases further, there is a sharp rise in AVC which more than o sets the fall in AFC. Therefore, ATC curve first falls, reaches its minimum and then rises. Thus, the average total cost curve is a "U" shaped curve.

Marginal cost:

Marginal cost is the addition made to the total cost by the production of an additional unit of output. In other words, it is the total cost of producing t units instead of t-1 units, where it is any given number. It is to be noted that marginal cost is independent of fixed cost. This is because fixed costs do not change with output.

It is only the variable costs which change with a change in the level of output in the short run. Therefore, marginal cost is in fact due to the changes in variable costs. Symbolically marginal cost may be written as:

$$MC = \frac{\Delta TC}{\Delta Q}$$

DTC = Change in Total cost

DQ = Change in Output

or

$$MC_n = TC_n - TC_{n-1}$$

Marginal cost curve falls as output increases in the beginning. It starts rising after a certain level of output. This happens because of the influence of the law of variable proportions. The MC curve becomes minimum corresponding to the point of inflexion on the total cost curve. The fact that marginal product rises first, reaches a maximum and then declines ensures that the marginal cost curve of a firm declines first, reaches its minimum and then rises. In other words, marginal cost curve of a firm is "U" shaped. The behavior of these costs has also been shown in Table.

Various Costs							
Units of output	Total fixed cost	Total variable cost	Total cost	Average fixed cost	Average variable cost	Average total cost	Marginal cost
0	1000	0	1000	-	-	-	-
1	1000	50	1050	1000.00	50.00	1050.00	50
2	1000	90	1090	500.00	45.00	545.00	40
3	1000	140	1140	333.33	46.67	380.00	50
4	1000	196	1196	250.00	49.00	299.00	56
5	1000	255	1255	200.00	51.00	251.00	59
6	1000	325	1325	166.67	54.17	220.83	70
7	1000	400	1400	142.86	57.14	200.00	75
8	1000	480	1480	125.00	60.00	185.00	80
9	1000	570	1570	111.11	63.33	174.44	90
10	1000	670	1670	100.00	67.00	167.00	100
11	1000	780	1780	90.91	70.91	161.82	110
12	1000	1080	2080	83.33	90.00	173.33	300

The above table shows that,

Fixed costs do not change with increase in output up to a given level. Average fixed cost, therefore, comes down with every increase in output.
Variable costs increase, but not necessarily in the same proportion as the increase in output. In the above case, average variable cost comes down gradually till 4 units are produced. Thereafter it starts increasing.
Marginal cost is the additional cost divided by the additional units produced. This also comes down first and then starts increasing.

Relationship between Average Cost and Marginal Cost:

| |
|---|
| When average cost falls as a result of an increase in output, marginal cost is less than average cost. |
| When average cost rises as a result of an increase in output, marginal cost is more than average cost. |
| When average cost is minimum, marginal cost is equal to the average cost. In other words, marginal cost curve cuts average cost curve at its minimum point (i.e. optimum point). |

LONG RUN AVERAGE COST CURVE

As stated above, long run is a period during which the firm can vary all its inputs; unlike short run in which some inputs are fixed and others are variable. In other words, whereas in the short run the firm is tied with a given plant, in the long run the firm can build any size or scale of plant and therefore, can move from one plant to another; it can acquire a big plant if it wants to increase its output and a small plant if it wants to reduce its output. It should be kept in mind that once the firm has built a scale of plant, its production takes place in the short run. Long run cost of production is the least possible cost of producing any given level of output when all individual factors are variable. A long run cost curve depicts the functional relationship between output and the long run cost of production.

In order to understand how the long run average cost curve is derived, we consider three short run average cost curves as shown in the Figure. These short run average cost curves (SACs) are also called 'plant curves. In the short run, the firm can be operating on any short run average cost curve, given the size of the plant. Suppose that there are the only three plants which are technically possible. Given the size of the plant, the firm will be increasing or decreasing its output by changing the amount of the variable inputs. But in the long run, the firm chooses among the three possible sizes of plants as

depicted by short run average curves (SAC1, SAC2, and SAC3). In the long run, the firm will examine with which size of plant or on which short run average cost curve it should operate to produce a given level of output, so that the total cost is minimum. It will be seen from the diagram that up to OB amount of output, the firm will operate on the SAC1, though it could also operate on SAC2. Up to OB amount of output, the production on SAC1 results in lower cost than on SAC2.

Short run Average Cost Curves

Long run Average Cost Curves
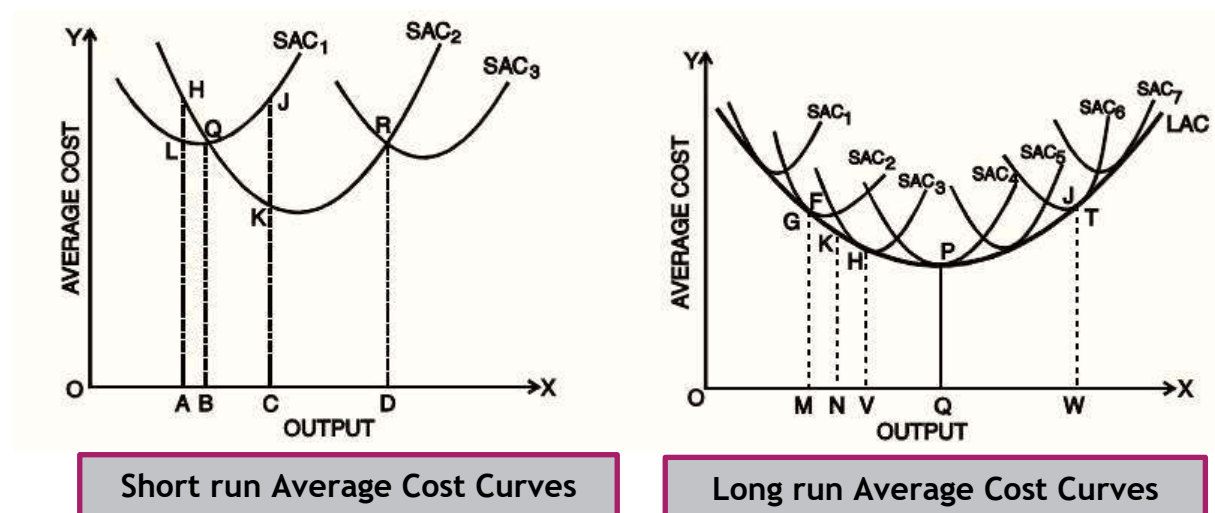
Suppose, the firm has a choice so that a plant can be varied by infinitely small gradations so that there are infinite number of plants corresponding to which there are numerous average cost curves. In such a case the long run average cost curve will be a smooth curve enveloping all these short run average cost curves.

As shown in Figure, the long run average cost curve is so drawn as to be tangent to each of the short run average cost curves. Every point on the long run average cost curve will be a tangency point with some short run AC curve. If a firm desire to produce any output, it then builds a corresponding plant and operates on the corresponding short run average cost curve. As shown in the figure, for producing OM, the corresponding point on the LAC curve is G and the short run average cost curve SAC2 is tangent to the long run AC at this point. Thus, if a firm desire to produce output OM, the firm will construct a plant corresponding to SAC2 and will operate on this curve at point G. For

example, to produce OM, the firm will be using SAC_2 only; if it uses SAC_3, it will result in higher unit cost than SAC_2. But, larger output OV can be produced most economically with a larger plant represented by the SAC_3.

The long run average cost curve is often called as 'planning curve' because a firm plans to produce any output in the long run by choosing a plant on the long run average cost curve corresponding to the given output. The long run average cost curve helps the firm in the choice of the size of the plant for producing a specific output at the least possible cost.

Explanation of the "U" shape of the long run average cost curve: As has been seen in the diagram LAC curve is a "U" shaped curve. This shape of LAC curve has nothing to do with the U shaped SAC which is due to variable factor ratio because in the long run all factors are variable. U shaped LAC arises due to returns to scale. As discussed earlier, when the firm expands, returns to scale increase. After a range of constant returns to scale, the returns to scale finally decrease. On the same line, the LAC curve first declines and then finally rises. Increasing returns to scale cause fall in the long run average cost and decreasing returns to scale result in rise in long run average cost. Falling long run average cost and increasing economies of scale result from internal and external economies of scale and rising long run average cost and diminishing returns to scale result from internal and external diseconomies of scale. (Economies of scale will be discussed in the next section.)

The above figure depicting long-run average cost curve is arrived at based on traditional economic analysis. It is flattened 'U' shaped. This type of curve could exist only when the state of technology remains constant. The L-shaped long run cost curve implies that initially when the output is increased due to increase in the size of plant (and associated variable factors), per unit cost falls rapidly due to economies of scale. The long-run average cost curve does not increase even after a sufficiently large scale of output as it continues to enjoy economies of scale.

ECONOMIES AND DISECONOMIES OF SCALE

The Scale of Production

Production on a large scale is a very important feature of modern industrial society. Therefore, the size of business undertakings has greatly increased. Large-scale production offers certain advantages which help in reducing the cost of production. Economies arising out of large-scale production can be grouped into two categories; viz., internal economies and external economies. Internal economies are those economies of production which accrue to the firm when it expands its output, so that the cost of production would come down considerably and place the firm in a better position to compete in the market effectively. Internal economies arise purely due to endogenous factors relating to efficiency of the entrepreneur or his managerial talents or the type of machinery used, or the marketing strategy adopted.

Internal Economies and Diseconomies:

We saw that returns to scale increase in the initial stages and after remaining constant for a while, they decrease. The question arises as to why we get increasing returns to scale due to which cost falls and why after a certain point we get decreasing returns to scale due to which cost rises. The answer is that initially a rm enjoys internal economies of scale and beyond a certain limit it suffers from internal diseconomies of scale. Internal economies and diseconomies are of the following main kinds:

(i) Technical economies and diseconomies:

Large-scale production is associated with economies of superior techniques. As the firm increases its scale of operations, it becomes possible to use more specialized and efficient form of all factors, specially, capital equipment and machinery. For producing higher levels of output, there is generally available a more efficient machinery which when employed to produce a large output yields a lower cost per unit of output.

(ii) Managerial economies and diseconomies:

Managerial economies refer to reduction in managerial costs. When output increases, specialization and division of labour can be applied to management. It becomes possible to divide its management into specialized departments under specialized personnel, such as production manager, sales manager, finance manager etc. If the scale of production increases further, each department can be further sub-divided; for e.g. sales can be split into separate sections such as for advertising, exports and customer service. Thus, specialization of management enables large firms to achieve reduction in managerial costs.

(iii) Commercial economies and diseconomies:

Production of large volumes of goods requires large amount of materials and components. A large firm can place bulk orders for materials and components and enjoy lower prices for them. Economies can also be achieved in marketing of the product. If the sales staff is not being worked to full capacity, additional output can be sold at little or no extra cost. Moreover, large firms can benefit from economies of advertising. As the scale of production increases, advertising costs per unit of output fall. In addition, a large firm may also be able to sell its by- products or process it profitably; something which might be unprofitable for a small rm. There are also economies associated with transport and storage.

(iv) Financial economies and diseconomies:

A large firm has advantages over small firms in matters related to procurement of finance for its business activities. It can, for instance, offer better security to bankers and avail of advances with greater ease. On account of the goodwill enjoyed by large firms, investors have greater con defense in them and therefore would prefer their shares which can be readily sold on the stock exchange. A large firm can thus raise capital at lower cost.

(v) Risk bearing economies and diseconomies:

It is said that a large business with diverse and multi- production capability is in a better position to withstand economic ups and downs, and therefore, enjoys economies of risk bearing. However, risk may increase if diversification, instead of giving a cover to economic disturbances, increases these.

External Economies and Diseconomies:

Internal economies are economies enjoyed by a firm on account of use of greater degree of division of labour and specialized machinery at higher levels of output. They are internal in the sense that they accrue to the firm due to its own e orts. Besides internal economies, there are external economies which are very important for a firm. External economies and diseconomies are those economies and diseconomies which accrue to firms as a result of expansion in the output of the whole industry and they are not dependent on the output level of individual rms. These are available to one or more of the firms in the form of:

1. Cheaper raw materials and capital equipment:

The expansion of an industry may result in exploration of new and cheaper sources of raw material, machinery and other types of capital equipment's. Expansion of an industry results in greater demand for various kinds of materials and capital equipment's required by it.

2. Technological external economies:

When the whole industry expands, it may result in the discovery of new technical knowledge and in accordance with that, the use of improved and better machinery and processes than before. This will change the technical co-efficient of production and enhance productivity of firms in the industry and reduce their cost of production.

3. Development of skilled labour:

When an industry expands in an area, the laborer's in that area are well accustomed with the different productive processes and tend to learn a good deal from experience. As a result, with the growth of an industry in an area, a pool of trained labour is developed which has a favorable effect on the level of productivity and cost of the firms in that industry.

4. Growth of ancillary industries:

Expansion of industry encourages the growth of several ancillary industries which specialize in the production and supply of raw materials, tools, machinery, components, repair services etc. Input prices go down in a competitive market and the benefits of it accrue to all firms in the form of reduction in cost of production.

5. Better transportation and marketing facilities:

The expansion of an industry resulting from entry of new firms may make possible the development of an efficient transportation and marketing network. These will greatly reduce the cost of production of the firms by avoiding the need for establishing and running these services by themselves. Similarly, communication systems may get modernized resulting in better and speedy information dissemination.

6. Economies of Information:

Necessary information regarding technology, labour, prices and products may be easily and cheaply made available to the firms on account of publication of information booklets and bulletins by industry associations or by governments in public interest.

However, external economies may cease if there are certain disadvantages which may neutralize the advantages of expansion of an industry. We call them external diseconomies. External diseconomies are disadvantages that originate outside the firm, especially in the input markets.

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However, external economies may cease if there are certain disadvantages which may neutralize the advantages of expansion of an industry. We call them external diseconomies. External diseconomies are disadvantages that originate outside the firm, especially in the input markets. An example of external diseconomies is rise in various factor prices.

REMEMBER THE FOLLOWING POINTS

- Opportunity cost is also known as imputed cost, transfer earning, alternative cost, or implicit cost.
- Implicit costs are the opportunity cost of the factors of the production belonging to the entre primeur invested in his own business.
- Explicit costs are also known as accounting cost, out of pocket expenses, actual cost, historical cost, money cost etc.
- Economic costs are the sum total of explicit costs and implicit costs.
- Accounting profit = Sales income - explicit costs.
- Economic profit = Sales income - economic costs.
- Cost of production = prime costs + Production overheads.
- Total costs = production cost + costs related to other functions.
- Prime costs = direct materials + direct wages + direct expenses.
- Cost related to other functions = general administration expenses.
- Production overhead = Indirect materials + Indirect wages + Indirect expenses.
- Cost of sales = Total production cost as given in point 8 + cost of sales promotion.
- Cost function is the relationship between cost and output and depends upon its production function and prices of factors of production.
- The average fixed cost curve is a continuously downward sloping curve. It is a rectangular hyperbole.
- The average variable cost curve, the average cost curve, and marginal cost curve all are **U shaped.**
- The U shape of the average cost curve is due to the operation of law of

variable proportions.

- Diminishing returns means increasing marginal cost.
- In the short run at least one of the factors of production is fixed while in the long run all the factors of production are variable.
- Diminishing returns occur when units of a variable input are added to a fixed input and marginal product falls.
- The marginal cost curve cuts the average cost curve at its lowest point.
- The marginal cost = Change in the total cost divided by the change in the output
- When all the inputs are proportionately increased and if :
  a) output increases proportionately then it is a case of constant returns to scale.
  b) output increases more than proportionately then it is a case of increasing returns to scale.
  c) output increases less than proportionately then it is a case of decreasing returns to scale.
- The long run average cost curve is also U shaped, but its U shape is less explicit than that of the short run average cost curve.
- When the returns are increasing the long run average cost curve moves downwards and when returns are decreasing the long run average cost curve moves upwards.
- The long run average cost curve covers all the short run average cost curves and therefore it is also known as envelope curve. However, it touches the minimum point of any one of the short run average cost curves it covers. At this point the firm produces output at the long run minimum average costs. Thus, out of so many short run average cost curves there is only one short run average cost curve where the long run average cost is the minimum.
- The output which is produced at the short run minimum cost is known as short run optimum output.
- The output which is produced at the long run minimum cost is known as long run optimum output.
- A short average cost curve cannot cut the long run average cost curve.
- The long run average cost curve is also known as planning curve because the firm can decide the size of the plant to be adopted for producing a given amount of output.

MEANING AND TYPES OF MARKETS

UNIT-1: Meaning and Types of Markets

INTRODUCTION

MEANING OF MARKET:

In a market some are buyers and some are sellers. The market fixes the price at which those who want something can obtain it from those who have it to sell.

Note that it is only exchange value which is significant here. Considerations such as 'sentimental value' mean little in the market economy.
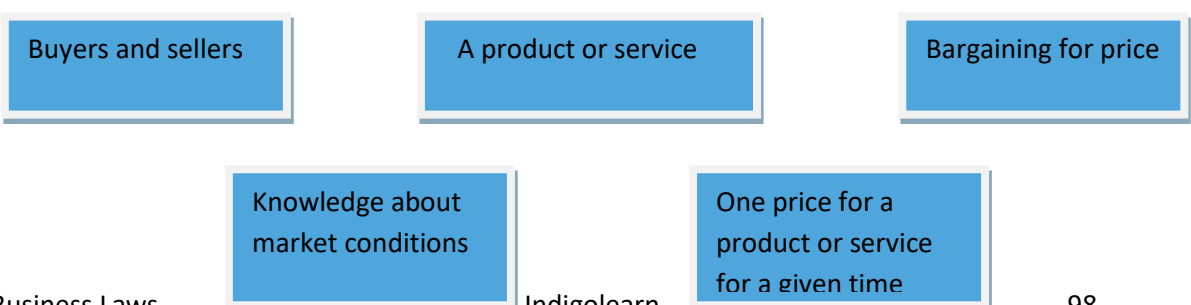
For most of the articles definite price by the shopkeeper. But buyers will still influence this price. If it is too high, the market will not be cleared; if it is low, the shopkeeper's stock will run out. However, in studying the market economy it is essential to understand how price is determined. Since price determination is done in the market, we can define the market simply as

"all those buyers and sellers of a good or service who influence the price".

Market does not mean a physical place: A market need not be formal or held in a particular place. Second-hand cars are often bought and sold through newspaper advertisements. Second-hand furniture may be disposed of by a card in the local shop window.

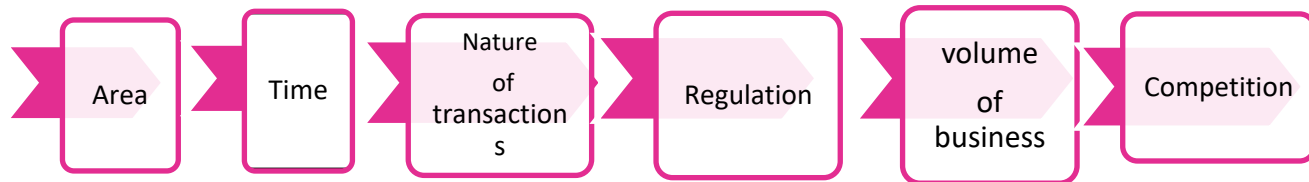**Thus, a market can be defined as an organisation which promotes contact between buyers and sellers of a product either directly or indirectly and thereby make a transaction between them possible.**

Elements of a market

Buyers and sellers	A product or service	Bargaining for price

Knowledge about market conditions	One price for a product or service for a given time

Classification of Markets :

Various bases are adopted for the purposes of classification

| Area | Time | Nature of transactions | Regulation | volume of business | Competition |

On the basis of Area

On the basis of geographical area covered, markets are classified into

Local Markets	Generally, markets for perishable like butter, eggs, milk, vegetables, etc., will have local markets. Like wise, bulky articles like bricks, sand, stones, etc., will have local markets as the transport of these over a long distance will be uneconomic.
Regional Markets	Semi-durable goods command a regional market.
National Markets	• In this market durable goods and industrial items exist.
International markets	• The precious commodities like gold, silver etc. are traded in the international market.

Busin   Indigolearn

On the basis of Time

Alfred Marshall conceived the 'Time' elements in marketing and this is classified into

Very short period market	Short-period Market	Long-period Market	Very long-period or secular period
It refers to that type of market in which the commodities are perishable and supply of commodities cannot be changed at all.	Short period is a period which is slightly longer than the very short period.	It implies that the time available is adequate for altering the supplies by altering even the fixed factors of production.	It is one when secular movements are recorded in certain factors over a period of time.
The market supply is almost fixed and it cannot be increased or decreased, because skilled labour, capital and organization are fixed.	In this period, the supply of output will be increased by increasing the employment of variable factors to the given fixed capital equipments.	The supply of commodities may be increased by installing a new plant or machinery and the output adjustments can be made accordingly.	The period is very long.

The factors include the size of the population, capital supply, supply of raw materials etc. |
| Commodities like vegetables, flower, fish, eggs, fruits, milk, etc., which are perishable and the supply of which cannot be changed in the very short period come under this category. | | | |

Very short period market:

➢The market that exits only **a few hours**

➢**Fish**, **vegetable**, **milk** market etc are the examples.

Fish market

Vegetable market

Short Period Market:

➢It lasts **a few months**.

➢**Stationary goods**, **saree** market etc. are the examples.

Library

Car Market

Computer Market

Long Period market:

Its exits for **several Years**

Motor car, **Watch**, **Computer** market etc. are the examples

Very long period market

It lasts for **15-20 years**

Airplane, Heavy machinery etc. are the examples
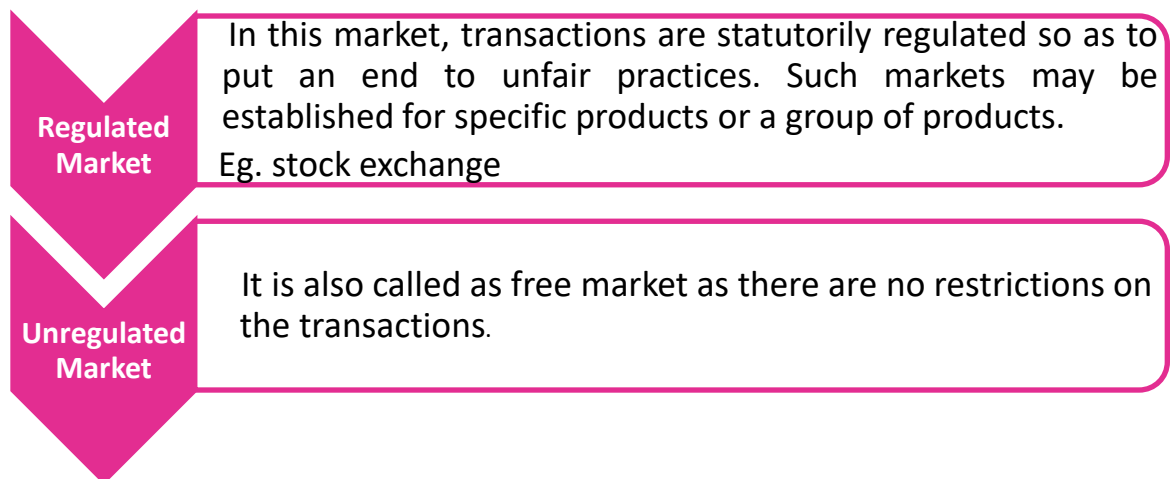
Aeroplane market

Heavy machinery market

In the basis of Nature of Transactions

Spot Market

Spot transactions or spot markets refer to those markets where goods are physically transacted on the spot.

Future Market

• It is related to those transactions which involve contracts of the future date.

On the basis of Regulation

Regulated Market	In this market, transactions are statutorily regulated so as to put an end to unfair practices. Such markets may be established for specific products or a group of products. Eg. stock exchange
Unregulated Market	It is also called as free market as there are no restrictions on the transactions.

Wholesale Market

The wholesale market comes into existence when the commodities are bought and sold in bulk or large quantities.

Retail Market

- When the commodities are sold in the small quantities, it is called retail market. This is the market for ultimate consumers.
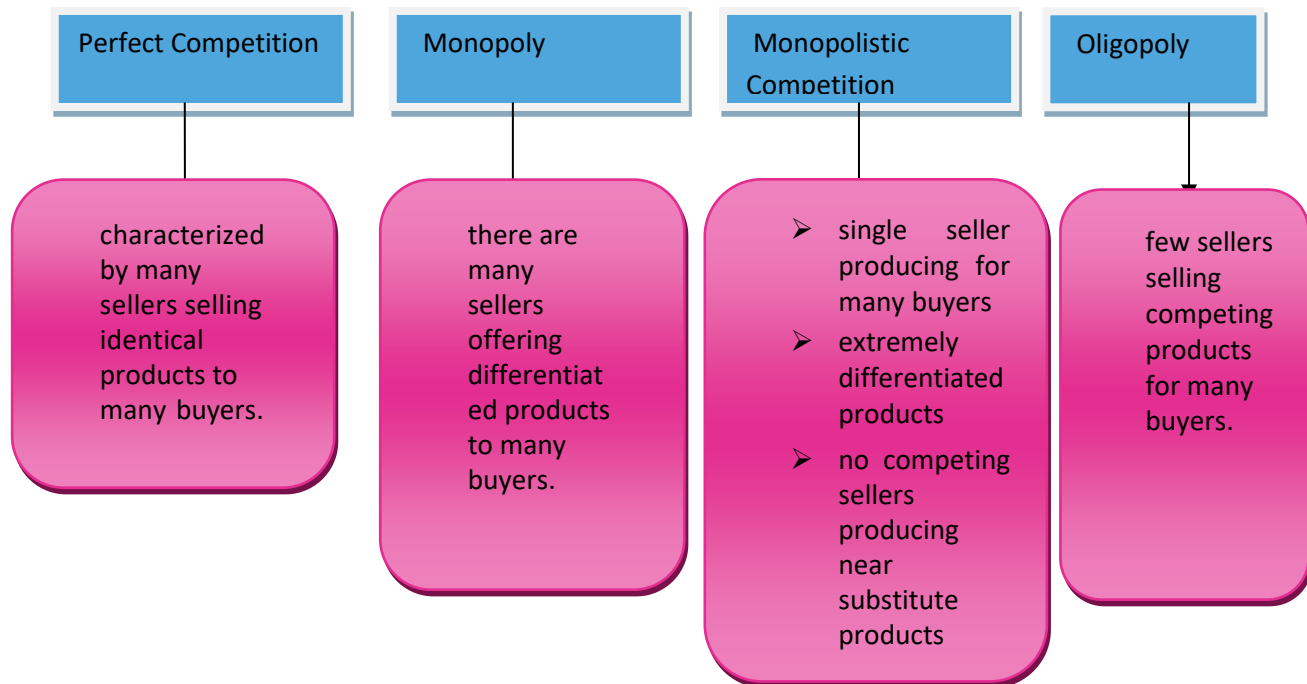

On the basis of Competitions

Based on the type of competition markets are classified into

TYPES OF MARKET STRUCTURES

Perfect Competition	Monopoly	Monopolistic Competition	Oligopoly
characterized by many sellers selling identical products to many buyers.	there are many sellers offering differentiated products to many buyers.	➢ single seller producing for many buyers ➢ extremely differentiated products ➢ no competing sellers producing near substitute products	few sellers selling competing products for many buyers.

Distinguishing features of major types of markets

Market Types				
Assumption	Pure Competition	Monopolistic Competition	Oligopoly	Monopoly
Number of sellers	many	Many	A few	one
Product differentiation	None	Slight	none to substantial	extreme
Price elasticity of demand of a firm	Infinite	Large	small	small
Degree of control over price	none	some	some	Very considerable

CONCEPTS Of TOTAL REVENUE, AVERAGE REVENUE AND MARGINAL REVENUE

Total Revenue

We may state that total revenue refers to the amount of money which a firm realises by selling certain units of a commodity.

example: If a firm sells 100 units for **Rs.** 10 each. what is the amount which it realizes? It realises **Rs.** 1,000 (100 x 10), which is nothing but total revenue for the firm.

Symbolically, total revenue may be expressed as   TR = P x Q

where, TR = Total Revenue

P = Price

Q = Quantity of

commodity sold.

Average Revenue

Average revenue is the revenue earned per unit of output. It is nothing but price of one unit of output.

Symbolically $TR = AR \; x \; Q$

where,   AR = Average Revenue

TR = Total Revenue

Q = Quantity of commodity Sold

$$TR = P \; x \; Q$$

AR = P, i.e. Average Revenue is Price.

For example, a firm realises total revenue of Rs. 1,000 by the sale of 100 units It implies that the average revenue is Rs. 10 or the firm has sold the commodity at a price of Rs. 10 per unit.

Marginal Revenue

Marginal revenue (MR) is the change in total revenue resulting from the sale of an additional unit of the commodity. We can say that MR is the rate of change in total revenue resulting from the sale of an additional unit.

For example, if a seller realises **Rs.** 1,000 after selling 100 units and **Rs.** 1200 after selling 101 units, we say marginal revenue is **Rs.** 200.

Symbolically,

$$MR = \frac{\Delta TR}{\Delta Q}$$

MR = Marginal Revenue

TR = Total Revenue

Q = Quantity Sold

Δ = Change

For one-unit change in output

MR =TR_n - TR_{n-1}

Where TR is the total revenue when sales are at the rate of n units per period. TR_{n-1} is the total revenue when sales are at the rate of n - 1 units per period.

Marginal Revenue, Average Revenue and Elasticity of Demand it is to be noted that marginal revenue, average revenue and price elasticity of demand are uniquely related to one another through the formula :

$$MR = AR \; X \frac{e-1}{e}$$

Where e **=** price elasticity of demand

The following points are important:

Thus, if e = 1, MR = 0

and if e >1,   MR will be positive
and if e <1,   MR will he negative

In a straight-line demand curve, we know that the elasticity of the middle point is equal to one. It follows that marginal revenue corresponding to the middle point of the demand curve (or AR curve) will be zero.

BEHAVIOURAL PRINCIPLES

Principle 1

❖ A firm should not produce at all if total revenue from its product does not equal or exceed its total variable cost. (This principle will apply in the short run)

❖ It is a matter of common sense that a firm should produce only if it will do better by producing than by not producing. The firm always has the option of not producing anything.

❖ If it does not produce anything, it will have an operating loss equal to its fixed cost. Unless actual production adds as much to revenue as it adds to cost, it will increase the loss of the firm.

Principle 2

❖ It will be profitable for the firm to expand output whenever marginal revenue is greater than marginal cost, and to keep on expanding output until marginal revenue equals marginal cost.

❖ Not only marginal cost should be equal to marginal revenue, its curve should cut marginal revenue curve from below.

❖ The above principle states that if any unit of production adds more to revenue than to cost, that unit will increase profits; if it adds more to cost than to revenue, it will decrease profits.

❖ Profits will be maximum at the point where additional revenue from a unit equals to its additional cost.

Principle 3

However, in the long run total revenue of the firm should be more than its total cost + normal profit.

❑

- In Economics market is an organisation which promotes a contact between buyers and sellers of a commodity either directly or indirectly and makes transactions between them possible.
- Market structures are of four types

  - Perfect Competition
  - Mono
    polis
    tic
    Com
    petit
    ion
  - Mono
    poly
  - Oligopoly

- In economics average revenue is known as price.
- Marginal revenue is the change in the total revenue divided by the change in the total sale.
- When marginal revenue is zero total revenue is maximum.
- Following relationships are important:

  - $MR = AR \, X \frac{e-1}{e}$

  - Thus, if e = 1, MR = 0.

  - and if e >1,   MR. will be positive
  - and if e <1,   MR will he negative

- In a straight-line demand curve, we know that the elasticity of the middle point is equal to one. It follows that marginal revenue corresponding to the middle point of the demand curve (or AR curve) will be zero.
- In the short run a firm should continue producing output if price is greater than average variable cost and marginal cost.
- A firm should not produce at all if total revenue from its output does not equal or is more than total variable cost.
- In the long run the firm should produce output only when total sales revenue is more than or equal to the total cost plus normal profit.

MEANING AND TYPES OF MARKETS

UNIT-2: Determination of Prices

INTRODUCTION

The topic explains how equilibrium price and quantity are determined in a free market economy with the help of demand and supply. This is explained through tables and diagrams. The topic also delves into the effects of change in demand and supply on equilibrium price and quantity.

The determination of equilibrium price

In an open competitive market, it is the interaction between demand and supply that tends to determine price and quantity. This can be shown by bringing together demand and supply. We have the following schedule which will explain the process of price determination.

SCHEDULE:

Determination of Price

S No	Price (Rs.)	Demand Units	supply Units
1	1	60	5
2	2	35	35
3	3	20	45
4	4	15	55
5	5	10	65

When we plot the above points on a single graph with price on Y-axis and quantity demanded and supplied on X-axis, we get a figure like this:
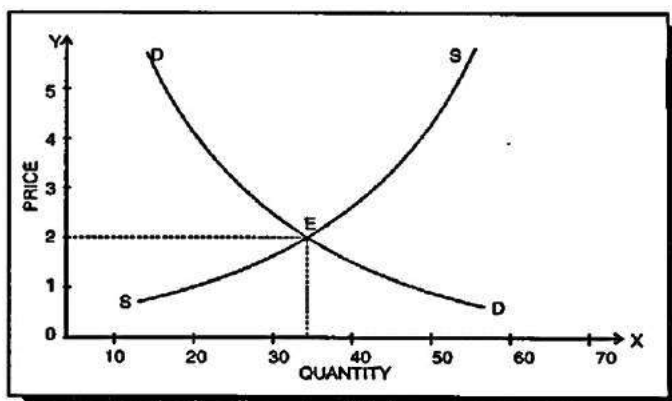
GRAPH:

Fig.1 : Determination of Equilibrium Price

Let us see what the market price of the article would be.

> It cannot be Re. 1, for at that price there would be 60 units in demand, but only 5 units on offer.
> Competition among buyers would force the price up. It cannot Re. 5, for at that price there would be 65 units on offer for sale but only 10 units in demand.
> Competition among sellers would force the price down. At Re. 2, demand and supply are equal (35 units) and the market price will tend to settle at this figure.

This is equilibrium price and quantity i.e. the point at which price and output will tend to stay. Once this point is reached, we will have stable equilibrium. It should be noted that it would be stable only if other things were equal or constant.

CHANGES IN DEMAND AND SUPPLY

The equilibrium price is the one which is *determined by the forces of demand and supply in an open market. It is the price at which the market demand and the market supply are equal.*

However, the price would change when there are changes in market demand and market supply. Such changes are of the following four types:

(i)   An increase (shift to the right) in demand;

(ii) A decrease (shift to the left) in demand;

(iii) An increase (shift to the right) in supply;

(iv) A decrease (shift to the left) in supply.

We will consider each of the above changes one by one.

(i)   An increase in demand:
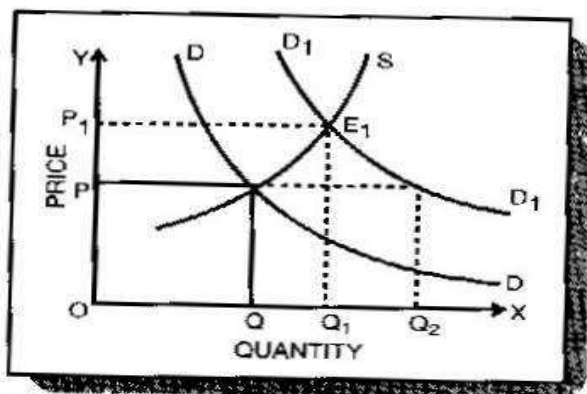
Here, DD = Original demand curve

SS = Original supply curve
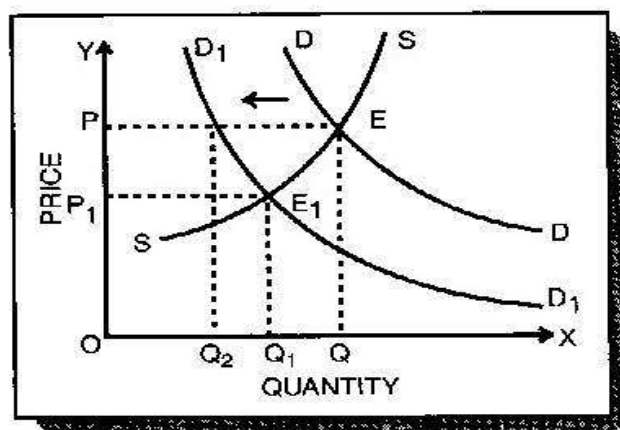
OP = Equilibrium price

OQ = Equilibrium quantity

demand and supply

Now suppose the money income of the consumer increases, the demand curve will shift to D1 D1 and the supply curve will remain same. We will see that on the new demand curve D_1D_1 at OP price demand increases to OQ_2 while supply remains the same i.e. OQ. Since supply is short of the demand, price will go up to OP_1. With the higher price supply will also shoot up and new equilibrium between the demand and supply will be reached. At this equilibrium point, OP_1 is price and OQ1 is the quantity which is demanded and supplied.

Increase in Demand, causing an increase in equilibrium price and quantity.

Thus, we see that as a result of an increase in demand, there is an increase in equilibrium price, and also in the quantity sold and purchased.

(ii) Decrease in Demand: Opposite will happen when the demand falls as a result of a fall in income, while the supply remaining the same. The demand curve will shift to the left and become D1D1 while the supply curve remaining as it is. With the new demand curve D1D1 at original price OP. OQ, is demanded and OQ is supplied. As the supply exceeds demand, price will go down and quantity demanded will go up. A new equilibrium price OP1 will he settled in the market where demand OQ1 will be equal to supply OQ1.
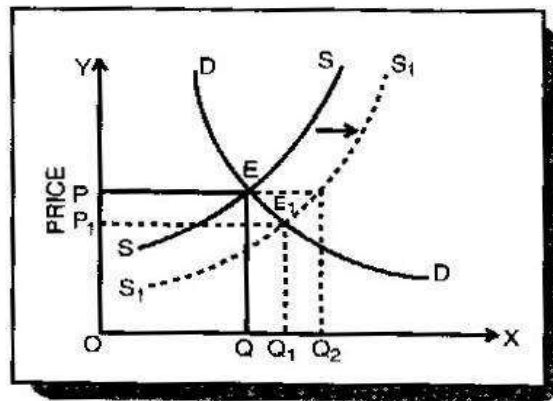

Decrease in Demand resulting in a decrease in price and quantity demanded
Thus with a decrease in demand, there is a decrease in the equilibrium price as well as a decrease in quantity demanded and supplied.

(iii) Increase in Supply : Let us now assume that demand does not change, but there is an increase in supply say because of improved technology.

Increase in supply, resulting in decrease in equilibrium price and increase in quantity supplied

The supply curve SS will shift to the right and become S1S1. At the original equilibrium price OP, OQ is demanded and OQ2 is supplied (with new supply curve). Since the supply is greater than the demand, the equilibrium price will go down and become OP1 at which OQ1 will be demanded and supplied..

Thus, as a result of an increase in supply the equilibrium price will go down and the quantity demanded as well as supply will go up.

(iv) Decrease in Supply : If because of some reason, there is a decrease in the supply we will find that equilibrium price will go up but the amount sold and purchased will go down as shown in figure :
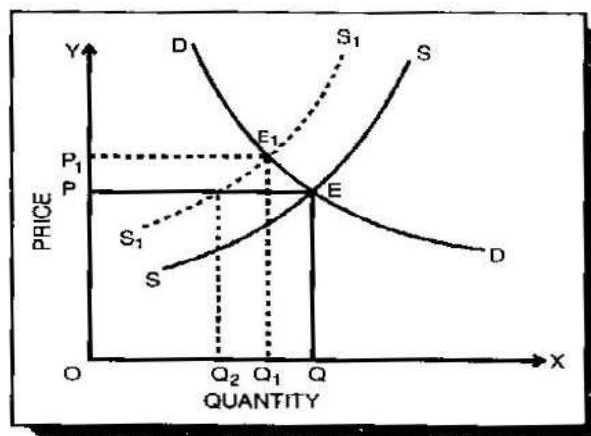

Decrease in supply causing an increase in the equilibrium price and a fall in quantity demanded Thus a decrease in supply increases the price and decreases the quantity demanded and supplied.

SIMULTANEOUS CHANGES IN DEMAND AND SUPPLY

Till now, we were considering the effect of change either in demand or in supply on the equilibrium price and the quantity sold and purchased. There may be cases in which both the supply and demand change at the same time. During a war, for example, shortage of goods will often decrease supply while full employment causes high total wage payments which increase demand.

We may discuss the changes in both demand and supply with the help of diagrams as follows
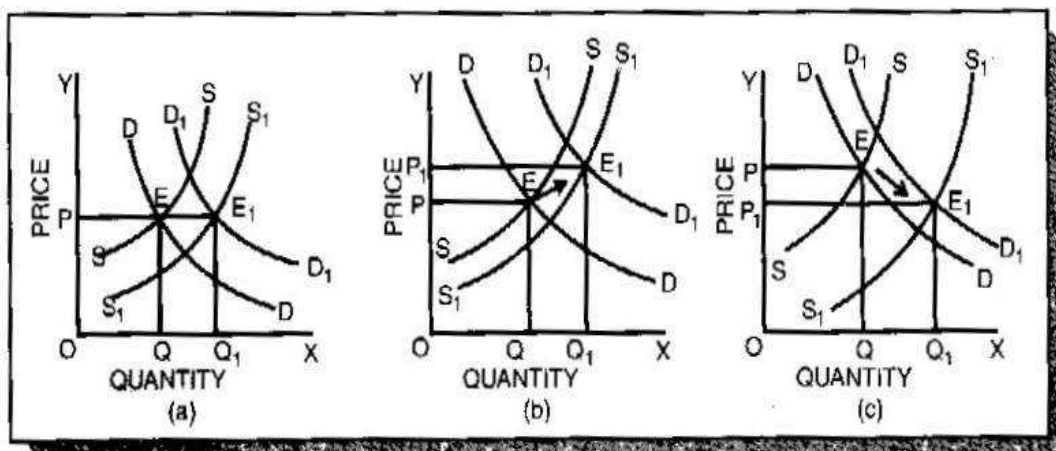
Simultaneous Change in Demand and Supply

Fig. shows simultaneous change in demand and supply and its effects on the equilibrium price, in the figure, the original demand curve DD and the supply curve SS meet at E, at which OP is the equilibrium price OQ is the quantity bought and sold.

Fig. (a), shows that increase in demand is equal to increase in supply. The new demand curve D1D1 and S1S1 meet at E1. The new equilibrium price is equal to the old equilibrium price (OP)

Fig. (b), shows that increase in demand is more than increase in supply. Hence, the new equilibrium price OP1 is higher than the old equilibrium price OP. Opposite will happen i.e. the equilibrium price will go down if there is a simultaneous fall in the demand and supply and the fail in demand is more than the fall in supply,

Fig. (c), shows that supply increases in a greater proportion than demand. The new equilibrium price will be less than the original equilibrium price. Conversely, if the fall in the supply is more than proportionate to the fall in the demand, the equilibrium price will go up.

REMEMBER THE FOLLOWING POINTS

➢ Price of a commodity is determined by the forces of demand and supply
➢ Equilibrium Price is the one at which the quantity demanded and quantity supplied become equal.
➢ The market price is the price existing in the market at a given point of time.

- Normal price is the one around which the market price rotates.

- Other things remaining the same,

  - When demand for a commodity increases, there is an increase in equilibrium price and also increase in quantity demanded and supplied.
  - When demand for a commodity decreases, there is a decrease in equilibrium price and decrease in quantity demanded and supplied.
  - When supply of a commodity increases, there is a decrease in equilibrium price and increase in quantity demanded and supplied.
  - When supply of a commodity decreases, there is an increase in equilibrium price and a decrease in quantity demanded and supplied.

- If increase in demand is more than increase in supply the price and quantity sold both will increase.

- If increase in supply is more than increase in demand the price will fall and quantity demanded and sold both will increase.

- If decrease in demand is more than decrease in supply the price and quantity sold both will decrease.

- If decrease in supply is more than decrease in demand the price will go up and quantity demanded and sold both will decrease.

MEANING AND TYPES OF MARKETS

UNIT-2: Price-Output Determination under different Market Forms

INTRODUCTION

The unit explores determination of price and output under different markets. It discusses short run and long run equilibrium of a firm under perfect competition, monopoly and monopolistic competition. It also explains the concepts of industry equilibrium, price discrimination and various types of oligopoly markets and their characteristics.

Perfect competition

"Perfect competition is a theoretical market situation."

The perfect competition, as it is described in the text books of economic theory is never found in the real life. Now let us examine the conditions of the perfect competition to have an idea about its nature.

Characteristics of Perfect Competition : The characteristics of the perfect competition can be described under :

- Large Number Of Buyers And Sellers
- Product is Homogeneous
- Perfect Knowledge
- Free Entry
- No Transport Cost

● Agricultural markets ● Free software ● Street food vendors

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These features together are never found to be existing at a given point of time and therefore perfect competition is regarded as a myth.
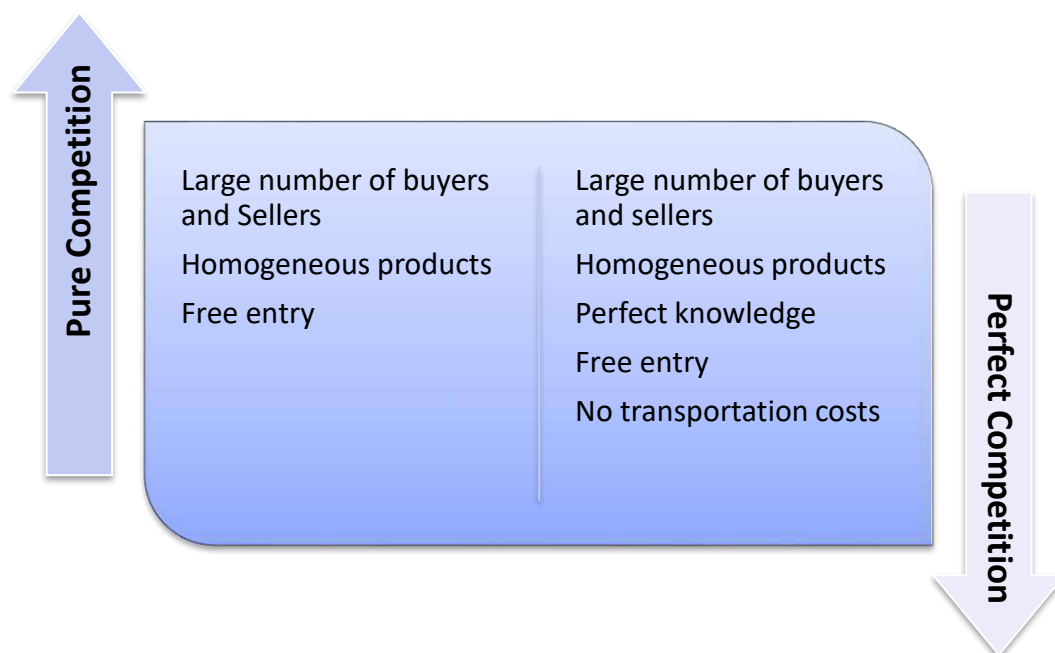
Large Number Of Buyers And Sellers

- The number of the buyers and sellers is very large.
- Each individual consumer purchases an infinitesimally small quantity of the total purchase and individual seller sells an infinitesimally small part of the total sale.
- Neither the consumers nor the sellers individually have any control over the supply of the product.
- An individual buyer or the seller does not have any control over the price of the product.

Product is Homogeneous

- The product sold in the perfectly competitive market is homogeneous.
- They are **absolutely similar** from the viewpoint of their quality, appearance, taste, colour, packing etc. When we talk about homogeneity, we also assume that the **services** given with the products are also the same
- there must not be any psychological differences in the products imagined by the buyers.
- **In the terminology of economics, the firms in a perfect market, produce perfect substitutes for the product of each other. Homogeneity is a very broad term. Prof. Chamberlin has remarked that the perfect competition not only assumes standardized products but also standardized producers.**

Perfect Knowledge

- The buyers and the sellers have complete knowledge of the price of the product, of the quality of the product etc.
- It is not possible for the sellers to undertake the advertisements to convince the buyers that their products are superior to other products in the market and charge higher price for their products. For this reason price differences are not found.

Free Entry

- Free entry also means free exit.
- If the existing firms are earning supernormal profits, then new firms can also enter the industry *without any restriction* and if the existing firms are incurring losses and they are willing to leave the industry, they can do so without any hindrance.
- No legal or any other hinderance for firms to enter or exit from industry

No Transport Cost

- As the transportation costs are absent the possibility of the price differences due to the transport cost differences is ruled out.
- Here price becomes the given factor. All the sellers have to accept the price as given
- Firms here are PRICE TAKERS rather than PRICE MAKERS or price setters.

Difference between pure competition and perfect competition

Pure Competition	Perfect Competition
Large number of buyers and Sellers	Large number of buyers and sellers
Homogeneous products	Homogeneous products
Free entry	Perfect knowledge
	Free entry
	No transportation costs

Thus, the perfect competition includes the pure competition but pure competition does not include the perfect competition. Perfect competition is broader than pure competition.

Average revenue and the marginal revenue curves under the perfect competition :

In a perfectly competitive market, *the forces of the demand and supply determine the price of the commodity*. The equilibrium price will be determined when the quantity demanded and supplied become equal as shown in the following schedule :

SCHEDULE:

Price	Qty. demanded (Million Units)	Qty. supplied (Million Units)
10	10	50
8	20	40
6	30	30
4	40	20
2	50	10

Here, we can see that the equilibrium price is **Rs.** 6/- and the equilibrium quantity demanded and supplied is 30 million. They become equal at this price. The process of the price determination is explained in the following diagram.
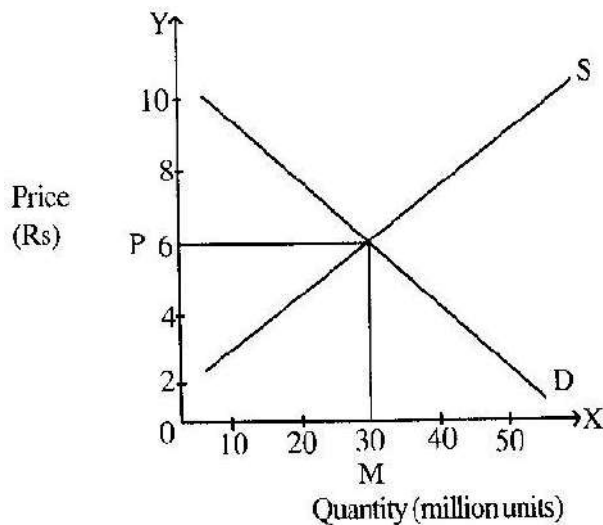
Here,

OP = Equilibrium price.

OM = equilibrium quantity

demanded and supplied

ANALYSIS

The price OP becomes a given factor in a perfectly competitive market. The firms have to accept the price as given.

An individual buyer may purchase more or less or may not purchase any quantity depending upon his choice or A seller may sell more or less or may refuse to sell any quantity at this price but if at all, they want to purchase or sell, the price will have to be accepted as a given one.

So, the firms under perfect competition are known as price taker and not price setter or price maker.

The firm <u>cannot</u> charge a price higher than this because in that case it will lose its market to other producers and <u>will not</u> charge a price lower than this because as it can sell any amount of output at this price there is no rationality in reducing price to get a larger share of the market.

Average and Marginal Revenue Curves

Any individual firm, under the perfect competition, can sell any amount of output at this price. The price remains the same. Therefore, the price or average revenue of the firm is constant, the marginal revenue is also constant and equal to the average revenue, as explained here :

SCHEDULE:

Price	Sales	TR (Rs.)	AR (Price)(Rs.)	MR (Rs.)
6	1	6	6	6
6	2	12	6	6
6	3	18	6	6
6	4	24	6	6
6	5	30	6	6

Because AR and MR are given and constant and also the same, the ARC and MRC of the firm coincide as shown in the diagram and a line parallel to the horizontal X-axis. Such a demand curve is perfectly elastic meaning that *the firm can sell any quantity at the given price but the demand for its product will become zero at a slightly higher price.*

DIAGRAM :
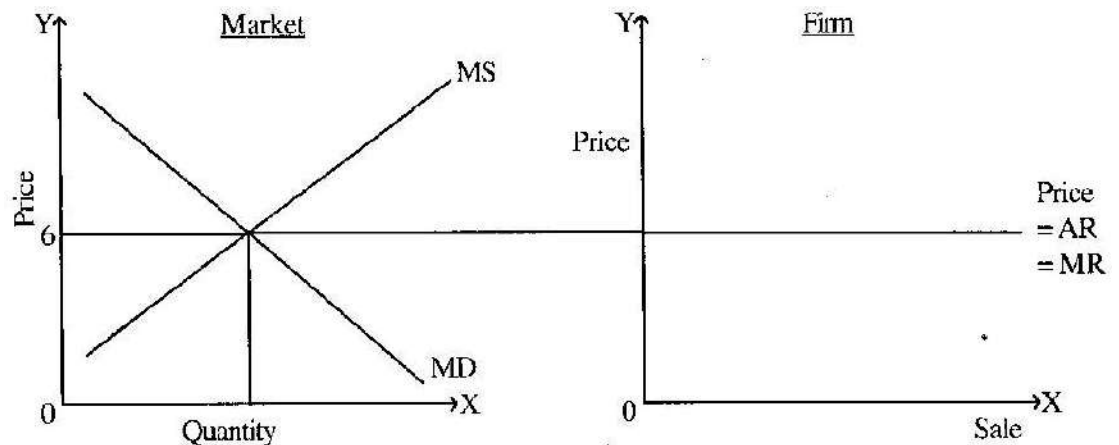
In the language of economics the Average and the Marginal revenue curves under perfect market are perfectly elastic.

Conditions of the equilibrium(OR necessity and sufficiency) of a firm in a perfectly competitive market.

Under the perfect competition, there are two conditions of the equilibrium of a firm.

> The marginal revenue and the marginal cost must become equal in the equilibrium position. (MR = MC)

> The MC curve must cut the MR curve from the below.

These two conditions of the equilibrium can be explained with the help of a diagram.

DIAGRAM :
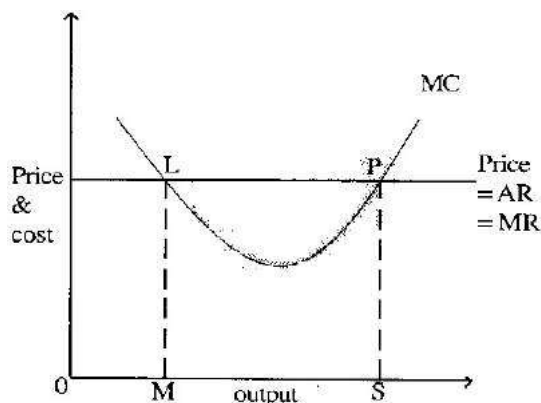
This being a perfect competition, the AR curve of the firm itself is the MR curve(P=AR=MR) and both of them are the same. Therefore, the average and the marginal revenue curves are a parallel horizontal line to the x-axis.

Now, we can see that the

➢ MCC of the firm cuts the MRC at two points L and P. At both the points, MR and MC of the firm are equal (MR=MC).

➢ However, at the L point, where firm is producing the OM output, the firm is not in equilibrium.

➢ In any market the equilibrium condition is that any expansion of the output should not be profitable. It must result into loss. OM output is not the equilibrium output.

➢ The firm can increase its profit by carrying on output up to OS. At this point, again the MR of the firm is just equal to the marginal cost (MR=MC) of the firm.

➢ The firm will be earning the maximum profit at the OS output.

➢ Beyond OS, MR < MC, and so there would be loss for the firm if it tries to increase output. Here the term loss means a profit loss. i.e. a loss in profits.

Thus, under the perfect competition, there are two conditions of equilibrium namely.

1. The MR and MC must become equal. This is necessary condition of the equilibrium of the firm.
2. The MCC of the firm must cut the MRC from below. This second condition is the sufficient condition of the firm's equilibrium.

Supply curve of the firm in a competitive market

One interesting thing about the MC curve of the firm in a perfectly competitive industry is that it depicts the firm's supply curve. This can be shown with the help of the following example.
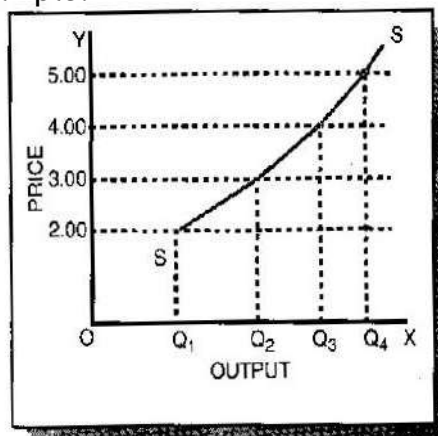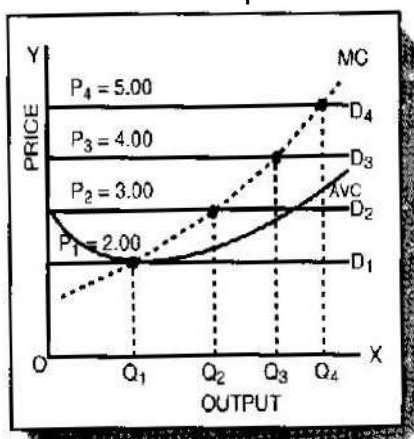
Marginal cost and supply curves for a price-taking firm

Suppose market price of a product is **Rs.** 2 corresponding to it we have D1 as demand curve for the firm. At price **Rs.** 2, the firm supplies Q1 output because here MR=MC.

If the market price is **Rs.** 3, the corresponding demand curve is D2. At **Rs.** 3, the quantity supplied is Q2. Similarly, we have demand curves at D3 and D4 and corresponding supplies are Q3 and Q4.

The firm's marginal cost curve which gives the marginal cost corresponding to each level of output is nothing but firm's supply curve that gives the quantity the firm will supply at each price.

➢ For prices bellow AVC, the firm will supply zero units because here the firm is unable to meet even its variable cost.

➢ For prices above AVC the firm will, equate price and marginal cost.

➢ When price is just meeting the AVC, the firm will, equate price and marginal cost and no profits or losses.

Thus in perfect competition the firm's marginal cost curve above AVC has the identical shape of the firm's supply curve.

The short run and long run equilibrium of firm and industry under perfect competition

➢ The equilibrium of firm is that position where the firm's output becomes constant.
➢ It is that position where the marginal revenue of the firm = marginal cost.
➢ In this position the firm may be making supernormal profits, normal profits or may be incurring losses depending upon the price and cost conditions faced by the firm.
➢ The equilibrium of industry is that position where the number of the firms in the industry becomes constant.
➢ The inside firms are not willing to leave the industry and the outside firms are not willing to enter into the industry.
➢ This would happen in the long run where all the firms in the industry are earning only normal profits as their price = their average cost.

Supernormal Profits

There is a difference between normal profits and supernormal profits. Supernormal profit in additional to normal rate of profit, the firm earns additional profits.

NORMAL PROFIT ⤙ • Average Revenue = Average Total Cost

SUPERNORMAL PROFIT ⤙ • Average Revenue > Average Total Cost

The following example will make the above concepts clear:

Example:

Suppose the cost of producing 1,000 units of a product by a firm is **Rs.** 15,000. The entrepreneur has invested **Rs.** 50,000 in the business and normal rate of return in the market is 10 per cent. Thus the entrepreneur must earn at least **Rs.** 5,000 (10% of 50,000) in this particular business. This **Rs.** 5,000 will be shown as a part of cost. Thus total cost of production is **Rs.** 20,000 (**Rs.** 15,000+ 5,000). If the firm is selling the product at **Rs.** 20, it is earning normal profits because AR (**Rs.** 20) is equal to ATC (**Rs.** 20). If the firm is selling the product at **Rs.** 22 per unit, its AR **Rs.** 22 is greater than its ATC (**Rs.** 20) and it is earning supernormal profit at the rate of **Rs.** 2 per unit.

DIAGRAM
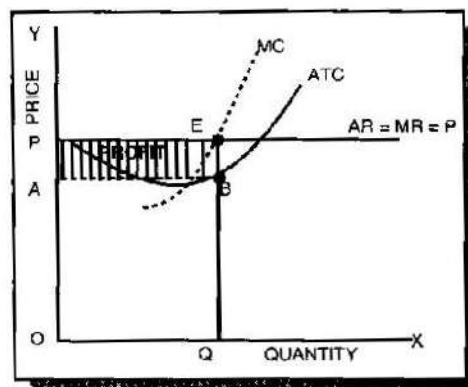
Short-run equilibrium : Supernormal profit of a competitive firm

ANALYSIS

The Figure shows how a firm can earn supernormal profit in the short run.

▪ The diagram shows that in order to attain equilibrium, the firm tries to equate marginal revenue with marginal cost.

▪ MR (marginal revenue) curve is a horizontal line and MC (marginal cost) curve is a U-shaped curve which cuts the MR curve at E.

- At E, MR = MC. and OQ is the equilibrium output for the firm.
- The firm's profit per unit is EB (AR-ATC). AR is EQ and ATC is BQ. Total profits are ABEP.

Normal profits

When the firm just meets its average total cost, it earns normal profits. Here AR = ATC. It is to be noted that here a normal percentage of profits for the entrepreneur for his managerial services is already included in the cost of production.
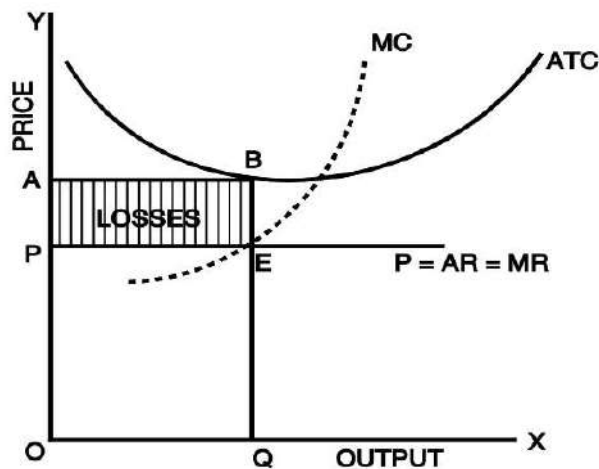
DIAGRAM
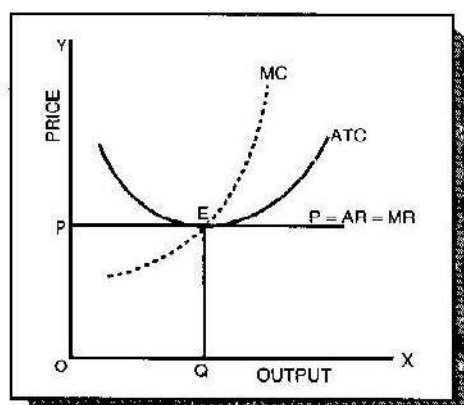
Short-run equilibrium of a competitive firm : Normal profits

ANALYSIS

The figure shows that MR = MC at E. The equilibrium output is OQ. Since here AR=ATC or OP = EQ, the firm is just earning normal profits.

LOSSES

- The firm can be in an equilibrium position and still can make losses.
- This is the position when the firm is minimizing losses.
- When the firm is able to meet its variable cost and a part of fixed cost it will try to continue production in the short run if it recovers a part of the fixed costs, it will be beneficial for it to continue production because fixed costs (such as costs towards plant and machinery, building etc.) are already incurred and in such a case it will be able to recover a part of them.
- But if a firm is unable to meet its average variable cost also, it will be better for it to shut down.

The following diagram explains this point and it also explains the shutdown point of the firm.

ANALYSIS

➢ In the above diagram E is the equilibrium point, OQ is the equilibrium output, OP is the price, OA is the average cost. Therefore, ABOQ is the total cost, OQEP is the total revenue and APEB is the minimum losses.

➢ However, here the firm keeps on producing output because though the price does not cover the average total cost, it covers the marginal cost.

Long-Run Equilibrium of the Firm

➢ In the long run firms are in equilibrium when they have adjusted their plant so as to produce at the minimum point of their long run AC curve, which is tangent to the demand curve defined by the market price.

➢ In the long run the firms will be earning just normal profits, which are included in the AC.

➢ If they are making supernormal profits in the short run, new firms will be attracted in the industry; this will lead to a fall in price (a down ward shift in the individual demand curves) and an upward shift of the cost curves due to the increase of the prices of factors as the industry expands.

➢ These changes will continue until the AC is tangent to the demand curve. If the firms make losses in the short run they will leave the industry in the long run.

➢ This will raise the price and costs may fall as the industry contracts, until the remaining firms in the industry cover their total costs inclusive of the normal rate of profit.

➤ The Fig., shows how firms adjust to their long run equilibrium position.

(a)   (b)
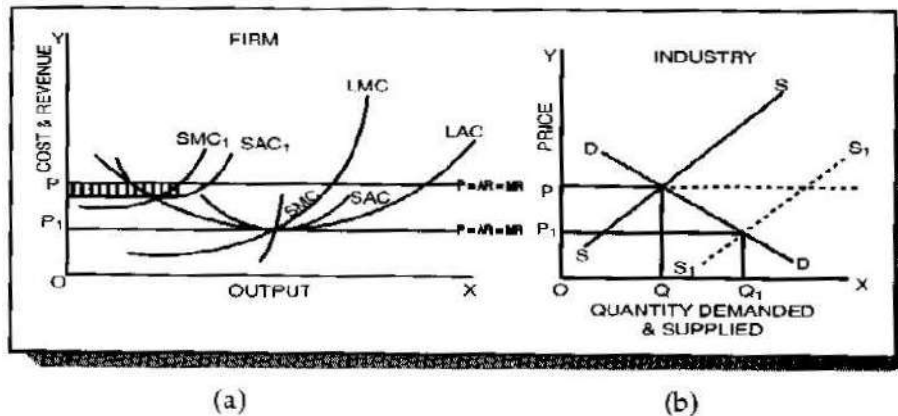
Long-run equilibrium of the firm in a perfectly competitive market

- If the price is OP, the firm is making super-normal profits working with the plant whose cost is denoted by SAC1, It will, therefore, have an incentive to build new capacity and it will move along its SAC.
- At the same time new firms will be entering the industry attracted by the excess profits.
- As the quantity supplied in the market increases, the supply curve in the market will shift to the right and price will fall until it reaches the level of OP in figure given here at which the firms and the industry are in long run equilibrium.
- Here AR = MR = MC = AC = LMC = LAC= Price

Long run equilibrium of the industry

The industry is said to have attained long run equilibrium when

» all the firms are earning normal profits only i.e. all the firms are in equilibrium

» there is no further entry or exit from the market,
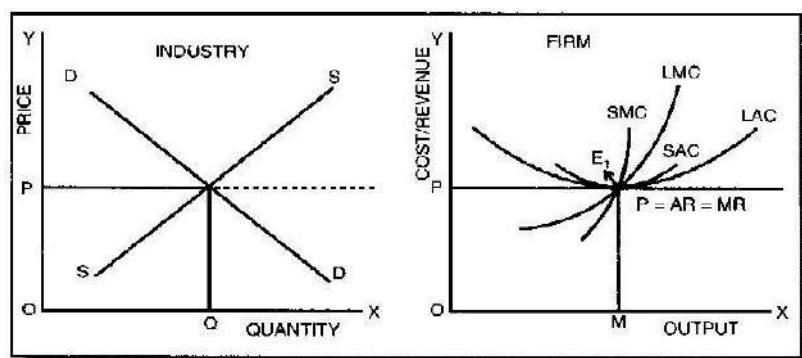
Long-run equilibrium of a competitive industry and its firms

Here

    a) The output is produced at the minimum possible cost,

    b) Consumers pay the minimum possible price which just covers the marginal cost i.e. MC = AR.

    c) Plants are used at full capacity in the long run, so that there is no wastage of resources i.e. MC = AC

    d) Firms earn only normal profits i.e. AC = AR.

    e) Firms maximize profits (i.e. MC=MR) but the level of profits will be just normal. In other words, in the long run, AR = MR = P = LMC = LAC = SMC = SAC and there will be optimum allocation of resources.

Monopoly

Mono means one and polien means seller. Monopoly is a market where there is only one producer or seller of a product or a service. The other important condition is that there should not be close substitutes for this product or service.

Features of Monopoly Market

- Single seller of the product
- Restrictions to Entry
- No close-substitutes
- No advertisement cost
- Monopoly power

|	
Single seller of the product	• There is only one producer or seller of a commodity or a service
Restrictions to Entry	• there is a blocked entry • The reason may be : the size of market, amount of finance required, nature of technological knowledge, government policy or some natural factor giving rise to a monopoly control on supply.
No close-substitutes	• There are no close substitutes for the monopoly product or service and therefore, the demand for it is inelastic.
No advertisement cost	The monopolist being the only producer in the market does not have to advertise his product.
Monopoly power	• The monopoly firm when in equilibrium is able to charge a price higher than the marginal cost. • The difference between the price and the marginal cost shows the monopoly power of the firm. • If he wants to charge a higher price, he has to contend with a smaller sale. • Thus, out of the two factors price and output only one factor is under the control of the monopolist.

Monopolist's Revenue Curves
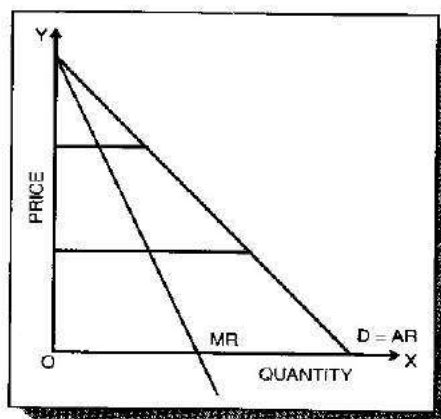
A monopolist's demand curve and marginal revenue curve

Both of them are downward sloping curves and the marginal is exactly halfway between the average revenue curve and the Y axis

Equilibrium of monopoly firm in a short and a long run

In monopoly during a short period the firm may be making monopoly profits or may be incurring losses. However, in the long run it always earns super normal monopoly profits.

Profit maximisation in a monopolised market: Equilibrium of the monopoly firm :

- Firms in a perfectly competitive market are price-takers so that they are only concerned about determination of output.
- But this is not the case with a monopolist. A monopolist has to determine not only output but also price for his product. Since, he faces a downward sloping demand curve, if he raises price of his product his sales will go down.
- On the other hand, if he wants to improve his sales volume he will have to be content with lesser price.
- He will try to reach that level of output at which profits are maximum i.e. he will try to attain the equilibrium level of output. How he attains this level can be found out as is shown below.

Short run Equilibrium : Conditions for the equilibrium The twin conditions for equilibrium in a monopoly market are same as discussed earlier.

    (i)   MC=MR

    (ii) MC curve must cut MR curve from below.

Graphically, we can depict these conditions in figure given here
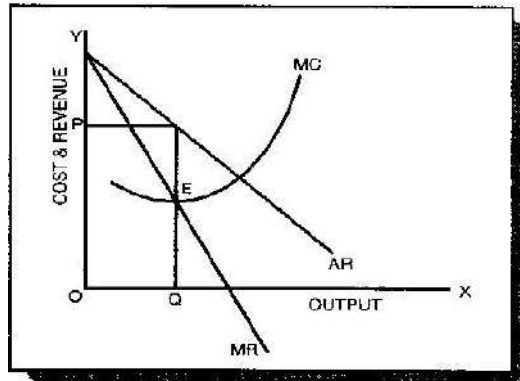
Equilibrium position of a monopolist (Short run)

Equilibrium position of a monopolist (Short run)

The figure shows that MC curve cuts MR curve at E. That means at E, equilibrium price is OP and equilibrium output is OQ.

Profit maximisation under monopoly

In order to know whether the monopolist is making profits or losses in the short run, we need to introduce average total cost curves The following figure shows how the firm makes profits in the short run.
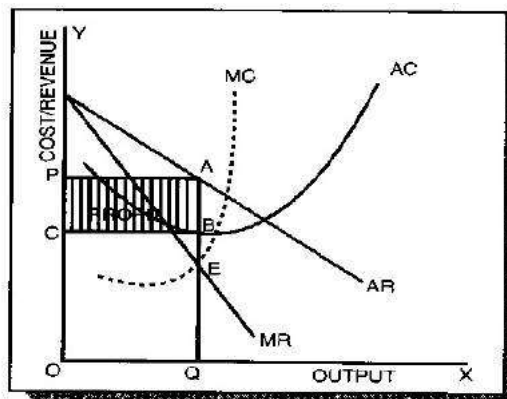

Firm's equilibrium under monopoly : maximisation of profits

The above figure shows that MC cuts MR at E to give equilibrium output as OQ. At OQ, price charged is OP (we find this by extending line EQ till it touches AR or demand curve). Also at OQ, the cost per unit is BQ Therefore, profit per unit is AB or total profit is ABCP.

Loss minimisation under monopoly

An important question that can be asked is can a monopolist incur losses? One of the misconceptions about a monopolist is that he always makes profits. It is to be noted that nothing guarantees that a monopolist makes profits.

It all depends upon his demand and cost conditions. If he faces a very low demand for his product and his cost conditions are such that ATC > AR, he will not be making profits but incur losses. Figure here depicts this position.
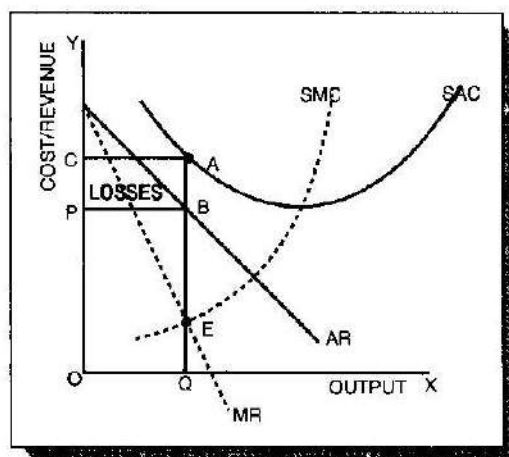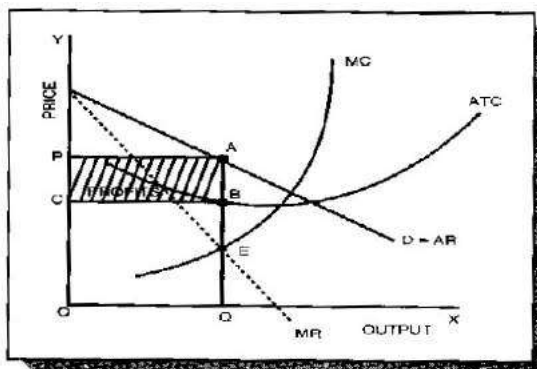

Equilibrium of the monopolist : Losses in the short run

Equilibrium of the monopolist: Losses in the short run

In the above figure, MC cuts MR at E. Here, E is the point of loss minimisation. At E, equilibrium output is OQ and equilibrium price is OP. Cost corresponding to OQ is QA. Cost per unit of output i.e. QA is greater than revenue per unit which is BQ. Thus, the monopolist incurs losses to the extent of AB per unit or total loss is ABPC.

Long Run Equilibrium

Long run is a period long enough to allow the monopolist to adjust his plant size or use his existing plant at any level that maximizes his profit. In the absence of competition, the monopolist need not produce at the optimal level. He can produce at sub-optimal scale also. In other words, he need not reach the minimum of LAC curve, he can stop at any place where his profits are maximum.

Long-run equilibrium of a monopolist

However, one thing is certain The monopolist will not continue if he makes losses in the long run. He will continue to make super normal profits even in the long run as entry of outside firms is blocked.

Price discrimination - the meaning and the conditions of possibility and profitability.

Price discrimination is a special feature of monopoly.

There are two words in the term price discrimination, Price & Discrimination. The word discrimination means unequal treatment.

Accordingly, price discrimination can be defined as the policy adopted by the monopoly firm under which it charges different prices for different homogeneous units of the same product or service either from the same buyer or different buyers. E.g. doctors charge different fees from different patients or Railways charge different rates from routine passengers and season-pass holders.

Types OF Price Discrimination :

There are many different types of price discrimination.
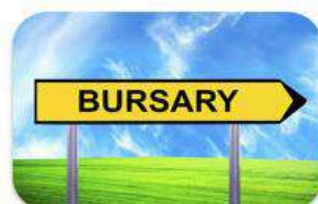

Market haggling

Mobile phone contracts / tariffs

Taxi fares at peak times of the day

KET TYPE	OFF-PEAK PRICES	PEAK PRICES
Adult	£7.29	£8.49
Child	£5.29	£6.49
Teen	£5.79	£6.79
Student	£5.99	£7.29
Senior	£5.29	£6.49
Family of 4	£21.16	£25.96

Cinema ticket prices

20% Discount

Student discount

Hairdresser discounts

BURSARY

Educational bursaries

Personal Price Discrimination	The monopoly firm charges different prices for the same product from different buyers.
Use wise Or Trade Price Discrimination	The monopoly firm charges different prices for the same product or the same service in different uses. E.g. Electricity companies charge different prices for their services from household consumers and commercial users.
Place Wise Or Geographical Price Discrimination	The monopoly firm charges two different prices in two different markets. E.g. charging a higher price in the local market and charging a lower price in the international markets. (= Dumping)
Time-Wise Price Discrimination	The monopoly firm charges two different prices at two different points of time. e.g. Regular price and discount price in festive season.
Perfect Price Discrimination	The monopoly power of the firm is so strong that it is in a position to charge different prices for each individual unit of the product.

Objectives of Price discrimination

- to earn maximum profit
- to dispose of surplus stock
- to enjoy the economies of scale
- to capture foreign markets
- to secure equity through pricing
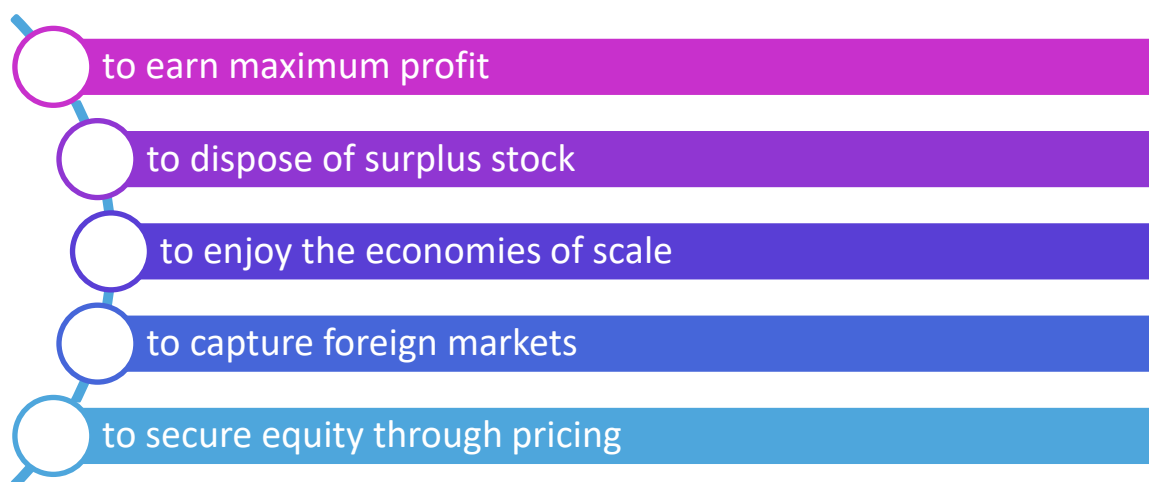
Price discrimination may take place because of personal, local, income, size of the purchase, time of purchase and age of the consumers reasons. Price discrimination may be related to the consumer surplus enjoyed by the consumers.

Prof. Pigou classified three degrees of price discrimination.

Under the first degree price discrimination the monopolist will fix a price which will take away the entire consumer's surplus

Under the second degree price discrimination he will take away only a part of the consumers' surplus. Here price varies according to the quantity sold. Larger quantities are available at lower unit price

Under third degree price discrimination, price varies by attributes such as location or by customer segment. Here the monopolist will divide the consumers into separate sub markets and charge different prices in different sub-markets. E.g. Dumping.

Conditions Under Which Price Discrimination Becomes Possible

Price discrimination is not always possible.

Certain conditions are to be satisfied in order that price discrimination becomes possible. These conditions are as under:

1) **Monopoly Must Exist:**
   - This is the most important condition for price discrimination i.e. the firm must have some monopoly control over the supply of its product so that the firm is able to force the buyers to pay different prices for its product.
   - Only when a firm has control over the supply of its product, it can force the buyers to pay different prices for the same product.
   - In a perfect market where the number of the sellers is very large and products produced by them are homogeneous, price discrimination cannot take place.

2) **No Possibility of Resale:**
   This is another important condition for price discrimination. There should be no possibility of resale
   e.g. if the monopoly firm sells its product to X group of consumers at **Rs.** 2/- and to Y group of consumers at **Rs.** 30 /-. Now somehow, if X group is able to resell the product to Y group, then the Y group would not buy from the monopoly firm, and so the price discrimination would become impossible.

Resale Would Not Take Place Under The Following Circumstances:

The markets are far apart.

When the product sold is a direct service.

When there are legal restrictions.

When equivalent duty or tax wipes out the price difference.

When the price difference is negligible.

Condition of profitability

Now let us see when would the price discrimination become profitable. Here, the condition is that the Elasticity of demand for the monopoly product should be different in different markets at the given monopoly price.

Let us assume that there are two markets. A and B. The elasticity of demand for the monopoly product in the market A is 5 and in the market B, it is 2. The price of the product is **Rs.** 10 /-

Now let us find out the marginal revenues in these two markets at this price.

The following formula is used to find out the MR when price and elasticity of demand are given.

$$MR = AR\ X\frac{e-1}{e}$$

Where AR = price, MR = Marginal revenue and E = Elasticity. Now let us find out the MR in these two markets.

MR in the market A	=	10	x	$\frac{5-1}{5}$	=	$\frac{40}{5}$	= 8
MR in the market B	=	10	x	$\frac{2-1}{2}$	=	$\frac{10}{2}$	= 5

In other words, if one more (marginal) is sold in the market A, it will give additional revenue of **Rs.** 8 and if the same unit is sold in the market B, it gives a marginal revenue of **Rs.** 5 This means that is the monopoly firm, transfers one unit from the market B to the market A, its total revenue will go up by **Rs.** 3. (**Rs.** 8 – **Rs.** 5.) This would be profitable for the firm.

Thus, PD would be profitable only when the elasticities of demand are different in different markets at a given price.

This process of transfer will continue till such time as the MRs become equal in both the markets. When the product is transferred from the

market B to the market A, price and MR in the market B will go up and they would fall in the market A. A time will come when MRs in both the markets would become equal. When this happens, the firm would stop transferring units from the market B to market A. This would be the equilibrium position of the firm. The following diagram explains this point :

Diagram
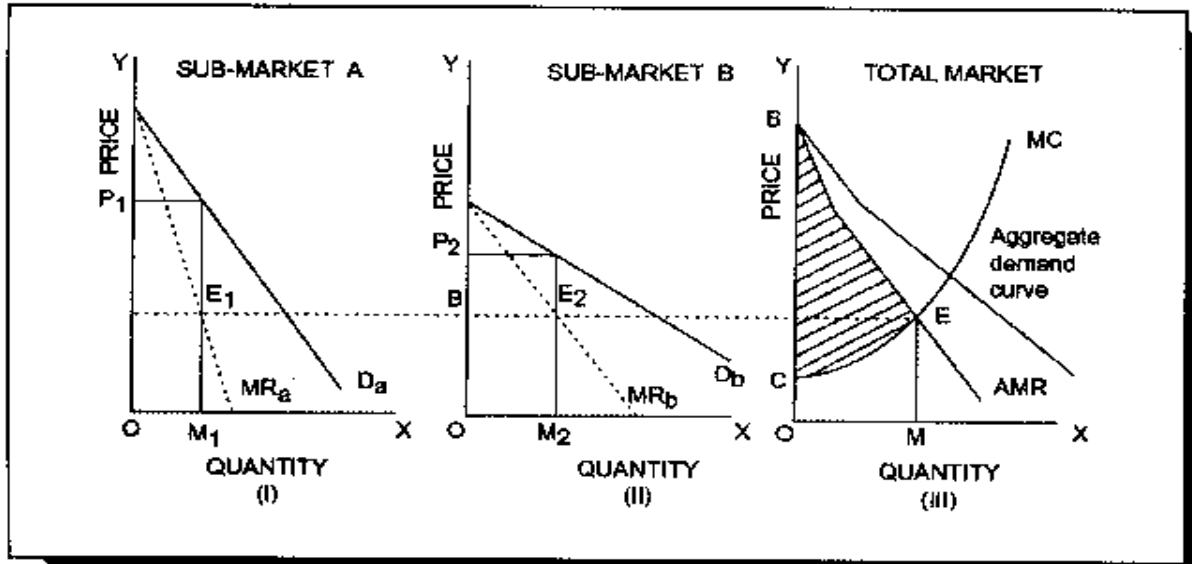
Fixation of Total Output and different price in the two sub-markets by the discriminating monopolist

Analysis

- In the above diagram in the figure III the combined MR Curve cuts the MC Curve of the firm at point E. So, OM is the equilibrium output.

- The firm would sell OM1 output in sub-market A at the price OP1 and the remaining OM2 output at the OP2 price in the sub-market B at the OP2 price. OM1 + OM 2 = OM.

Here there are two conditions of firm equilibrium.

1. **The marginal revenue of the firm = its marginal cost.**

2. **The marginal revenues in both the sub-markets are equal.**

IMPERFECT COMPETITION-MONOPOLISTIC COMPETITION

The idea of monopolistic competition was given by Prof. Edward Chamberlin. (The idea of imperfect competition was given by Mrs. Joan Robinson. However, the explanation given by Prof. Chamberlin is more exhaustive.)

Imperfect Competition

Market structure that does not meet the conditions of perfect competition

There Are Barriers to Entry

Any factors that make it hard for a new firm to enter a market

Facilities | Equipment

Licensing Fees | Expertise

Start-up Costs
Expenses that a firm must pay before it can start to produce and sell goods

Monopolistic Competition

Oligopoly

Oligopsony

Monopoly

Monopsony

Examples of Monopolistic Competition

Shoe repairs and key makers

Taxi and minibus companies

Sandwich bars and coffee stores

Hairdressing salons

Dry-cleaners and launderettes

Bars and Nightclubs

Features of Monopolistic Competition

Following are the features of monopolistic competition market

➢ **Large number of sellers**
➢ **Product differentiation**
➢ **Highly elastic demand**
➢ **Non-price competition**
➢ **Free entry and free exit**

| Large number of sellers	• In this market the number of the sellers is very large but it is not as large as it is in a perfectly competitive market.
Product differentiation	• the products produced by the firms are not homogeneous but heterogeneous (differentiated). • They are not perfect substitutes for each other but are only close substitutes • The products are differentiated on the grounds of location, quality, services given with the sale and advertisements made by the firms
Highly elasitic demand	• As the products produced by different firms are close substitutes the demand for them is highly elastic
Non-price competition	The firms compete on the ground of advertisements, after sale services, etc.
Free entry and free exit	As in perfect competition, in this market also there is a free entry and a free exit for all the firms.

Price-output determination under monopolistic competition :
Equilibrium of a firm

➢ In a monopolistically competitive market since the product is differentiated between firms, each firm does not face a perfectly elastic demand for its products.

➢ The demand curve faced by the individual firms is highly elastic and the firms have some control over the price. Each firm is a price maker and is in a position to determine price of its own product.

➢ As such, the firm is faced with a downward sloping demand curve for its product. Generally, the less differentiated the product is from its competitors, the more elastic this curve will be.
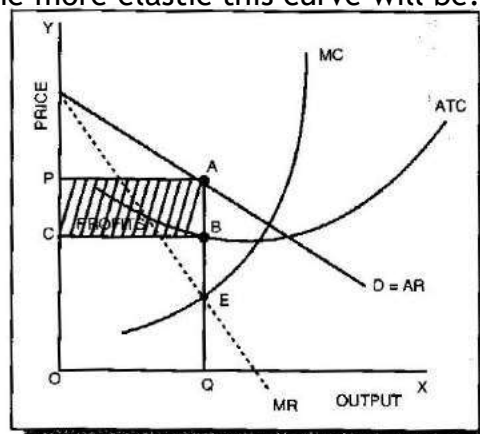
Short-run equilibrium of a firm in monopolistic competition : Super normal profits

Short-run equilibrium of a firm in monopolistic competition: Super normal profits

The firm depicted in figure has a downward sloping but flat demand curve for its product, The firm is assumed to have U-shaped short run cost curve.

Conditions for the Equilibrium of an individual firm : The conditions for price-output determination and equilibrium of an individual firm may be stated as follows:

i. *MC=MR*

ii. *MC curve must cut MR curve from below.*

Profit maximisation : Figure shows that MC cuts MR curve at E. At E, the equilibrium price is OP and equilibrium output is OQ. Since per unit cost is BQ, per unit super normal profit (i.e. price-cost) is AB (or PC) and total super normal profit is APCB.

**Loss minimisation :** The firm may also be earning losses in the short-run. This is shown in fig. given below.
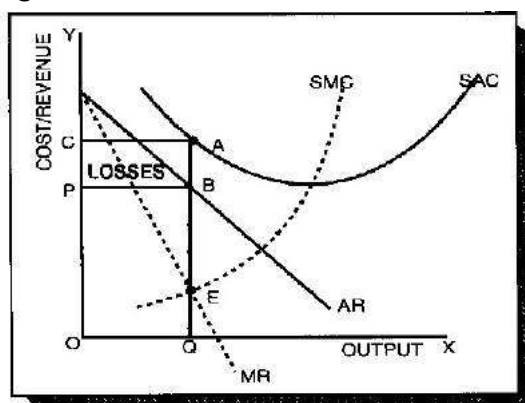
Short-run equilibrium of a firm in Monopolistic Competition – With losses

The figure shows that per unit cost (AQ) is higher than price OP (or BQ) of the product of the Firm and loss per unit is AB (AQ-BQ). Total loss is ACPB.

Long run industry or group equilibrium under monopolistic competition

What about long run equilibrium of the industry? If the firms in a monopolistically competitive Industry earn super-normal profits in the short-run, there will be an incentive for new firms to enter the industry. As more firms enter, profits per firm will go on decreasing as the total demand for the product will be shared among a larger number of firms. This will happen till all the profits are wiped away and all the firms earn only normal profits. Thus in the long run all the firms will earn only normal profits.
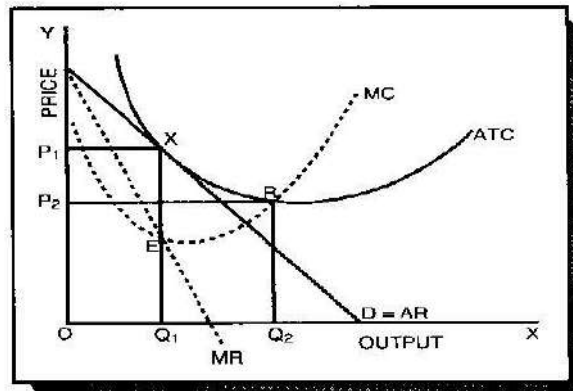
The long run equilibrium of a firm in monopolistic competition

Figure shows the long run equilibrium of a firm in a monopolistically competitive market.

➤ The average revenue curve touches the average cost curve at point X corresponding to quantity Q1 and price P1.

➤ At equilibrium (i.e. MC = MR) profits are zero, since average revenue equals average costs.

➤ All firms are earning zero supernormal profits or just normal profits.

➤ In case of losses in the short run, the loss making firms will exit from the market and this will go on till the remaining firms make normal profits only.

➤ In the diagram we can see that the optimum output of the firm is OQ2 but the firm stops producing at the OQ1 output only.

➤ The Q1 Q2 capacity of the firm remains unused. This is known as excess capacity problem under monopolistic competition

➤ Therefore, the monopolistic competition is considered to be an undesirable market. It is a wasteful market. The other wastes of monopolistic competition are:

  o the existence of inefficient firms, side by side the efficient firms taking the advantage of ignorance of buyers and high-pressure advertisements.

  o cross transport for carrying the goods which are only slightly differentiated to various places to satisfy the whimsical buyers.

Advertisements which do not have any conspicuous advantage to the advertising firms but making the buyers to pay high prices to the firms to cover their advertisement costs.

Oligopoly

FEATURES OF OLIGOPOLY :

➢ Only A Few Sellers

➢ Interdependence

➢ Importance of advertising and selling costs or non-price competition

➢ Group behavior

➢ Products

➢ Entry

➢ Kinked Demand Curve

Only A Few Sellers

- there are only a few sellers (or producers) in the market ex. the cold drink industry, the fridge industry, the TV industry etc.
- All the producers are monopolists in a smaller or greater degree and yet all of them are in competition with the others.
- When all oligopoly firms are of more or less equal size, then it is known as Full oligopoly.
- When one or two firms are dominant and rest of them are small sized, it is known as Partial oligopoly.

Interdependence

- Interdependence in decision-making of the few firms which comprise the industry
- This is because when the number of competitors is few, any change in price, output, product, by a firm will have direct effect on the fortune of the rivals, who will then retaliate in changing their own prices, output or advertising technique as the case may be.
- An oligopolistic firm must also consider the reactions of other firms in the industry to any major decision it takes.

Importance of advertising and selling costs or non price competition

- A direct effect of interdependence of oligopolists is that the various firms have to employ various aggressive and defensive marketing weapons to gain a greater share in the market or to maintain their share.
- For this various firms have to incur a good deal of costs on advertising and other measures of sales promotion. Therefore, there is a great importance of advertising and selling costs in an oligopoly market. **This is known as non price competition.**
- Firms under oligopoly avoid price cutting and try to compete on non-price basis else a type of price-war will emerge which will drive a few of them out of the market.

Group behaviour

- The theory of oligopoly is a theory of group behaviour, not of mass or individual behaviour and to assume profit maximising behaviour on oligopolist's part may not be very valid. There are many forms of behaviour found in an oligopoly. - collusion, price leadership, etc.

Products

- Products of various firms may be perfect substitutes or may be imperfect substitutes. However they are always close substitutes.

Entry

- Entry in the oligopoly market may be free or closed, but one thing is certain and that is, the entry in this type of market is very difficult due to one reason or the other

Kinked Demand Curve

- The demand curve under all other markets is linear and certain while here it is kinked or cornered. There is a kink on the demand curve.

Price and output decisions in an oligopolistic market :

Because of interdependence an oligopolistic firm cannot assume that its rival firms will keep their prices and quantities constant, when it makes changes in its price and/or quantity. When an oligopolistic firm changes its price, its rival firms will retaliate or react and change their prices which in turn would affect the demand of the former firm.

Therefore an oligopolistic firm cannot have sure and definite demand curve, since it keeps shifting as the rivals change their price in reaction to the price changes made by it. Now when an oligopolist does not know his demand curve, what price and output he will fix cannot be ascertained by economic analysis. However, economists have established a number of price-output models for oligopoly market depending upon the behaviour pattern of the members of the group.

Kinked Demand Curve

It has been observed that in many oligopolistic industries *prices remain sticky or inflexible for a long time. They tend to remain constant for a long period, even in the face of declining costs*. This is known as **price rigidity.** Many explanations have been given for this price rigidity under oligopoly and the most popular explanation is kinked demand curve hypothesis given by an American economist Sweezy.

The demand curve facing an oligopolist, according to the kinked demand curve hypothesis, has a 'kink' at the level of the prevailing price.

The kink is formed at the prevailing price level. It is because the segment of the demand curve above the prevailing price level is highly elastic and the segment of the demand curve below the prevailing price level is inelastic. A kinked demand curve **dD** with a kink at point P has been shown in Figure given here.
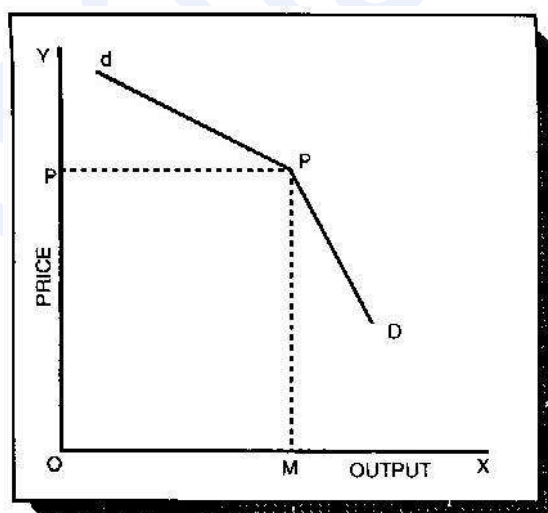
Kinked Demand Curve under oligopoly

Kinked Demand Curve under oligopoly

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. Each oligopolist 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, his competitors will not follow its increase in price.

This is because when an oligopolist lowers the price of its product its competitors will feel that if they do not follow the price cut their customers will run away and buy from the firm which has lowered the price. Thus in order to maintain their customers they will also lower their prices. Thus the lower portion of the demand curve PD is price inelastic showing that very little increase in sales can be obtained by a reduction in price by an oligopolist.

On the other hand, if a firm increases the price of its product there will a substantial reduction in its sales because as a result of the rise in its price, its customers will go to its competitors which will welcome the new customers and will gain in sales. The oligopolist who raises his price will lose a great deal and will therefore refrain from increasing price. This behaviour of the oligopolists explains the elastic upper portion of the demand curve **dp** showing a large fall in sales if a producer raises his price.

Each oligopolist will, thus, stick to the prevailing price as there is no gain in changing it and a kink will be formed at the prevailing price. Thus, rigid or sticky prices are explained according to the kinked

demand curve theory. **Prof. Paul Sweezy has used oligopoly model to explain sticky prices.**

Collusive Oligopoly and price leadership:

When the firms enter into agreements to pursue uniform price-output policy so to avoid price wars and cut throat competition, it is known as collusive oligopoly.

But collusions are of two main types:
(a)   Cartels and
(b)   Price leadership.

In a **cartel type** of collusive oligopoly, firms **jointly fix a price and output policy** through agreements. But under **price leadership, one firm sets the price and others follow it**. The one which sets the price is a price leader and the others who follow it are its followers. Cartels come into existence when all the firms are more or less of the same size. Price leadership occurs when one firm is large whereas others are relatively small.

Price leadership is of three types.

i. **Price leadership by a dominant firm**: A firm with the highest market share sets its profit maximizing price whereas the other firms follow it.
ii. **Price leadership by a low cost firm:** A firm with the lowest cost sets the price which fetches some profit to small firms also and the small firms accept the price.
iii. **Barometric Price Leadership:** An old, experienced and respected firm sets the price which is best for all the firms of the industry after taking in to account the costs, demand etc and others follow that price.

Other important market forms other important market forms are:
i. **Duopoly**, a subset of oligopoly, is a market situation in which there are only two firms in the market.
ii. **Monopsony** is a market characterized by a single buyer of a product or service and is mostly applicable to factor markets in which a single firm is the only buyer of a factor.
iii. **Oligopsony** is a market characterized by a small number of large buyers and is mostly relevant to factor markets.
iv. **Bilateral monopoly** is a market structure in which there is only a single buyer and a single seller i.e. it is a combination of monopoly market and a monopsony market.

REMEMBER THE FOLLOWING POINTS

In all the markets the objective of the firm is to maximise profits.
➢ In all the markets the objective of the firm is to maximise profits by equating the marginal revenue with the marginal cost.

Perfect Competition

➢ Perfect competition is a myth because we do not see any market in the practical life which would satisfy all the conditions of such a market.
➢ ▢In Perfect competition the average revenue curve itself is the marginal revenue curve.
➢ In Perfect competition the marginal cost curve above the minimum point of the average variable cost curve is the supply curve of the firm.
➢ In Perfect competition the marginal cost curve must be rising at the point of equilibrium.
➢ The shut-down point is the one where the price obtained by the firm is just equal to the average variable cost.
➢ In Perfect competition all the firms are of the optimum size in the long run.
➢ Out of all the markets the Perfect competition is the most ideal market.
➢ In Perfect competition all the firms have to accept the price determined by the market and therefore the firms in Perfect competition the firms are known as price taker.

- In Perfect competition the average revenue curve itself is the marginal revenue curve and both of them are parallel to the horizontal x-axis.
- **The total revenue curve of a perfectly competitive firm is a 45 degree straight line starting from the point of origin.**

Monopoly

- In monopoly there is only one firm and therefore it is known as single firm industry.
- In monopoly the firm is price setter because is has got control over the supply of the product.
- In monopoly the average revenue and marginal revenue curves both are downward sloping curves.
- In monopoly there is closed entry and therefore only in this market the firm earns super normal profits even in the long run.
- Monopoly power is the power of the firm to charge a price higher than the marginal cost.
- In monopoly there can be losses during a short run when the demand is inadequate and the price obtained is smaller than the average cost.
- In monopoly there is no supply curve of the firm.
- For a given size of market the output under monopoly would be smaller and price would be higher than what they are in perfectly competitive market.
- A monopoly firm can charge either a desired price or can sell a desired output but cannot sell a desired output at a desired price.
- Monopoly power is the power to charge a higher price. It is measured by the distance between average revenue curve and marginal cost curve in equilibrium.
- According to Prof. Lerner monopoly power = price - marginal cost / price
- In monopoly exploitation of buyers and factors of production is very common.
- In the first degree price discrimination the consumer's surplus is zero. In the second degree price discrimination the consumer's surplus is plus while in the third degree price discrimination the monopolist divides the market according to the purchasing power of various consumer groups.

Monopolistic competition

- The idea of monopolistic competition is given by Prof. Edward Chamberlin
- Product differentiation is the most important feature of monopolistic competition.
- Monopolistic competition is wasteful because in this market all the firm operate with unused production capacities in the long run when the industry is in equilibrium.

- The average and marginal revenue curves of a firm under monopolistic competition are more elastic than under monopoly.
- There are four wastes of monopolistic competition.
    - Excess capacities
    - Wasteful advertisements
    - Cross transport
    - Existence of inefficient firms side by side efficient firms.
- Out of all the markets monopolistic competition is the worst form of market.

Oligopoly

- In Oligopoly the firms have kinked demand curve.
- In Oligopoly the entry for the outside firms is rather difficult.
- In Oligopoly an independent output and pricing decision is not possible for the firm.
- In a kinked demand curve, the upper portion of the demand curve is more elastic than the lower portion of the demand curve.
- Non price competition (advertising and selling cost) is very important for oligopoly firms.
- In India the industries like T.V., Scooters, Motorcycles, Refrigerators, Air-conditioners, cold-drinks are the examples of oligopoly.
- The idea of price rigidity is given by prof. Paul Sweezy.
- The idea of price rigidity can be explained with the help of the kinked demand curve.

BUSINESS CYCLES

Understanding the meaning of term 'Business Cycles"

One of the basic underlying feature of any economy across the globe is the fluctuation in economic activities over a period of time. There have been periods of prosperity followed by periods of downturns in economic activity. *These* rhythmic fluctuations in aggregate economic activity that an economy experiences over a period of time are called business cycles or trade cycles

A business cycle **is the natural rise and fall of economic growth** that occurs over time.

In other words, **business cycle refers to alternate expansion and contraction of overall business activity** as manifested in fluctuations in measures of aggregate economic activity, such as, gross national product, employment and income.

Business cycles or the periodic booms and slumps in economic activities **reflect the upward and downward movements in economic variables**

A typical business cycle or trade cycle consists of the following:-

| Periods of Good Trade | • Rising Prices
• Low Unemployment Percentage |

| Periods of bad trade | • Faling Prices
• High Unemployment percentage |

Characteristics of Business Cycles or Economic fluctuations

- They are recurrent occur periodically.

- They occur again and again but not always at regular intervals, nor are they of the same length.

Different Phases of Business Cycle

Experience of various countries suggest that their economies grow over a period of time but this growth story is filled with business cycles (their GDP line going up, declining but gaining momentum again). Ultimately growth of any economy can be projected in the following figure:-
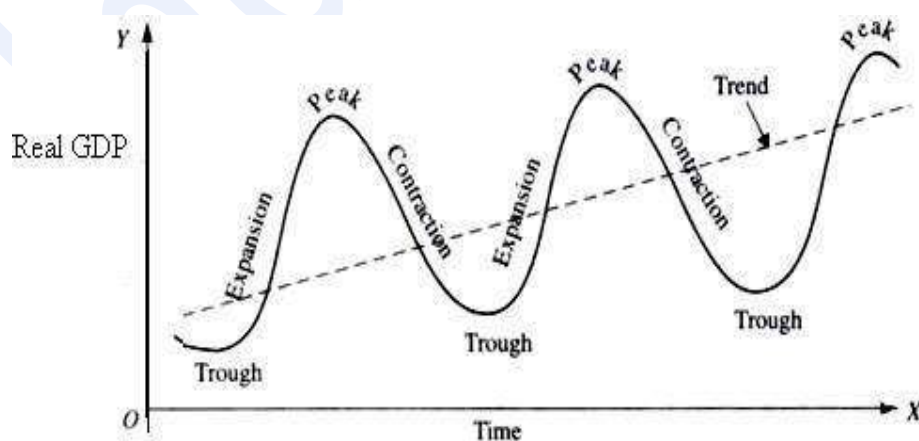
Observations from above diagram

➤ Steady broken line in the middle represents steady growth of the economy (excluding the impact of business fluctuation). This line basically shows overall **'trend'** of the economy over a period of time

➤ The first stage in the above diagram is called **'trough'** when the overall economic activities i.e. production and employment, are at the lowest level.

➤ This is followed by **'expansion path'** - when production and employment expand and the economy starts reviving,

➤ The stage of expansion goes on till the economy reaches the point called **'peak'**, however beyond that this stage cannot go on indefinitely. Hence after reaching the 'peak', the economy starts on 'contraction path' when the level of economic activity starts declining

➤ The contraction or downturn continues till it reaches the lowest turning point i.e. **'trough'.** However, after remaining at this point for some time, the economy revives again and a new cycle starts.

Features of different phases of Business cycles

Expansion

- Increase in national output, employment, aggregate demand, capital and consumer expenditure
- Increase in sales, profits of business entities resulting to rising stock prices, increased credit availability from banks
- Negligible involuntary employment (almost Zero). Unemployment, if any, in the economy would be because of following reasons:-
    - ✓ Frictional unemployment (i.e. due to change of jobs, or suspended work due to strikes or due to imperfect mobility of labour)
    - ✓ Structural unemployment (i.e. unemployment caused due to structural changes in the economy)
- Investment happening is good and hence demand for goods and services is also very high. Resultantly, prices and costs tend to rise faster
- Increasing prosperity and people enjoy high standard of living due to high levels of consumer spending, business confidence, production, factor incomes, profits and investment

The stage of expansion continues till there is full employment of resources and production is at its maximum possible level using the available productive resources. The growth rate eventually slows down and reaches its peak.

Peak

The term peak refers to the top or the highest point of the business cycle. In other words, after this point, stage of expansion ends and stage of contraction starts.

Reasons

- In the later stages of expansion, inputs are difficult to find as they are short of their demand and therefore input prices increase.
- Output prices also rise rapidly leading to increased cost of living and greater strain on fixed income earners.
- Consumers begin to review their consumption expenditure on housing, durable goods etc.

  Consequently, actual demand stagnates.

Remember:

The economy cannot continue to grow endlessly. Point of 'Peak' is the end of expansion and it occurs when economic growth has reached a point where it will stabilize for a short time and then move in the reverse direction

Contraction

How 'Contraction' starts:-

1) There is fall in the levels of investment and employment. *(Demand decreasing..!!)*
2) Producers do not instantaneously recognize the pulse of the economy and continue anticipating higher levels of demand. Therefore, they maintain their existing levels of investment and production *(with the hopes of a better future..!!)*
3) The consequence is a discrepancy or mismatch between demand and supply. **Supply far exceeds demand.**
4) Once this stage is reached, producers now realize that that they have indulged in excessive investment and over production. Hence, they respond by holding back future investment plans, cancellation and stoppage of orders for equipment and all types of inputs including labour. *(Supply side contracts..!!)*
5) As producers contract their supply, there is a chain of reactions in the input markets as well

   - producers of capital goods and raw materials in turn respond by cancelling and curtailing their orders. *(Fire of contraction starts spreading across sectors now…!!)*

How consumers play a role in recession

1) Due to fall in prices of products (including inputs) incomes of wage and interest earners gra
2) dually decline resulting in decreased demand for goods and services.
3) Producers lower their prices in order to dispose off their inventories and for meeting their financial obligations.
4) Consumers, in their turn, expect further decreases in prices and postpone their purchases. With reduced consumer spending, aggregate demand falls, generally causing fall in prices.
5) The discrepancy between demand and supply gets widened further. This process gathers speed and recession becomes severe

Stage of severe recession

- Investments start declining; production and employment decline resulting in further decline in incomes, demand and consumption of both capital goods and consumer goods.
- Business firms become pessimistic about the future state of the economy and there is a fall in profit expectations which induces them to reduce investments.
- Bank credit shrinks as borrowings for investment declines, investor confidence is at its lowest.
- Stock prices fall and unemployment increases despite fall in wage rates.
- The process of recession is complete and the severe contraction in the economic activities pushes the economy into the phase of depression.

Trough and Depression:

Depression is the severe form of recession and is characterized by extremely sluggish economic activities. Main features of this stage are:-

- *Growth rate becomes negative* and the level of national income and expenditure declines rapidly.
- Demand for products and services decreases, prices are at their lowest and decline rapidly forcing firms to *shutdown* several production facilities.
- Companies are unable to sustain their work force, and hence job cuts. This leads to mounting *unemployment* and consequently the consumers are left with very little disposable income
- There is *fall in the interest rate* due to which people's demand for holding liquid money (i.e. in cash) increases. Despite lower interest rates, the demand for credit declines because investors' confidence has fallen. Credit generation remains low due to possible banking or financial crisis. (that are general consequences of depression)

- Industries, especially capital and consumer durable goods industry, suffer from excess capacity.
- Large number of bankruptcies and liquidation significantly reduce the magnitude of trade and commerce. At the depth of depression, all economic activities touch the bottom and the phase of trough is reached.

Point to be note
The economy cannot continue to contract endlessly. It reaches the lowest level of economic activity called trough and then starts recovering

Recovery

After a rough patch, there is end of pessimism and the beginning of optimism which reverses the process. This revival process generally happens in the following manner:-

- Pervasive unemployment forces the workers to accept wages lower than the prevailing rates.
- Due to this, the producers anticipate lower costs and better business environment. As business confidence gets better, they start to invest again and to build stocks;
- Slowly, the banking system starts expanding credit; technological advancements require fresh investments into new types of machines and capital goods;
- Employment increases, aggregate demand picks up and prices gradually rise.

Spurring of investment is the main factor that acts as a turning point from depression to expansion. As investment rises, production increases, employment improves, income improves and consumers begin to increase their expenditure. Increased spending causes increased aggregate demand and in order to fulfill the demand more goods and services are produced. Employment of labour increases, unemployment falls and expansion takes place in the economic activity

What are the different Indicators to detect which phase is going on?

Meaning of Indicators
It is very difficult to predict the turning points of business cycles. Economists use changes in a variety of activities to measure the business cycle and to predict where the economy is headed towards. These are called indicators.

Types of Indicators

1. Leading Indicators

Meaning

- A leading indicator is a measurable economic factor that changes before the economy starts to follow a particular pattern or trend. *In other words, those variables that change before the real output changes are called 'Leading*
- *indicators'*. Leading indicators often change prior to large economic adjustments

Examples

- Changes in stock prices,
- profit margins and profits,
- indices such as housing, interest rates and prices
- value of new orders for consumer goods, new orders for plant and equipment, building permits for private houses,
- fraction of companies reporting slower deliveries,
- index of consumer confidence and money growth rate

Significance

- Leading indicators, though widely used to predict changes in the economy, are not always accurate. Even experts disagree on the timing of these so-called leading indicators.
- For instance:- it may be weeks or months after a stock market crash before the
- economy begins to show signs of receding. Nevertheless, it may never happen.

2. Lagging indicators

Meaning

- Lagging indicators reflect the economy's historical performance and changes in these indicators are observable only after an economic trend or pattern has already occurred. In other words, variables that change after the real output changes are
- called 'Lagging indicators'.

Examples

- unemployment,
- corporate profits,
- labour cost per unit of output,
- interest rates,
- the consumer price index and
- commercial lending activity

Significance

- If leading indicators signal the onset of business cycles, lagging indicators
- confirm these trends

3. Coincident indicator

Meaning

- Coincident economic indicators, also called concurrent indicators, coincide or occur simultaneously with the business-cycle movements. Since they coincide fairly closely with changes in the cycle of economic activity, they describe the
- current state of the business cycle

Examples

- Gross Domestic Product,
- industrial production, inflation,
- personal income,
- retail sales and
- financial market trends such as stock market prices.

Significance

- These indicators give information about the rate of change of the expansion or
- contraction of an economy more or less at the same point of time it happens

General Features of Business Cycles

Business Cycles may differ in terms of duration and intensity, but all of them share the following common features:-

No fixed duration

Business cycles occur periodically although they do not exhibit the same regularity. The duration of these cycles vary.

Variance in intensity

Fluctuations are common phenomenon in any economy, however, the intensity of each
business cycle varies

Lack of regularity in different phases

All business cycles have distinct phases of expansion, peak, contraction and trough. However, these phases seldom display any smoothness and regularity. Further, the length of each phase also differs *(hence nobody can be sure when recession has ended…!!*

Pervasive in nature

Business cycles typically generally originate in free market economies *(since forces of demand and supply decide the direction of such economies)*. Accordingly, the effect of these cycles is generally pervasive i.e. disturbances in one or more sectors get easily transmitted to all other sectors.

Disproportionate effect on different

Although all sectors are adversely affected by business cycles, some sectors such as capital goods industries, durable consumer goods industry etc, are disproportionately affected. Moreover, compared to agricultural sector, the industrials sector is more prone to the adverse effects of trade cycles

Complex in nature

Business cycles are exceedingly complex phenomena. This is because of the reason that they do not have uniform characteristics and causes and they are caused by varying factors.

Therefore, it is difficult to make an accurate prediction of trade cycles before their occurrence

Impact on all economic variables

Repercussions of business cycles get simultaneously felt on nearly all economic variables viz. output, employment, investment, consumption, interest, trade and price levels.

Contagious from one nation to

Business cycles are contagious and are international in character. They begin in one country and mostly spread to other countries through trade relations.

For example, the great depression of 1930s in the USA and Great Britain affected almost all the countries, especially the capitalist countries of the world. The recent sub prime crisis of US is another example that quickly spread across the globe.

Impact on social well being

Business cycles have serious consequences on the well being of the society. The period of recession is a very agonizing period causing lots of distress for all.

For instance:- The great depression of 1929-33 is still cited for the enormous misery and human sufferings it caused

Great Depression of 1930

- Longest, deepest, and the most widespread depression of the 20th century during 1930s.
- Started in the US and became worldwide.
- Global GDP fell by around 15% between 1929 and 1932. Production, employment and income fell.

What lead to it

- There is difference of opinion amongst economists regarding causes of Great Depression.
- While **British economist John Maynard Keynes** regarded lower aggregate expenditures in the economy to be the cause of massive decline in income and employment,
- Monetarists opined that the Great Depression was caused by the banking crisis and low money supply.
- Many other economists blamed deflation, over- indebtedness, lower profits and pessimism to be the main causes of Great Depression.

Recovery

- The economies of the world began recovering in 1933.
- Increased money supply, huge international inflow of gold, increased governments' spending due to World War II etc., were some of the factors which helped economies slowly come out of recession and enter the phase of expansion and upturn.
- Also termed as Dot.Com bubble. It roughly covered the period 1997-2000

Information Technology bubble burst of 2000

- Also termed as Dot.Com bubble. It roughly covered the period 1997-2000

What lead to it

- During this period, many new Internet–based companies (commonly referred as dot- com companies) were started.

- Due to rapid growth of internet, venture capitalists invested huge amount in these companies. These companies were also able to borrow from the market at low interest rates
- Due to over- optimism in the market, investors were less cautious. There was a great rise in their stock prices
- These companies offered their services or end products for free with the expectation that they could build enough brand awareness to charge profitable rates for their services later *(something we see even today in e-commerce space..!!)*
  The burst of Bubble

- The "growth over profits" mentality led some companies to engage in lavish internal spending, such as elaborate business facilities. These companies could not sustain long.
- The collapse of the bubble took place during 1999–2001.
- Many dot-com companies ran out of capital and were acquired or liquidated.
- Nearly half of the dot –com companies were either shut down or were taken over by other companies.
- Stock markets crashed and slowly the economies began feeling the downturn in their economic activities.

Global Economic Crisis (2008-

What lead to it
- The recent global economic crisis owes its origin to *US financial markets*.
- After the year 2000, the US Federal Reserve (the Central Bank of US) reduced the rate of interest which led to large liquidity or money supply with the banks.
- With lower interest rates, credit became cheaper and the households, even with low creditworthiness, began to buy houses in increasing numbers.
- Excess liquidity with banks and availability of new financial instruments led banks to lend without checking the creditworthiness of borrowers *(Loans were given even to sub- prime households and also to those persons who had no income or assets)*
- Due to oversupply in the market, prices of houses (that were held as mortgages) declined significantly and hence the *sub – prime households started defaulting* on a large scale in paying off their instalments.

- This caused huge losses to the banks. Losses in banks and other financial institutions had a chain effect and soon the whole US economy and the world economy at large felt its impact.

Causes of Business Cycles
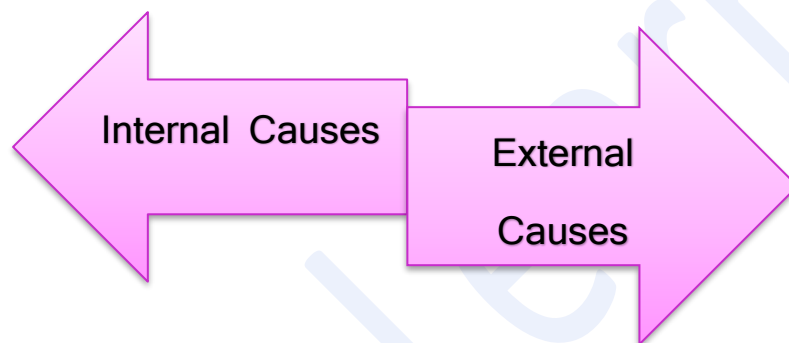
Internal Causes

1. Fluctuations in Effective Demand

According to Keynes, fluctuations in economic activities are due to **fluctuations in aggregate effective demand**
Effective demand refers to the willingness and ability of consumers to purchase goods at different prices.
How aggregate demand leads to economic fluctuations

❖ Higher level of demand
- In a free market economy, where maximization of profits is the aim of businesses, a higher level of aggregate demand will induce businessmen to produce more. *(since more production would mean more sale and hence more profits)*
- As a result, there will be more output, income and employment

- However, if aggregate demand outstrips aggregate supply, it causes inflation
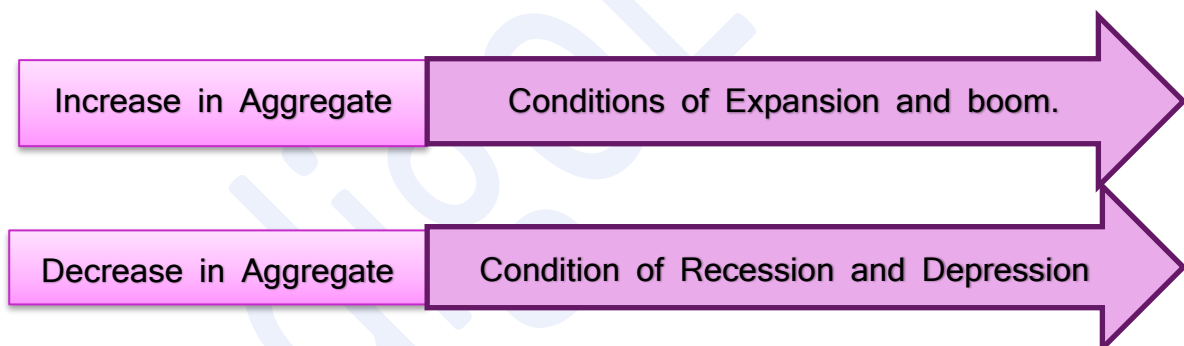
❖ **Lower level of demand**

- If the aggregate demand is low, there will be lesser output, income and employment *(since producers will cut their output to avoid situation of excess supply)*

- Investors sell stocks, and buy safe-haven investments that traditionally do not lose value *(such as bonds, gold and the U.S. dollar)*

- As companies lay off workers, consumers lose their jobs and stop buying anything but necessities. That causes a downward spiral

❖ **Impact of Foreign Trade**

- The difference between exports and imports is the net foreign demand for goods and services.

- This is a component of the aggregate demand in the economy, and therefore variations in exports and imports can lead to business fluctuations as well.

Conclusion

Increase in Aggregate	Conditions of Expansion and boom.

Decrease in Aggregate	Condition of Recession and Depression

2. **Fluctuations in Investment**

According to some economists, fluctuations in investments are the prime cause of business cycles.

❖ **Why do investments fluctuate**

- Changes in the profit expectations of entrepreneurs.

- New inventions may cause entrepreneurs to increase investments in projects which are cost-efficient or more profit inducing.

- Investment may rise when the rate of interest is low in the economy.

❖ Effect of Fluctuations in Investment

- Investment spending is considered to be the most volatile component of the aggregate demand.
- Increases in investment shift the aggregate demand to the right, leading to an economic expansion *(how increase in demand leads to boom is already explained above)*
- Decreases in investment have the opposite effect

3. Variations in government spending

- Fluctuations in government spending with its impact on aggregate economic activity result in business fluctuations *(since it is an important component of aggregate demand..!!)*
- Government spending, especially during and after wars, has destabilizing effects on the economy.

4. Macroeconomic policies

Macroeconomic policies mainly includes monetary and fiscal policies of the government.

How these policies lead to business cycles.

❖ Expansionary/ Inflationary policies
  ♦ Examples
    - increased government spending
    - tax cuts softening of interest rates,

  ♦ Impact
    - Boost to aggregate demand, resulting to expansion and boom
    - Inflationary effects (mainly due to interest rate cuts) and decline in unemployment rates.

❖ Anti- Inflationary policies
  ♦ Examples
    - reduction in government spending
    - increase in taxes
    - Increase in interest rates

  ♦ Impact
    - downward pressure on the aggregate demand leading to slow down in the economy

- At times, such slowdowns may be drastic, showing negative growth rates and may ultimately end up in recession.

5. Money Supply

According to **Hawtrey,** trade cycle is a purely monetary phenomenon. Unplanned changes in supply of money may cause business fluctuation in an economy.

❖ Increase in supply of money
- Expansion in aggregate demand leading to boom in economic activities.
- Capital is easily available, and therefore consumers and businesses alike can borrow at low rates *(This stimulates more demand, creating a virtuous circle of prosperity)*
- However, excessive increase of credit and money also set off inflation in the economy.

❖ Decrease in money supply
- Decrease in money supply and/or contraction of credit creation by banks leads to lesser investible funds for businessmen and lesser disposable funds for consumers
- Due to lesser investment and lesser demand, there is fall in output, employment etc. and hence initiation of recession in the economy

6. Psychological factors

➤ **Anticipation theory by Pigou.**

❖ Theory

- According to Pigou, modern business activities are based on the anticipations of business community and are affected by waves of optimism or pessimism.
- Business fluctuations are the outcome of these psychological states of mind of businessmen

❖ Stages of Optimism

- If entrepreneurs are optimistic about future market conditions, they make investments, and as a result, the expansionary phase may begin.

❖ Stages of Pessimism

- Investors tend to restrict their investments.
- With reduced investments, employment, income and consumption also take a downturn and the economy faces contraction in economic activities.

-

➤ Other Theories
❖ Innovation Theory by Schumpeter

- According to Schumpeter's innovation theory, trade cycles occur as a result of innovations which take place in the system from time to time

❖ Cobweb theory by Nicholas Kaldor

- This theory holds that business cycles result from the fact that present prices substantially influence the production at some future date.
- The present fluctuations in prices may become responsible for fluctuations in output and employment at some subsequent period

External Causes

1. Wars

- During war times, production of war goods, like weapons and arms etc., increases and most of the resources of the country are diverted for their production.
- This affects the production of other goods - capital and consumer goods.
- Fall in production causes fall in income, profits and employment.
- This creates contraction in economic activity and may trigger downturn in business cycle

2. Post War Reconstruction

- After war, when the country begins to reconstruct itself, expenditure is incurred for building houses, roads, bridges etc. due to which economic activity begins to pick up.
- All these activities push up effective demand due to which output, employment and income go up. (thereby pushing the economy upwards..!!)

3. Technology shocks

- Although growing technology enables production of new and better products and services, however these products generally require huge investments for new technology adoption.

- On account of this, technological advancement in any country leads to expansion of employment, income and profits etc. and give a boost to the economy.

For example, due to the advent of mobile phones, the telecom industry underwent a boom and there was expansion of production, employment, income and profits

4. Natural Factors

- These mainly include weather cycles which cause fluctuations in agricultural output. This leads to instability in the economies, especially those economies which are mainly agrarian.
- Even in other economics, there is an indirect impact caused in the following manner:-
  - ✓ In the years when there are draughts or excessive floods, agricultural output is badly affected. With reduced agricultural output, incomes of farmers fall and therefore they reduce their demand for industrial goods.
  - ✓ Reduced production of food products also pushes up their prices and thus reduces the income available for buying industrial goods.
  - ✓ Reduced demand for industrial products may cause industrial recession.

5. Population growth

- The rate of savings in the economy directly depends on population growth. Where the population growth rate outpaces the economic growth rate, the result is lesser overall savings in the economy.
- Fewer saving will reduce investment and as a result, income and employment will also be less.
- With lesser employment and income, the effective demand will be less, and overall, there will be slowdown in economic activities

6. Other reasons

- In the world of globalisation, it is natural that business fluctuations occurring in one part of the world get easily transmitted to other parts.
- Changes in laws related to taxes, trade regulations, government expenditure, transfer of capital and production to other countries, shifts in tastes and preferences of consumers are also potential sources of disruption in the economy.

Why is study of Business Cycles relevant for Business Decision Making

1. **Direct Impact on profits**

   Understanding the business cycle is important for businesses of all types as they affect the demand for their products and in turn their profits which ultimately determines whether a business is successful or not.

2. **Formulation of appropriate policies**

   Knowledge regarding business cycles and their inherent characteristics is important for a businessman to frame appropriate policies. For example,
   - Period of prosperity opens up new and superior opportunities for investment, employment and production and thereby promotes business.
   - Period of recession or depression reduces business opportunities and profits *(businessmen play defensive during this time..!!*

3. **Planning regarding expansion and down sizing**
   - undertaking the function of ***forward planning***, is study of the ecnmic environment in which it is operating.
   - The stage of the business cycle is crucial while making managerial decisions regarding e**xpansion or down-sizing**.
   - Businesses have to advantageously respond to the need to alter production levels relative to demand. Different phases of the cycle require fluctuating levels of input use, especially labour input.
   - Capability to expand or rationalize production operations so as to suit the stage of the business cycle is the key to long term success of any firm

4. **Impact due to nature of product**

   ❖ **Products that vary directly with economic cycle**
   - Businesses whose fortunes are closely linked to the rate of economic growth are referred to as "cyclical" businesses.
   - These include fashion retailers, electrical goods, house-builders, restaurants, advertising, overseas tour operators, construction and other infrastructure firms.
   - During a boom, such businesses see a strong demand for their products but during a slump, they usually suffer a sharp drop in demand

   ❖ **Products that vary inversely with economic cycle**

- It may also happen that some businesses actually bene_t from an economic down turn.
- This happens when their products are perceived by customers as representing good value for money, or a cheaper alternative compared to more expensive products.

❖ Ability to respond appropriately

Understanding what phase of the business cycle an economy is in and what implications the current economic conditions have for their current and future business activity, helps businesses to better anticipate the market and to respond with greater alertness.

For instance:- Study of stage of business cycle helps a firm to determine the exact timing of its new product launch *(the ability to forecast the future economic climate is what determines the success of newly launched product..!!)*

Our Approach

We go to great lengths to ensure that we deliver a quality learning experience to our students. Right from pedagogy design to faculty selection, video recording and animation, at every stage our goal is to ensure that the final output is the BEST and it meets the requirements of the learners. It is our laser sharp focus on maintaining HIGH QUALITY and setting new benchmarks in the CA education domain, that make our efforts stand out and help our students to succeed in their examinations.

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