BUSINESS ECONOMICS

UNIT-I

INTRODUCTION

Meaning:

Business Economics is nothing but the application of economics theories and principles management. It deals with decision making at the level of a business firm. Business managers use economic modes of thought to analyse business situation and to make decisions. The Primary function of a business executive is decision making and forward planning.

Business Economics is now Called "Managerial Economics".

Definition of Business Economics:

"Use of economic analysis is formulating policies is known as problems"**-Joel Dean**

"Managerial Economics is economics applied in decision making".**-Hanyes,Mote**

According to M.C.Nair and Meriam-"Business Economics consists of the use of economic models of thought to analyse business problems".

Nature of Business Economics:

1. **Micro in Nature:**

It is micro in Nature. This is because business economics is the study mainly at the level of business firm. The appropriate title for micro economics is **Price Theory.** One of the uses of price theory is the application of it's method of analysis to business problems. It's knowledge enables businessmen to take improved decision in demand analysis.

2. **Pragmatic in Approach**:

It is Pragmatic approach in it's approach; it does not involve itself in Theoretical controversies. It is the application of economics analysis to decision making.

3. **Normative Science:**

It is normative study, it prescribes standards or norms for policy making. It is Prescriptive rather than descriptive in nature. In economics theory, we try to explain economic behaviour.

4. **A Science Art:**

Business firms employ scientific methods of observation, reasoning and Verification in analysing business problems. Demand forecasting is a scientific analysis. Business economics may also be called an art because it helps management in the efficient utilisation of scarce resources.

5. **Study of Macro Environment**:

Business firms operate under macro economic environment. The macro Economic environment relating to national income, business cycles, economic policies of the government in relation to business are important to managers.

SCOPE OF BUSINESS ECONOMICS

1. **Demand Analysis and Forecasting**:

A Business firm is a collection of factors of production. It converts raw Materials into finished products. These products are to be sold in the market. Hence the firm has to estimate the demand for its product. Production is more often in anticipation of demand. A forecast of future sales becomes important. On of basis of demand forecasts the firm will prepare schedules for production and for employing resources.

2. **Cost Analysis**:

Firms attempt at minimisation of production costs. Cost estimates are essential For decision making. Managers know the causes for variations in costs. There is an element of uncertainty because all causes are not known in advance. Cost control is essential for pricing practices and profit planning.

3. **Pricing Policies:**

The process of the products that the firm sells brings income to the firm. Profits are the difference between total income and total costs. The success of the firm therefore depends on correct price fixing. Pricing policies cover price determination in various market forms. Pricing methods, differential pricing, productive pricing and price forecasting.

4. **Profit Management**:

The chief aim of a firm is to make maximum profits. Profits depends upon the Difference between revenue and costs. Cost and revenues vary for a number of reasons. There is, therefore, uncertainty in profit planning. Under profit management, we study the nature of profit, pofit policies, planning and profit techniques like Break even analysis.

5. **Capital Management**:

Capital investments are the most complex problems. Capital management Implies planning and control of the capital expenditure. The main topics under capital management are cost of capital, rate of return and selection of project.

Micro and Macro Economics and their interface

The working of the economic system can be analysed in two ways-micro analysis and macro analysis. We may analyse the behaviour of individual units in the economy-the individual consumer, individual firm and industry. We study the conditions of equilibrium of consumers. We also study that conditions of equilibrium of a firm under various market situations. We then proceed to study the organisation and operations of a single industry. Finally, he attempts to explain the working of the whole economic system. This type of analysis is called micro analysis.

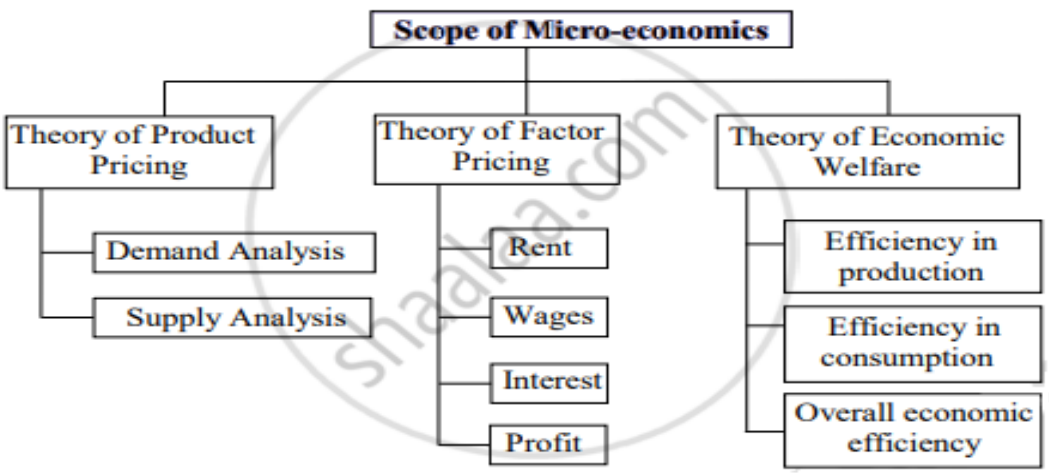
The second type of analysis is called macro analysis. Here we analyse the working of the economic system as a whole. We examine the factors which determine total income, total employment, total consumption, total savings, total investment etc.

Micro Economics:

The word 'micro' means a millionth part. Micro economics is therefore the study of small parts of the economy. It studies the economic motives and behaviour of individual consumers and producers and the principles involved in organising and operating individual firms and industries. It studies how individual consumer, firm and industry attain equilibrium or optimum positions.

Micro is derived from the Greek word 'micros' meaning small. It seeks to explain the market for individual commodities and individual factors of production. It also tries to explain price determination of individual commodities and factors of production. It lays down the conditions of equilibrium of firms and industries. The analysis is based on the assumption of full employment of resources.

The subject matter of micro economics may be summed up in four basic questions. They are: (i) what goods shall be produced and in what quantities (ii) How they shall be produced (iii) to whom goods shall be produced (iv) whether production and distribution of goods is efficient. All these questions are answered by the Price Theory. The contents of price theory can be presented in a chart.



Macro Economics:

Macro economics is the study of the economic system as a whole. It studies not individual economic units like the consumer or firm or industry but the whole economic system. It deals with the aggregates the national output, aggregated employment, total consumption, total investment and the general price level. It establishes a functional relationship between these aggregate variables.

Gardner Ackley says:"Macro economics concerns with such variables as the aggregate volume of output of an economy, with the extent to which its resources are employed, with the size of national income and with general price level".

Difference between Micro and Macro Economics

	Micro Economics	Macro Economics
Meaning	It is the branch of economics that is related to the study of individual, household, and firm's behaviour in decision making and allocation of the resources.	It is the branch of economics that deals with the study of the behaviour and performance of the economy in total. The most important factors studied in macro economics involve in Gross Domestic Product (GDP), unemployment, inflation and growth rate etc.
Area of Study	It studies the particular market segment of the economy	It studies the whole economy that covers several market segment
Deals with	It deals with various issues like demand, supply factor pricing, product pricing, economic welfare, production, consumption and more	It deals with various issues like national income, distribution, employment, general price level, money and more
Business Application	It is applied to internal issues	It is applied to environmental and external isssues
Scope	It covers several issues like demand, supply, factor pricing product, economic welfare, production, consumption and more	It covers several issues like distribution, matual income, money general price level and more.
Significance	It is useful in regulating the prices of a product along side the prices of factors of production (labour,land,entrepreneur,capital and more)	It perpetuates firmness in the broad price level, and solves the major issues of the economy like deplation, inflation, rising prices unemployment and

		poverty as a whole.
Limitations	It is based on impractical presuppositions i.e., in micro economics, it is presumed that there is full employment in the community which is not at all feasible	It has been scriutinised that the misconception of composition incorporates, which sometimes fails of prove accurate because it is feasible that what is true for aggregate may not be true for individual as well

UNIT-II

DEMAND ANALYSIS

Introduction:

Business firms produce goods for sale in the market. They have to make two decisions.1.What to produce? And 2. How much to produce? These two depends on the state of demand. They produce only such goods which they can sell at profitable prices in the market. They produce that much quantity which they can sell. Demand analysis seeks to search out and measure forces that determine the volume of sales.

Meaning of Demand:

In ordinary language 'demand' means 'desire' for a thing. But a mere desire cannot get the thing unless it is backed by enough purchasing power. A poor man desire to have an electric fan or a radio. But, be cannot buy them if he does not have sufficient money to do so. Similarly, a rich man due to his enormous riches may enjoy high purchasing power. He may have the capacity to buy a helicopter. But, if he does not have desire for it he will not buy it. Thus, in economics demand means a desire to have a thing back by sufficient purchasing power.

Prof.Benham says:"Demand for anything at a given price is the amount of it which will be bought per unit of time at that place."

Hanson-"By demand, we mean the quantity of a commodity that will be purchased at a particular price and not merely the desire of a thing."

Determinants to Demand:

There are various determinants or factors on which demand for a commodity depends. These determinants may be economic and non-economic. Some of the important determinants of demand are follows:

a) **Price of the Commodity**:

Price of the commodity is the main determinant of demand for a commodity. The Law of demand states that if other variables remain constant or unchanged. There is a definite relationship between the price of the commodity and its demand. The relation is inverse. When price of the commodity falls demand for it increase and when the price of the commodity rises demand for it decreases.

b) **Consumer's income:**

There is a positive relationship between consumer's income and the demand for a Commodity. When income of the consumer increases the demand for the commodity also increases. When income increases capacity of the consumer to purchase the commodity increases and therefore the demand also increases.

c) **Price of the related commodity**:

The demand for a commodity is also affected by the price of its related commodity. For example, if the price of coffee falls demand for tea will be affected, if the price of petrol increases the demand for the car will be affected.

d) Consumer's tastes and preferences:

Consumer's tastes and preference are important determinants of demand for a commodity. The demand for a commodity changes when the taste and preference of the consumer changes. If the taste for a particular commodity changes positively, the demand for that commodity will increase. Advertisement, improved knowledge etc. cause a change in the taste and preference.

e) Consumer's expectations:

If consumers expect a fall in the future price, demand for the commodity will

Be affected. If the commodity is durable in nature, now consumers will postpone their purchasing. On the other hand if the consumers hear that the price of a particular commodity is going to rise and the commodity is essential, then the consumers will try to purchase more at the going price. Similar is the case of expectation about future income. If a consumer is certain about rise in future income, he will try to purchase more even at a high price and vice versa.

f) Population of the country:

When population of the country increases, demand for cloth, house, rice, medicine, school, college etc increases.

g) Credit facility:

When the credit facility is available, demand for commodities particularly of durable commodities and commodities of status symbol increases. If banks offers easy credit facility on instalments basis, demand for two wheelers and four wheelers will definitely increase.

h) Weather:

Weather is another determinant which affects the demand for a commodity. Demand for cold drinks increases when it is very hot. Similarly, demand for tea and coffee will increase in a cold rainy day

Demand Function

Demand function states the functional relationship between the demand for a commodity and the factors that determine it.

There are several factors that determine demand. The most important of them are:

1. Income of the consumers.
2. Tastes and fashions of the consumers.
3. Population.
4. Price of related goods.
5. Climatic conditions.
6. Price of that commodity.

The Demand function is shown in the form of an equation.

$D_n=F(P_n,P_x.....P_z)Y_1T$

D_n= demand for commodity n.

F= Function of

P_n= Price of commodity n

P_x.....P_z= Price of other goods

Y= Income of the consumers

T= Tastes of the consumers.

Demand Function relating to the law of demand:

The demand function relating to the law of demand states the functional relationship between the demand for that commodity and its price only. It is expressed as $D_n=F(P_n)$

D_n= demand for commodity n

F= Function of

P_n= Price of commodity n

Income Demand Function:

Income demand function states the functional relationship between the demand for the commodity and income. It is expressed as D=F(Y).

D= Demand, F= Function of, Y= Income.

Cross Demand Function:

Cross Demand Function states the functional relationship between the demand for the commodity and the prices of other goods.

It is expressed as $D= F(P_n)$

D= Demand

F= Function of

P_n= Price of other goods.

Importance of Demand Function:

Demand function is an important tool of demand analysis. It is important for economic policy formulation and business decisions.

1. It helps us to study and analyse the factors that influence demand.
2. It helps us in demand forecasting.
3. It is helpful in optimum allocation of the resources of a business firm.
4. To find out the elasticity of Demand.

Law of Demand:

We are in a position to derive the law of demand. As price rises, demand contracts. As price falls, demand extends.

Marshall stated the law thus:"the amount demanded increases with a fall in price, and diminishes with a rise in price."

Bilas states the law thus:"other things being equal, the quantity demanded per unit of time will be greater, lower the price and smaller, higher the price".

Samuelson states:"Law of Demand states that people will buy more at lower prices and buy less at higher prices, other things remain the same".

For the law of demand to hold good, other things must remain the same. What are these other things that should remain the same.

- No change in consumers income
- No change in consumers Wealth
- No change in prices of related goods-substitutes and complements
- No change in consumer tastes and preferences.

Why do Demand Curves Slope Downward?-Properties of Demand Curve.

We have to know the reasons for the demand curves to slope downward. The reasons are as follows.

Marshall's Explanation:

(i) Law of diminishing Marginal Utility:

Marshal based the law of demand on the law of diminishing marginal utility. He

Infact converted the marginal utility curve of a commodity into its demand curve (i) the law of diminishing marginal utility states that each succeeding unit of a commodity gives less satisfaction than the proceeding unit.

(ii) Less Urgent Uses:

As the price of a commodity falls it is put to less and less urgent uses where its marginal utility is less.

(iii) New Buyers:

Further, as price falls the commodity in question comes within the reach of new buyers. The estimates of marginal utilities will be different for different buyers. A person intensity of desire for a commodity may be great. He may buy it even when the price per unit is Rs.50. another person's desire may be less intense. His estimate of utility of that commodity may be less. He buys only when the price is Rs.40.

J.R.Hick's Explanation:

J.R.Hick's provided explanation for the law of demand. As we see later, his explanation is based on ordinary utility. A fall in price leads to an increase in demand. This Hicks called Price Effect-the effect of a change in price on quantity demanded. He broke the price effect into substitution effect and income effect.

A. Substitution Effect:

As the price of a commodity falls, it may become cheaper than its substitutes.

People who were previously buying substitutes may prefer to buy the commodity in question.

B. Income Effect:

A change in price of a commodity produces income effect also. A fall in price is equal to an increase in real income of the consumers. For example, let us suppose that a consumer buys 6 apples when the price of each apple is Rs.3. suppose the price of apple falls from Rs.3

to Rs.2. to buy the same quantity of apples the consumer now needs to spend only Rs. 12. There is a saving in his expenditure by Rs.6. this is equivalent to an increase in real income.

The income effect is generally positive. Insome cases, it tends to be negative. Those goods for which the income effect is negative are called inferior goods. In india with a rise in per capital income, lower income people gave up buying of coarse foodgrains like maize and started buying wheat or rice. Maize has become an inferior good for them. If both substitution effect and income effect are positive, the law of demand holds good. Even if income effect is negative, if it is less than the positive substitution effect, Marshal's law of demand holds good.

If the negative income effect is greater than the positive substitution effect, we have an exception to the law of demand. Then the demand curve will slope upward to the right. Such is the case with Giffen goods.

Exceptions to the Law of Demand:

To the general rule that demand curves slope downward, there are four possible exceptions. In some cases a rise in pi-ice may stimulate demand and cause the demand curve to slope upward for some distance. The first two exceptions are quite important. The other two are apparent and not real.

1. **Veblen goods:**

   These goods are associated with the name of Thorstein Veblen (1857-1929) and

   His doctrine of conspicuous consumption. Some goods are purchased by rich people for vanity purpose, eg., diamond and Jewellery

2. **The Giffen Effect:**

   A fall in the price of inferior goods tends to reduce its demand and a rise in its

   Price tends to extend its demand. This phenomenon was first observed by SIR ROBERT GIFFEN, popularly known as Giffen effect.

3. **Price changes are anticipated:**

   Price of a commodity falls. Seeing prices fall and expecting them to godown still

   Further, consumers wait for the expected fall in price. Their demand curves shift to the left, because still lower prices are expected. The opposite is also true. High prices with the expectation of a further rise in price cause demand curves shift to the right. There will be an increase in demand.

4. **Differences in quality:**

   There is another false exception to the law of demand. An article which is sold

   Under two brand names at the same time provides an exception. Consumers buy more of the high-priced brand than of the low priced even though the goods are identical. But consumers think that the two brands are different. In such cases we have to analyse the demand for two brands separately as if they were two different goods.

Elasticity of Demand:

Elasticity of demand is generally defined as the respectiveness or sensitiveness of demand to a given change in the Price of Product.

Type of Elasticity of Demand:

- Price Elasticity of Demand
- Income Elasticity of Demand
- Cross Elasticity of Demand
- Advertisement Elasticity of Demand

Definition of Price Elasticity:

"the elasticity (or responsiveness) of demand in a market is great or small according as the amount demanded increases much or little for a given fall in price, and diminishes much or little for a given rise in price".-**Alfre Marshal**

"The elasticity of demand for a commodity is the rate at which quantity bought changes as the price changes".-**A.K.Carincross**

Elasticity is " a measure of the relative change in the amount purchased in response to a relative change in price on a given demand curve."

The concept thus refers to the rate at which the demand for good responds to a change in its price. It assumes that income of people and prices of related goods remain the same. As it measures the relationship between changes in price and consequent changes in demand it is called Price Elasticity.

Price Elasticity of Demand:

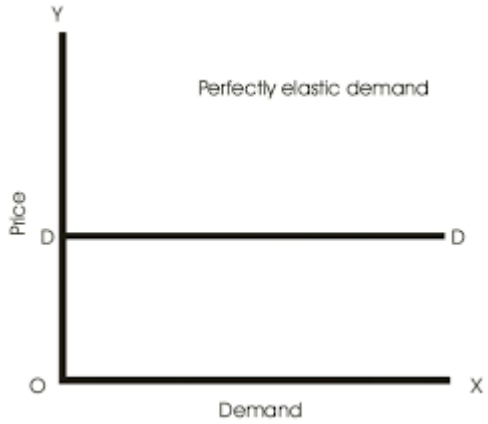
Price elasticity of demand is the responsiveness of quantity demanded of a product to a given change in price.

$$PED = \frac{\text{Proportionate change to the qty of demand of Product A}}{\text{Proportionate change to the Price of B}}$$

$$Ed_p = \frac{(Q_2-Q_1)/Q_1}{(P_2-P_1)/P_1}$$

1. **Perfectly Elasticity of Demand:**

If elasticity of demand is infinity or perfectly elastic, the average revenue curve is a Straight line parallel to X-axis. The firms can sell any quantity at the ruling market price. No price reduction is necessary to increase sales.



2. Perfectly inelasticity of Demand:

If the demand remains constant even when price changes much or less, it is Called perfectly inelasticity or perfect inelastic demand. Elasticity is equal to zero.

Here, the price is changing to any extent. But, demand remains the same. So, DD is perfectly inelastic demand curve which is vertical and perpendicular to X-axis.

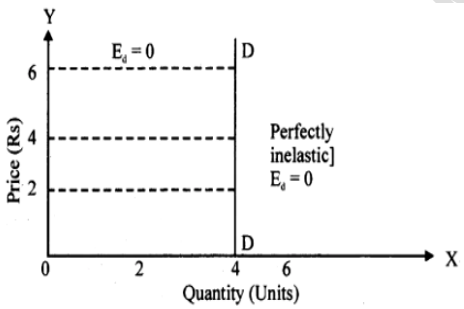


Figure shows perfectly inelastic demand curve

3. Relatively Elasticity of Demand:

If the change in demand is than the change in price, it is called relatively Elasticity of demand. This known as more elastici demand or simply elastic demand.

A small fall in price brings about a great rise. In demand or a small rise in price may bring about a grateful in demand.

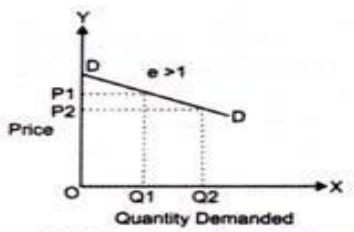
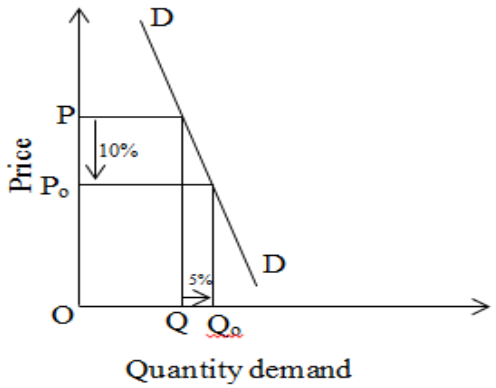


Figure-4: Relatively Elastic Demand

4. **Relatively inelasticity of Demand:**

If the change in demand is less than the change in price, it is called relatively Inelasticity of demand. A great fall in price may bring about only a small rise in demand or a great rise in price may bring about only is small fall in demand.



5. **Unitary Elasticity of Demand:**

If the change in demand is last equal to the change in price, it is called unitary elasticity of demand. Here, the price change is 10% and the demand change is also 10%.

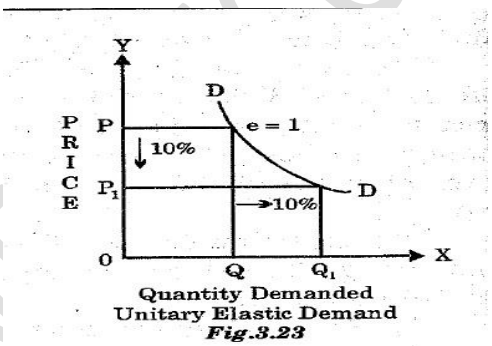


Fig.3.23

2. Income Elasticity of Demand:

A change in income of a consumer leads to a change in quantity of a Commodity purchased. The concept of income elasticity expresses the relationship between change in income and consequent change in the demand o a commodity.

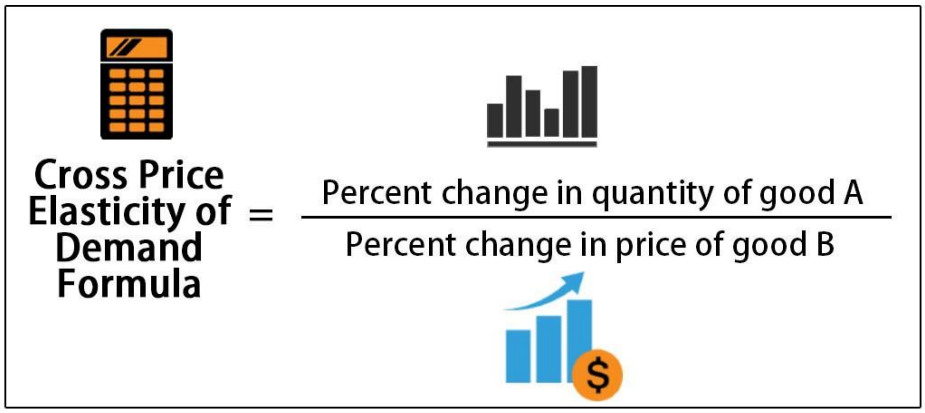
"Income elasticity of demand shows the way in which a consumer's purchase of any good changes as a result of change in his income."-**Stonier and Hague**

$$Ed_i = \frac{(Q_2-Q_1)/Q_1}{(I_2-I_1)/I_1}$$

3. Cross Elasticity of Demand:

The demand for a commodity depends not only on its price but also on the

Prices of substitutes and complements. Cross elasticity is a measure of relative change in the quantity demanded of a commodity due to a relative change in the price of its substitute of complement.



The commodity B may be substitute or complement for commodity A.

i) The cross elasticity is large and positive if the commodities are good substitutes. It is large because a rise in the price of commodity will induce its buyers its substitute, if it is a good one. It is positive because change are in the same direction.

Cross Elasticity of Demand

Price of coffee Per cup (Y)	Demand Cups	Price of Tea Per cup (X)	Demand Cups
Rs.4	50	Rs.5	40
Rs.6	30	Rs.5	50

4) Advertisement Elasticity of Demand:

Business firms incur expenditure on advertisement and publicity to increase

the sales of their products. The object of such expenditure is

(i) To shift the demand curve to the right

(ii) To reduce the elasticity of demand

If the demand curve shifts to the right, it means more units are sold at a given price. If the advertisement expenditure convinces the consumers that the product in question is superior and makes them to prefer that product, the demand becomes inelastic. Even if the price of the product is raised, consumers i continue to buy it.

The increase in demand brought about by advertisement outlay can be measured by advertisement elasticity of demand.

Proportionate change in sales/Proportionate change in advertisement expenditure.

Measurements of Price Elasticity of Demand:

There are five methods to measure the price elasticity of demand. These Methods are:

1. Total Expenditure Method
2. Proportionate Method
3. Point Elasticity of Demand
4. Arc Elasticity of Demand
5. Revenue Method

1. Total Expenditure Method:

Dr. Marshall has evolved the total expenditure method to measure the price elasticity of demand. According to this method, elasticity of demand can be measured by considering the change in price and the subsequent change in the total quantity of goods purchased and the total amount of money spent on it.

Total Outlay=Price X Quantity Demanded.

There are three possibilities

I. If with a fall in price (demand increases) the total expenditure increases or with a rise in price (demand falls) the total expenditure falls, in that case the elasticity of demand is greater than one i.e., (Ed>1.)

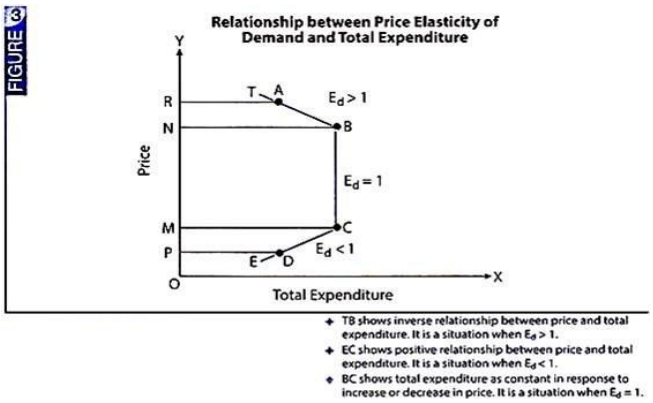
II. If with a rise or fall in the price (demand falls or rises respectively), the total expenditure remains the same, the demand will be unitary elastic i.e., (Ed=1).

III. If with a fall in price (demand rises), the total expenditure also falls, and with a rise in price (Demand falls) the total expenditure also rises, the demand is said to be less elastic or elasticity of demand is less than one i.e., (Ed<1)

Table Representation

The method of total expenditure has been explained with the help of table

Price (P)	Quantity Demanded(Q)	Total Outlay (PQ)	Elasticity of Demand E_d
10	1	10	$E_d>1$
9	2	18	
8	3	24	
7	4	28	
6	5	30	$E_d=1$
5	6	30	
4	7	28	$E_d<1$
3	8	24	
2	9	18	
1	10	10	



2. Proportionate Method:

This method is also associated with the name of Dr. Marshall. According to this method, "price elasticity of demand is the ratio of percentage change in the amount demanded to the percentage change in price of the commodity." It is known as the Percentage Method, Flux Method, Ratio Method, Arithmetic Method. Its formula is as under: Proportionate change in quantity demanded/Proportionate change in price.

$$E_d = \frac{\text{Proportionate Change in Quantity Demanded}}{\text{Proportionate Change in Price}}$$

$$= \frac{\frac{Q_1 - Q}{Q}}{\frac{P_1 - P}{P}}$$

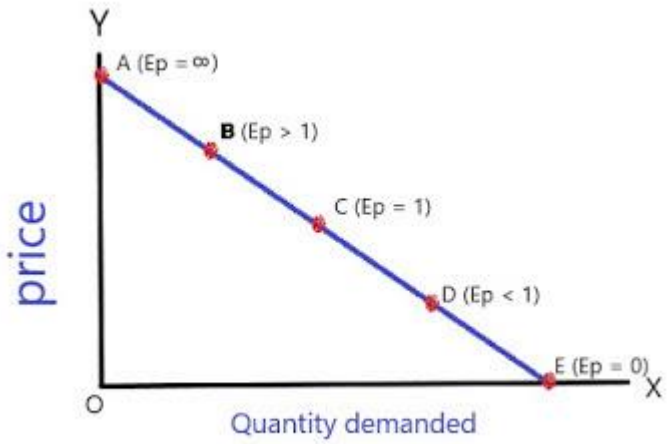
3. Point Method:

This method was also suggested by Marshall and it takes into consideration a Straight line demand curve and measures elasticity at different points on that curve. This method has now become very popular method of measuring elasticity. In this we take a straight line demand curve, which connects the demand curve with both the axis OX and OY.

Case (i) Linear Demand Curve

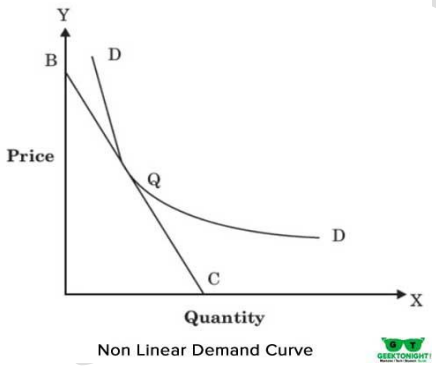
In figure 2.20 RS is a straight line demand curve. Initially, price is OP or QA and OQ or PA is the initial demand. At OP^1 new price the demand is OQ^1. At point R elasticity of demand can be measured with following formula.

E_d=Change in Demand/Original Demand/Change in Price/Original Price



Case (ii) Non-Linear Demand Curve.

It is possible that the demand curve is not a straight line but a curve. Even then the above technique shall be applicable. The only change to be made is that a tangent is drawn on the demand curve at a point at which we want to measure elasticity of demand.



4. Arc Elasticity of Demand

"Arc elasticity is a measure of the average responsiveness to price change exhibited by a demand curve over some finite stretch of the curve".-**Prof.Baumol**

"Arc elasticity is the elasticity at the mid-point of an arc of a demand curve."-**Watson**

"when elasticity is computed between two separate points on a demand curve, the concept is called Arc elasticity."-**Leftwitch**

This method of measuring elasticity of demand is also known as "Average Elasticity". In this method, we use $P_1+P_2/2$ rather than P. Thus, we apply $Q_1+Q_2/2$ rather than q. The formula for Arc elasticity of demand is as follows:

This method of measuring elasticity of demand is also known as "**Average Elasticity**". In this method, we use $\frac{P_1 + P_2}{2}$ rather than P. Thus, we apply $\frac{Q_1 + Q_2}{2}$ rather than q. The formula for arc elasticity of demand is as follows.

$$\text{Arc. Elasticity of Demand } (E_A) = \frac{\text{Change in Demand}}{\text{Original Demand + New Demand}} \Big/ \frac{\text{Change in Price}}{\text{Original Price + New Price}}$$

Arc. Elasticity of Demand in notational form can be expressed as :

$$E = \frac{Q - Q_1}{Q + Q_1} \div \frac{P - P_1}{P + P_1}$$

where Q = Original quantity demanded

Q_1 = New quantity demanded

P_1 = Original price

P_2 = New Price

This can be shown with the help of a diagram 11.

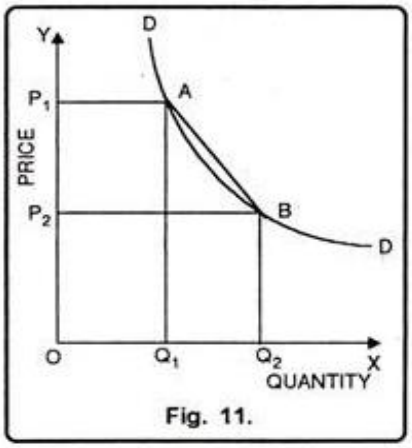


Fig. 11.

In figure 11 quantity is measured on X-axis while price on Y- axis. DD is the demand curve. Now if we want to measure the arc elasticity between A and B on the demand curve DD, we will have to take the average of prices OP_1 and OP_2 as well as of quantities *viz;* Q_1 and Q_2.

$$\therefore \quad E_A = \frac{[P + (P + \Delta P)]}{(Q + (Q + \Delta Q))} \times \frac{\Delta Q}{\Delta P}$$

5. **Revenue Method:** Mrs. Joan Robinson has given this method. She says that elasticity of demand can of measured with the help of average revenue and marginal revenue.

Therefore, sale proceeds that a firm obtains by selling its products are called its revenue. However, when total revenue is divided by the number of units sold, we get average revenue. On the contrary, when addition is made to the total revenue by the sale of one more unit of the commodity is called marginal revenue. Therefore, the formula to measure elasticity of demand can be written as,

E_d=A/A-M

Where Ed represents elasticity of demand, A=average revenue and M=marginal revenue. This method can be explained with the help of following figure.

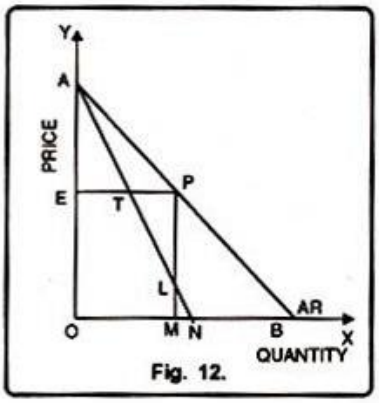


Fig. 12.

$$Ep = \frac{\text{Lower Portion}}{\text{Upper Portion}} \text{ OR } \frac{PB}{PA}$$

We see in the figure that ΔAEP and ΔPMB are similar, thus ratio of their sides is also equal.

$$Ep = \frac{PB}{PA} = \frac{PM}{AE}$$

and; ΔAET > and ΔTPL are congruent triangles, therefore PL=AE. Putting PL in place of AE in the above equation, we shall get

$$Ep = \frac{PB}{PA} = \frac{PM}{AE} \text{ (because PL = PM – LM)}$$

$$\therefore \quad Ep = \frac{PM}{PM - LM} \text{ (where PM = AR and LM = MR)}$$

$$\text{Therefore,} \quad Ep = \frac{PM}{PM - LM} = \frac{AR}{AR - MR} \text{ or } \frac{A}{A - M}$$

UNIT-3
Production, Cost and Revenue Analysis

Concept of Production Function:

The production analysis of the firm brings into focus the process of production and related costs of production. We must take inputs into consideration applied for production and resulting into output. There are different methods to produce a commodity. The firm has to identify the technically efficient production processes for avoiding any wastage of resources. These technically efficient production processes provide a choice for choosing the least-cost process.

Production is also defined as producing goods which satisfy some human wants. Production is a sequence of technical processes requiring either directly or indirectly the mental and physical skill of craftsman and consists of changing the shape, size and properties of materials and ultimately converting them into more useful articles. Means of production refer to the concept which combines the means of labor and the subject of labour. Means of labour simply means all the things which require labour to transform it. Subject of labour means the material to work on. Production, therefore, is the combined resources and equipment needed to come up with goods or serve.

Major portion of goods and services consumed in a modern economy are produced by firms. A firm is an organization that combines and organises resources for the purpose of producing goods and services for sale at a profit. The most important reason for a firm or business enterprises exist is that firms are specialised organization devoted to manage the process of production. Production in economic terms is generally understood as the transformation of inputs into outputs. The inputs are what firm buys, namely productive resources, and outputs are what it sells. Production is not the creation of matter but it is the creation of value.

MEANING OF PRODUCTION:

Business firms are important components (units) of the economic system. They are artificial entities created by individuals for the purpose of organising and facilitating production. The essential characteristics of the business firm is that it purchases factors of production such as land, labour, capital, intermediate goods and raw material from households and other business firms and transforms those resources into different goods or services which it sells to its customers, other business firms and various units of the government as also to foreign countries.

According to **J.R.Hicks:** "Production is any activity directed to the satisfaction of other people' wants through exchange".

According to **Waston: "**the relation between a firm's physical production (output) and the material factors of production (input) is referred to as a production function".

Factors of Production:

Productive resources used to produce a given produce are called factors of production.

These productive resources may be raw materials, services of various categories of labourers, or capital supplied by capitalists or entrepreneurship of an entrepreneur who assembles the other factors of production. These factors or resources are also called inputs. Thus, the factors of production are traditionally classified as land, labour, capital and organization. Production, in economics, is understood as the transformation of inputs or factors into outputs.

Some of the important factors of production are(i)Land (ii) Labour (iii) Capital (iv) Entrepreneur.

All the inputs are classified into two groups primary and secondary inputs. Primary inputs render services only whereas secondary inputs get merged in the commodity for which they are used.

(i) Land: In economics the term land is used in a broad sense to refer to all natural resources or gifts of nature. As the Penguin Dictionary of Economics has put it: "Land in economics is taken to mean not simply that part of the earth's surface not covered by water, but also all the free gifts of nature's such as minerals, soil fertililty, as also the resources of sea. Land provides both space and specific resources".

(ii) Labour: Like land, labour is also a primary factor of production. The distinctive feature of the factor of production, called labour, is that it provides a human service. It refers to human effect of any kind physical and mental which is directed to the production of goods and services.

As such, there are different types of labour input, varying in effort and skill

Content, and in particular types of skill content. Thus like 'land', labour is not homogeneous. The term covers clerical, managerial and administrative functions as well as skilled and unskilled manual work.

Land and Labour: Labour differs from land in an important way. While land is a stock, labour is a flow. The term 'labour' is used to refer to the flow of labour service per unit of time. So labour is perishable. If we do not make use of today's labour power, a correspondingly large amount is not made available tomorrow.(in future)

A related, but important point should be noted in this context. The worker sells his services in the market, but retains his capital (working ability). In other words, what is bought and sold is the service of labour, not labour itself. A firm cannot but and sell labour in the same way that it can but land and capital.

Dual Role: Another important point to note is that labour is not only a factor of production. The supplier of labour-the worker-is also a consumer. Thus, labour plays a dual role in a modern economy. Labour is both the subject and the object of production.

(iii) Capital: Capital, the third agent or factor is the result of past labour and it is used

To produce more goods. Capital has, therefore, been defined as 'produced means of production.' It is a man-made resource. In a board sense, any product of labour-and-land which is reserved for use in future production is capital.

To put it more clearly, capital is that part of wealth which is not used for the purpose of consumption but is utilised in the process of production. Tools and machinery, bullocks and ploughs, seeds and fertilizers etc., are examples of capital.

Even in ancient times, capital was created for producing food, hunting animals and for the transportation of goods. At that stage capital goods consisted of simple tools and implements. Even in the least developed countries some capital is used. In such countries people make use of simple ploughs, axes, bows and arrows and leather bags to carry water.

(iv) Enterprise (Organisation): Organisation, as a factor of production, refers to the task of bringing land, labour and capital together. It involves the establishment of co-ordination and co-operation among these factors. The person in charge of organisation is known as an organiser or an entrepreneur.

PRODUCTION FUNCTION:

Production function refers to the functional relationship between the quantity of a good produced(output) and factors of production (input). In economics, production function refers to the physical relationship between inputs and output under given technology.

In other words production function is a mathematical functional/technical/engineering relationship between inputs and output such that with a given combination of factor inputs and technology at a given period of time, the maximum possible output can be produced. Such as land, labour capital and entrepreneurship.

"The production function is purely a technical relation which connects factor inputs and output."-**Prof Koutsoyiannis**

"Production function is the relationship between inputs of productive services per unit of time and outputs of product per unit of time."**-Prof.George J.Stigler**

in this way, production function reflects how much output we can expect if we have so much of labour and so much of capital as well as of labour etc.

The new production function brought about by developing technology displays same inputs and more output or the same output with lesser inputs. Sometimes a new production function of the firm may be adverse as it takes more inputs to produce the same output.

Mathematically, such a basic relationship between inputs and outputs may be expressed as:

Q=f(Ld,L,M,T) where Q=Output of commodity X

Ld=land employed in the production of X

L= labour employed in the production of X

K= capital employed in the production of X

M= management employed in the production of X

T= technology employed in the production of X

LAW OF VARIABLE PROPORTION :(Law of Diminishing Returns)

Law of variable proportions occupies an important place in economic theory. This law is also known as law of proportionality. Keeping other factors fixed, the law explains the production function with one factor variable. In the short run when output of a commodity is sought to be increased, the law of variable proportions comes into operation. Therefore, when the number of one factor is increased or decreased, while other factors are constant, the proportion between the factors is altered.

Definitions:

The law of variable proportion has been differently defined by different economists as.

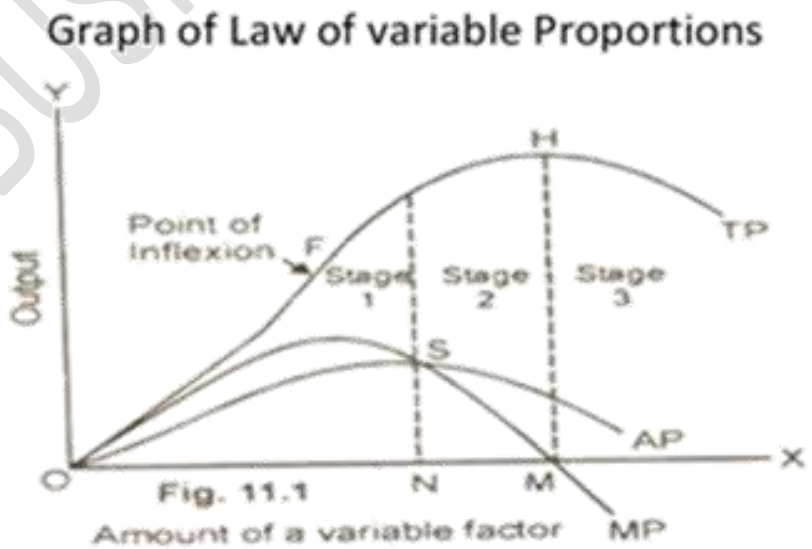
"As the proportion of the factor in a combination of factors is increased after a point, first the marginal and then the average product of that factor will diminish."**-Benham**

"As equal increment of one input are added, the inputs of other productive services being held constant, beyond a certain point the resulting increments of product will decrease that the marginal products will diminish."

Assumptions:

1. **Constant Technology:** The state of technology is assumed to be given and constant. If there is an improvement in technology the production function will move upward.
2. **Factor Proportions are Variable**: The law assumes that factor proportions are variables. If factors of production are to be combined in a fixed proportion, the law has no validity.
3. **Homogeneous Factor Units**: The units of variable factor are homogeneous. Each unit is identical in quality and amount with every other unit.
4. **Short Run**: The law operates in the short-run when it is not possible to vary all factor inputs.

Units of Labour and Capital	Total Product(TP)	Average Product(AP)TP/L	Marginal Product(MP)TP_n-TP_{n1}
1	20	20	20
2	38	19	18
3	54	18	16
4	68	17	14
5	80	16	12
6	90	15	10
7	90	12.9	0
8	80	10	-10



First Stage: First stage is known as the stage of increasing returns because the average product (AP) of the variable input increase throughout this stage and reaches its maximum.

Second Stage: The second stage starts from where average product is equal to marginal product. In second stage, total product increases at a diminishing rate until it reaches the maximum point.

Third Stage: Third stage starts after the employment of OM1 units of variable factor. If any unit of variable factor is added to it, it will have a negative marginal productivity. The additional units of variable factor will reduce production instead of increasing. Thus, the cost of production will also be increased, since total production actually falls as more labour is used.

LAW OF RETURNS TO SCALE:

In the long run all factors of production are variable. No factor is fixed. Accordingly, the scale of production can be changed by changing the quantity of all factors of production.

Definitions:

"The term returns to scale refers to the changes in output as all factors change by the same proportion." **-Koutsoyiannis**

"Returns to scale relates to the behaviour of total output as all inputs are varied and is a long run concept." **-Leibhafsky**

Returns to Scale are of the following **Three Types**

1. Increasing Returns to Scale
2. Constant Returns to Scale
3. Diminishing Returns to Scale

In the long run, output can be increased by increasing all factors in the same proportion. Generally, law of returns to scale refer to an increase in output due to increase in all factors in the same proportion.

1. **Increasing Returns to Scale:** Increasing returns to scale or diminishing cost refers to a situation when all factors of production are increased, output increases at a higher rate. It means if all inputs are doubled, output will also increase at the faster rate than double. Hence, it is said to be increasing returns to scale.

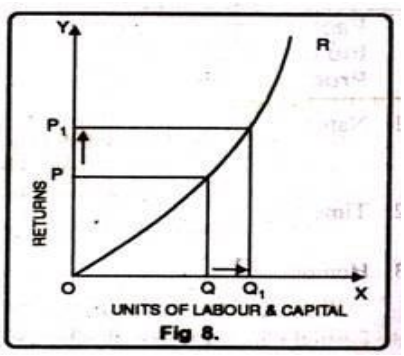
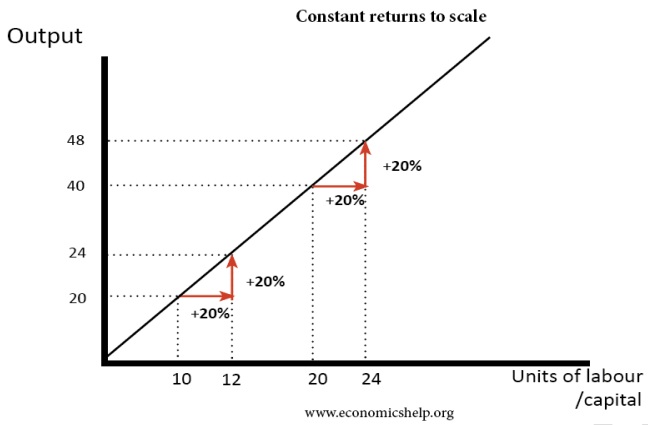
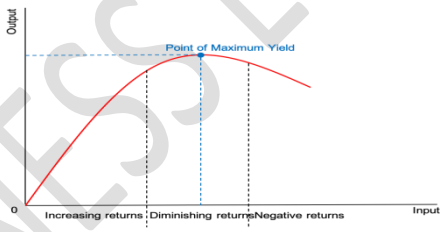


Fig 8.

2. **Constant Returns to Scale**: Constant returns to scale or constant cost refers to the production situation in which output increases exactly in the same proportion in which factors of production are increased. In simple terms, if factors of production are doubled output will also be doubled. In this case internal and external economies are exactly equal to internal and external diseconomies. This situation arises when after reaching a certain level of production, economies of scale are balanced by diseconomies of scale. This is known as homogeneous production function.



3. **Diminishing returns to Scale**: Diminishing returns or increasing costs refers to that production situation, where if all the factors of production are the factors of production are increased in a given proportion, output increases in a smaller proportion. It means, if inputs are doubled, output will increase in labour and capital is followed by 10 percent increase in output, then it is an instance of diminishing returns to scale.



Reason for increasing returns to scale: When all the factors are increased in some equal proportion, the total output increases more than portionately, which are known as increasing returns to scale. They are due to the following causes.

1. **Indivisibility of some factors:** Some factors are available in certain size only. As such, they are indivisible. Whenever there are indivisible factors which are not utilied their full capacity, economics are enjoyed with an increase in the output.
2. **Economies of diminision:** They are obtained when the sizes of some capital goods are increased. If the radius of a water pipe is doubled, the valume of water that flows, through will increase nearly four times. The operational cost of a double decker bus will not be double, through it carries passengers double than a single decker bus.
3. **Specialisation Economics:** when the scale of operation increases, specialisation can be introduced. Work can be divided among specialist can be introduced. Work can be divided among specialist labourers and specialist machine. This increases the productivity of the factors, hence increasing returns.

4. **Other Economics:** As the scale of production increases, economics in marketing and finance are obtained. Cost per unit is reduced. External economics are enjoyed by the firms when the industry grows in size. They also bring down the average cost.

COST:

Introduction:

Every firm has to incur several types of costs in order to produce a certain amount of output. Organiser cannot spend carelessly as his funds are limited. He has to understand the nature of different costs. He has to know how to control them. He has to know to produce maximum output with minimum cost so that he can maximise his profits. "Cost Analysis" provides him with much a knowledge. Costs are classified as fixed costs and variable cost. Costs, incurred on machines, tools factory buildings, salaries to permanent staff etc., are known as fixed costs. They do not change with output. As output increases, average fixed cost will be decreasing. Costs incurred on raw materials, fuel, transport, wages to temporary staff etc., are known as variable costs. They do change with output. The distinction between them hold good only in short periods. However, all costs become variable in the long period.

According to the **Chartered Institute of Management Accountants**, cost is "the amount of expenditure (actual or notional) incurred on or attributable to a specified thing or activity."

Types of Costs:

1. **Money Cost:** The most widely accepted concept of cost is the money expenses of a firm.

These are enterpreneur's cost of producing a commodity. This include wages and salaries of labour, interest on capital, rent paid to the owners of land, cost of raw material, replacement charges of machinery, normal profits of entrepreneur, expenses on power, light, fuel, advertisement, transportation, insurance charges and all types of taxes.

2. **Real Cost**: Adam Smith regarded pains and sacrifices of labour as real cost. Marshal

Thought that the effects and sacrifices undergone by various members of society in producing a commodity are the real cost.

3. **Incremental Cost**: Incremental costs are addition to the total cost due to a change in the

Nature of level of business activity. Eg: Addition of a new product, new machine, entering into a new market etc.

4. **Marginal Cost:** It is the addition to the total cost by producing one more unit.
5. **Implicit Costs:** These are the costs of the factor units owned by the owner himself. They

Do not involve cash payments or appear in books of accounts, the value of next best alternative use of a resource owned by owner. They are invisible.

6. **Explicit Cost:** These are the costs which involve cash payments they are recorded in the

Books of account. All manufacturing and trading expenses which involve cash payment are explicit costs.

7. **Opportunity Costs:** These are equal to the earnings which a factor of production in alternative use. It is the minimum payment to be made to a factor unit to retain it in the present use rather than to seek employment elsewhere. It is also called transfer price.

8. **Fixed Costs**: The costs incurred on factors of production which are fixed in the short run eg. Cost of running fixed equipment, salaries of administrative staff, depreciation of machinery etc.

9. **Variable Costs:** Costs which vary with output are called variable costs. In the long run

all

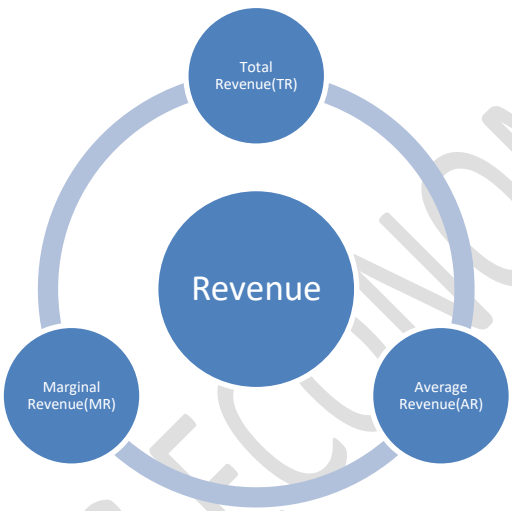
Costs are variable costs. Eg. Variable costs are cost of raw material, wages of labour, oil fuel and gas consumed etc.

REVENUE ANALYSIS:

The amount of money that a producer receives in exchange for the sale of goods is known as revenue. In short, revenue means sales revenue. It is the amount received by a firm from the sale of a given quantity of a commodity at the prevailing price in the market.

The term revenue refers to the income obtained by a firm through the sale of goods at different prices. In the words of Dooley, ' the revenue of a firm is its sales, receipts or income'.

The revenue concepts are concerned with Total Revenue, Average Revenue and Marginal Revenue.



1. **Total Revenue:** The income earned by a seller or producer after selling the output is called the total revenue. In fact, total revenue is the multiple of price and output. The behaviour of total revenue depends on the mark where the firm produces or sells.

   "Total revenue is the sum of all sales, receipts or income of a firm."**-Dooley**

   Total revenue may be defined as the "Product of planned sales (Output) and expected selling price."
   -Clower and Due

   TR=AR*Q
   TR=Total Revenue
   AR=Average Revenue or Price per unit
   Q=Output
2. **Average Revenue:** Average revenue refers to the revenue obtained by the seller by selling the per unit commodity. It is obtained by dividing the total revenue by total output.

   "The average revenue curve shows that the price of the firm's product is the same at each level of output." **-Stonier and Hague**
   AR=TR/Q
   AR=Average Revenue

TR=Total Revenue
Q=Output

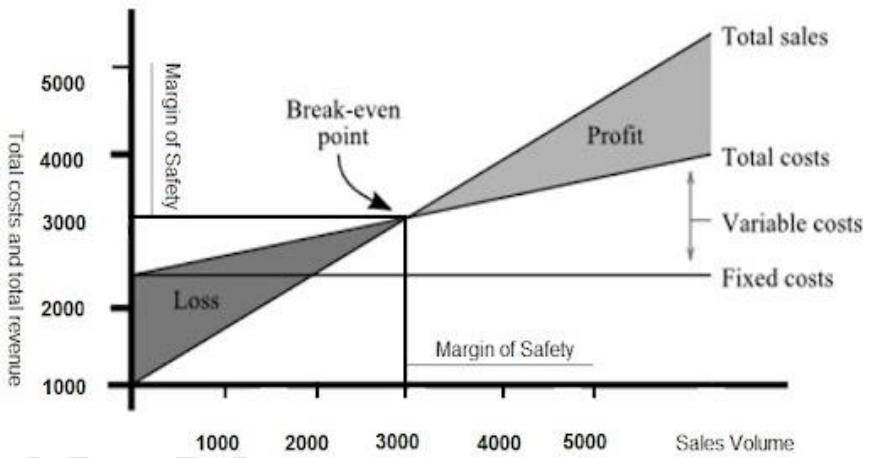
3. **Marginal Revenue:** Marginal revenue is the net revenue obtained by selling an additional unit of the commodity. "Marginal revenue is the change in total revenue which results from the sale of one more or one less unit of output." Ferguson. Thus, marginal revenue is the addition made to the total revenue by selling one more unit of the good.

BREAK EVEN ANALYSIS:

Break-even analysis is an analytical technique used to study cost-volume-profit relationship and to determine the point at which revenues and costs agree exactly. Break even point (BEP) indicates the level of operations that produce neither profit nor loss

By determining this point the firm can assess precisely how it is actually away from the point. If the firm operating at a level above the BEP, it indicates that the firm is making profit. A break even analysis is an economic tool that is used to determine the cost structure of a company or the number of units that need to be sold to cover the cost. Break even is a circumstance where a company neither makes a profit nor loss but recovers all the money spent.

The break even analysis is used to examine the relation between the fixed cost, variable cost, and revenue. Usually, an organization with a low fixed cost will have a low break-even point of sale.



Uses of Break even analysis:

1. It is a simple device and easy to understand
2. It is of utmost use in profit planning
3. It provides the basic information for further profit improvements studies.
4. It is useful in decision making and it helps in considering the risk implications of alternative actions.
5. It helps in finding out the effect of changes in the price, volume , or cost.
6. It helps in make or buys decisions also and helpful in the critical circumstances to find out the minimum profitability the firm can maintain.

Limitations of Break even analysis:

1. The basic assumptions are at times baseless.
2. It is difficult to segregate the cost components as fixed and variable costs.
3. It is difficult to apply for multinational companies.

4. It is a short-run concept and has a limited use in long range planning.
5. It is a static tool since it gives the relationship between cost, volume and profit at a given point of time.
6. If fails to predict future revenues and costs.
7. Despite the limitation it remains an important tool in profit planning due to the simplicity in calculation.

Unit-IV
Market Structure

Introduction:

Markets constitute an important place in an economy. As all goods produced need to be sold as these goods are sold in markets. The market is an assemblage of conditions in which buyers and sellers come in contact for the purpose of exchange. Market situations vary in their structure. Different market structures channel the behaviour of buyers and sellers(firms). As pricing in economy is based by market structure. Further, different prices and trade volumes are fashioned by different market structures.

Concept of Market:

In economics, we do not refer to a market as a physical place. Economists will describe a market as coming together of the buyers and sellers, i.e., an arrangement where buyers and sellers come in direct or indirect contact to sell/buy goods and services.

The concept of market structure is a tool for providing some framework to the theories investigating the market situations. The commonest three elements of market structure had been deposited by economists as the number, size, and size distribution of sellers and buyers, the degree of product differentiation, and the conditions of entry into the market. The setting or "place of competition to the firm" is called "market structure."

For example, the market for mobile will constitute all the sellers and buyers of mobile phones in an economy. It does not necessary refer to a geographic location.

Definition of Market:

The term market refers not necessarily to a place, but always to a commodity or commodities and "buyers and sellers of the same, who are in direct competition with one an other". **-Chapman**

"The term market has been generalised so as to mean any body of persons who are in intimate business relations and carry on extensive transaction is any commodity." **-Jerons**

Features of Markets:

1. In economics, the term market will refer to the market for one commodity or a set of commodities. For example a market for coffee, a market for rice, a market for TV's, etc.,
2. A market is also not restricted to one physical or geographical location. It covers a general wide area and the demand and supply forces of the region.
3. There must be a group of buyers and sellers of the commodity to constitute a market. And the relations between these sellers and buyers must be business relations.
4. Bothe the sellers and buyers must have access to knowledge about the market. There should be an awareness of the demand for products, consumers choices, and preferences, fashion trends, etc.,
5. At any given time only one price can be prevalent in the market for the goods and services. This is only possible in the existence of perfect competition.

Classification of Market:

Now we have seen what is a market. Let us learn more about the classification of markets. Broadly there are two classifications of markets the product market and the factor market. The factor market refers to the market for the buying and selling of factors of production like land, capital, labour etc., the other classification of markets are as follows:

I. On the Basis of Geographical Location

1. Location Markets: In such a market the buyers and sellers are limited to the location region or area. They usually sell perishable goods of daily use since the transport of such goods can be expensive.

2. **Regional Markets:** These markets cover a wider are than local markets like a district, or a cluster of few smaller states.
3. **National Markets:** This is when the demand for goods is limited to one specific country. Or the government may not allow the trade of such goods outside national boundaries.
4. **International Market:** When the demand for the product is international and the goods are also traded internationally in bulk quantities, we call it an international market.

II. On the Basis of Time

1. **Very Short Period Market:** This is when supply of the goods is fixed, and so it cannot be changed instantaneously. Say for example the market for flowers, vegetables, fruits etc. The price of goods will depend on demand.
2. **Short Period Market:** The market is slightly longer than the previous one. Here the supply can be slightly adjusted.
3. **Long Period Market:** Here the supply can be changed easily by scaling production. So it can change according to the demand of the market. So the market will determine its equilibrium price in time.

III. On the Basis of Nature of Transaction

1. **Spot Market:** This is where spot transaction occur, that is the money is paid immediately. There is no system of credit.
2. **Future Market:** This is where the transaction are credit transaction. There is a promise to pay the consideration sometime in the future.

IV. On the Basis of Regulatio

1. **Regulated Market:** In such a market there is some oversight by appropriate government authorities. This is to ensure there are no unfair trade practices in the market. Such markets may refer to a product or even a group of product. For example, the stock market is a highly regulated market.
2. **Unregulated Market:** This is an absolutely free market. There is no oversight or regulation, the market forces decide everything.

V. On the Basis of Competition

1. **Perfect Competition:** By perfect market we mean a market in which there is one market, one price and which operates completely and continuously. If in a market, at a given time, there is a perfect competition between the buyers and sellers and there prevails only one price for all units of the commodity, it is called a perfect market.
2. **Imperfect Market:** When some buyers or sellers or both are not aware of the offers being made by others, such a market is said to be imperfect market.
   a. **Monopoly Competition:** when there is monopoly, a single producer or seller controls the entire market. There are no substitutes of his product. He controls the entire supply and he can fix the price.
   b. **Duopoly:** A duopoly is a king of oligopoly a market dominated by a small number of firms. In the case of a duopoly, a particular market or industry is dominated by just two firms,
   c. **Oligopoly Competition:** Oligopoly is the form of imperfect competition, when sellers are few in number and one of them is of such size that an increase or decrease in his output will appreciably affect the market price.
   d. **Monopolistic Competition:** Monopolistic competition is a market situation in which there are many sellers of a particular product, but the product of each seller is differentiated. Differentiation is the basic condition giving rise to monopolistic competition. Under monopolistic competition, sellers are numerous but one of them is in a position to control a major part of the supply of the common commodity which all of them are offering for sale.

Perfect Competition:

Perfect competition is a market structure where an infinitely large number of buyers and sellers operate freely and sell a homogeneous commodity at a uniform price. It has the features of unlimited contestability (no barriers to entry), unlimited number of producers and consumers, and a perfect elastic demand curve. Sellers are price takers as they sell their products at equilibrium price only. This market is hypothetical and is myth as no such market exists actually. It is based on number of hypothetical conditions like no transport cost, no advertisement cost, full knowledge of markets among buyers and sellers etc.

Characteristics of Perfect Competition:

1. **Large number of buyers and sellers:**

The first and the foremost feature perfect competition is the presence of very large number of buyers and sellers the market. It is obvious that when the number of buyers and seller is large, the share of each buyers in total demand and the share of each seller in total supply will be so insignificant. Hence, no individual buyer and seller is in a position to influence the prevailing price in the market.

2. **Existence of homogeneous products:**

The products being sold in a perfectly competitive market are homogeneous in Character. The products are homogeneous in the sense that they are perfect substitutes for one another from the buyer's point of view. Hence no seller can gain any competitive advantage over the other sellers.

3. **Free entry and exit of firms:**

There are no artificial restrictions on new firm's entry into and exit from the industry. It means that firms have complete freedom to enter into or leave the industry. It implies that whenever the industry is earning abnormal profits, new firms may enter the industry. In case of losses incurred by the industry, some firms may leave the industry.

4. **Perfect mobility of factors of production:**

There is perfect mobility of factors of production. It means that there are no artificial Restrictions imposed on the movement of factors of production from one firm to another throughout the economy.

5. **Perfect knowledge about the market conditions:**

All buyers and sellers possess perfect knowledge about the existing market conditions. Market conditions mean the prevailing market price, the nature of the product sold, the quantity of products demanded and supplied in the markets etc.

6. **Non-existence of transport cost:**

There does not exist any transport cost as all firms are closer to the market or there is Equal transport cost as all firms are supposed to be equally far away from the market.

7. **Non-Intervention by the government:**

It is assumed that the government does not interfere with the working of a market Economy, i.e., it does not interfere with the economic activities in the form of controls on the supply of raw materials, tariffs, subsidies, rationing, licensing etc.

Equilibrium Price:

Consumers and producers react differently to price changes. Higher prices tend to reduce demand while encouraging supply, and lower prices increase demand while discouraging supply.

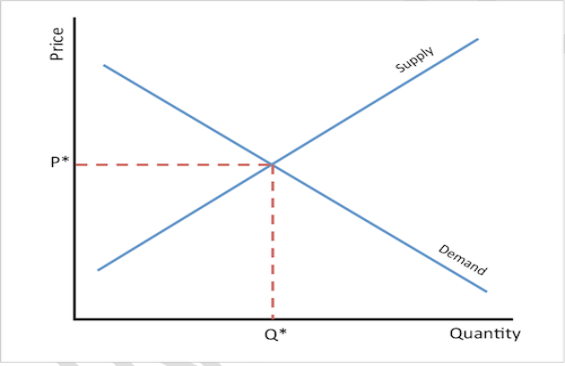
Economic theory suggests that, in a free market there will be a single price which brings demand and supply into balance, called **Equilibrium Price (Market Clearing Price).** Both parties require the scarce resource that the other has and hence there is a considerable incentive to engage in an exchange.

Price (P)	Quantity supplied	Quantity demanded
80	2000	200

70	1800	400
60	1600	600
50	1400	800
40	1200	1000
30	1000	1200
20	800	1400
10	600	1600
0	400	1800

In its simplest form, the constant interaction of buyers and sellers enable a price to emerge over time. It is often difficult to appreciate this process because the retail prices of most manufactured goods are set by the seller. The buyer either accepts the price, or does not make the purchase. While an individual consumer in a shopping mall the haggle over the price, this is unlikely to work, and they will believe they have no influence over price.

However if all potential buyers haggled, and none accepted the set price, then the seller would be quick to reduce price. Eventually a price is found which enables an exchange to take place. A rational seller would take this a step further, and gather as much market information as possible in an attempt to set a price which achieves a given number of sales at the outset.



Monopoly:

The word monopoly has been derived from the combination of two words i.e., 'Mono' and 'Poly'. Mono refers to a single and poly to control. In this way, monopoly refers to a market situation in which there is only one seller of a commodity. There are no close substitutes for the commodity it produces and there are barriers to entry. The single producer may be in the form of individual owner or a single partnership or a joint stock company.

According to **Stigler**, a monopoly is a firm producing a commodity for which there are no close substitutes.

In the words of **Donald Watson** "In the standard definition, a monopolist is the only producer of a product that has no close substitutes".

Characteristics/Features of Monopoly

1. **A Single Seller:**

   There is only one producer of a product. It may be due to some natural conditions

Prevailing in the market, or may be due to some legal restriction in the form of patents, copyright, sole dealership, stale monopoly etc.

2. **Products without substitute:**

The commodity sold by the Monopolist has no close substitute available for it. Therefore, if a consumer does not want the commodity at a particular price, the likelihood of getting closely or similar product may not be possible.

3. **Restriction of entry for new firms:**

There are barriers to entry into industry for the new firms. It may be due to the Ownership of strategic raw material or exclusive knowledge of production, patent rights or government licensing. The implication of barriers to entry is that in the short run, monopolist may earn supernormal profit or losses. However, in the long run, barriers to entry ensure that a monopolist firm earns only super normal profits.

4. **Price Discrimination:**

Price Discrimination exists when the same product is sold at different price to different buyers. A monopolist practices price discrimination to maximize profits.

5. **Limited Consumer Choice:**

as the firm is the single producer of the commodity, in the absence of any close substitute, the choice for consumer is limited.

6. **Price in Excess of Marginal Cost:**

Monopolist fix the price of a commodity (per unit) higher than the cost of producing one additional unit as they have absolute control over price determination.

Equilibrium under Monopoly:

A firm under monopolistic completion faces three situation i.e., supernormal profit, loss, and normal profit.

a. **Super Normal Profit:**

If the Average Revenue (AR) is greater than Average cost (AC) (AR>AC) the Monopoly firm will earn supernormal profit. Profit of monopolistic firm is shown in fowlloing diagram.

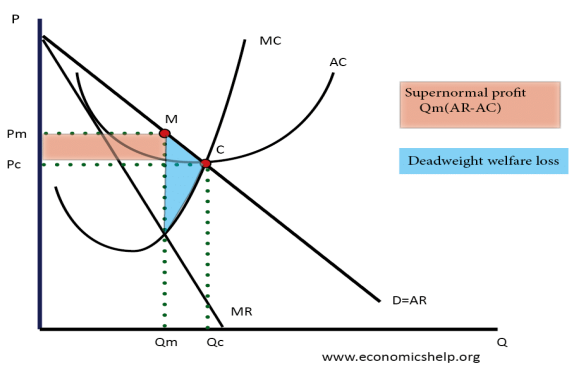
Profit= Total Revenue (TR)- Total Cost (TC)

Total Revenue (TR)= Average Revenue X Quantity= AQ X OQ- Area OPAQ

Total Cost (TC)= Average Cost X Output

Profit = TR-TC= Area OPAQ- Area OBCQ

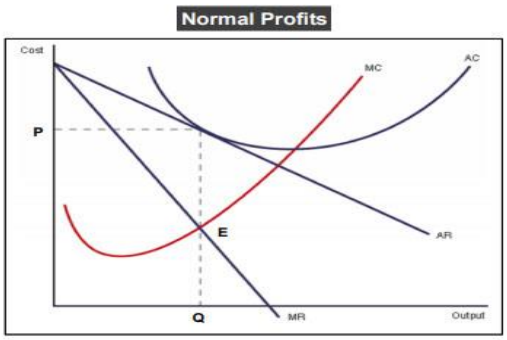
Profit =Area BPAC



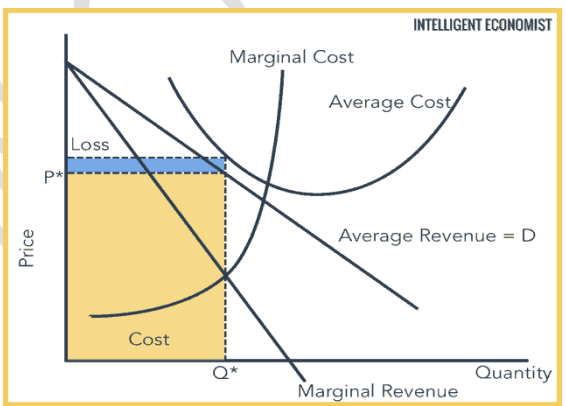
b. Normal Profit: The monopolistic firm at equilibrium will make normal profit if at equilibrium point AR=AC i.e., AC curve is tangent to AR.
Total Revenue (TR) =Average Revenue X Quantity = AQ X OQ= Area OPAQ

Total Cost (TC) =Average Cost X Output =AQ X QQ= Area OPAQ

Monopolistic firm in short run may also earn normal profit if SAC is tangent to the AR at equilibrium point (E), if in short run monopolist firm earn normal profit monopolist will not produce the output. Monopolist always wants supernormal profit.



c. Losses: If the Average Revenue (AR) is less than Average Cost (AC) (AR<AC) the monopoly firm will suffer from losses. Loss of monopolistic firm is shown in following diagram.
Loss = Total Cost (TC) – Total Revenue (TR)
Total Revenue (TR) = Average Revenue X Quantity = AQ X OQ = OPAQ
Total Cost (TC)= Average Cost X Output = CQ X OQ = OBCQ
Loss – TC – TR = Area OPAQ – Area OBCQ



Unit-V

National Income

Introduction:

One of the most important concepts in all economic systems is the national income. Technically it is called the gross national product (GNP). Economic growth is symptomized by an upward movement in GNP as the key variable. So GNP measures the economic performance. A more reliable indicator of the performance of the economy is per capital income.

It may be recalled that macro economics is the study of those forces, economic and physiological, that determine the four key macro variables, aggregate employment, production, real income and the price level.

In the words of P.Samuelson, "The concept of national income is in dispensable preparation for tackling the great issues of unemployment, inflation, and growth."

In common parlance, national income means the total value of final goods and services produced annually in a country. In other words, the total amount of income accruing to a country from economic activities in a financial year is known as national income. It is distributed among the factors of production in the forms of rent, wages, interest and profits.

Meaning of National Income:

National income means the value of goods and services produced by a country during a financial year. Thus, it is the net result of all economic activities of any country during a period of one year and is valued in terms of money. National income is an uncertain term and is often used interchangeably with the national dividend, national output, and national expenditure.

Definitions of National Income:

According to Marshall, "The labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds. This is the true net annual income or revenue of the country or national dividend."

A.C.Pigou has in his definition of national income included that income which can be measured in terms of money. In the words of Pigou, "National income is that part of objective income of the community, including of course income derived from abroad which can be measured in money."

Measurement of National Income:

There are three methods of estimating National Income. Any computation of National Income from any method should bring the same result of same National Income.

1. Production Level
2. Income Or Distribution Level
3. Expenditure Level

These three aspects of circular flow, production of goods and services, Distribution of income in honour of factors of production and at purchase of final goods and services doing expenditure of income. They are following:

The techniques which are used to measure the three aspects of circular flow of income are called methods of measurement of national income.

1. Product or Value Added Method
2. Income Method
3. Expenditure Method

1. **Product or Value Added Method:** It is also called Value Added Method, Industrial Origin Method or Net Output Method.
   According to this method, in an economy in a financial year adding final goods produced and services to the market value, national income is estimated, as far as enterprise relationship is concerned, this assumes its sell as final sell.

Final Product Approach: This approach has expressed in terms o GDP. According to final product approach, sum total of market value of all final goods and services produced by all productive units in the domestic economy in an accounting year is estimated by multiplying the gross product with market prices. Being gross it includes depreciation,being at market price, it includes net indirect taxes and being domestic, includes production by all production units within domestic territory of a country.

Gross National Product:(GNP) National Income is the sum total of values of all goods and services produced during a year. The money value of this total output is known as the Gross National Product (GNP).

Net National Product:(NNP) After calculating the GNP we have to determine the Net National Product. Out of the total 'Gross Product Produced a certain amount should be deducted towards depreciation, wear and tear of capital goods. As capital goods like machines and buildings are constantly used in production they gradually wear out. Such depreciation or decrease in value must be deducted from GNP to obtain the to net value of national product.

2. **Income Method:** In this method, national income from the side of payments made to the primary factors of production for their productive services in an accounting year. Thus according to income method, national income is calculated by summing up of factor incomes of all the normal residents of a country earned within and outside the country during a period of one year.

The income generated is nothing but the net value added at factor cost by factors of production, which is distributed in the form of money income amongst them. Thus if factor incomes of all the producing units generated within the domestic economy are added up, the resulting total will be domestic income or net domestic product at factor cost. By adding net factor income from abroad to domestic income we get net national product at factor cost.

GNP is the addition of all factor incomes generated in production of goods and services. While measuring GDP we must include only those income flows that originate with the production of the goods and services within the particular time period. The components of factor income are:

(i) Employee's Compensation,
(ii) Profits

(iii) Rent
(iv) Interest
(v) Mixed Income
(vi) Royalty

Thus, National Income= Compensation of employees+operating surplus.

3. **Expenditure Method:** GDP can be measured by taking into account all final expenditures in the economy. There are three distinct types of expenditures as they are committed by households, firms and Government respectively.

Three main categories of total spending are the following:

1. **Consumption:**

This refers to society's total expenditure on consumption goods and services in an accounting year and is denoted as C.

2. **Investment:**

This refers to the value of the output of capital goods over the year and is denoted by the symbol I.

3. **Government Expenditure:**

The current expenditure of the government is included in society's output. In this context we have to note an important point. When the government spend money to produce goods and services that are sold in the market, they are valued at current market prices.

However, various types of current expenditure of the government are not associated with the production of goods or services that are sold in the market such as public parks, government hospital, roads, highways etc., The value of the output resulting from such expenditure is arrived at by calculating the amount of money spent on them. Hence their valuation is at cost.

While estimating the government's contribution to national income from the expenditure side, we need only to meet the government's current expenditure. This is denoted as G. We exclude all transfer expenditure.

Concepts of National Income:

1. **Gross National Product (GNP):**

National Income is the sum total of values of all goods and services produced during a year. The money value of this total output is known as the Gross National Product (GNP).

While calculating GNP we must include only those items that represent the final products. We must avoid double counting or duplication.

2. **Net National Product (NNP):**

After calculating the GNP. We have to determine the Net National Product. Out of the total gross product product produced, a certain amount should be deducted towards depreciation, wear and tear of capital goods. As capital goods like machines and building are constantly used in production they gradually wear out. Such depreciation or decrease in value must be deducted from the GNP to obtain the net value of national product.

N.N.P.= GNP-Depreciation

N.N.P consists of :

- Goods and services bought by consumers.
- Goods and services bought by the Government.
- Net addition to private investments.
- Gain or loss from international trade.

This NNP is the sole source of payment for all the agents of production. It is divided into earnings of labour (wages), rent of land, interest of capital and profits of organisers. The national income is a flow and not a fund. It is a stream to which the factors of production continuously add and from which they receive their income continuously.

3. **National Income at factor costs:**

When we calculate GNP. We consider market prices of the goods and services. But, prices include indirect taxes and subsidies. So, if we deduct indirect taxes and add subsidies to the national income at market prices, we get National income at factor costs, this will be equal to the total cost of production of goods and services included in the National Income. This is equal to rewards paid to factors of production.

National Income= NI at Market prices-Indirect taxes: factor cost+subsidies

4. **Personal Income:**

Income earned by the individuals and institutions during a year is called Personal Income. The entire National Income does not reach individuals and institutions. A part of it goes by way of corporate taxes, undistributed profits and social security contributions. We should add transfer payments such as pensions, unemployment benefits, relief payments, interest on public debts. Such transfer payments are not included in National Income.

Personal Income= National Income – (Corporate taxes, undistributed profits, Social security contributions) + Transfer payments.

5. **Disposable Income:**

All the personal income is not for personal use. All the income that a person earns cannot be at his disposal for his expenses. There are personal taxes like income tax. Professional tax etc., paid by the individuals. They must be deducted from personal income to know the extent of disposable personal income Disposal income= Personal Income – Personal Taxes. Disposal income is spent on consumption and saving.

6. **Per Capital Income:**

If the National Income is divided by the total population, we get the average income per person. It is known as Per Capital Income (PCI). PCI may be expressed either money terms or in real terms. The value of goods and services which or on the average available to each person is called per capital money income. Such per capital income in money terms. Changes with the price level, although the volume of goods and services remains the same. If the per capita income is expressed with reference to the prices of a base year we get per capita real income.

7. **Real National Income:**

When National Income is calculated for the current year the value of the current year's output at current prices is computed. If there is inflation, current year's national income will be influenced by the inflationary effect. Due to price rise, national income seems to be larger though the output (real terms) does not increase.

Problems in Measuring National Income:

1. **Non-availability of statistical material:** Some persons like electricians, plumbers, etc., do some job in their spare time and receive income. The state finds it very difficulty to know the exact amount received from such services. This income which, should have been added to the national income is not recorded due to be lack of full information of statistics material.

2. **The Danger of double Counting:** Whille computing the national income, there is always the danger of double or multiple counting. If care is not taken in estimating the income, the cost of the commodity is likely to be counted twice or thrice and national income will be overestimated.
3. **Non-marketed services:** In estimating the national income, only those services are included for which the payment is made. The unpaid services, or non-marketed services are excluded from the national income.
4. **Difficulty in assessing the depreciation allowance:** The deduction of depreciation allowances, accidental damages, repair, and replacement charges from the national income is not an easy task. It requires high degree of judgment to assess the depreciation allowance and other charges.
5. **Housing:** A person lives in a rented house. He pays $5000 per month to the landlord. The income of the landlord is recorded in the national income. Let us suppose that the tenant purchases the same house from the landlord. Now the income of the owner occupant has increased by $5000. Is it not justifiable to include this income in the national income? Should or should not this income be recorded in the national income is still a controversial question.
6. **Transfer earnings:** While measuring the national income, it should be seen that transfer payments should not become a part of national income. The payments made as relief allowance, pensions, etc. Do not contribute towards current production. So they should be excluded from national income.
7. **Self-consumed production:** in developing countries, a sifnificant part of the output is not exchanged for money in the market. It is either consumed directly by producers or bartered for other goods. This unorganised and non-mentioned sector makes calculation of national income difficult.
8. **Price level Changes:** National Income is measured in money terms. The measuring rod of money itself does not remain stable, this means that national income can change without any change in output.

Problems of Measurement is Under Developed Countries:

The national income in under developed countries like Pakistan, Afganistan etc., cannot be accurately measured due to the following reasons:

1. **Self-consumed-bartered consumption:**

   Some of the transactions of agricultural goods in the villages are done without the use of money. The statisticians, therefore, cannot measure the exact amount of the transactions for inclusion in the national income.
2. **No systematic accounts maintained:**

   Most of the producers do not keep any record of the sale of the products in the market. This makes the task of national income still more complicated.
3. **No occupational classification:**

   There is no occupational specialisation in the under developed countries. People receive income by working in various capacities. One person sometimes works as carpenter and at another time as mason. The statisticians cannot accurately measure the income of such persons.
4. **Unreliable data:**

   The statisticians themselves do not feel the importance of figures which they

collect they also do not take much pains for getting the reliable data. The figures of national income are, therefore not up-to-date in the under-developed countries.

Components of National Income:

1. **Gross Domestic Product:** GDP is the total value of goods services produced with the country during a year. This is calculated at market prices and is known as GDP at market prices.
2. **GDP at Factor Cost:** GDP at factor cost is the sum of net value added by all producers within the country. Since the net value added gets distributed as income to the owners of factors of production, GDP is the sum of domestic factor incomes and fixed capital consumption.
3. **Net Domestic Product:** NDP is the value of net output of the economy during the year. Some of the country's capital equipment wears out or becomes obsolete each year during the production process. The value of this capital consumption is some percentage of gross investment which is deducted from GDP. Thus Net Domestic Product= GDP at factor cost – Depreciation.
4. **Nominal and Real GDP:** When GDP is measured on the basis of current prices, it is called GDP at current prices or nominal GDP. On the other hand, when GDP is calculated on the basis of fixed prices in some year, it is called GDP at constant prices or real GDP.
5. **GDP Deflator:** GDP deflator is an index of price changes of goods and services included in GDP. It is a price index which is calculated by dividing the nominal GDP in a given year by the real GDP for the same year and multiplying it by 100. Thus, GDP Deflator= Nominal (or current price) GDP/Real (or constant Prices) GDP X 100.
6. **Gross National Product:** GNP is the total measure of the flow of goods and services at market value resulting from current production during a year in a country, including net income from abroad.
7. **GNP at Market Price:** When we multiply the total output produced in one year by their market price prevalent during that ear in a country, we get the Gross National Product at market prices.
8. **GNP at Factor Cost:** GNP at factor cost is the sum of the money value of the income produced by the accruing to the various factors of production in one year in a country, it includes all items mentioned above under income Approach to GNP less indirect taxes.
9. **NNP at Market Prices:** Net National Product at market prices is the net value of final goods and services evaluated at market prices in the course of one year in a country. If we deduct depreciation from GNP at market prices, we get NNP at market prices. Thus NNP at Market Prices = GNP at Market Prices – Depreciation.
10. **Domestic Income:** Income generated (or earned) by factors of production with in the country from its own resources is called domestic income or domestic product. Domestic income includes: i) Wages and Salaries, ii) Rents, including imputed house rents, iii) Interest, iv) Dividends v) Undistributed corporate profits, including surpluses of public undertaking, vi) Mixed incomes consisting of profits of unincorporated firms, self employed persons, partnerships, etc., and vii) Direct taxes.

    Since domestic income does not include income earned from abroad, it can

also be shown as: Domestic Income – National Income – Net Income earned from abroad. Thus the difference between domestic income and national income is the net income earned from abroad.

SHORT ANSWER QUESTIONS

UNIT-I: INTRODUCTION:

1. **Business Economics.**

Business Economics has been viewed differently by different scholars. Some of the popular definitions of business economics are the following.

Joel Dean: The purpose of Business Economics is to show how economic analysis can be used in formulating business policies.

Brigham and Pappas: Business Economics is the application of economic theory and methodology to business administrative practice.

2. **What are the features of Business Economics.**

The followings are the common features in Business Economics.

a. **Decision-making economic nature:** Business Economics is concerned with decision-making economic nature. This implies that business economics deals with identification of economic choices and allocation of scarce resources.
b. **Goal oriented and perspective:** Business Economics is a goal oriented and perspective. It deals with how decisions should be made by managers to achieve the organisational goal.
c. **Pragmatic:** It is pragmatic. It is concerned with those analytical goals which are useful in improving decision making.

3. **Micro Economics ?**

The micro economic concepts deal with the economic problems of individual units like a firm, a consumer or industry. Since microeconomic concepts are closely associated with resource allocation, it makes a major contribution to business economics.

4. **Positive and Normative?**

Both macro economics and micro economics may be positive or normative or both. Positive approach (Descriptive) deals with accurate descriptive of a phenomenon. It explains 'What is', What was', and 'What will be'. It does not make any suggestion. On the other hand, normative approach (Prescriptive) is that which assists in the solution of problems. It tells 'What ought to be', since business economics is applied micro economics, thus it is normative and prescriptive (having optimising models) in nature.

UNIT-II: DEMAND ANALYSIS:

1. Market Demand ?

Industry companies of many firms producing the same commodity.

The total demand enjoyed by a commodity is called Market Demand. It is the sum total of all individual demands for a commodity. At the same price a commodity may be sold in different quantities in different areas or to different persons. A general fall in price usually leads to a fall in demand and similarly a general rise in price usually leads to a fall in demand market demand schedule gives valuable information about the quantities of a commodity that are sold at different prices.

2. **Define the Law of Demand ?**
   Marshall defines the law as the greater the amount to be sold the

Smaller must be the price at which it is offered in order that it may find purchases or in other wards the amount demanded increases, with a tall in prior and diminishes with rise in price.

Chapman defines, "Demand are the quantitative expressions of preferences, price and demand are inversely related".

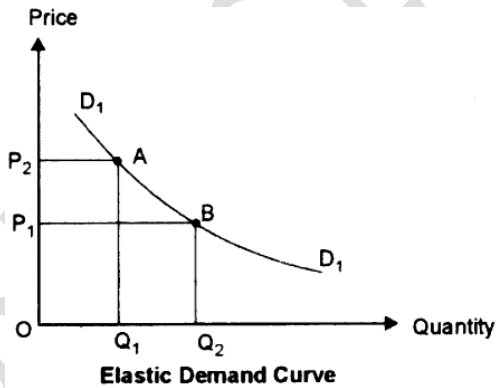
Benham Defines, the law as "Usually a larger quantity of a commodity will be demanded at a lower price than at a higher price".

3. **Giffen's Goods ?**
   Giffen's effect states that in the case of bread demand curve clopes

upward from left to the right. Robert Giffen, a British Economist, observed that rise in the price of bread caused the low paid British workers to buy main bread and not less. These workers lived on a diet of mainly bread. When its price rise, as they had to spend more for a given amount of bread. They could not buy as much meat as before. Bread being still cheaper it has been substituted for meat and other expensive food. Such essential goods have came to be known as Giffen Goods

4. Elasticity of demand ?
   Suppose price declines (rises). As a result, total expenditure rises (falls).

Under the circumstance, the value of elasticity of demand becomes greater than one. In fig., we have drawn a demand curve having a value of greater than one.



Elastic Demand Curve

At price OP, OA is demanded. Thus, the total expenditure equals OP X OA = rectangle OPBA, As price drops to OP., the quantity demanded rises to OA., now, the total expenditure becomes OP X OAi = rectangle OPBA.

Unit-III: Production, Cost and Revenue Analysis:

1. **Opportunity Cost ?**
   The concept of opportunity cost was first introduced by the Austrian economist Wieser and later on it was developed by peyenport, knight, Wicksteed and Robjans. The Fetcu is based on the fundamental act that resources are scarce while the ends are unlimited. When resources

are scarce, if we want produce more of a commodity we have to produce less of another commodity.

2. Assumptions of opportunity cost ?

Opportunity cost concept is based on the following assumptions:

1. It assumes that the stock of productive resources as given and that they are fully employed in other words, it assumes full employment of the resources.
2. The factors of production are non-specific so that they can be put to alternative uses.
3. There is perfect mobility of factors so that they can move freely to alternative uses.
4. There is perfect competition.
5. All the units of a factor are homogeneous.

3. Marginal Revenue?

At constant prices, marginal revenue should remain the same for all units, but there are a number of real-world factors that can serve to alter marginal revenue figures. A company may sell outdated or damaged inventory at a discount.

4. Marginal Cost?

Marginal costs represent the flip-side of marginal revenues. One company's marginal costs almost always coincide with another company's marginal revenue.

5. Concept of CVP Cost Volume Profit Analysis

Cost- Volume Profit (CVP) analysis is an analytical tool for studying the relationship between volume, cost, prices and profits. It is very much an extension, or even a part of marginal costing. It is an integral part of the profit planning process of the firm. However, formal profit planning and control involves the use of budgets and other forecasts, and the CVP analysis provides only an overview of the profit planning process. Besides it helps to evaluate the purpose and reasonableness of such budgets and forecast.

6. Break even analysis?

Break even analysis is of vital importance in determining the practical application of cost functions. It is a function of three factors, i.e. sles volume, cost and profit. It aims at classifying the dynamic relationship existing between total cost and sale volume of a company.

Hence it is also known as "cost volume profit analysis". It helps to know the operating condition that exists when a company 'break even' that is when sales reach point equal to all expenses incurred in attaining that level of sales. The break even point may be declined as that level of sales in which total revenues equal total costs and net income is equal to zero. This is also known as no profit no loss point. This concept has been proved highly useful to the company executives in profit forecasting and planning and also in examining the effect of alternative business management, decision.

7. **Money cost.**
Whenever we refer to the cost of production of a commodity it means money cost only. Money is a measurement of the amount of money spent by the producer in producing a certain quantity of a commodity.

Unit-IV: Market Structure

1. Market Meaning.
In general terms, the word market is associated with a place where transaction occurs between sellers and buyers. It is defined as an area where a large number of shops sell a particular product.

However, in economics, the meaning of market is different from the general meaning of market. In economic terms, market is defined as a system under which buyers and sellers negotiate the price of a product, settle the price, and transact their business.

Moreover, it is not necessary that sellers need to sell their products at a particular place, they can distribute the products round the world. In economic sense, personal or physical contact between buyers and sellers is also not necessary.

They can perform transaction through various modes of communication, such as telephone internet, or video conferencing.

According to Cournot-"Economists understand the term market not any particular market place in which things are bought and sold but the whole of any region in which buyers and sellers are in such free intercourse with one another that the price of the same goods tends to equality easily and quickly."

2. **Perfect Competition?**
It is market structure where large number sellers and buyers are involved in buying and selling of goods at equilibrium price which is fixed by the industry. Goods sold in this market are homogenous in nature and have no substitutes. Sellers are price takers as they sell their products at equilibrium price only. This market is hypothetical and is myth as no such market exists actually. It is based on number of hypothetical conditions like no transport cost, no advertisement cost, full knowledge of markets among buyers and sellers etc.

3. **Oligopoly.**
This market structure has a few sellers and many buyers. The sellers in this market have interdependence policies and compete with each other with competitive nature. Survival is difficult in this market as competition is lough and there is reaction of each seller for other seller's action of policies. Price rigidity is the main feature of this market.

4. **Define Monopoly.**
The word monopoly has been derived from the combination of two words i.e, "Mono" and "Poly". Mono refers to a single and poly to control. In this way monopoly refers to a market situation in which there is only one seller of a commodity. There are no close substitutes for the commodity it produces and there are barriers to entry. The single producer may be in the form of individual owner or a single partnership or a joint stock

company. In other words, under monopoly there is no difference between firm and industry.

Unit-V : National Income

1. **Explain National Income.**
Marshall: "The labour and capital resources of a country acting on its normal resources produce annually a certain net aggregate of commodities, material and immaterial, including services of all kinds. This is the true net annual income or revenue of the country of the national dividend."

Pigou: "National Income is that part of Objective income the commodity including of course income dividend from abroad, which can be measured in money."

In simple words " Nation Income is the net sum total of all the final goods and services produced in an year."

2. **N.N.P (Net National Product)**
After calculating the GNP. We hav to determine the Net National Product. Out of the total gross product produced a certain amount should be deducted towards depreciation, wear and tear of capital goods. As capital goods like machines and building are constantly used in production they gradually wear out. Such depreciation or decrease in value must be deducted from the GNP to obtain the to net value of national product.

NNP=GNP-Depreciation
NNP Consists of:

a. Goods and services bought by consumers.
b. Goods and services bought by the government.
c. Net addition to private investments.
d. Gain or loss from international trade.

This NNP is the sole source of payment for all the agents of production. It is divided into earning of labour (wages), rent of and , interest on capital and profits or organisers.

The National Income is a flow and not a fund. It is a stream to which the factors of production continuously add and from which they receive their income continouosly.

3. **Per Capital Income.**
If the national income is divided by the total population, we get the average income per person. It is known as per capital income (PCI). PCI may be expressed either money terms or in real terms. The value of goods and services which or on the average available to each person is called per capital money income.

4. **Real National Income.**
When national income is calculated for the current year the value of the current year's output at current prices is computed. If there is inflation, current year's national income will be influenced by the on inflationary effect. Due to pri rise, national income seems to be larger thought the output (real terms) does not increase.

5. **G.D.P.**
   GDP is the total value of goods and services produced with the country during a year. This is calculated at market prices and is known as GDP at market prices.

6. **NNP at factor Cost.**
   Net National Product at factor cost is the net output evaluated at factor prices. It includes income earned by factors of production through participation in the production process such as wages and salaries, rents, profits etc. It is also called National Income. This measure differs from NNP at market prices in that indirect taxes are deducted and subsidies are added to NNP at market prices in order to arrive at NNP at factor cost. Thus NNP at factor cost = NNP at market + Subsidies.

7. **Private Income.**
   Private income is income obtained by private individuals from any source, produce or otherwise and retained income of corporations. It can be obtained from NNP at factor cost by making certain additions and deductions.

Private income = National income (NNP at factor cost) + Transfer Payments + Interest on public debt – social security – profits and surpluses of public undertakings.

8. **Personal Income.**
   Personal income is the total income received by the individuals of a country from all sources before direct taxes in one year. Personal income is never equal to the national income because the former includes the transfer payments whereas they are not included in national income. Personal income is derived from national income by deducting undistributed corporate profits, profit taxes, and emplyee's contributions to social security schemes. Personal income is differs than private income actually it is less than price income because it excludes undistributed corporate profits. Personal income = National income – undistributed corporate profits – profit taxes – social security contributions + transfer payments + interest on public debt.