SHREE H. N. SHUKLA COLLEGE OF I.T. & MGMT.
(AFFILIATED TO SAURASHTRA UNIVERSITY)
3- Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot – 360001
Ph. No–(0281)2471645
2 – Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot - 360001
Ph.No–(0281)2440478, 2472590

B.COM SEM – 1
PRINCIPLE OF ECONOMICS

Sr. No/	Unit Name
1	Introduction of Economics
2	Elasticity of Demand
3	Production Analysis
4	Cost Analysis

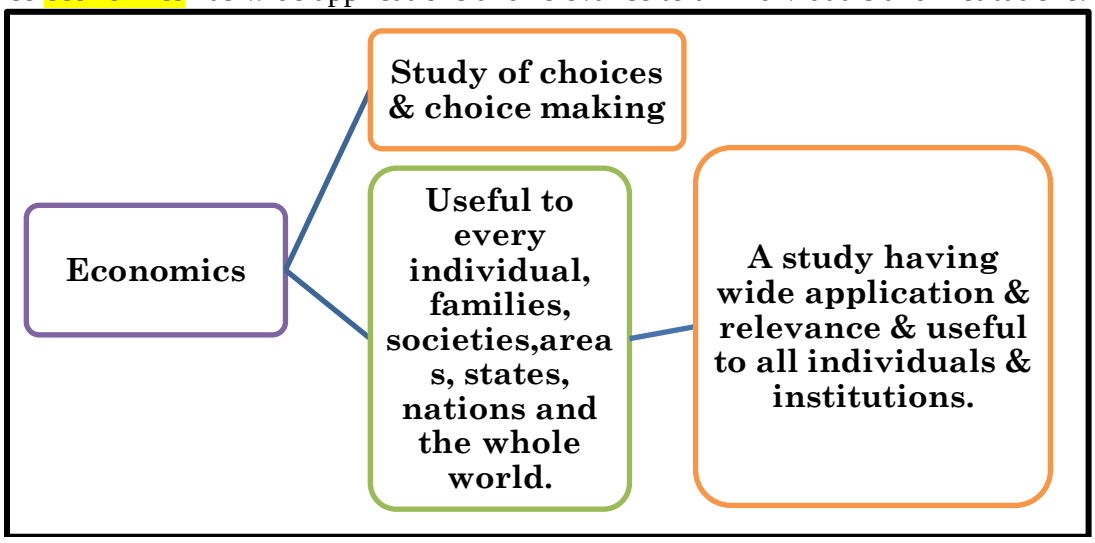
Unit 1: Introduction.

- Various Definition.
- Nature & Scope Of Economics.
- Various Business Decisions
- Incremental Concept
- Concept Of Time Perspective.
- Equi Marginal Utility.
- Concept of Discounting Principle.

The various definition of economics

Economics is a study of choice and choice making. Choice making is relevant for every individuals, families, societies, institutions, areas, states and nations and for the whole world.

Hence **economics** has wide applications and relevance to all individuals and institutions.

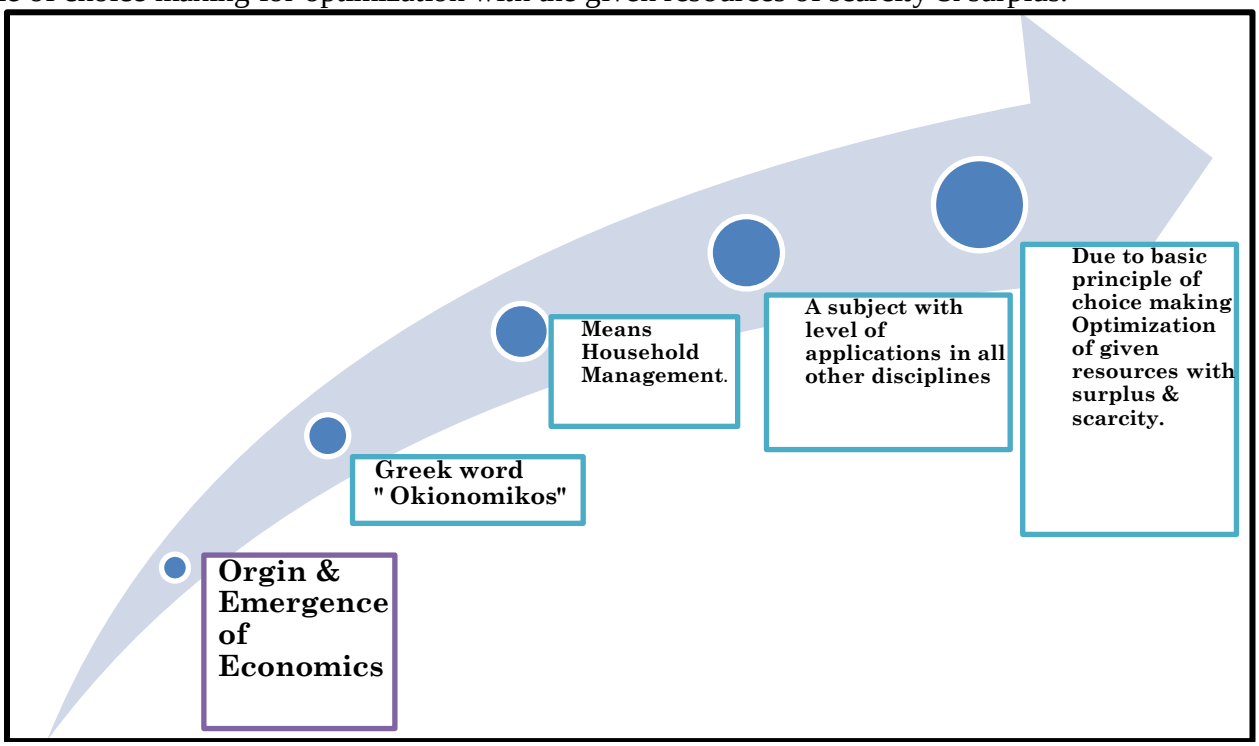


Questions	Answers.
1. Economics is a study of	Choices & Choice Making.
2. A study of choices or choice making is known as	Economics.
3. What is relevant for every individual, societies, institutions, nations and for	Choice Making.

the whole world?	
4. Which study has wide application & relevance to all individuals & institutions?	Economics.

The word **"economics"** originates from a **Greek word " Okionomikos" meaning household management.**

Economics emerged as a subject with a high level of applications in all other disciplines due to its basic principle of choice making for optimization with the given resources of scarcity & surplus.



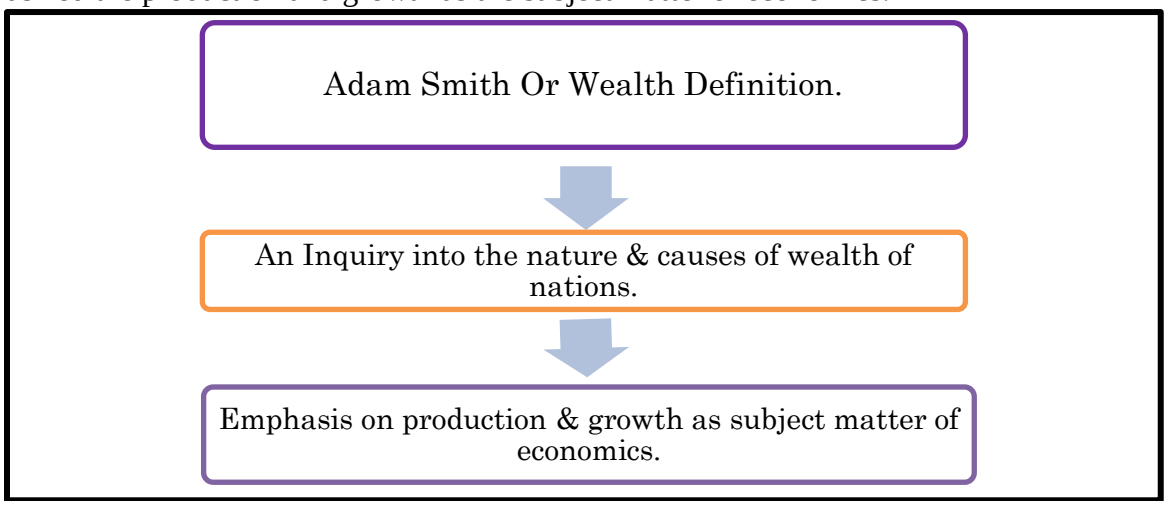
Questions	Answers
1. From which Greek word did economics originated	"Okionomikos"
2. Okionomikos means	Household Management.
3. Economics as a subject emerged with high level of application because of	Choice making.
4. Due to choice making optimization of given resources is possible with	Surplus & Scarcity

Adam Smith Definition Or Wealth Definition:

Adam Smith who is regarded as father of economics published a book titled " An Inquiry Into Nature & Causes Of Wealth Of Nations." in 1766.

He defined economics as **" A science which inquires into the nature and causes of wealth of nations."**

He emphasized the production and growth as the subject matter of economics.

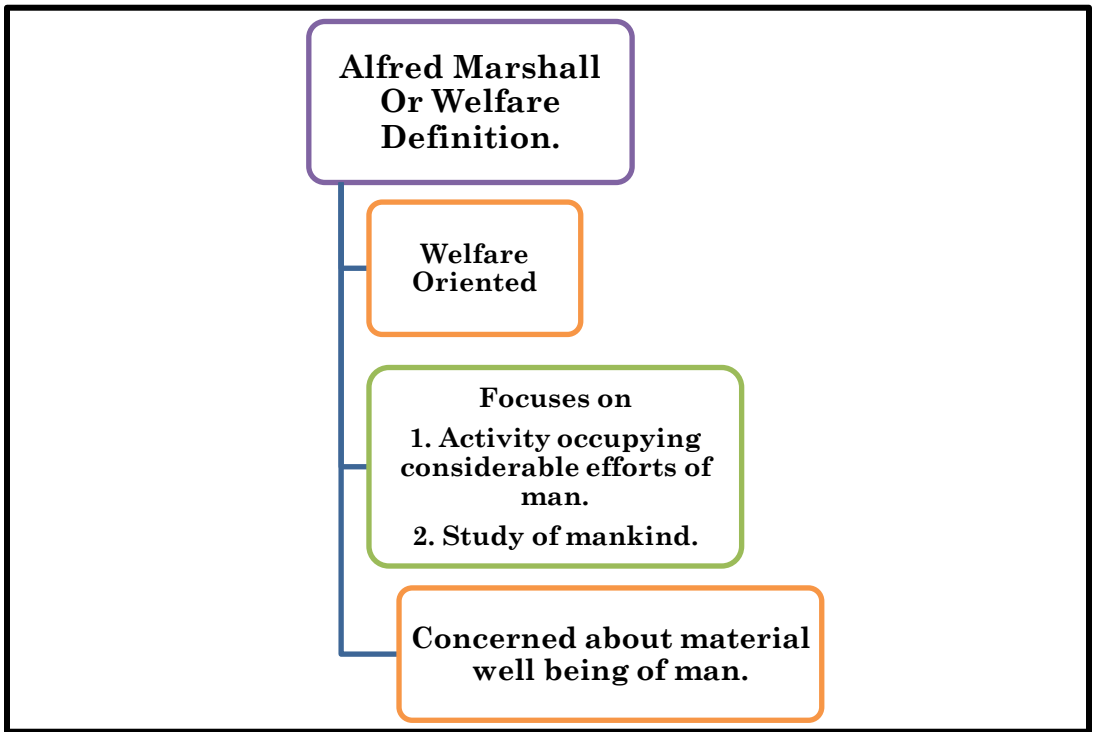


Questions.	Answers.
1. Adam Smith is known as	Father Of Economics.
2. Adam Smith published which book in 1776	An inquiry into nature & causes of wealth of nations.
3. Adam Smith defines economics as	" A science which inquires into the nature and causes of wealth of nations"
4. Adam Smith emphasized on what as the subject matter of economics?	Production and growth of wealth.
5. Adam Smith definition of economics is also known as	Wealth Definition.
6. Wealth Definition of economics is given by	Adam Smith.
7. What does Adam Smith definition say	Economics is a study of wealth.

Alfred Marshall Definition Or Welfare Definition:

In 1890 Alfred Marshall stated that **" Economics is a study of mankind in the ordinary business of life it examines that part of individual and social actions which is most closely connected with the attainment and with the use of material requisites and well being."**

It is on one side a study of wealth and other side a study of human welfare based on wealth.

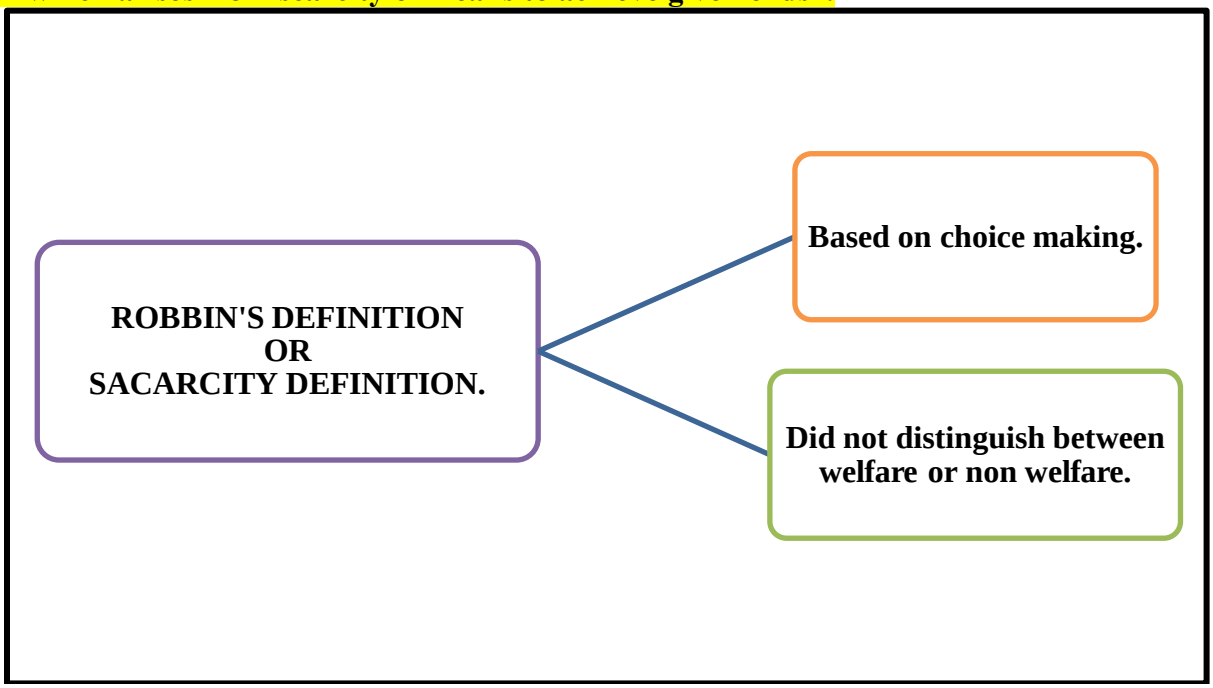


Questions.	Answers.
1. Alfred Marshall stated the definition of economics in the year	1890.
2. Alfred Marshall's definition is also known as	Welfare definition.
3. Marshall's definition of economics is	Welfare oriented.
4. Marshall's definition focuses on	• Activity occupying efforts of man. • Study of mankind.
5. Marshall's definition of economics is concerned about	Material Wellbeing.
6. Economics is a study of mankind is stated by	Alfred Marshall.
7. Marshall definition states that	"Economics is a study of mankind in the ordinary business of life. It examines that part of individual & social action which is most closely connected with the attainment & with use of material requisites & wellbeing. It is on one side a study of

	wealth & on other side a study of human welfare based on wealth."

Robbins Definition Or Scarcity Definition

According to Robbins **"Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses."**
He emphasized on **"choice making."** In his own words **" Economics is considered with that aspect of behavior which arises from scarcity of means to achieve given ends".**



Questions.	Answers.
1. Robbins definition is also known as	Scarcity definition.
2. Robbins definition is based on	Choice making.
3. Robbins definition included terms as	Ends, scarce means & alternative uses.
4. End means	Target.
5. Robbins definition does not differentiate between	Welfare & Non welfare.
6. Robbins definition states that	" Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses."

From the above definitions of economics each definition has its merits and demerits which are as follows:

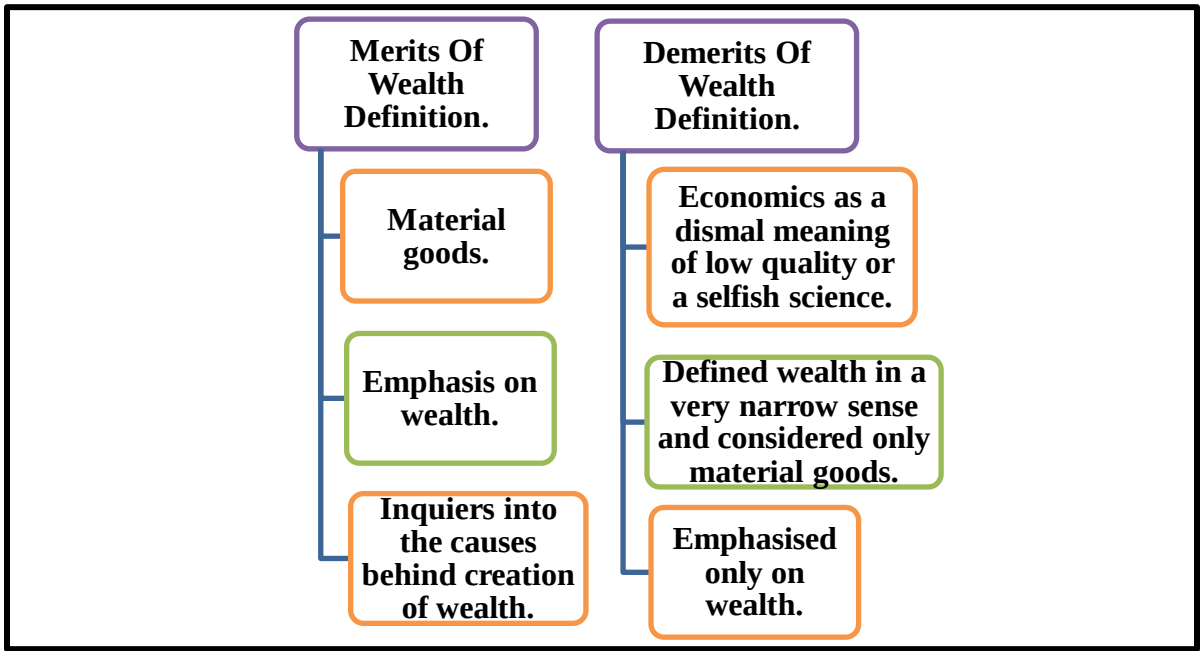
Merits & Demerits Of Adam Smith's Definition Or Wealth Definition

The following are the merits of wealth definition:

- It takes into account only material goods.
- Exaggerated the emphasis on wealth.
- It inquires the causes behind creation of wealth.

The following are the demerits of wealth definition:

- It considered economics as a dismal or selfish science.
- It defined wealth in a very narrow & restricted sense.
- It considered only material & tangible goods.
- It gave emphasis only to wealth & reduced man to secondary place.



Questions.	Answers.
1. Adam Smith's definition takes into account only	Material goods.
2. Adam Smith definition gave exaggerated emphasis on	Wealth.
3. Adam Smith definition inquires into	The causes behind creation of wealth.
4. Wealth definition considered economics as	A dismal or selfish science.

5. Wealth definition defined wealth in a	Very narrow & restricted sense.
6. Wealth definition considered only	Material & tangible goods.
7. Wealth definition gave emphasis only to	Wealth reducing man to secondary place.

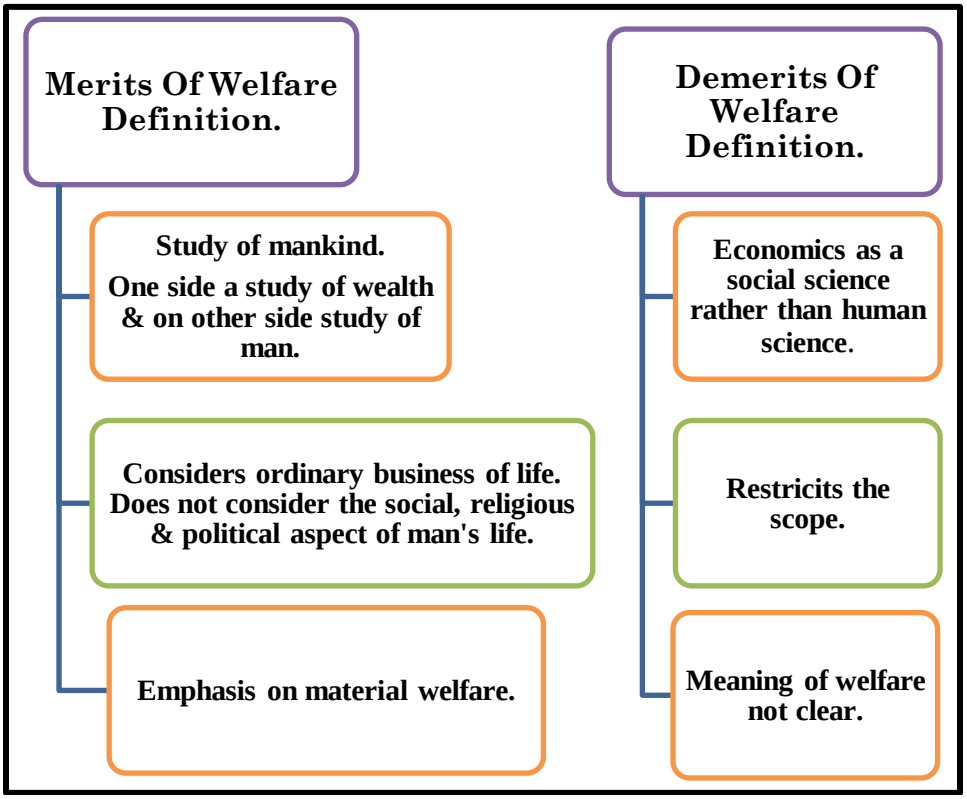
Merits & Demerits Of Marshall's Definition Or Welfare Definition

The following are the merits of welfare definition:

- It is primarily the study of mankind.
- It is on one side a study of wealth and on other side study of man.
- It takes into account ordinary business of life. It is not concerned with social, religious & political aspect's of man's life.
- It emphasis on material welfare i.e human welfare which is related to wealth.
- It limits the scope to activities amenable to measurement in terms of money.

The following are the demerits of welfare definition:

- It considers economics as a social science rather than a human science.
- It restricts the scope of economics to the study of persons living in organized communities only.
- Welfare in itself has a wide meaning which is not made clear in definition.



Questions.	Answers.
1. Marshall's definition primarily is a study of	Mankind.
2. One side it is a study of _____ & on other side study of _____.	Wealth & man.
3. Marshall takes into account the	Ordinary business of life.
4. It is not concerned with	Social, religious & political aspect's of man's life.
5. Marshall's definition emphasis on	Material welfare.
6. Marshall's definition main limitation is that it considers economics as a _____ rather than a _____	Social science & human science.
7. Marshall's definition does not give clear meaning of	Welfare.

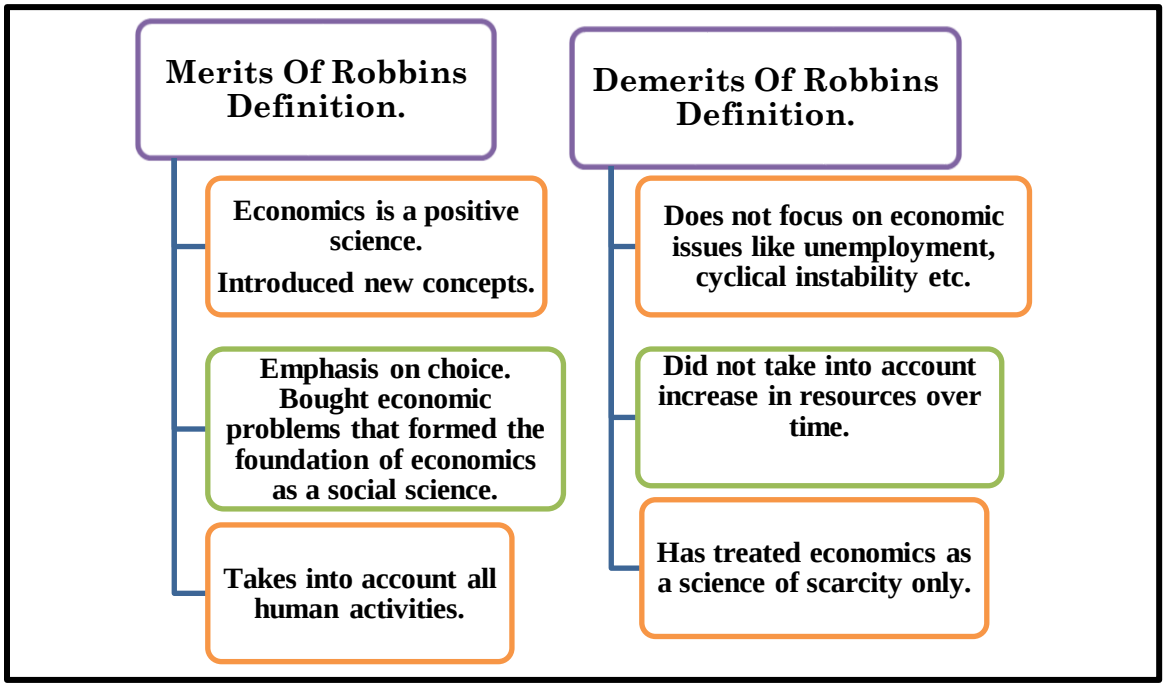
Merits And Demerits Of Robbins Definition Or Scarcity Definition

The following are the merits of Robbins definition:

- Economics is a positive science.
- New concepts are used such as unlimited ends, scarce means & alternative uses of means.
- It emphasis on choice a study of human behavior.
- It tried to bring the economic problems which forms the foundation of economics as a social science.
- It takes into account all the human activities.

The following are the demerits of Robbins definition:

- It does not focus on many important economic issues of cyclical instability, unemployment, income determination & economic growth & development.
- It did not take into account the possibility of increase in resources over time.
- It has treated economics as a science of scarcity only.

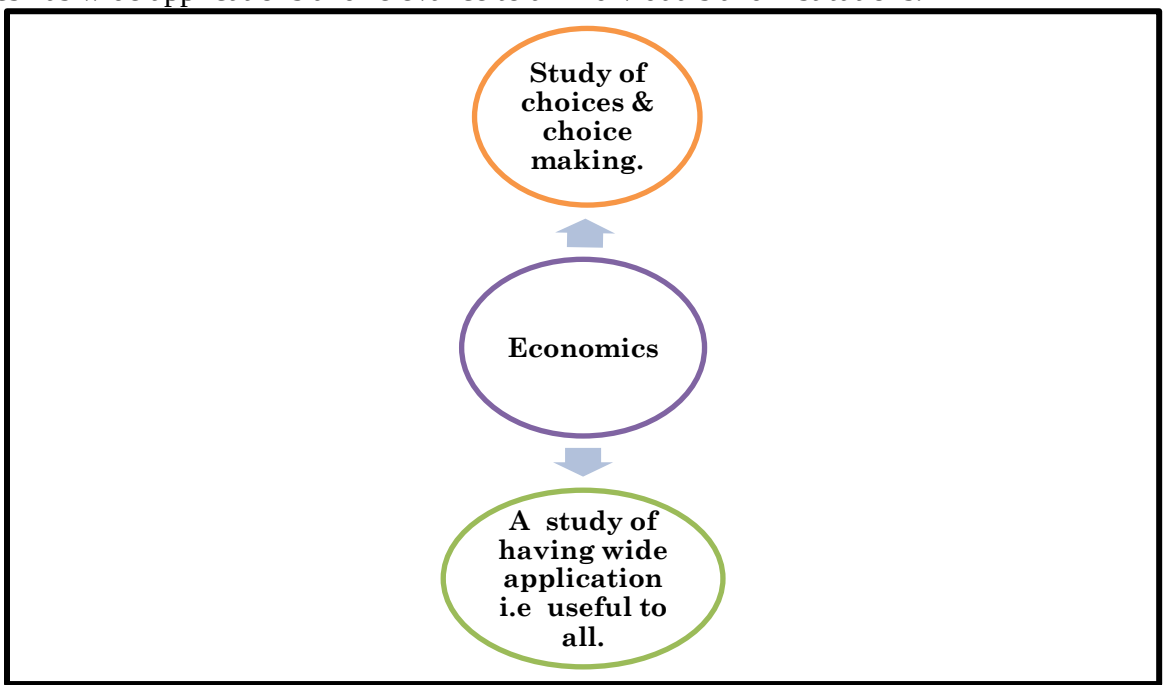


Questions.	Answers.
1. Robbins definition regards economics as a	Positive science.
2. Robbins definition introduced	New concepts.
3. Scarcity definition emphasis on	Choice.
4. Scarcity definition bought _____ that formed _____of economics as a _____	Economic problems & the foundation & social science.
5. Robbins definition takes into account all _____	Human activities.
6. Robbins definition of economics does not focus on	Economic issues like unemployment, cyclical instability etc.
7. Scarcity definition did not take into account	Increase in resources over time.
8. Robbins definition has treated economics as a	Science of scarcity only.

Thus when we review all of these definitions and their evolution it indicates that the core of the subject economics is **"choice making."**
It is a subject concerned about achieving growth by optimizing the given resources based on choices.

Nature and scope of economics

Economics is a study of choices or choice making. Choice making is relevant for every individuals, families, societies, institution, areas, states and nations and for the whole world.
Hence economics has wide applications and relevance to all individuals and institutions.

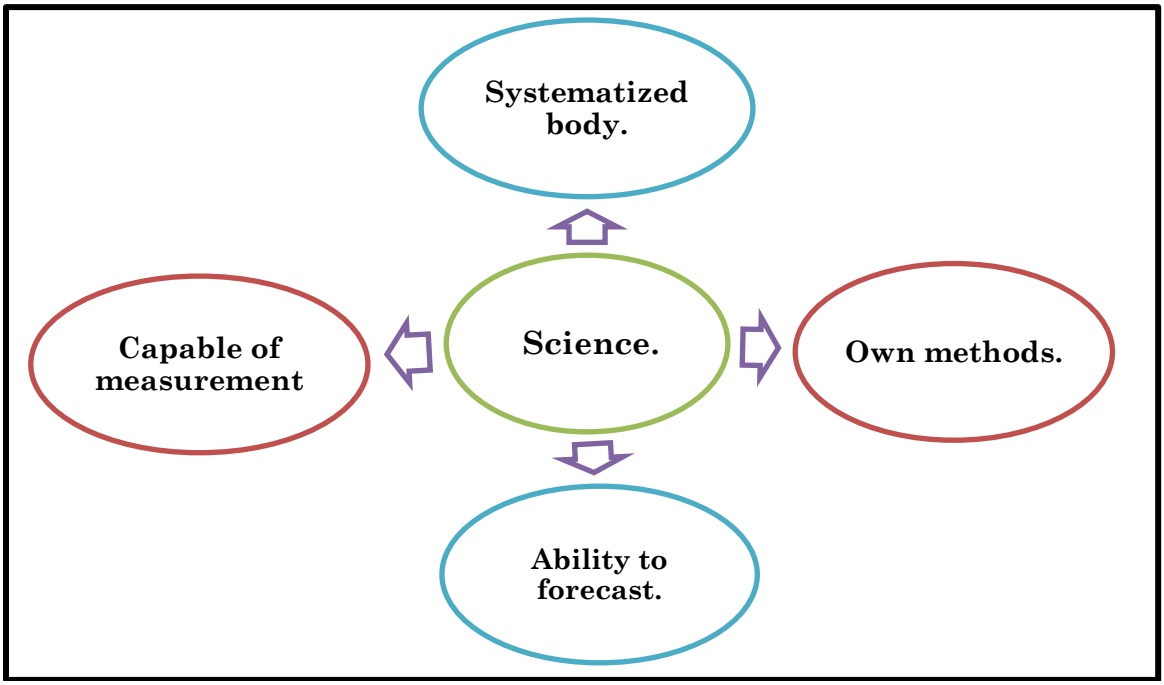


We generally discuss whether economics is a science or art or both. Often questions arises whether economics is a science or arts or both. If science whether it is a positive or a normative science or both.

Nature of economics:

A subject is considered as science when

- It is a systematized body of knowledge which studies the relationship between the cause and effect.
- It is capable of measurement.
- It has its own methodological apparatus.
- It should have the ability to forecast.



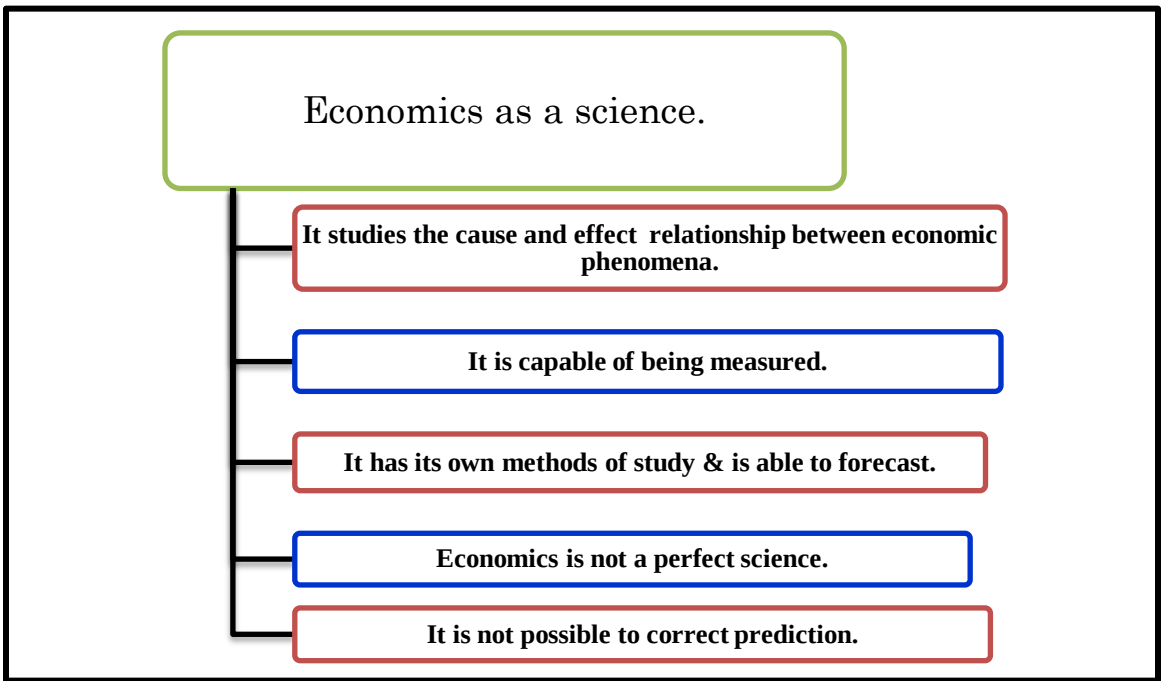
Questions.	Answers.
1. A subject is considered as science when it is a _____	Systematized body.
2. A subject is considered as science only when	It is capable of measurement.
3. A subject is considered science when it has	Its own methodological apparatus.
4. A subject is considered science when it is	Able to forecast.

Economics as a science:

- Hence, like science it studies the cause and effect relationship between economic phenomena.
- To understand let us take the law of demand.
- It explains the cause and effect relationship between price and demand for a commodity.
- It says other being constant as price rises the demand for commodity falls and vice versa.
- Here the cause is price rise and effect is fall in quantity demanded.
- Similarly like science it is capable of being measured, the measurement in terms of money.
- It has its own methodology of study and it forecasts the future market conditions with the help of various statistical and non statistical tools.
- But it is noted that economics is not a perfect science.
- This is because economists do not have uniformity in particular event.

- The subject matter of economics and the economic behavior of man which is highly unpredictable.

- Money which is used to measure outcomes in economics is itself a dependent variable.
- It is not possible to make correct prediction about the behavior of economic variables.



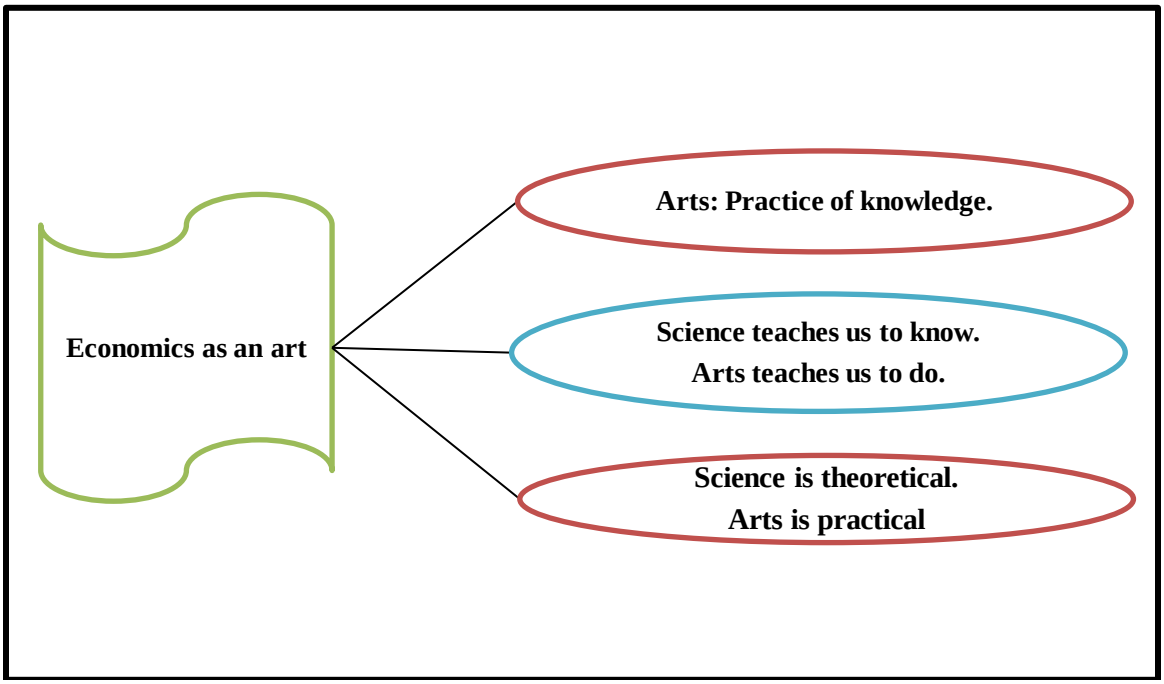
Questions.	Answers.
1. Economics like science studies	Causes and effect relationship between economic phenomena.
2. In law of demand the cause is _____and effect is _____.	Price rise and fall in quantity demanded.
3. Economics like other sciences is	Capable of being measured.
4. Economics also has ____like science which enables it to _____future markets with the help of various _____ and _____ tools.	○ Own methods. ○ Forecast. ○ Statistical. ○ Non statistical.
5. Economics is not a	Perfect science.

6. It is not possible to make correct	Prediction about the behavior of economic variables.

Economics as an art:

- Art is nothing but practice of knowledge where as science teaches us to know art teaches us to do.
- Unlike science which is theoretical art is practical.
- If we analyze economics we find that it has the features of an art also.
- Its various branches, consumption, production, public finance etc provide practical solutions to various economic problems.
- It helps in solving various economic problems which we face in our day to day life.

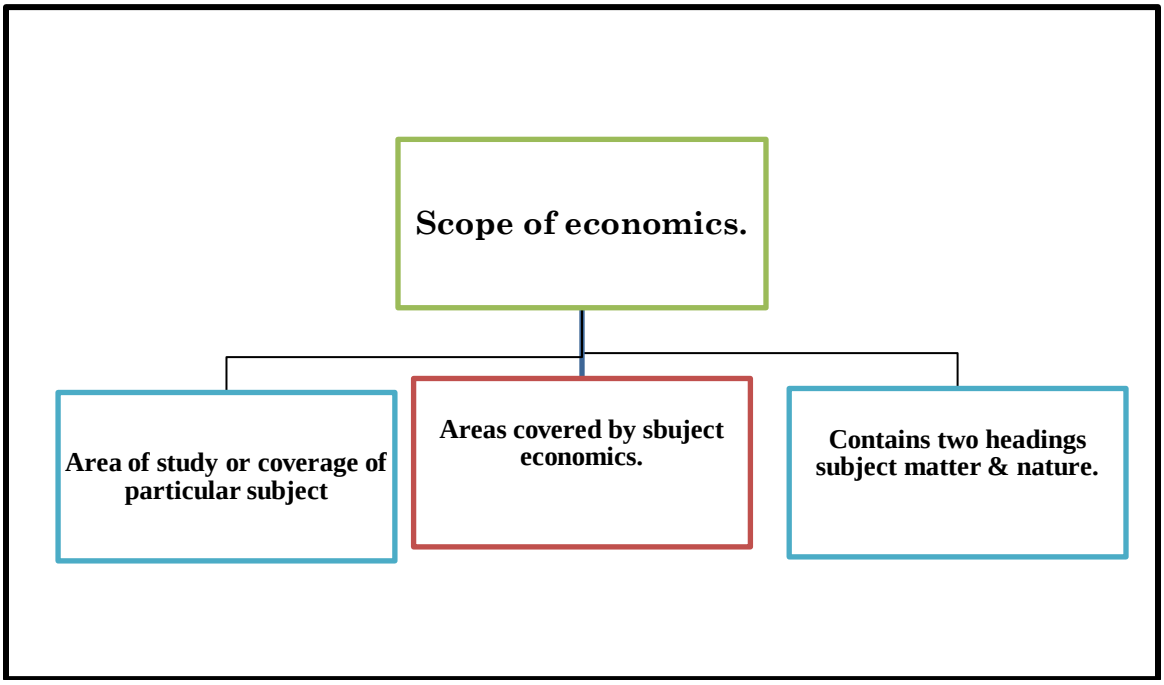
Economics is both a science and an art. It is science in its methodology and art in its application. Study of unemployment problem is science but framing suitable policies for reducing the extent of unemployment is an art.



Question.	Answers.
1. Art is nothing but	Practice Of Knowledge.
2. Science teaches us to _____ and arts teaches us to _____.	• Know. • Do.
3. Science is _____ and art is _____.	• Theoretical. • Practical.
4. When we analyze economics we find that it has the features of	Arts.
5. Various branches of economics provide	Solutions to various economic problems
6. Economics is a science in its _____ and art in its _____.	• Methodology. • Application.
7. Study of unemployment problem is _____ and framing suitable policies for reducing it is an _____.	• Science. • Art.

Scope Of Economics:

Scope means an area of study or coverage of the particular subject. Scope of economics means areas covered by subject economics i.e. the whole topics which should be studied in economics.
The scope of economics contains two headings they are subject matters and nature of economics.

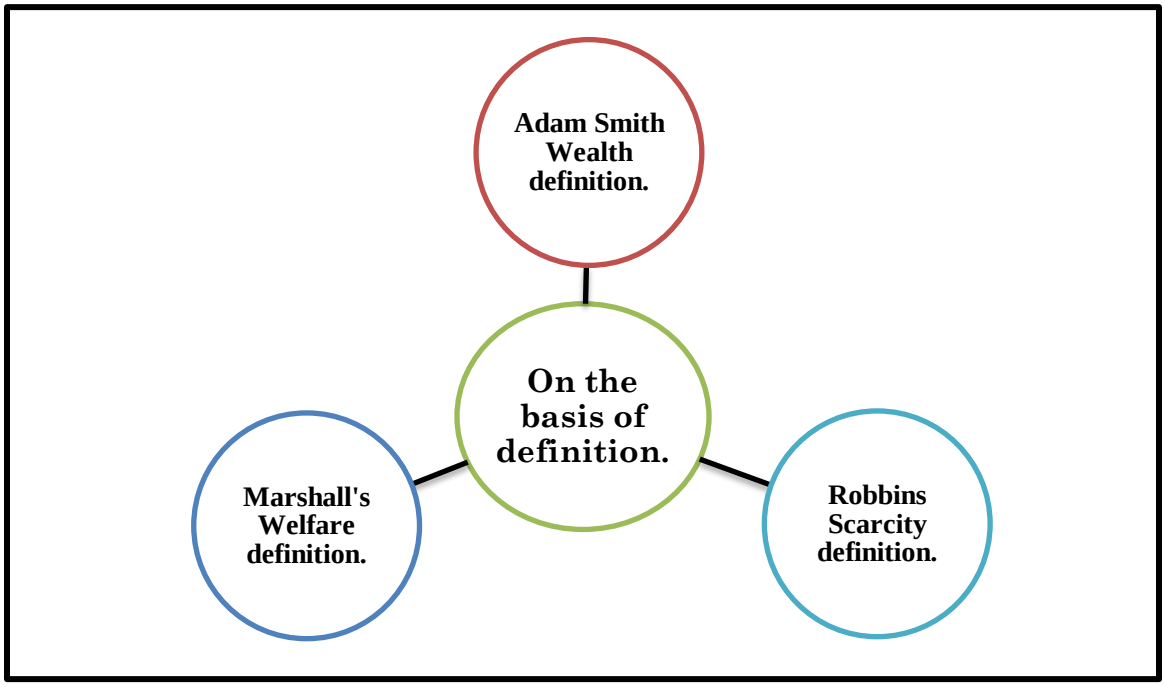


Questions.	Answers.
1. Scope means	An area of study or coverage of the particular subject.
2. Scope of economics means	An area covered by the subject of economics.
3. The scope of economics contains two headings.	• Subject matter. • Nature of economics.

The subject matter of economics is studied with help of the following

1. On the basis of definition:

- Different economists have a different view regarding the subject matter of economics.
- The classical economist Adam Smith considered economics as a science that deals with wealth.
- Therefore the subject matter of economics is the study of nature and causes of wealth of nations.
- The leader of neoclassical economists Alfred Marshall considered economics as the science of welfare.
- Therefore the subject matter of economics is the study of mankind in the ordinary business of life.
- The economists L Robbins considered economics as a modern or scarcity and choice definition.
- Therefore the subject matter of economics is the study of human behavior as a relationship between ends and scarce means.

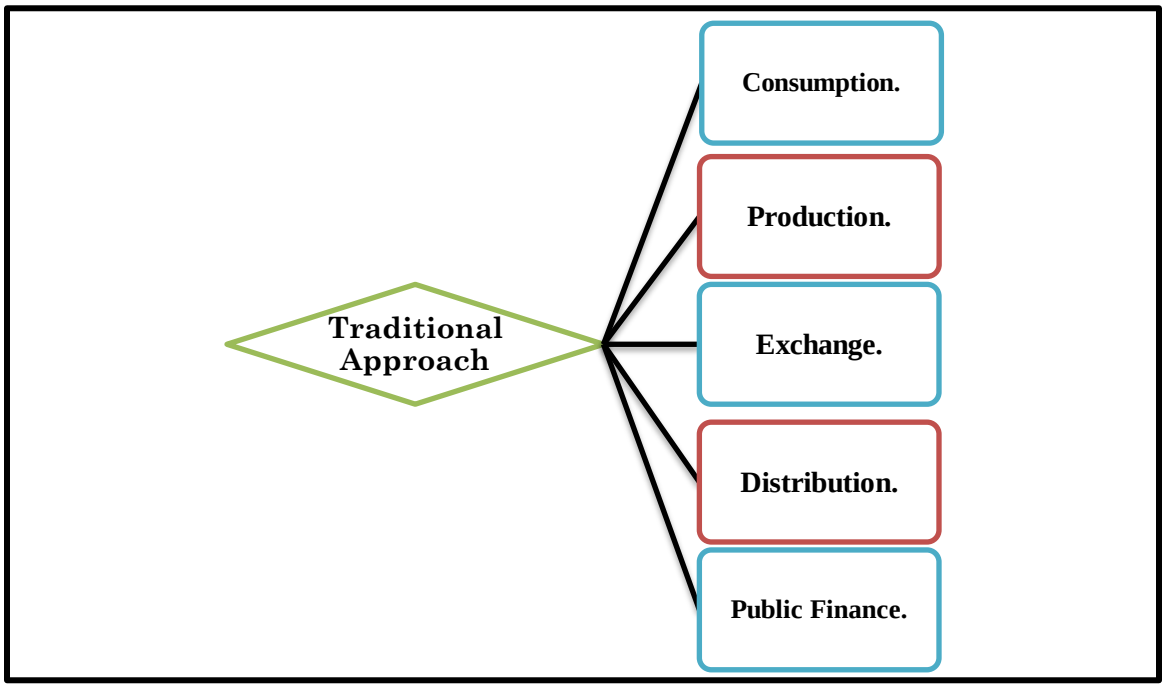


Questions.	Answers.
1. The subject matter of economics is studied on	The basis of definition.
2. Adam Smith considered economics as a science	That deals with wealth.
3. Marshall considered economics as a science	Of welfare.
4. Robbins considered economics as a science	Of scarcity or choice making.

2. Traditional Approach:

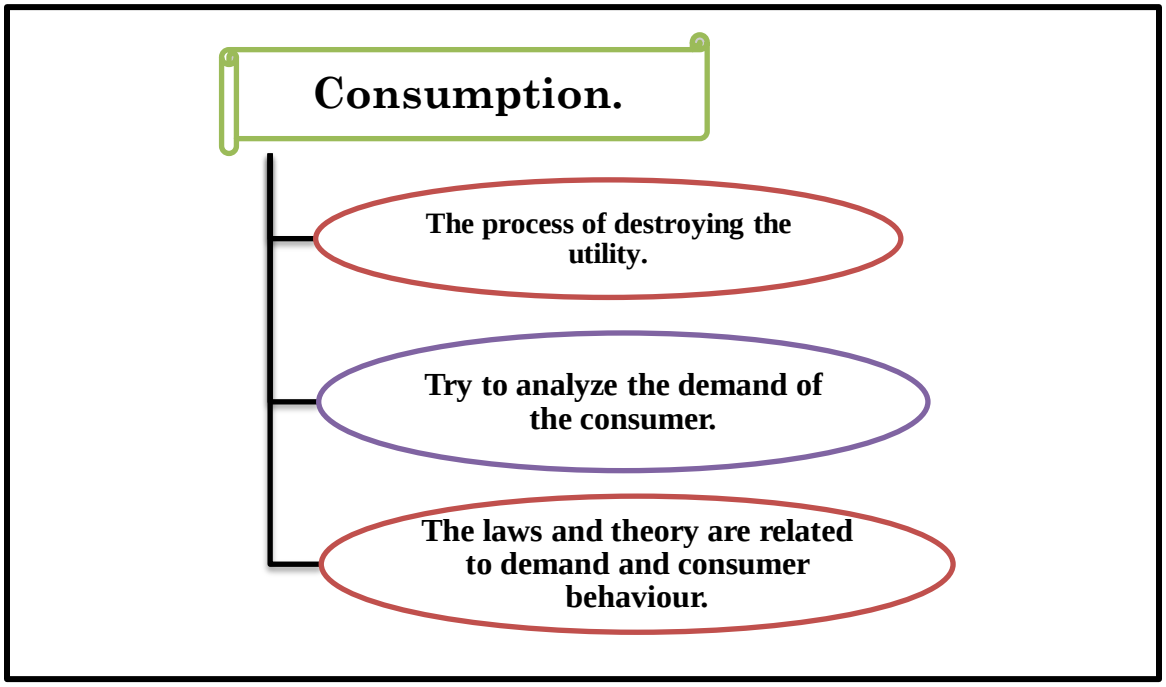
- According to traditional approach economics deals with the activities of man.
- It deals with those activities of man through which he tries to satisfy his wants.
- There are three fundamental economic wants such as food, cloth and shelter.
- As we know the human wants are unlimited but the means to satisfy them are limited.
- When the first want is satisfied second want arises and to fulfill the second urgent want effort should be done to get resources or means.

- Therefore according to the traditional approach the continuous circle of unlimited wants efforts and satisfaction are known as a subject matter of economics.



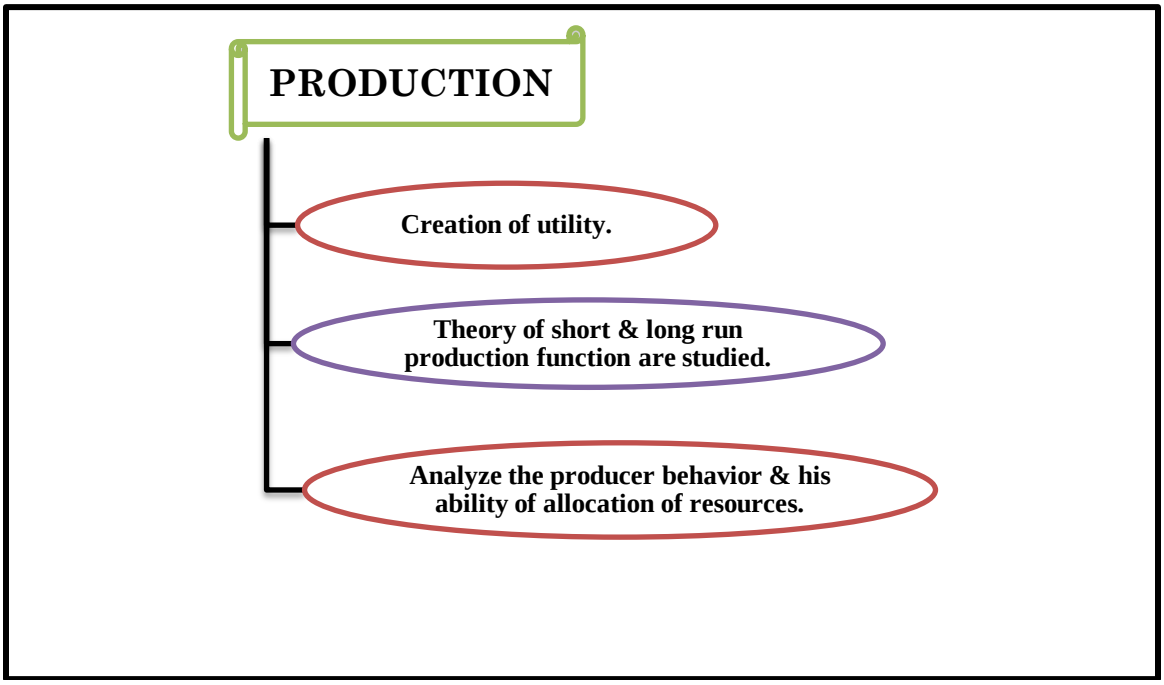
A. Consumption:

- Consumption means the process of destroying utility.
- In consumption we try to analyze the demand of the consumer regarding goods and services to drive the maximum satisfaction.
- Thus the laws and theory related to demand and consumer behavior are studied in consumption.



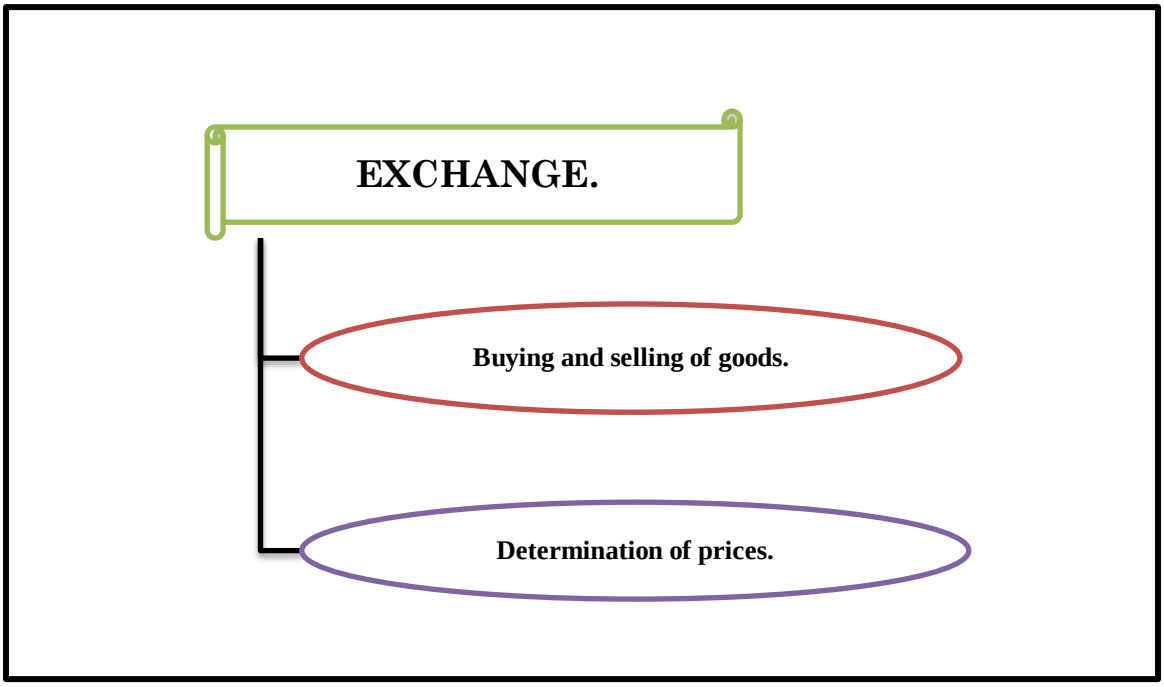
B. Production:

- It is the creation of utility.
- The theory based on short run and long run production functions are studied under it.
- In production we try analyze the behavior of the producer and how does a producer allocate his resources so as to get maximum profit out of hiss production.



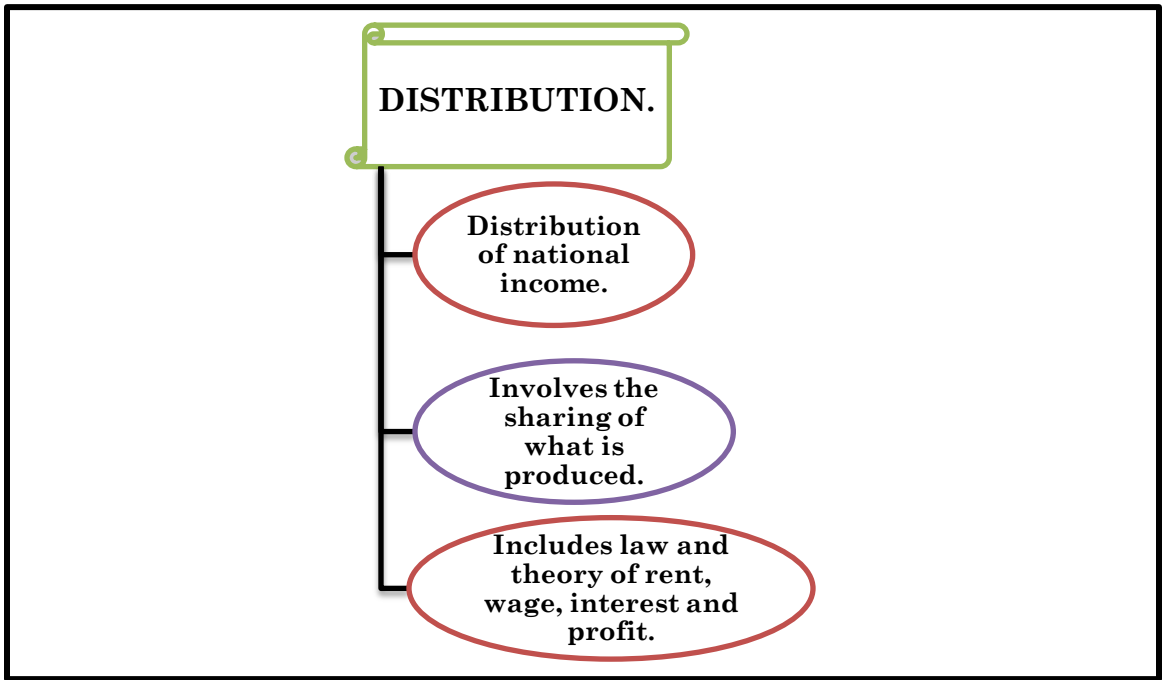
C. Exchange:

- In exchange we study the buying and selling process of goods and services and how the price of goods and services are determined by various markets like perfect competition, monopoly, monopolistic competition oligopoly and duopoly.



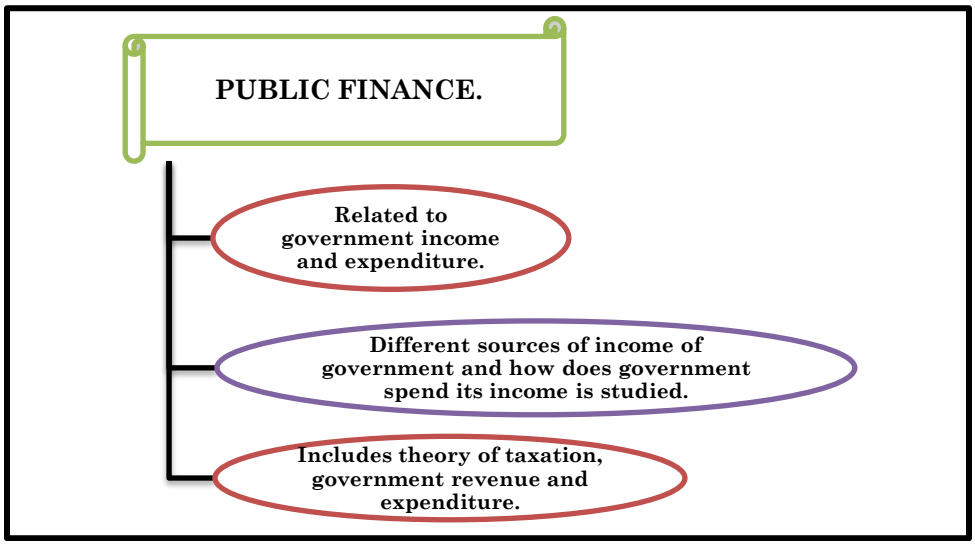
D. Distribution:

- In distribution we study the distribution of national income among the factors of production like land labor, capital and organization.
- It also involves the sharing of what is produced.
- It includes law and theory of wage, rent, interest and profit.



E. Public Finance:

- Public finance is related to the government income and expenditure.
- In public finance we study the different source of income of government and how does the government spend its income.
- It includes theory of taxation, government revenues and expenditure.



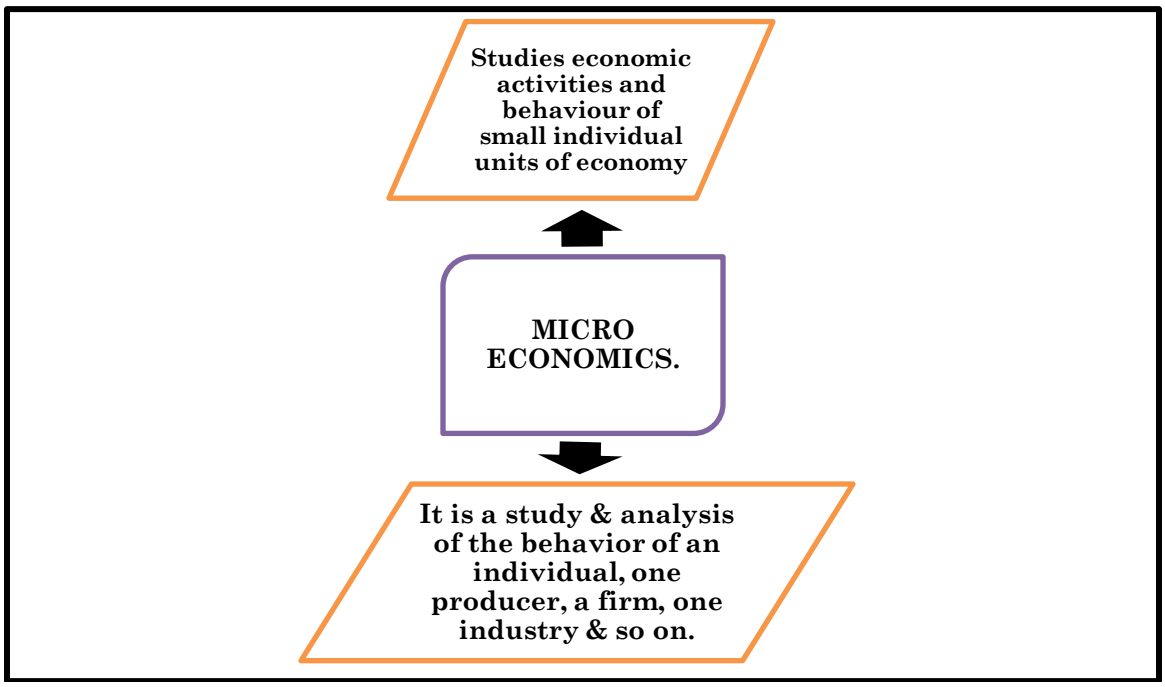
Questions.	***Answers.***
1. According to traditional approach economics deals with	Activities of man that tries to satisfy his wants.
2. 3 fundamental economic wants	Food, clothing & shelter.
3. Human wants are _____ but means to satisfy them are _____.	○ Unlimited. ○ Limited.
4. Consumption means the process of	Destroying the utility.
5. Consumption includes	Law and theory of demand.
6. Production means	Creation of utility.
7. Theory of _____ & _____ production function are studied.	○ Short run. ○ Long run.
8. Analyze the _____ & his ability of _____.	○ Behavior of producer. ○ Allocation of resources.
9. Exchange means	Buying and Selling of goods.
10. Distribution of _____ is studies	National income.
11. Distribution includes	Law and theory of rent, wage, interest & profit.
12. Public finance is related to	Government income & expenditure.
13. Public finance includes	Theory of taxation, government revenue & expenditure.

3. Modern Approach:

According to modern views the subject matter of economics is divided into

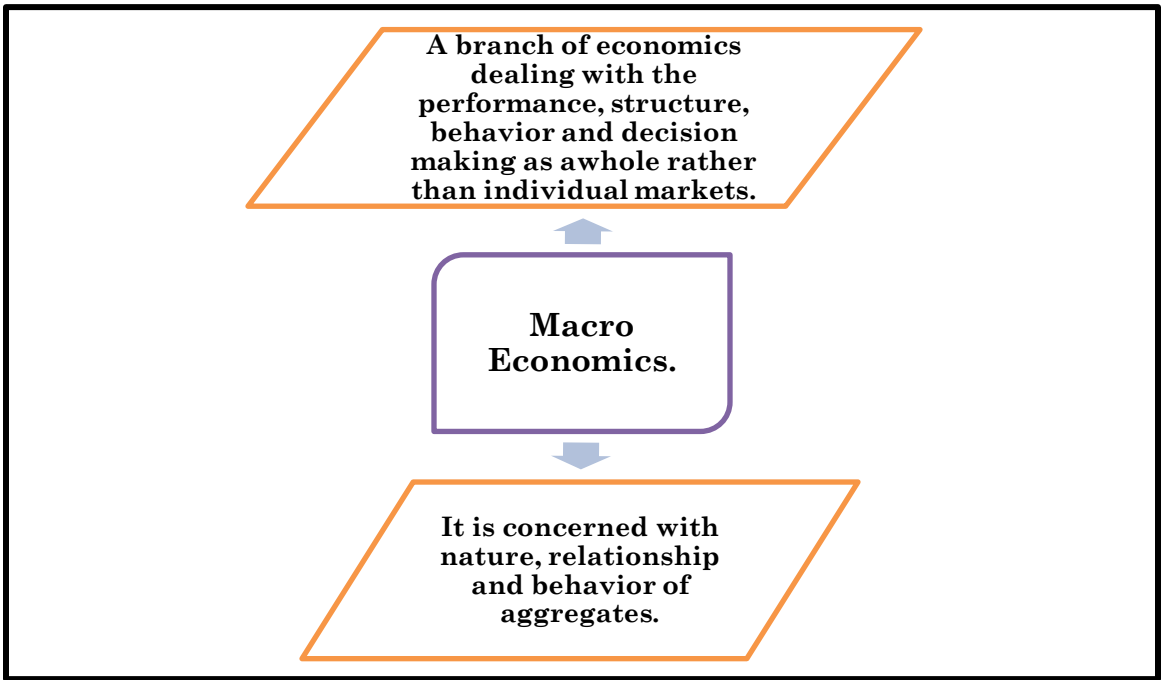
A. Micro Economics:

- It studies the economic activities and behavior of small individual units of economy.
- It means micro economics can be defined as the study and analysis of the behavior of an individual consumer, one producer, a firm, a household, one industry and so on.



B. Macro Economics:

- It is branch economics dealing with the performance, structure, behavior and decision making of an economy as a whole, rather than individual market.
- It is concerned with nature, relationship and behavior of aggregate quantities and averages such as national income, total consumption, savings, investment, total employment, general price level, aggregate expenditure and aggregate supply of goods and services.



Questions.	*Answers.*
1. According to modern view subject matter of economics is divided into.	○ Micro Economics. ○ Macro Economics.
2. Micro economics means.	Study and analysis of individual behavior.
3. Macro economics means.	Study of aggregates.

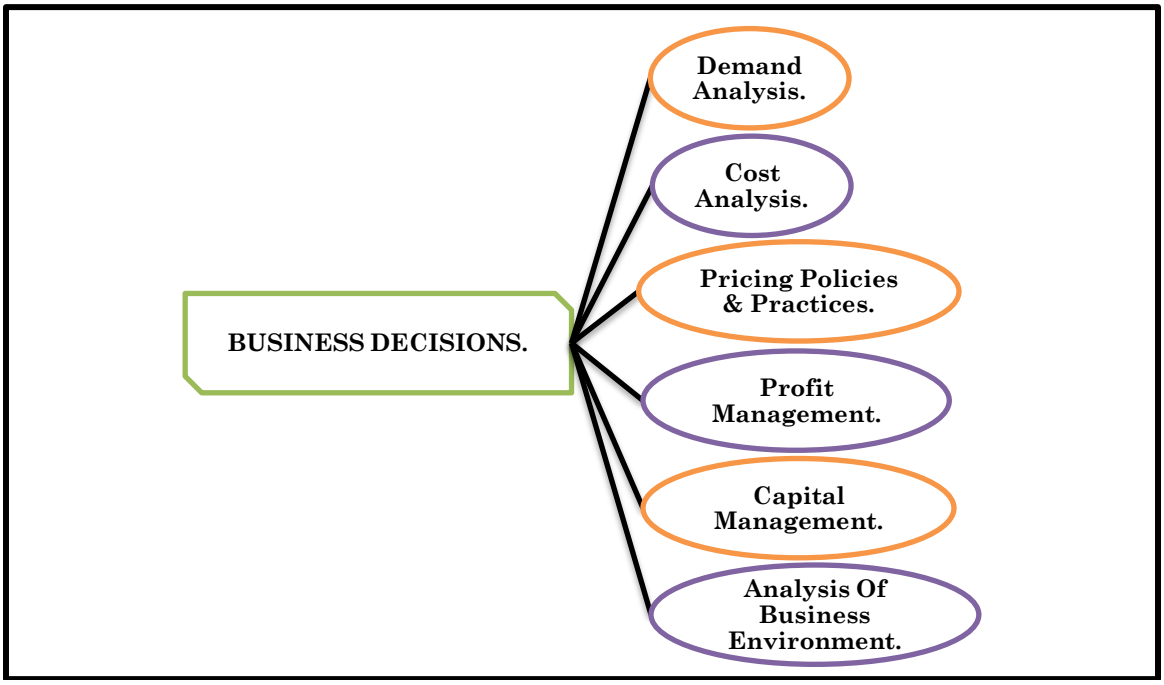
Various types of business decisions

Economics is a study of choices and choice making. Choice making is relevant for every individual, families, societies, institutions, areas, states and nations and for the whole world.

Hence economics has wide application and relevance to all individuals and institutions.

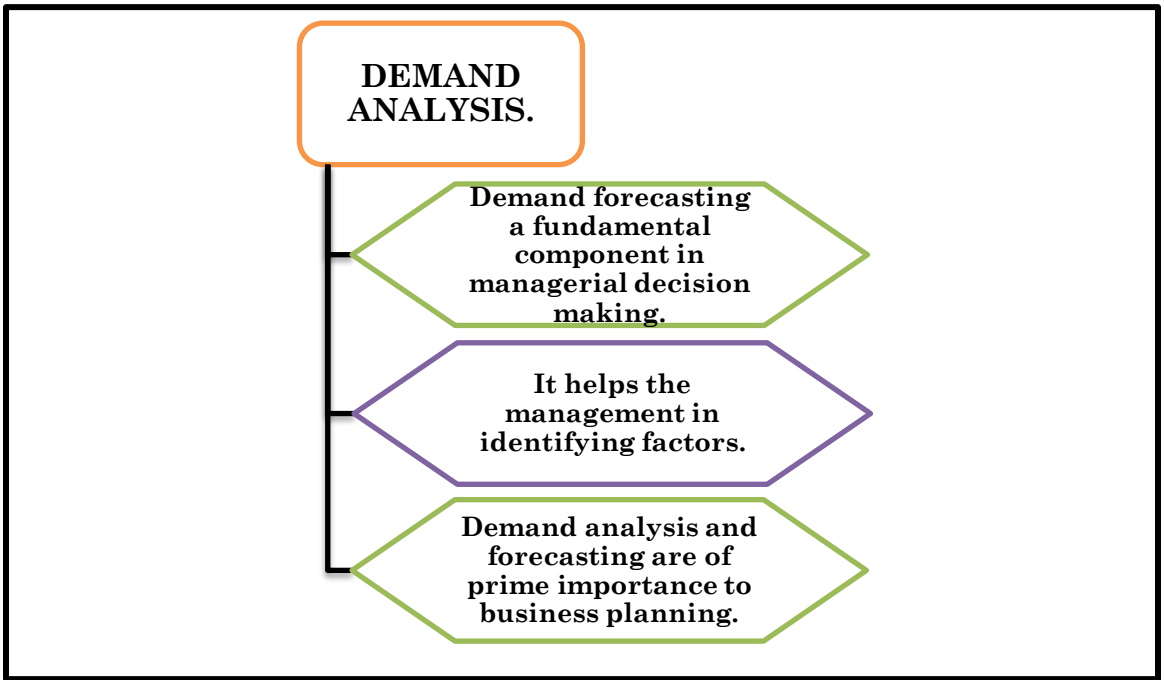
The functions of business economics is to solve the problem of business decision making.

There are decisions like short term and long term among them these are the following:



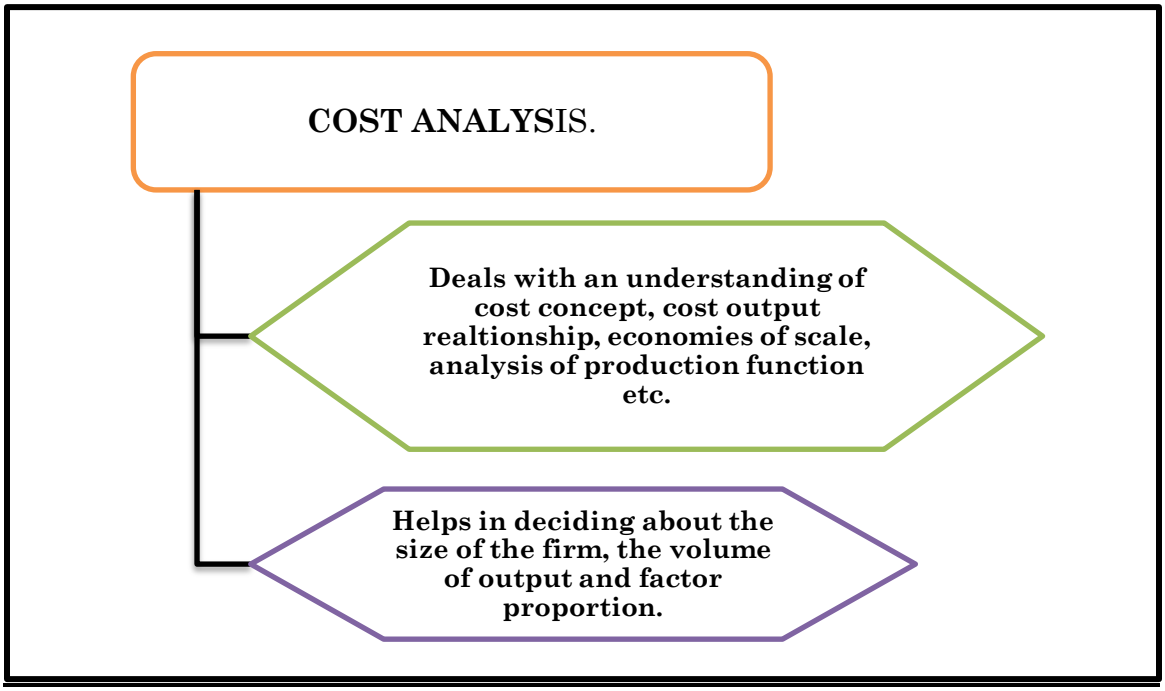
A. Demand Analysis:

- Analysis of demand is undertaken to forecast demand, which is a fundamental component in managerial decision-making.
- Demand forecasting is of importance because an estimate of future sales is a primer for preparing production schedule and employing productive resources.
- Demand analysis helps the management in identifying factors that influence the demand for the products of a firm.
- Thus, demand analysis and forecasting is of prime importance to business planning.



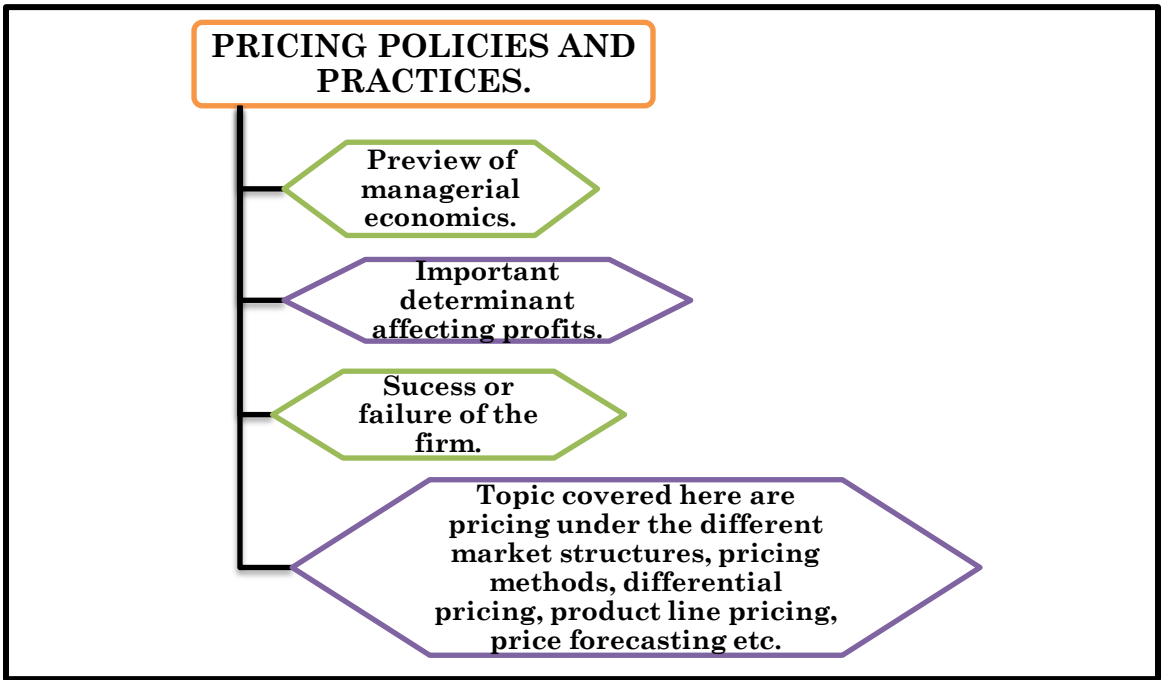
B. Cost Analysis:

- Cost estimates are an essential part of business decision making and helps in the efficient and optimum allocation of resources.
- Production analysis deals with physical terms while cost analysis deals with monetary terms.
- The objective of a firm is to produce a given output at least cost by having the optimum combination of the factors of production.
- Cost analysis deals with an understanding of cost concept cost-output relationship, economies to scale, analysis of production function, cost control, cost benefit analysis.
- Cost analysis helps in deciding about the size of the firm the volume of output and factor proportions.



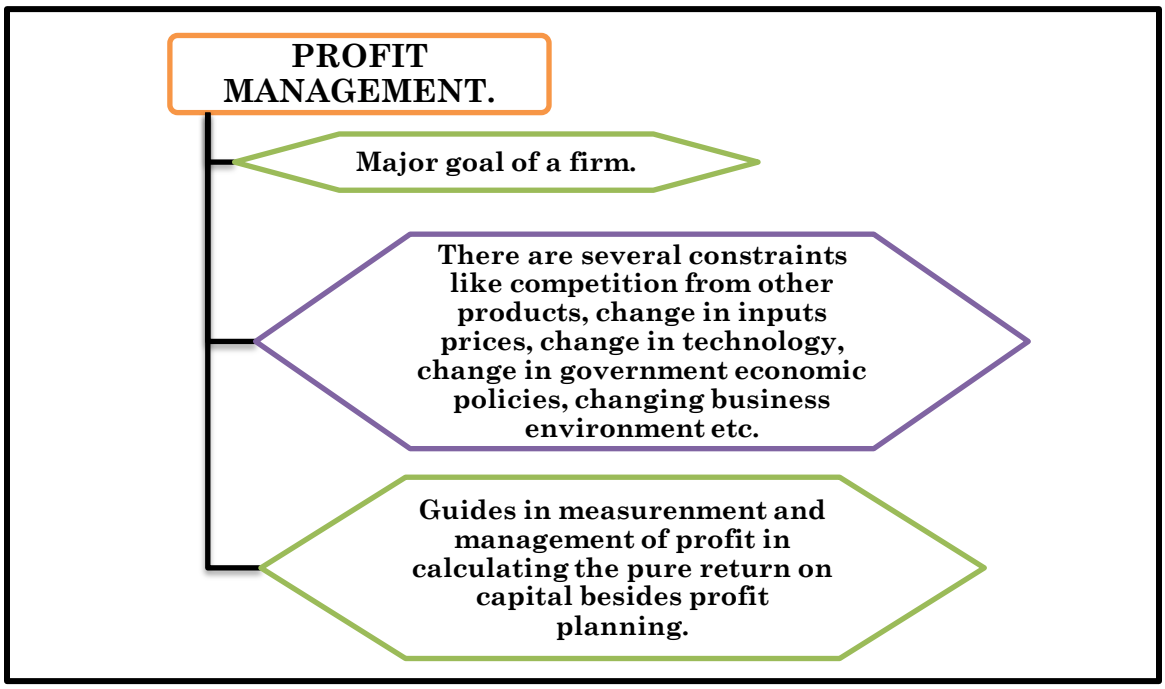
C. Pricing policies and practices:

- Pricing decision has always been within the preview of managerial economics.
- Pricing policy is an important determinant affecting profits.
- The success or failure of the firm to a very extent depends on the correctness of its pricing decisions, because price policy affects revenue of the firm and consequently its profits.
- The main topic covered here are pricing under the different market structures, pricing methods, differential pricing, product line pricing, price forecasting etc..



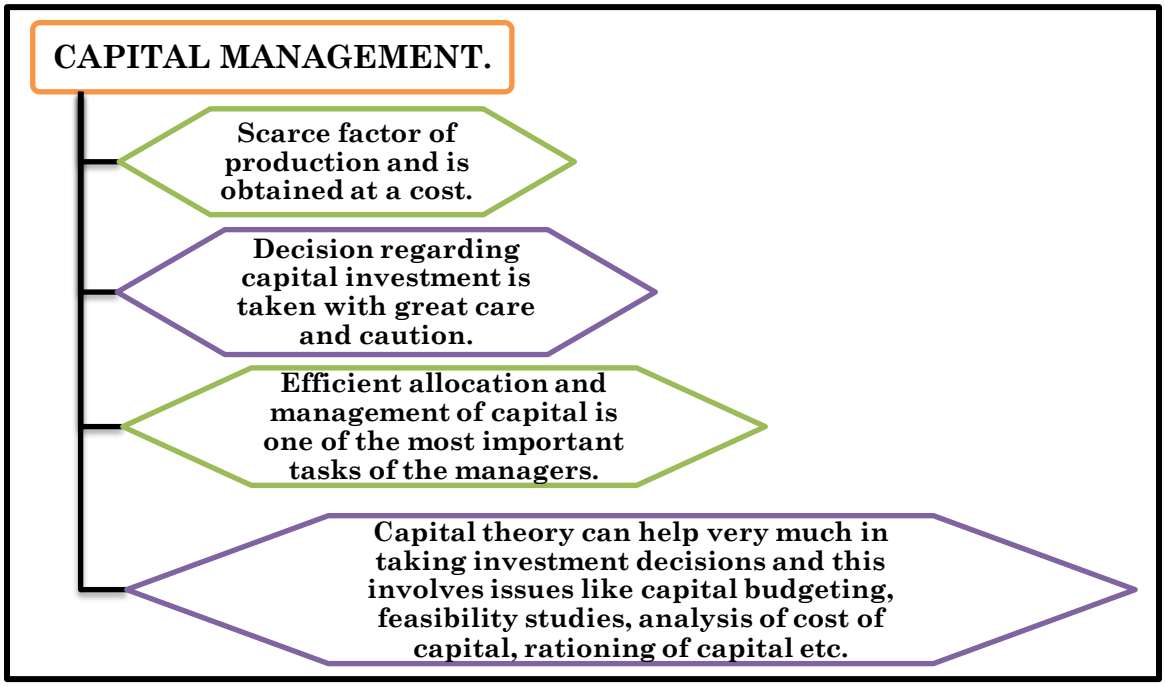
D. Profit Management:

- Profit making is the major goal of a firm. Here there are several constraints like competition from other products, change in inputs prices, change in technology, change in government economic policies, changing business environment etc.
- Profit theory guides in the measurement and management of profit in calculating the pure return on capital besides future profit planning.



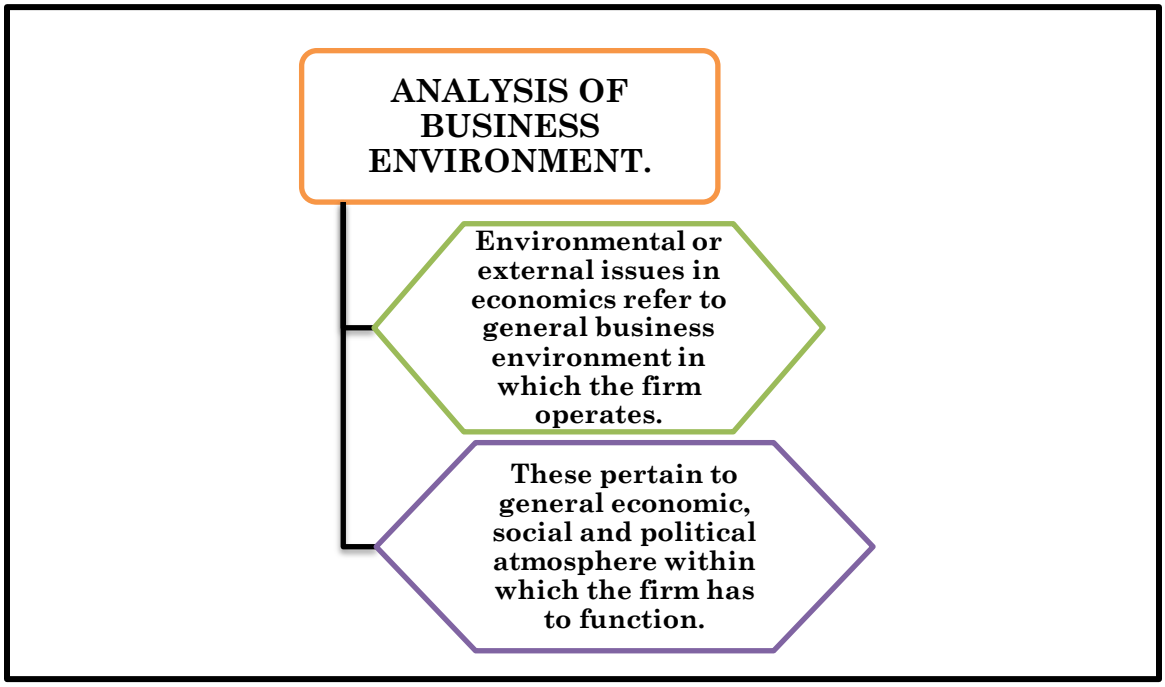
E. Capital Management:

- Capital is scarce factor of production and is obtained at a cost.
- Therefore it is necessary that decision regarding capital investment is taken with great care and caution.
- Efficient allocation and management of capital is one of the most important tasks of the managers.
- Knowledge of capital theory can help very much in taking investment decisions and this involves issues like capital budgeting, feasibility studies, analysis of cost of capital, rationing of capital etc.



F. Analysis Of Business Environment:

- Environmental or external issues in economics refer to general business environment in which the firm operates.
- These pertain to general economic, social and political atmosphere within which the firm has to function.



Questions.	*Answers.*
1. The component in managerial decision making	Demand Forecasting.
2. What helps the management in identifying factors	Demand Analysis.
3. Which concepts are of prime importance to business planning.	• Demand Analysis. • Demand Forecasting.
4. Which concept deals with understanding of cost concept, cost output relationship etc.	Cost Analysis.
5. Cost analysis helps in deciding about.	• The size of the firms. • The volume of output and factor proportion.
6. _____ is the preview of managerial economics.	Pricing policies and practices.
7. Pricing policies and practices is the important	Profits.

determinant affecting	
8. _____ or _____ of the firm are depended on pricing policies.	• Success. • Failure.
9. Topic covered under pricing policies and practices are	• Pricing under different market structure. • Pricing methods. • Differential Pricing. • Product line pricing. • Price forecasting.etc.
10. _____ is the major goal of a firm.	Profit management.
11. Name some constraints of profit management.	• Competition from other products. • Change in input price. • Change in technology etc.
12. Profit management guides in	• Measurement & management of profit.
13. Capital management is a _____ factor of production.	Scarce.
14. Capital is obtained at a	Cost.
15. _____ & _____ of capital is one of the most important task of management.	• Efficient allocation. • Management.
16. Capital theory helps very much in taking	Investment decision.
17. External issues in economics refer to	General business environment.
18. These pertain to general _____, _____ & _____ atmosphere within which the firm has to function.	• Economic. • Social. • Political.

Incremental concept

Economics is a study of choices and choice making. Choice making is relevant for every individual, families, societies, institutions, areas, states and nations and for the whole world.

Hence economics has wide application and relevance to all individuals and institutions.

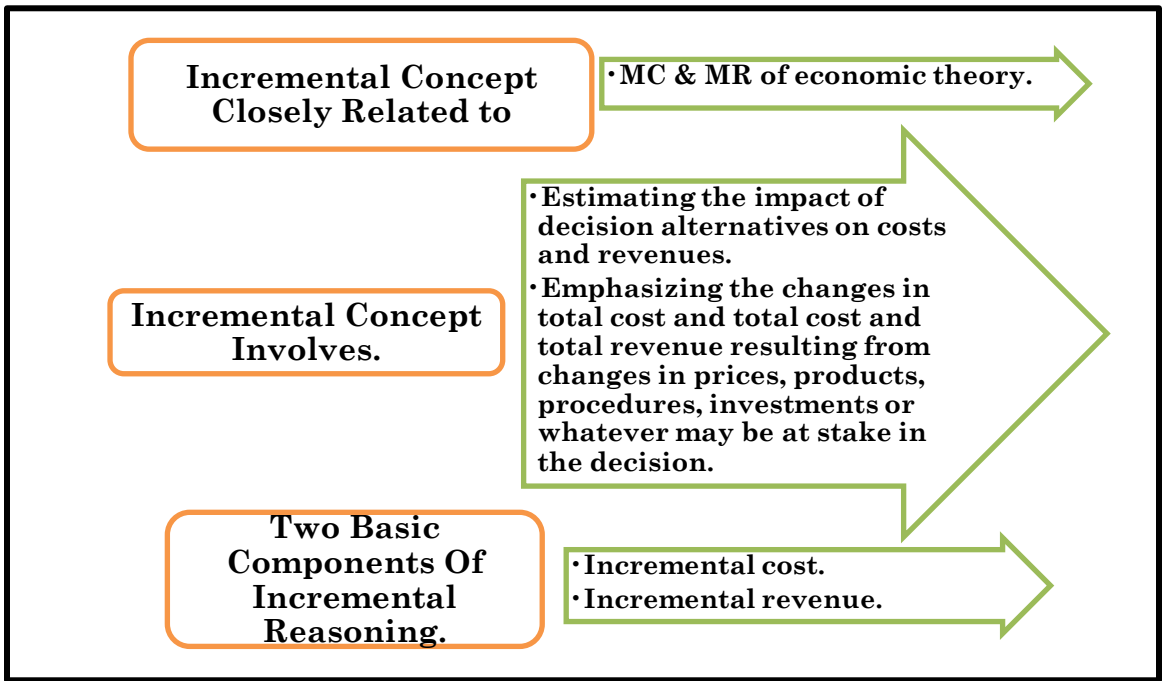
The incremental concept is closely related to the marginal costs and marginal revenues of economic theory.

Incremental concept involves two important activities which are as follows:

- Estimating the impact of decision alternatives on costs and revenues.
- Emphasizing the changes in total cost and total cost and total revenue resulting from changes in prices, products, procedures, investments or whatever may be at stake in the decision.

The two basic components of incremental reasoning are as follows:

- Incremental cost: Incremental cost may be defined as the change in total cost resulting from a particular decision.
- Incremental revenue: Incremental revenue means the change in total revenue resulting from a particular decision.



Questions.	Answers.
1. Incremental concept is closely related to.	MC & MR of economic theory.
2. It involves which to important activities.	• Estimating the impact of decision alternatives on costs and revenues. • Emphasizing the changes in total cost and total cost and total revenue resulting from changes in prices, products, procedures, investments or whatever may be at stake in the decision.
3. Name the two basic component of incremental reasoning.	• Incremental cost

	• Incremental revenue

The incremental principle may be stated as under:
A decision is obviously a profitable one if:

- **It increases revenue more than costs**
- **It decreases some costs to a greater extent than it increases other costs**
- **It increases some revenues more than it decreases other revenues**
- **It reduces costs more that revenues.**

Question.	Answer.
1. Incremental principle can be stated as	A decision is obviously a profitable one if: • It increases revenue more than costs • It decreases some costs to a greater extent than it increases other costs • It increases some revenues more than it decreases other revenues • It reduces costs more that revenues.

- Some businessmen hold the view that to make an overall profit, they must make a profit on every job. Consequently, they refuse orders that do not cover full cost (labor, materials and overhead) plus a provision for profit.
- Incremental reasoning indicates that this rule may be inconsistent with profit maximization in the short run.
- A refusal to accept business below full cost may mean rejection of a possibility of adding more to revenue than cost.
- The relevant cost is not the full cost but rather the incremental cost.
- A simple problem will illustrate this point.

Illustration

Some businessmen hold the view that to make an overall profit, they must make a profit on every job. The result is that they refuse orders that do not cover full costs plus a provision of profit. This will lead to rejection of an order which prevents short run profit. A simple problem will illustrate this point. Suppose a new order is estimated to bring in an additional revenue of Rs. 10,000. The costs are estimated as under:

Labor	**Rs 3000/-**
Materials	**Rs 4000/-**

Overhead Charges	**Rs 3000/-**
Selling Cost	**Rs 1400/-**
Full Cost	**Rs 1200/-**

The order appears to be unprofitable. For it results in a loss of Rs. 2,000. However, suppose there is idle capacity which can be utilized to execute this order. If order adds only Rs. 1,000 to overhead charges, and Rs. 2000 by way of labor cost because some of the idle workers already on the pay roll will be deployed without added pay and no extra selling and administrative costs, then the actual incremental cost is as follows:

Labor	**Rs 2000/-**
Materials	**Rs 4000/-**
Overhead Charges	**Rs 1000/-**
Incremental Cost	**Rs 7000/-**

Thus there is a profit of Rs. 3,000. The order can be accepted on the basis of incremental reasoning. Incremental reasoning does not mean that the firm should accept all orders at prices which cover merely their incremental costs.

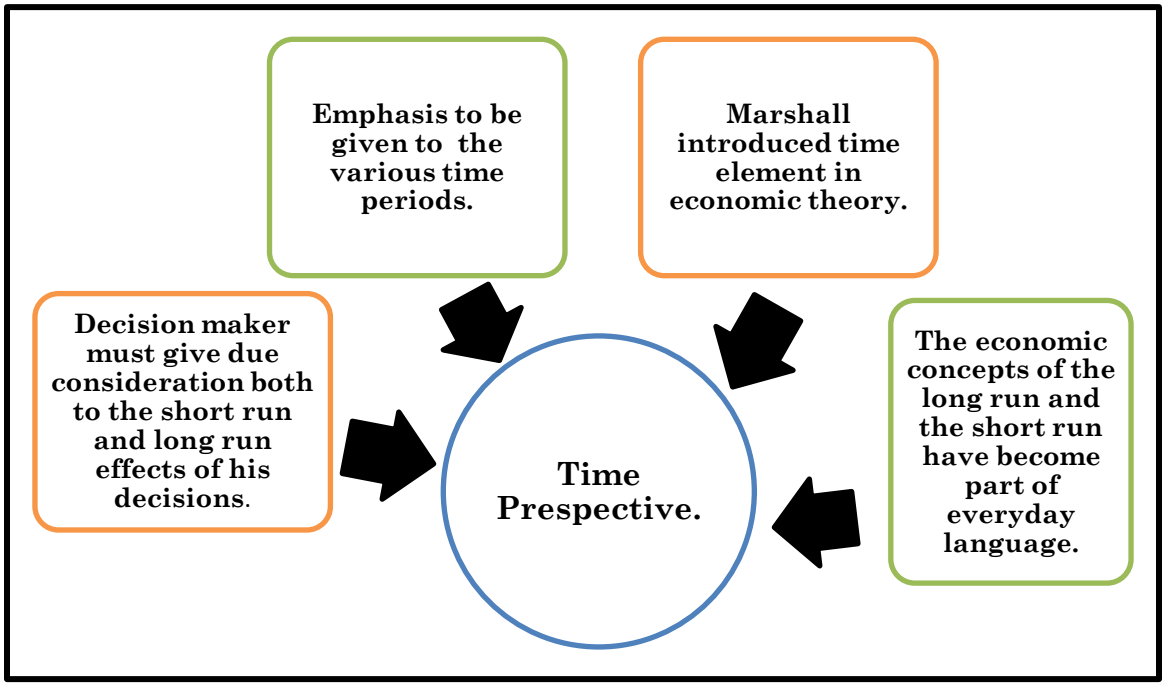
The concept is mainly used by the progressive concerns. Even though it is a widely followed concept, it has certain limitations:

- The concept cannot be generalized because observed behavior of the firm is always variable.
- The concept can be applied only when there is excess capacity in the concern.
- The concept is applicable only during the short period.

The concept of time perspective

Economics is a study of choices and choice making. Choice making is relevant for every individual, families, societies, institutions, areas, states and nations and for the whole world. Hence economics has wide application and relevance to all individuals and institutions.

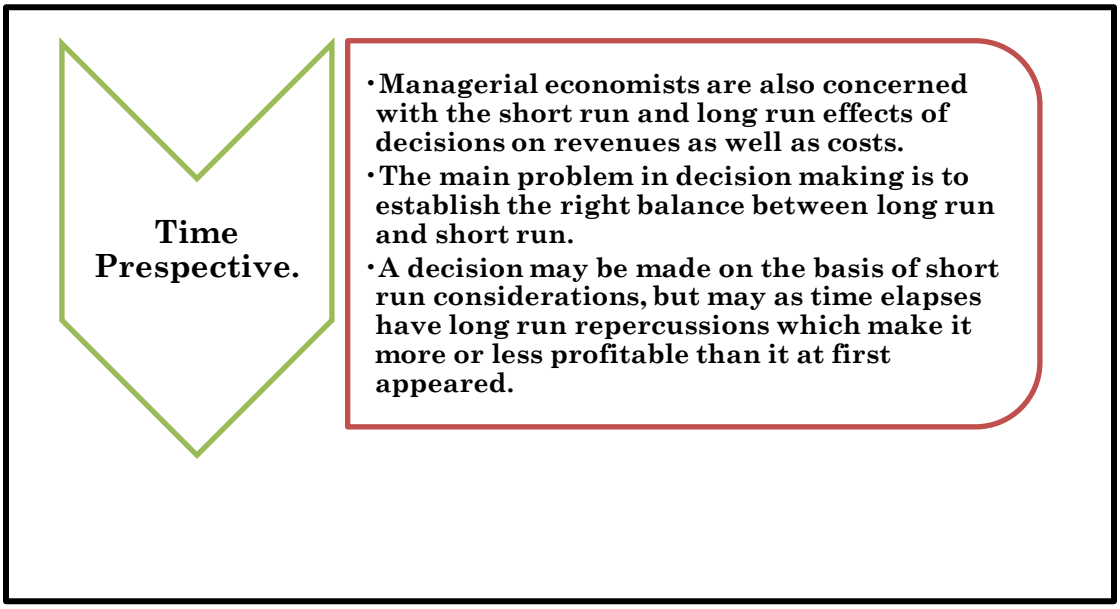
- The time perspective concept states that the decision maker must give due consideration both to the short run and long run effects of his decisions.
- He must give due emphasis to the various time periods. It was Marshall who introduced time element in economic theory.
- The economic concepts of the long run and the short run have become part of everyday language.



Questions.	Answers.
1. What does the concept of time perspective state that.	The decision maker must give due consideration both to the short run and long run effects of his decisions.
2. Emphasis should be given to	Various time periods.
3. Who introduced time element in economic theory.	Marshall.
4. Economic concepts of long run & short run have become part of	Everyday language.

- Managerial economists are also concerned with the short run and long run effects of decisions on revenues as well as costs.
- The main problem in decision making is to establish the right balance between long run and short run.
- In the short period, the firm can change its output without changing its size. In the long period, the firm can change its output by changing its size.
- In the short period, the output of the industry is fixed because the firms cannot change their size of operation and they can vary only variable factors.

- In the long period, the output of the industry is likely to be more because the firms have enough time to increase their sizes and also use both variable and fixed factors. In the short period, the average cost of a firm may be either more or less than its average revenue.
- In the long period, the average cost of the firm will be equal to its average revenue.
- A decision may be made on the basis of short run considerations, but may as time elapses have long run repercussions which make it more or less profitable than it at first appeared.



Questions.	Answers.
1. What concern does managerial economist also have?	The effects of decision of short run & long run on revenue as well as cost.
2. What is the main problem?	To establish balance between short run and long run.
3. Name some adjustments that a firm does in short run and long run?	○ In the short period, the firm can change its output without changing its size. In the long period, the firm can change its output by changing its size. ○ In the short period, the output of the industry is fixed because the firms cannot change their size of operation and they can vary only variable factors.
4. What happens when a decision is made on basis of short run	Long run repercussions which make it more or less profitable than it at first appeared.

Illustration:

The firm which ignores the short run and long run considerations will meet with failure can be explained with the help of the following illustration.

Suppose, a firm having a temporary idle capacity, received an order for 10,000 units of its product. The customer is willing to pay only Rs. 4.00 per unit or Rs. 40,000 for the whole lot but no more.

- The short run incremental cost (ignoring the fixed cost) is only Rs. 3.00. Therefore, the contribution to overhead and profit is Rs. 1.00 per unit (or Rs. 10, 000 for the lot).
- If the firm executes this order, it will have to face the following repercussion in the long run: It may not be able to take up business with higher contributions in the long run.
- The other customers may also demand a similar low price. The image of the firm may be spoilt in the business community.
- The long run effects of pricing below full cost may be more than offset any short run gain.

Haynes, Mote and Paul refer to the example of a printing company which never quotes prices below full cost due to the following reasons:

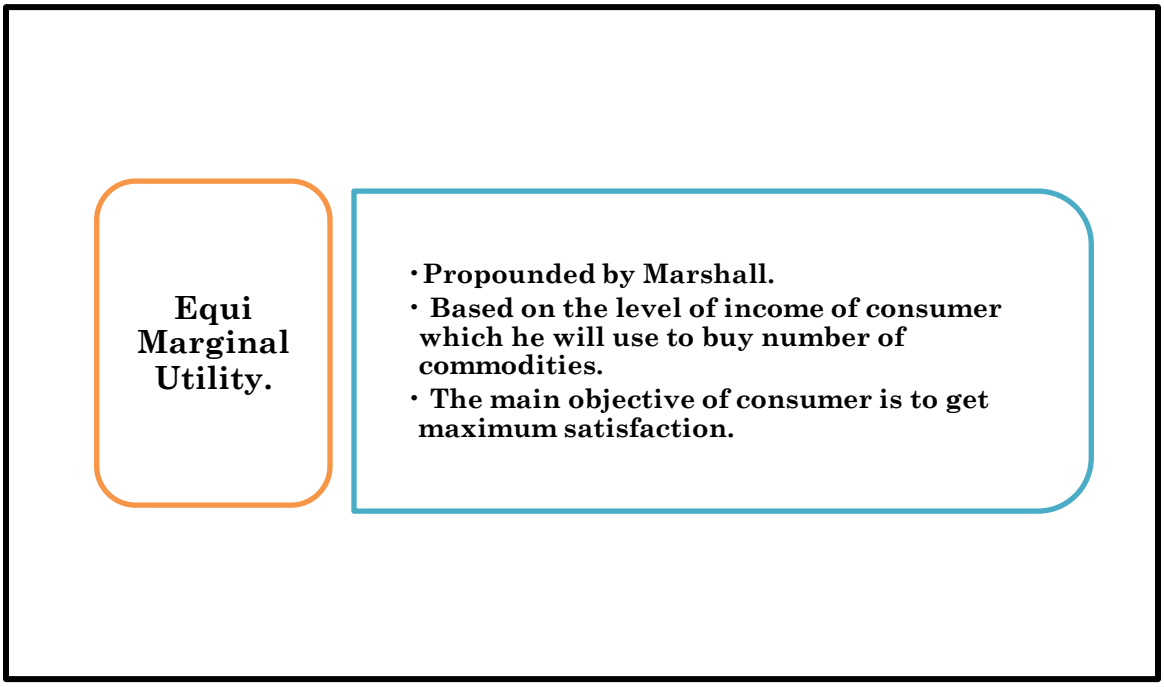
- The management realized that the long run repercussions of pricing below full cost would more than offset any short run gain. Reduction in rates for some customers will bring undesirable effect on customer goodwill.
- Therefore, the managerial economist should take into account both the short run and long run effects as revenues and costs, giving appropriate weight to most relevant time periods.

Concept of equi marginal utility

Ans: Economics is a study of choices and choice making. Choice making is relevant for every individual, families, societies, institutions, areas, states and nations and for the whole world.

Hence economics has wide application and relevance to all individuals and institutions.

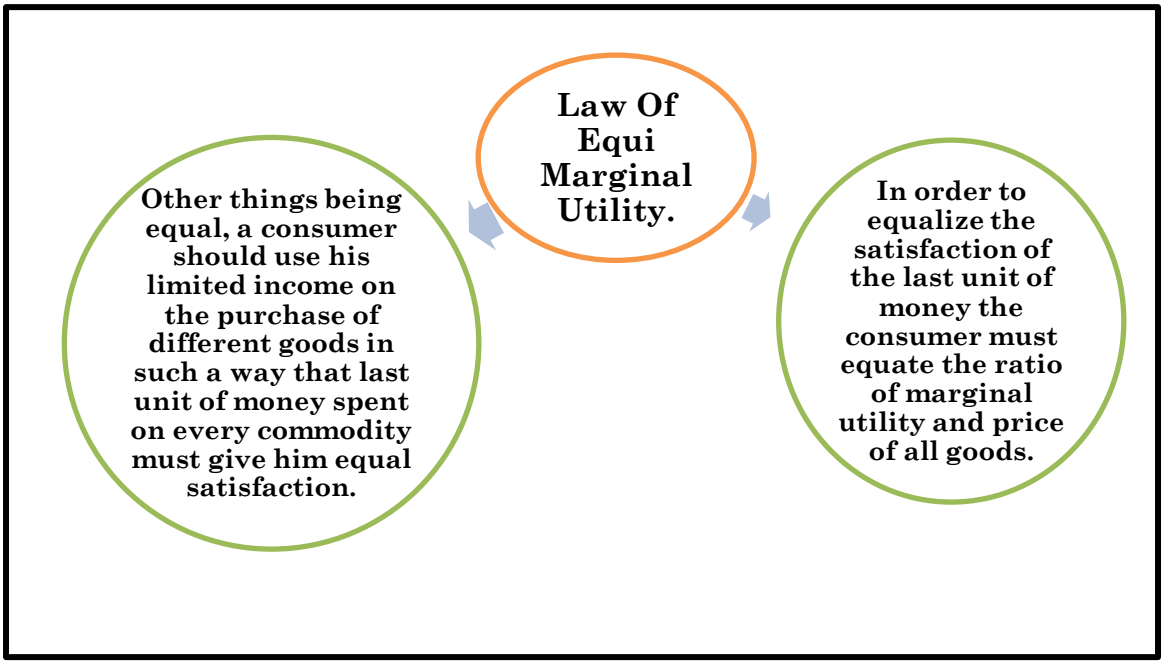
- The concept of **equi marginal utility** was propounded by Marshall.
- In case of **law of diminishing marginal utility which is related to consumption of only one commodity income level is not taken into account.**
- Law of equi marginal utility is based on th**e level of income of consumer which he will use to buy a number of commodities.**
- The main objective of the consumer is to get maximum satisfaction hence he should spend his money income on the purchase of different goods in such a way that he will get maximum satisfaction.



Questions.	Answers.
1. The concept of Equi Marginal Utility of propounded by	Marshall.
2. Equi Marginal Utility is based on	The level of income of consumer which he will use to buy number of commodities.
3. What is the main objective of the consumer?	To get maximum satisfaction.

According to Marshall law of equi marginal utility states that **" Other things being equal, a consumer should use his limited income on the purchase of different goods in such a way that last unit of money spent on every commodity must give him equal satisfaction."**

- In order to equalize the satisfaction of the last unit of money the consumer must equate the ratio of marginal utility and price of all goods.
- If we assume that consumer is spending his income on the purchase of four goods A,B,C, & D then $\frac{MUA}{PA} = \frac{MUB}{PB} = \frac{MUC}{PC} = \frac{MUD}{PD}$.



Question.	Answer.
1. What does law of equi marginal utility state?	Other things being equal, a consumer should use his limited income on the purchase of different goods in such a way that last unit of money spent on every commodity must give him equal satisfaction.
2. Law of equi marginal utility was given by	Marshall.
3. To equalize satisfaction of the last unit of money what does the consumer must do.	Consumer must equate the ratio of marginal utility and price of all goods.

This can be explained by the following illustration:

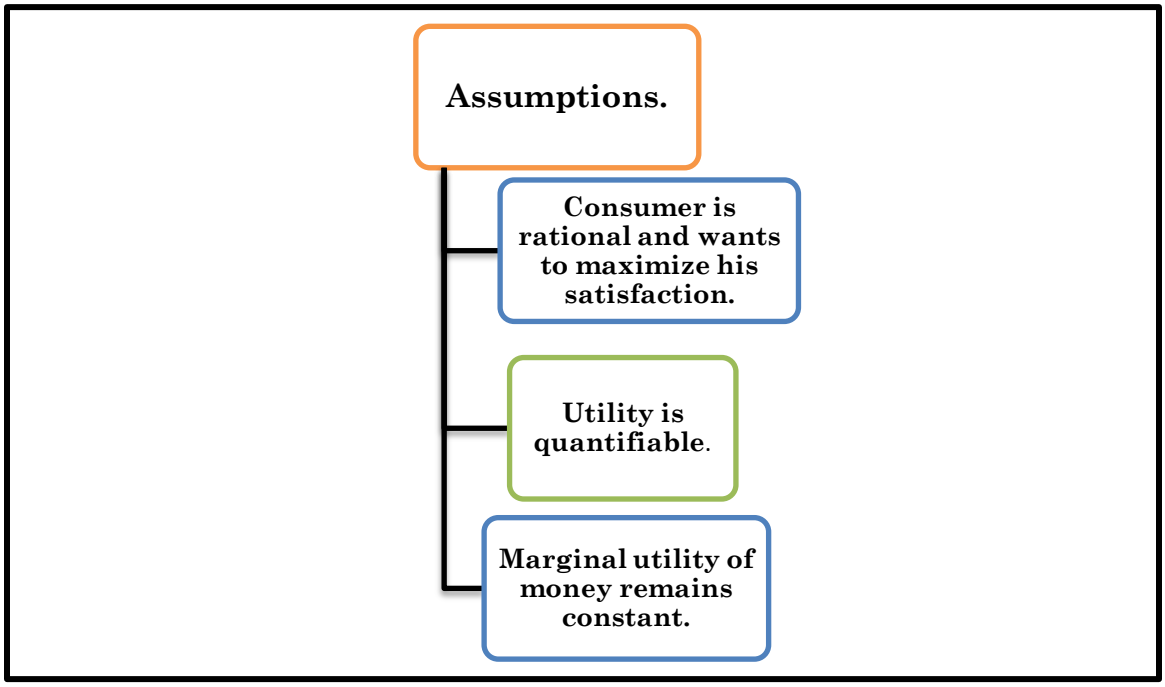
- Suppose there is a consumer with total income of Rs 55/-. He wants to spend it for the purchases of four commodities.
- Their prices are Rs 3/- Rs4/- Rs2/- and Rs 12/- respectively.
- With the help of the following table it can be explained.

Units	MUA	MUB	MUC	MUD
1	52	75	**18**	120
2	45	62	12	**108**
3	**27**	55	8	92
4	20	43	5	70
5	12	**36**	2	50

- From the table we can notice that when consumer will buy 3 units of commodity A, 5 units of commodity B, 1 unit of commodity C and 2 unit of commodity of D he will get maximum satisfaction because the ratio of marginal utility and price for all goods be equal i.e **9.**
- Total utility from 3 units of A will be **52+45+27=124.**
- Total utility from 5 units of B will be **75+62+55+43+36=271.**
- Total utility from 1 unit of C will be **18.**
- Total utility from 2 unit of D will be **120+108=228.**
- Thus total utility derived from consumption of 4 commodities will be **124+271+18+228=641.**
- This is the maximum satisfaction that can be derived with the limited income of the consumer.

The law of equi marginal utility is based on the following assumption:

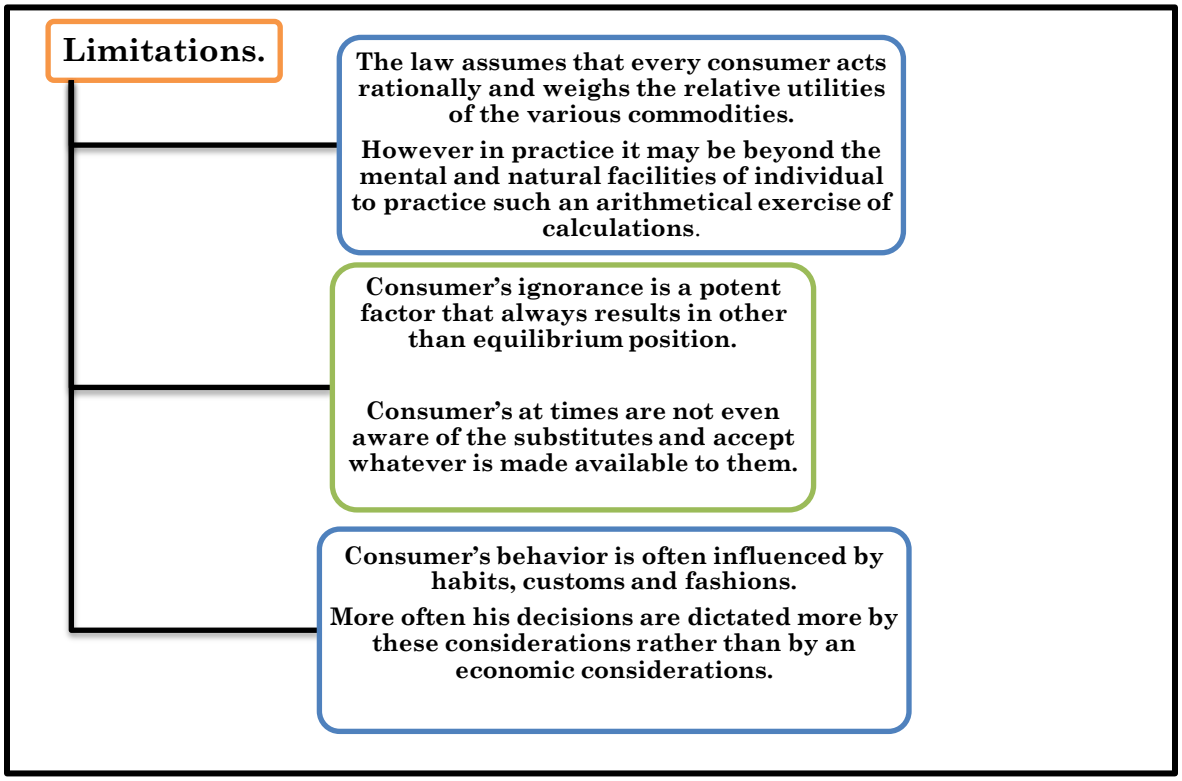
- Consumer is rational and wants to maximize his satisfaction.
- Utility is quantifiable.
- Marginal utility of money remains constant.



Questions.	Answers.
1. Consumer is _____ and want to maximize his satisfaction.	Rational.
2. Utility is _____.	Quantifiable.
3. Marginal Utility of money remains_____.	Constant.

The following are the limitations to law of equi marginal utility.

- The law assumes that every consumer acts rationally and weighs the relative utilities of the various commodities.
- However in practice it may be beyond the mental and natural facilities of individual to practice such an arithmetical exercise of calculations.
- Consumer's ignorance is a potent factor that always results in other than equilibrium position.
- Consumer's at times are not even aware of the substitutes and accept whatever is made available to them.
- Consumer's behavior is often influenced by habits, customs and fashions.
- More often his decisions are dictated more by these considerations rather than by an economic considerations.



Questions.	Answers.
1. What does the law assumes?	○ The law assumes that every consumer acts rationally and weighs the relative utilities of the various commodities. ○ However in practice it may be beyond the mental and natural facilities of individual to practice such an arithmetical exercise of calculations.
2. What is the result of consumers ignorance?	○ Consumer's ignorance is a potent factor that always results in other than equilibrium position. ○ Consumer's at times are not even aware of the substitutes and accept whatever is made available to them.

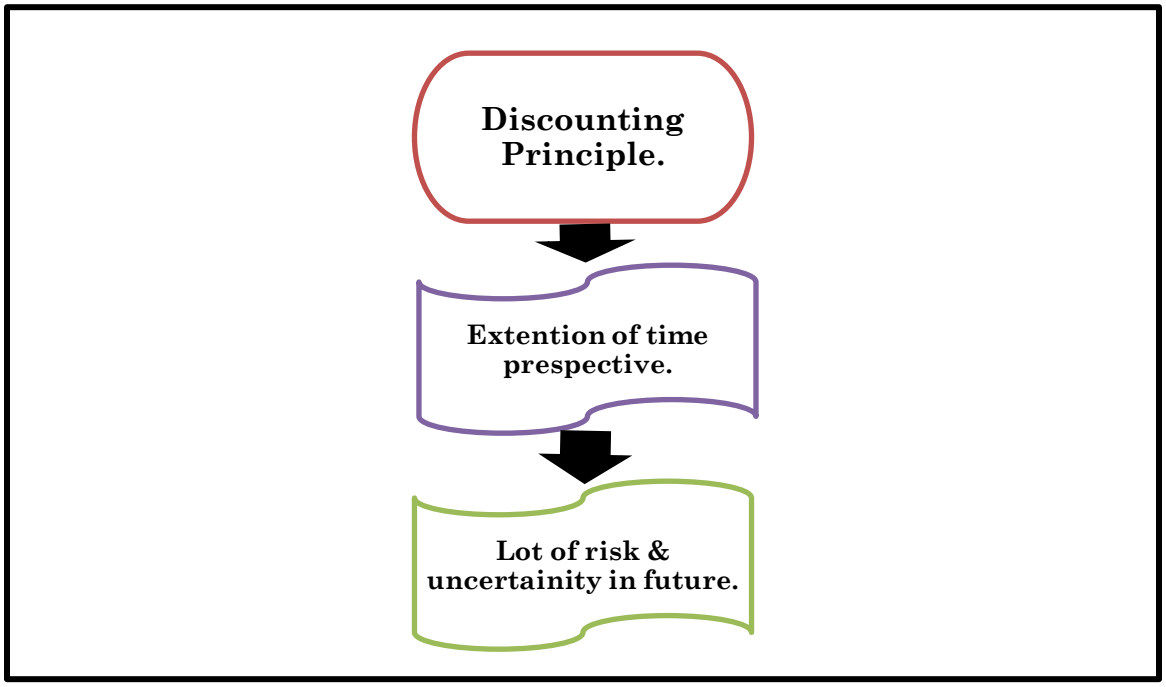
3. What influences the consumers behavior?	○ Consumer's behavior is often influenced by habits, customs and fashions. ○ More often his decisions are dictated more by these considerations rather than by an economic considerations.

Concept of discounting principle

Economics is a study of choices and choice making. Choice making is relevant for every individual, families, societies, institutions, areas, states and nations and for the whole world.

Hence economics has wide application and relevance to all individuals and institutions.

- This concept is an extension of **the concept of time perspective.**
- Since future is unknown and incalculable, there is **lot of risk and uncertainty in future.**
- Everyone knows that a rupee today is worth more than a rupee will be two years from now.
- This appears similar to the saying that **" a bird in hand is more worth than two in the bush."**
- This judgment is made not on account of the uncertainty surrounding the future or the risk of inflation.



3- Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot – 360001
Ph. No–(0281)2471645

2 – Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot - 360001
Ph.No–(0281)2440478, 2472590

Questions.	Answers.
1. Discounting principle is the extension of	Time Perspective.
2. There is lot of ____ & ____ in future.	○ Risk. ○ Uncertainty.

- It is simply that in the intervening period a sum of money can earn a return which is ruled out if the same sum is available only at the end of the period.
- In technical parlance, it is said that the present value of one rupee available at the end of two years is the present value of one rupee available today.
- The mathematical technique for adjusting for the time value of money and computing present value is called ‘discounting’.
- The following example would make this point clear. Suppose, you are offered a choice of Rs. 1,000 today or Rs. 1,000 next year.
- Naturally, you will select Rs. 1,000 today. That is true because future is uncertain. Let us assume you can earn 10 per cent interest during a year.
- You may say that I would be indifferent between Rs. 1,000 today and Rs. 1,100 next year i.e., Rs. 1,100 has the present worth of Rs. 1,000.
- Therefore, for making a decision in regard to any investment which will yield a return over a period of time, it is advisable to find out its ‘net present worth’.
- Unless these returns are discounted and the present value of returns calculated, it is not possible to judge whether or not the cost of undertaking the investment today is worth.
- The concept of discounting is found most useful in managerial economics in decision problems pertaining to investment planning or capital budgeting.
- The formula of computing the present value is given below:
- $V = A/1+i$
- where:
- V = Present value
- A = Amount invested Rs. 100
- i = Rate of interest 5 per cent
- $V = 100/1+.05 = 100/1.05$ =Rs. 95.24
- Similarly, the present value of Rs. 100 which will be discounted at the end of 2 years: A 2 years $V = A/(1+i)^2$
- For n years $V = A/(1+i)^n$

Uses.

- **The intervening period a sum of money can earn a return which is ruled out if the same sum is available only at the end of the period.**
- **In technical parlance, it is said that the present value of one rupee available at the end of two years is the present value of one rupee available today.**
- **The mathematical technique for adjusting for the time value of money and computing present value is called 'discounting'.**
- **The concept of discounting is found most useful in managerial economics in decision problems pertaining to investment planning or capital budgeting.**

Questions.	Answers.
1. In the _____ period a sum of money can earn a return which is ruled out if the same sum is available only at the _____ of the period.	○ Intervening. ○ End.
2. In technical parlance it is said that the _____ of one rupee available at the end of 2 years is the present value of one rupee available_____.	○ Present Value. ○ Today.
3. The _____ technique for adjusting for the _____ of money and computing _____ is called _____.	○ Mathematical. ○ Time Value. ○ Present Value. ○ Discounting.
4. The concept of discounting is found most useful in	Managerial Economics.
5. In managerial economics discounting principle is useful in.	Decision pertaining to investment planning or capital budgeting.

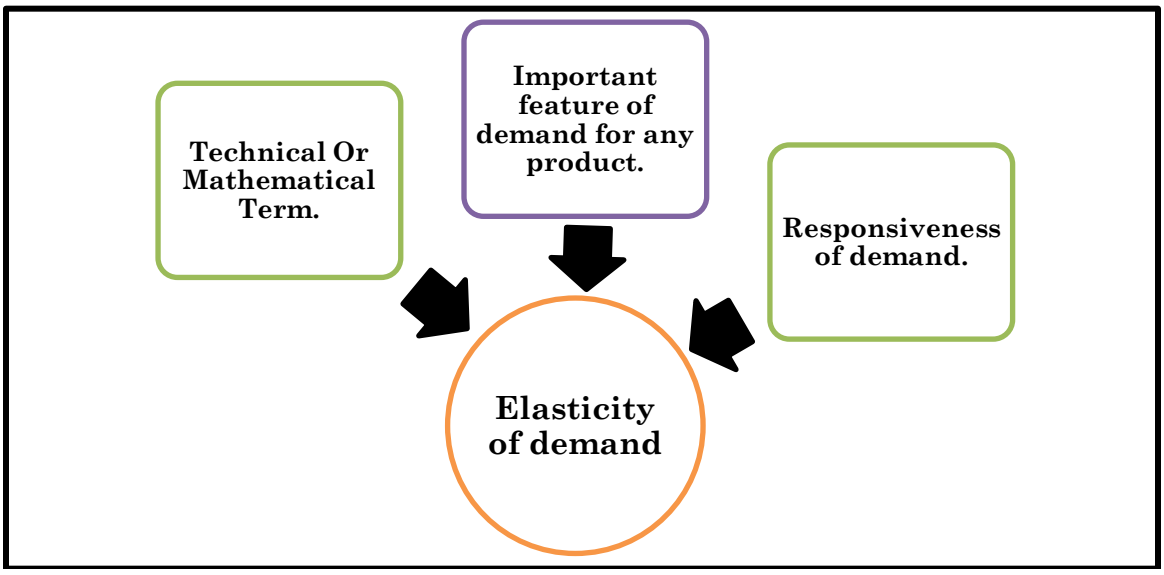
Unit 2: Elasticity Of Demand.

- Meaning.
- Types of elasticity of demand.
- Price elasticity of demand and its types.
- Methods to measure price elasticity of demand.
- Factors affecting price elasticity of demand.
- Importance of price elasticity of demand.
- Income elasticity of demand.
- Factors affecting income elasticity of demand.
- Importance of income elasticity of demand.
- Cross elasticity of demand.
- Importance of cross elasticity of demand.

The meaning of elasticity of demand and its various types

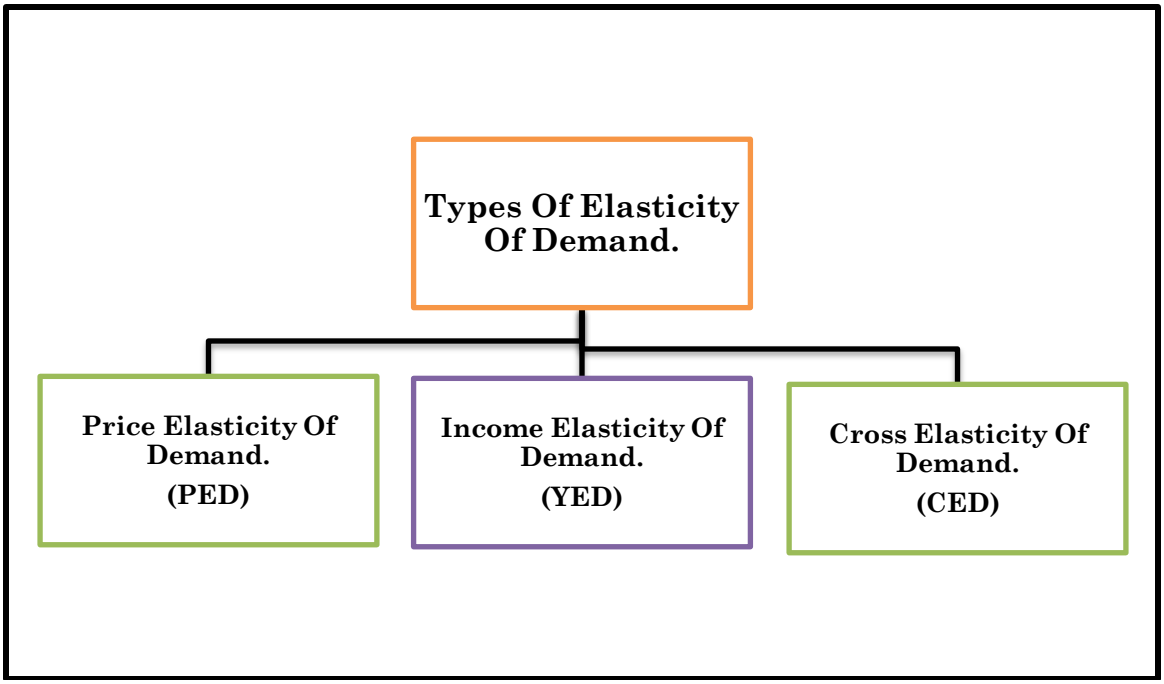
Elasticity of demand is a **technical or mathematical term.** One of the most important feature of demand for any product is that it changes with change in any determinant like price, income of the buyer and prices of related goods or products.

This responsiveness of demand is called elasticity of demand.



1. Elasticity of demand is a	• Technical. • Mathematical.
2. Which is one of the important feature of demand for any product.	Elasticity of demand.
3. This ____ of demand is called ____ of demand.	• Responsiveness. • Elasticity.

The following are the various types of elasticity of demand.



1. Price Elasticity Of Demand (PED):

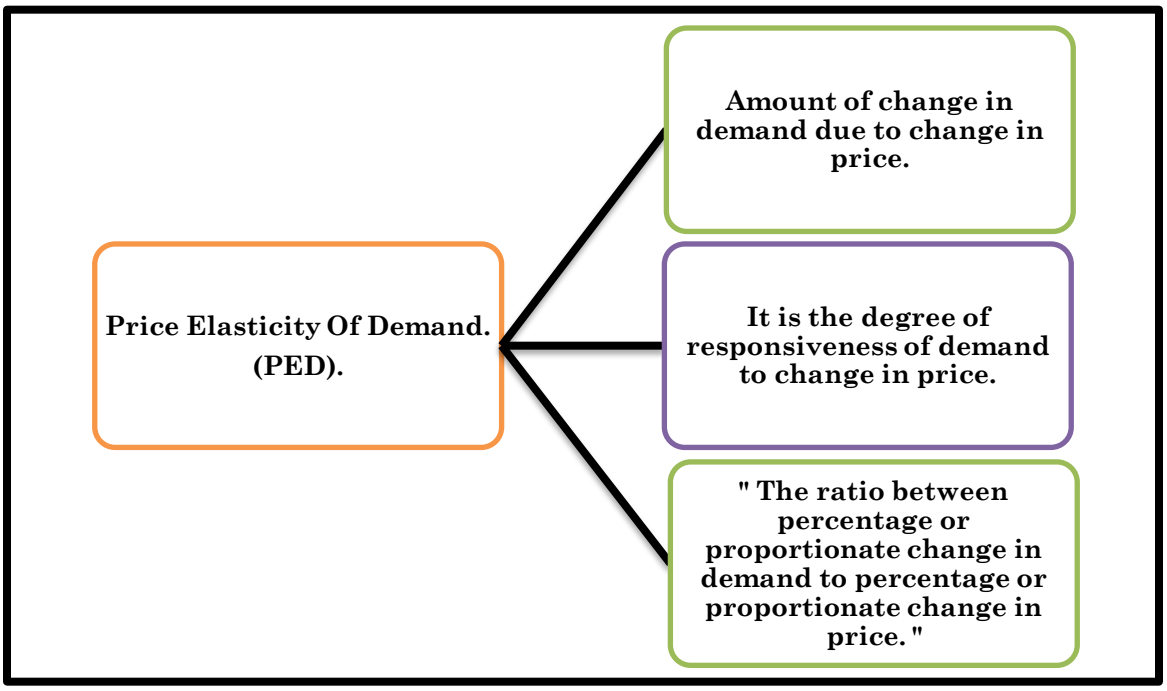
- Price elasticity of demand (PED) refers to amount of change in demand due to change in price.
- It is the degree of responsiveness of demand to change in price.
- Price elasticity of demand is defined as **" The ratio between percentage or proportionate change in demand to percentage or proportionate change in price".**

PED = % or proportionate change in demand

% or proportionate change in price.

$E_P = \Delta Q/Q/\Delta P/P$

$= \Delta Q/\Delta P.P/Q$



2. Income Elasticity Of Demand (YED):

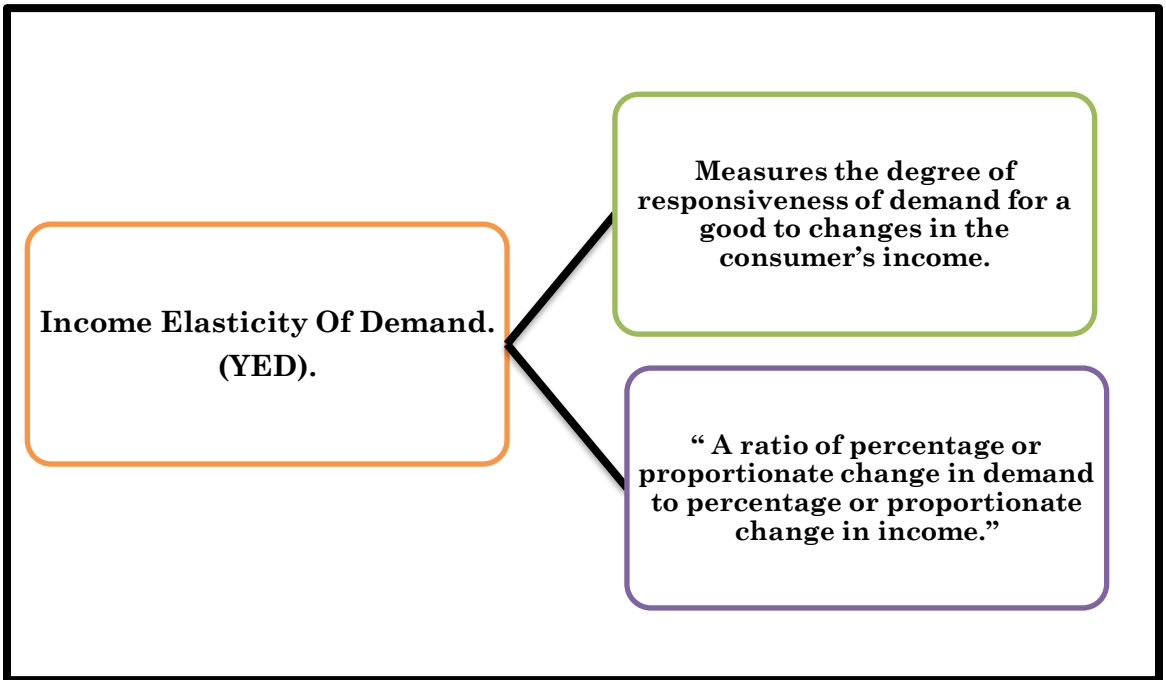
- The income elasticity of demand measures the degree of responsiveness of demand for a good to changes in the consumer's income.
- The income elasticity of demand is defined as **" A ratio of percentage or proportionate change in demand to percentage or proportionate change in income."**

YED = % or proportionate change in demand

% or proportionate change in income.

$$E_P = \Delta Q/Q/\Delta Y/Y$$

$$= \Delta Q/\Delta Y.Y/Q$$



3. Cross Elasticity Of Demand (CED):

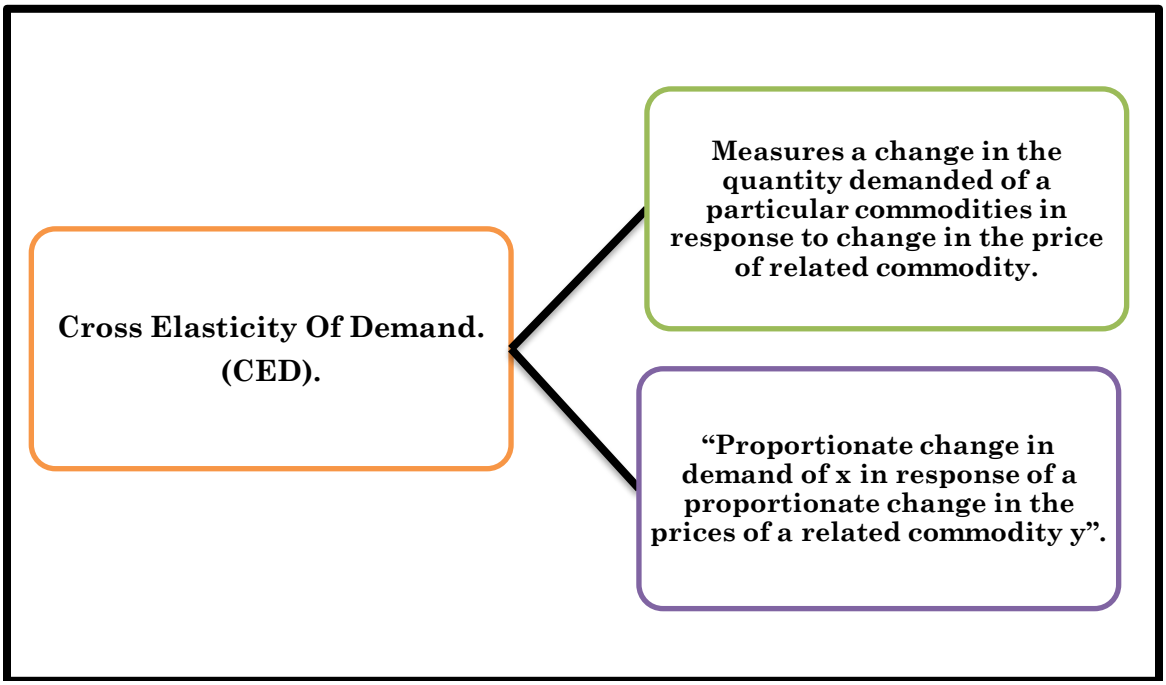
- Cross elasticity of demand measures a change in the quantity demanded of a particular commodities in response to change in the price of related commodity.
- It can be defined as **"Proportionate change in demand of x in response of a proportionate change in the prices of a related commodity y".**

CED = % or proportionate change in demand of x

% or proportionate change in price of y.

$= E_P = \Delta Qx/Qx/\Delta Py/Py$

$= \Delta Qx/\Delta Py.Py/Qx$



Question.	Answers.
1. Price elasticity of demand is defined as	" The ratio between percentage or proportionate change in demand to percentage or proportionate change in price".
2. Income elasticity of demand is defined as	" A ratio of percentage or proportionate change in demand to percentage or proportionate change in income."
3. Cross elasticity of demand is defined as	"Proportionate change in demand of x in response of a proportionate change in the prices of a related commodity y".
4. % or proportionate change in demand of x / % or proportionate change in price of y. =	Cross elasticity of demand.

5. % or proportionate change in demand % proportionate change in income. =	Income elasticity of demand.
6. % or proportionate change in demand % or proportionate change in price. =	Price elasticity of demand.

Q2. Evaluate in detail the concept of price elasticity of demand and its various types?

Ans: Elasticity of demand is a **technical or mathematical term.** One of the most important feature of demand for any product is that it changes with change in any determinant like price, income of the buyer and prices of related goods or products.

This responsiveness of demand is called elasticity of demand.

Price Elasticity Of Demand (PED):

- Price elasticity of demand (PED) refers to amount of change in demand due to change in price.
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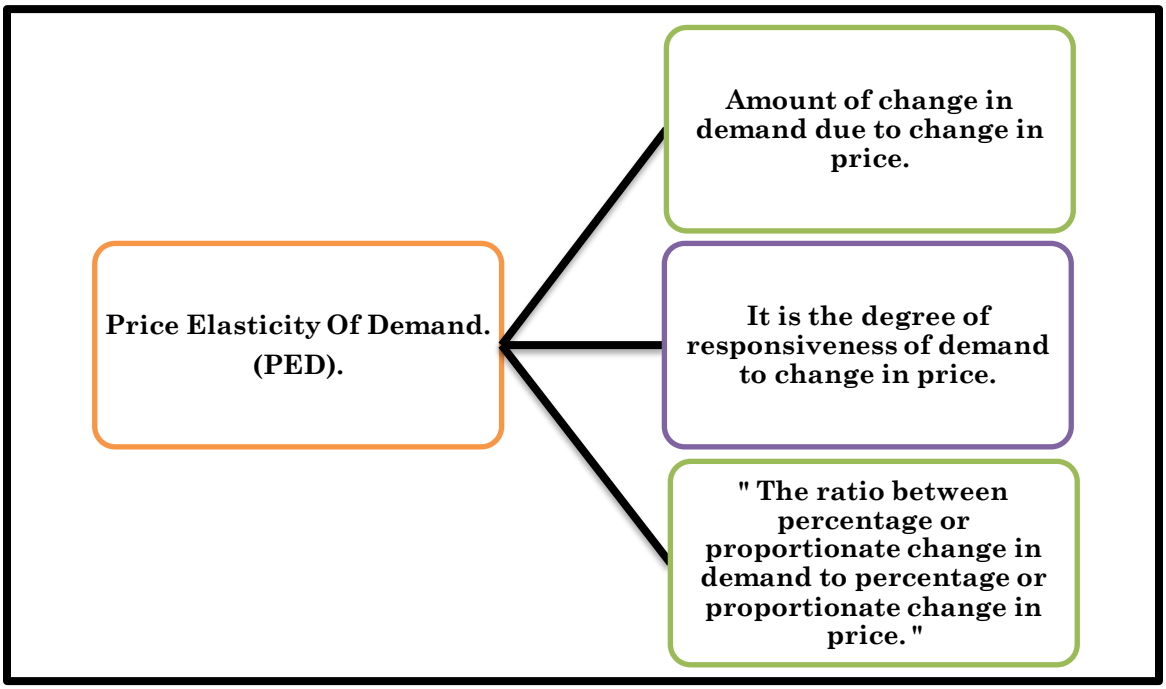
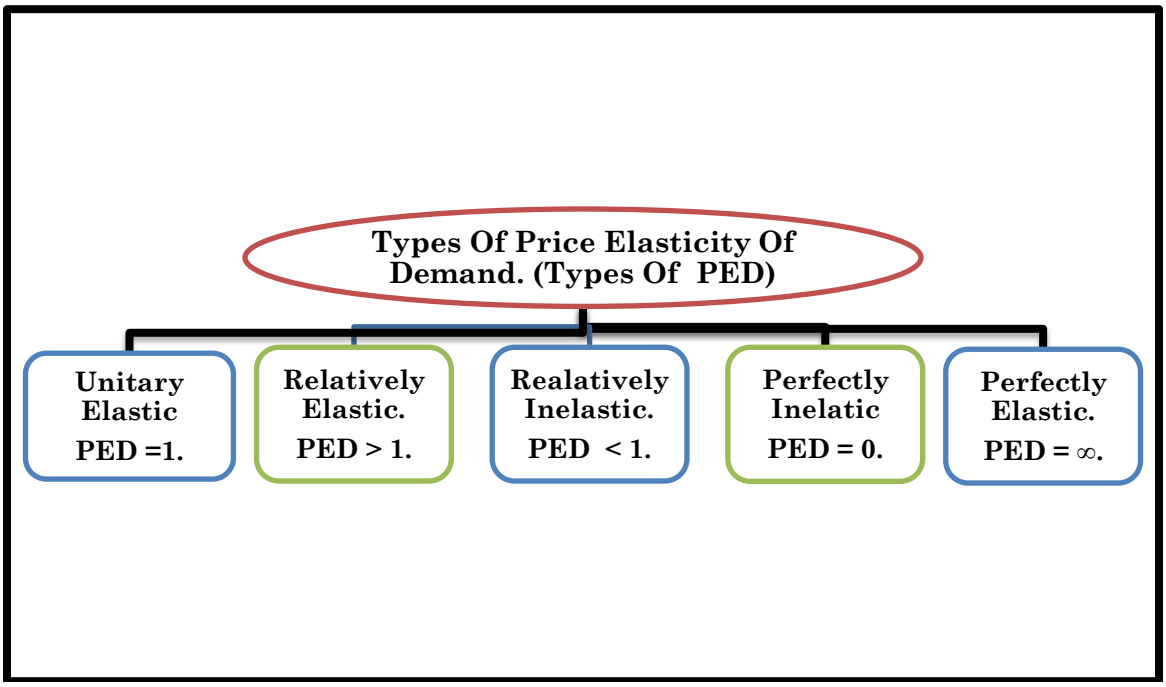
% or proportionate change in price.

$$E_P = \Delta Q/Q/\Delta P/P$$

$$= \Delta Q/\Delta P.P/Q$$

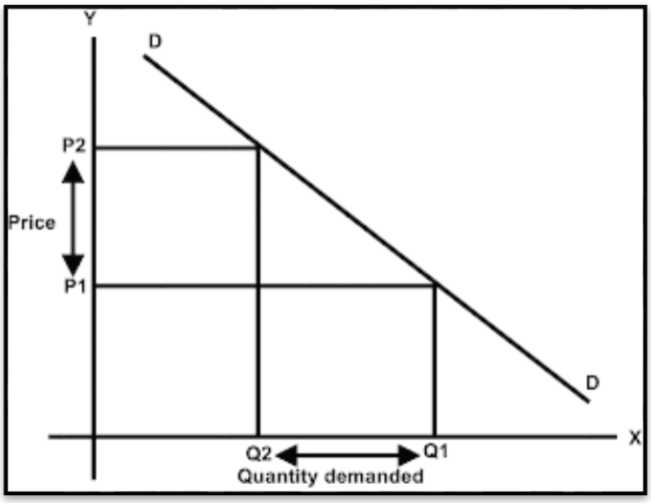


The following are the various types of price elasticity of demand:



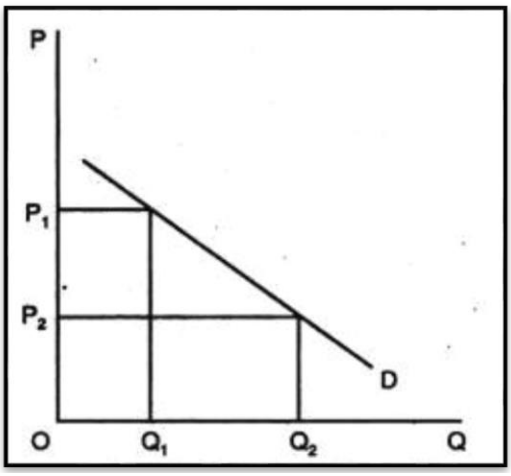
A. Unitary elastic demand.

If change in price and change in demand are equal it is described as unitary elastic demand. In other words PED = 1. This is shown with help of the following figure.



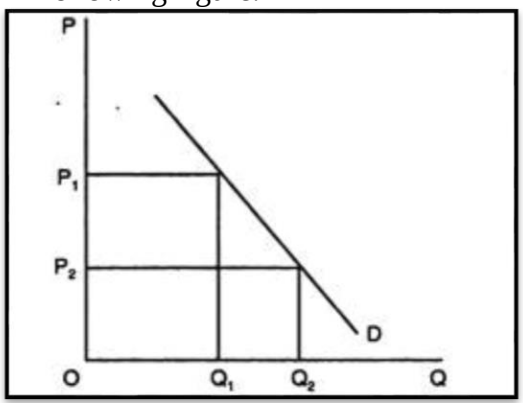
B. Relatively elastic demand.

When change in demand for a commodity is greater than change in price it is described as relatively elastic demand. In other words PED > 1 . This is shown in the following figure.



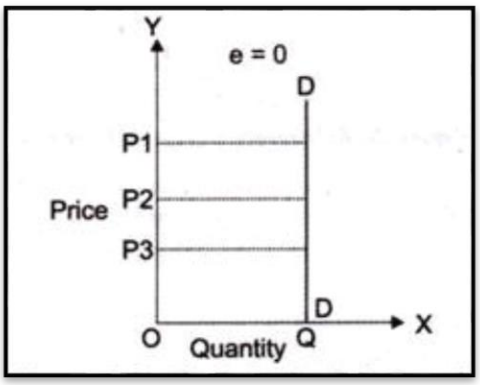
C. Relatively inelastic demand.

When change in demand is lesser than change in price of a commodity it is described as relatively inelastic demand i.e. PED < 1. This is shown in following figure.



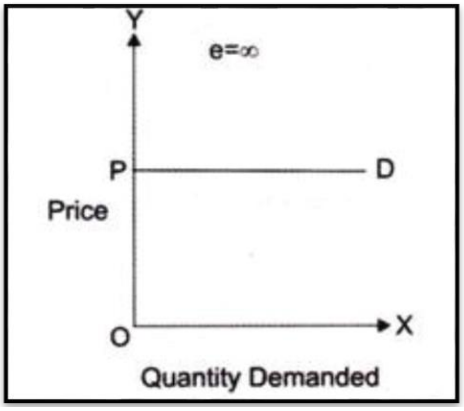
D. Perfectly inelastic demand.

When demand for a commodity is fixed and it does not change for any change in price it is described as perfectly inelastic demand such that PED = 0
The following figure shows perfectly inelastic demand curve.



E. Perfectly elastic demand.

If demand for a commodity changes by infinity even due to a small change in price it is called as perfectly elastic demand such that PED = ∞.
The following figure depicts a horizontal perfectly elastic demand curve.



1. Price elasticity of demand id defined as	" The ratio between percentage or proportionate change in demand to percentage or proportionate change in price".
2. Elasticity of demand of a product is unitary elastic when	PED = 1.
3. Elasticity of demand of a product is relatively elastic when	PED > 1.
4. Elasticity of demand of a product is relatively inelastic when	PED < 1.
5. Elasticity of demand of a product is perfectly inelastic when	PED = 0.
6. Elasticity of demand of a product is perfectly elastic when	PED = ∞
7. When PED = 1 it is called	Unitary elastic demand.
8. When PED > 1 it is called	Relatively elastic demand.
9. When PED < 1 it is called	Relatively inelastic demand.
10. When PED = 0 it is called	Perfectly inelastic demand.
11. When PED = ∞ it is called	Perfectly elastic demand.

Various methods or measurements to measure price elasticity of demand.

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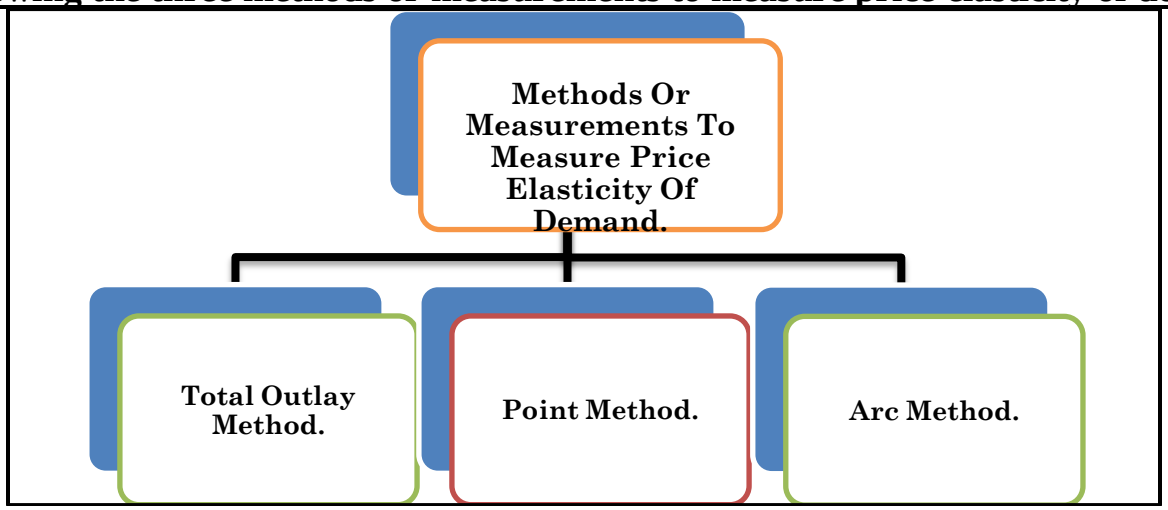
% or proportionate change in price.

$$E_P = \Delta Q/Q/\Delta P/P$$

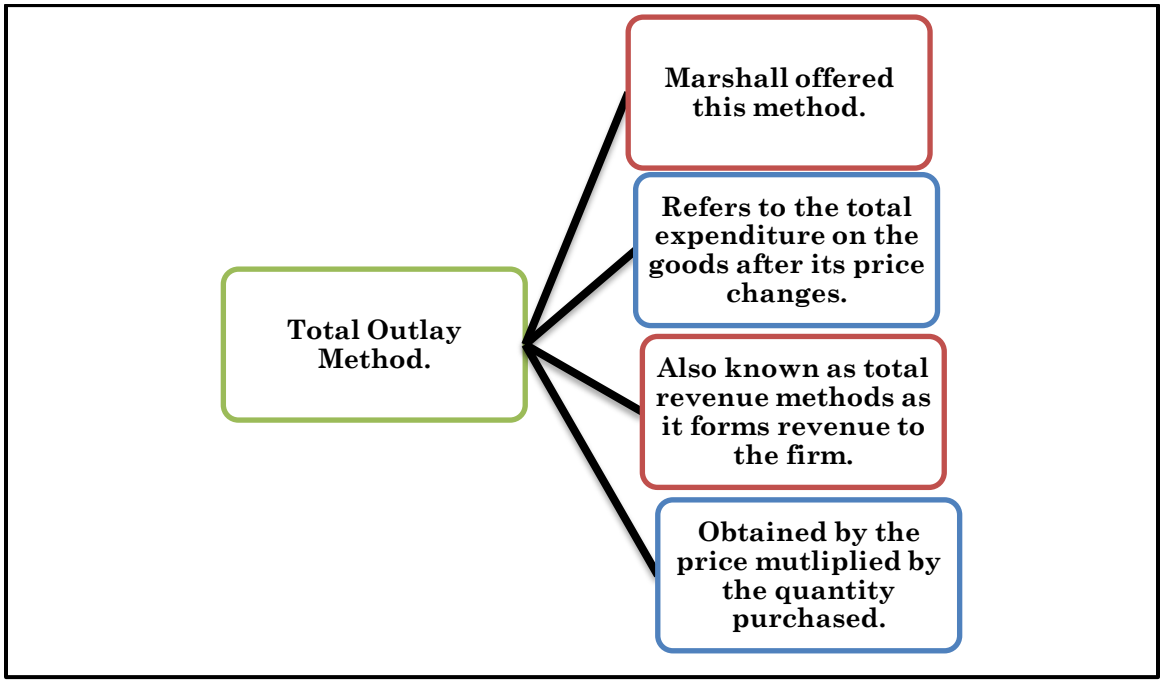
$$= \Delta Q/\Delta P.P/Q$$

The following the three methods or measurements to measure price elasticity of demand:



A. Total Outlay Method:

- Marshall offered this method.
- Total outlay method refers to total expenditure on the goods after its price changes.
- It is also known as total revenue method since it forms revenue to the firms.
- Total outlay or revenue is obtained by multiplying the number of units sold by price of a product i.e TR = total units sold X Price.
- Thus, total outlay or revenue is price multiplied by the quantity purchased.

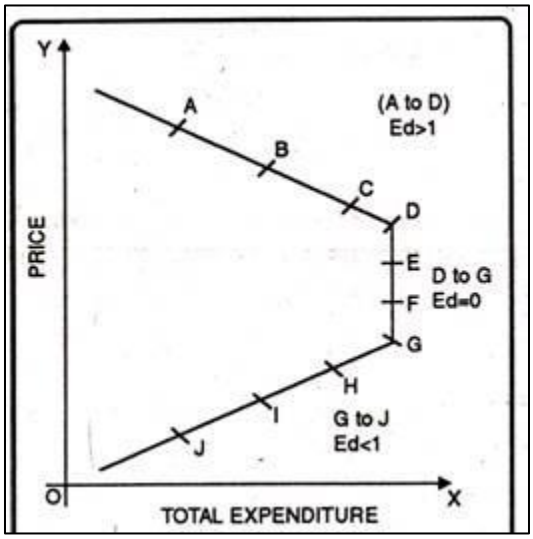


- Here we want to measure how much total outlay changes following a change in price.
- It depends upon the elasticity of demand.
- With the help of this method price elasticity of demand is measured on the basis of the following rules:

- If TR increases with a rise in price or decreases with a fall in price PED < 1.
- If TR decreases with a rise in price or increases with a fall in price PED > 1.
- If TR is constant whether price rises or falls PED = 1.

This is explained in the table and diagram below:

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

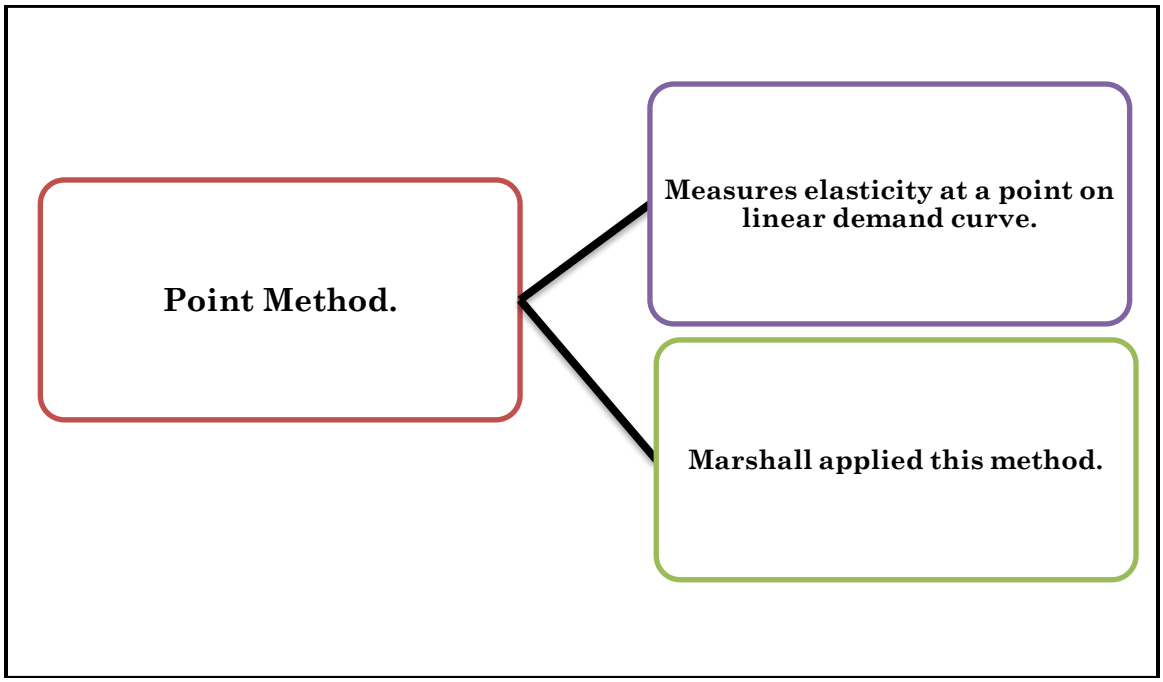


Questions.	Answers.
1. Total outlay method is offered by	Marshall.
2. Total outlay method refers to	The total expenditure on the goods after its price changes.
3. Total outlay method is also known as	Total revenue method.
4. Total revenue is obtained by	TR = P x Q.

5. Name the three rules on the basis of which PED is measured.	○ If TR increases with a rise in price or decreases with a fall in price PED < 1. ○ If TR decreases with a rise in price or increases with a fall in price PED > 1. ○ If TR is constant whether price rises or falls PED = 1.

B. Point Method:

- Point elasticity method is used to measure the elasticity of demand at a point on a demand curve when the change in price is very small.
- The price change is so small that the initial price and the changed price can be represented by the same point on price axis under the rule of approximation.
- According to Marshall this method is applied to measure elasticity on a linear demand curve.
- Point elasticity on a point of a linear demand curve depends on the slope of the curve and the price-output ratio at that point.
- Thus, elasticity of demand will be different at different points on the demand curve since the price-output ratio will be very.



- To show it geometrically, let us consider a point P on a linear demand curve DD1, as shown in Figure

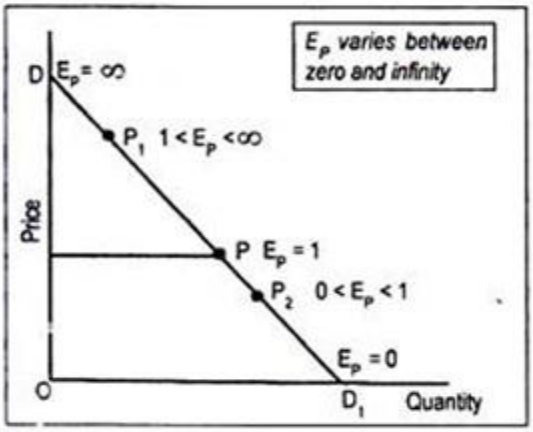


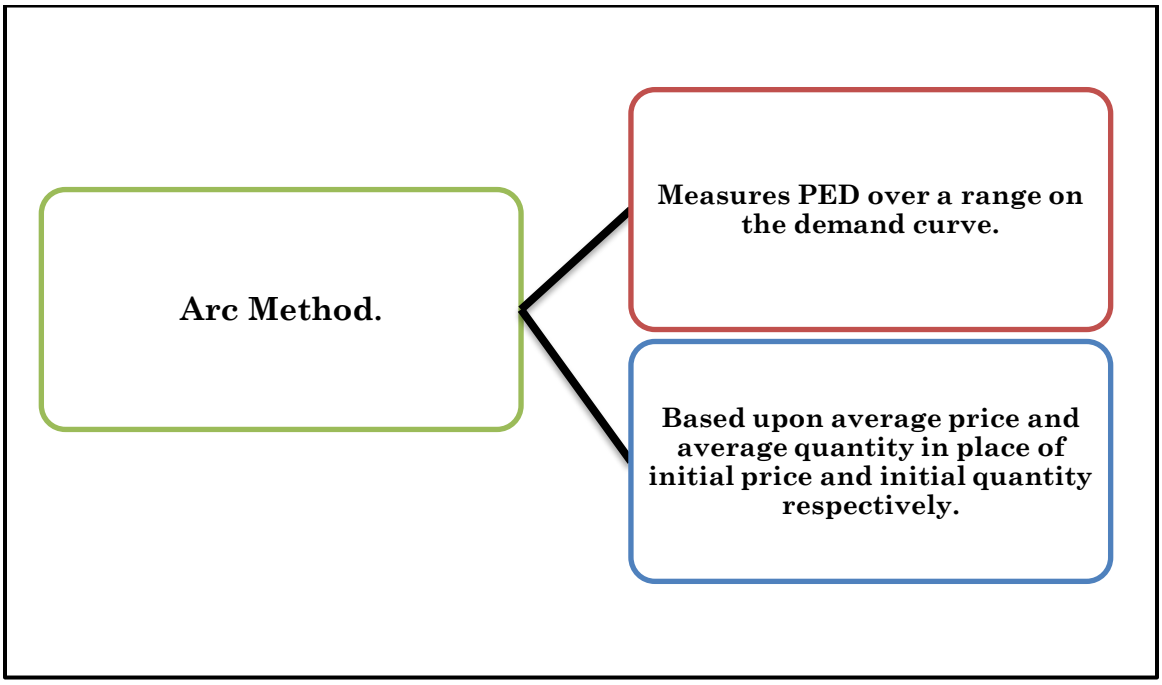
Fig. 2.52: Elasticity of Demand (O → ∞)

- Here, DD_1 is a linear demand curve. Elasticity of demand varies from point to point on a demand curve.
- At point P, elasticity of demand is PD_1/PD. As the distance between PD_1 and PD is the same, it is unit elastic (i.e., $E_p = 1$).
- As we move downwards along the curve DD_1 from the mid-point, say point P_2, elasticity declines. At P_2 it is, inelastic (i.e., $0 < E_p < 1$) since $P_2D_1 < P_2D$.
- At point D_1, elasticity is zero since $0/DD_1$is equal to zero. Further, as we move upwards from the mid-point, elasticity increases.
- At P_1, it is elastic (i.e., $1 < E_p < \infty$) since $P_1D_1 > P_1D$. On the other hand, at point D, it is infinite since $DD_1/0$ is equal to infinity. Thus, at lower prices it is inelastic, and at higher prices it is elastic.
- Thus, elasticity of demand on a straight line demand curve varies from zero to infinity ($0 \leq E_p \leq \infty$).

Questions.	Answers.
1. When elasticity of demand is measured at a point on linear demand curve it is called	Point method.
2. Who applied this method	Marshall.
3. The demand curve has __ slope but the price elasticity of demand _____ from point to point.	○ Negative. ○ Varies.

C. Arc Method:

- This method measures the price elasticity of demand over a range on the demand curve rather than at a point on demand curve.
- The arc elasticity method is based upon average price and average quantity in place of initial price and initial quantity respectively.



- In Figure- points A and B on the demand curve DD represent new and initial points with the price levels as P_2 and P_1 and quantity levels as Q_2 and Q_1 respectively.

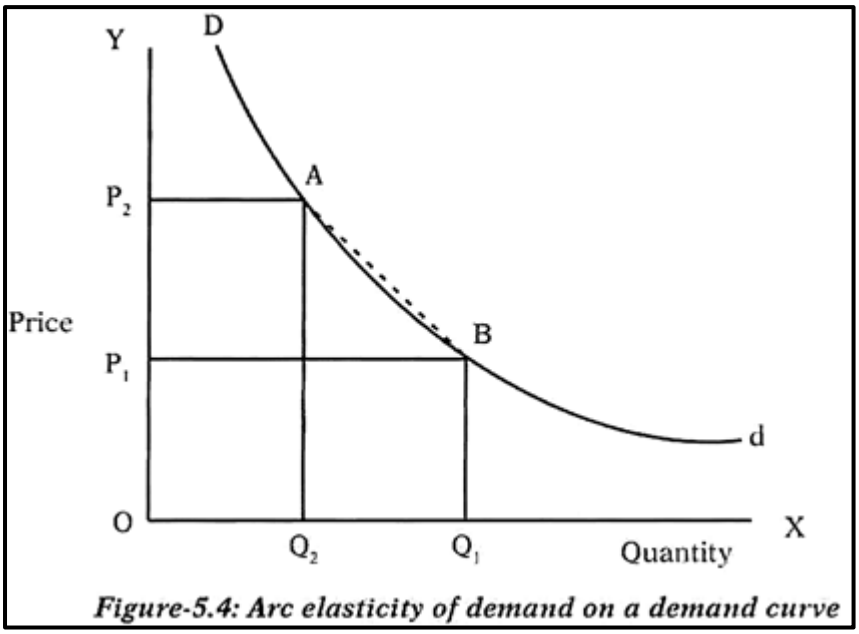


Figure-5.4: Arc elasticity of demand on a demand curve

- In reality we often come across a situation where price changes are substantial.

Questions.	Answers.
1. _____ measures the price elasticity of demand over a range on the demand curve.	Arc elasticity method.
2. The arc elasticity method is based upon average ____ and average_____ in place of initial price and initial quantity respectively.	○ Price. ○ Quantity.
3. In reality we often come across a situation where price changes are ____	Substantial.

Factors affecting prices elasticity of demand

Elasticity of demand is a **technical or mathematical term.** One of the most important feature of demand for any product is that it changes with change in any determinant like price, income of the buyer and prices of related goods or products.

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$$E_P = \Delta Q/Q/\Delta P/P$$

$$= \Delta Q/\Delta P.P/Q$$

The following are the factors affecting price elasticity of demand:

1. **Nature of the commodity.**

- Elasticity of demand for the a commodity depends upon its nature.
- If a commodity is a type of necessary good like food grains demand will be inelastic but for luxurious goods demand will be elastic.

2. **Durability.**

- In case of durable goods that are purchased once in a while elasticity of demand is low.
- But for all perishable goods elasticity of demand is high.

3. **Level of income.**

- In case of high income group people demand for all goods is inelastic but for low income people demand is elastic for all goods.

4. **Custom and habit.**

- In case of commodity which is demanded under the influence of custom or habit demand will be inelastic.

5. **Proportion of expenditure.**

- If proportion of expenditure on a particular commodity is less demand for this commodity will be inelastic.
- But if proportion expenditure on a commodity is large elasticity of demand for the commodity will be high.

6. Level of price & change in price.

- When price level of a commodity is too high and change in price is smaller demand for the commodity will be inelastic.
- If price level is low and change in price is large demand will be elastic.

7. Number of uses.

- If a commodity can be used to satisfy several wants it will have elastic demand but if a commodity has a single use it will have inelastic demand.

8. Substitutes.

- If a product has several substitutes its demand will be elastic but in absence of substitutes demand will be inelastic.

Factors Affecting PED.

- **Nature of commodity.**
- **Durability.**
- **Level of income.**
- **Custom & habit.**
- **Proportion of expenditure.**
- **Level of price & change in price.**
- **Number of uses.**
- **Substitutes.**

Questions.	Answers.
1. Elasticity of demand for a commodity depend upon its	Nature.
2. In case of _____ elasticity is low.	Durable goods.
3. _____ people demand is elastic all goods.	Low income.
4. Commodities which are demanded under the influence _____ & _____ their demand will be inelastic.	○ Custom. ○ Habit.
5. _____ plays as an important role on demand.	Proportion Of Expenditure.
6. _____ & _____ plays as an important determinant of elasticity of demand.	○ Level of price. ○ Change in price.
7. ____ is one of the important factor affecting elasticity of demand.	Number of uses.

Importance or significance or uses of price elasticity of demand

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$$E_P = \Delta Q/Q/\Delta P/P$$

$$= \Delta Q/\Delta P.P/Q$$

The concept of price elasticity of demand is of great practical importance to firms, government and other institutions.

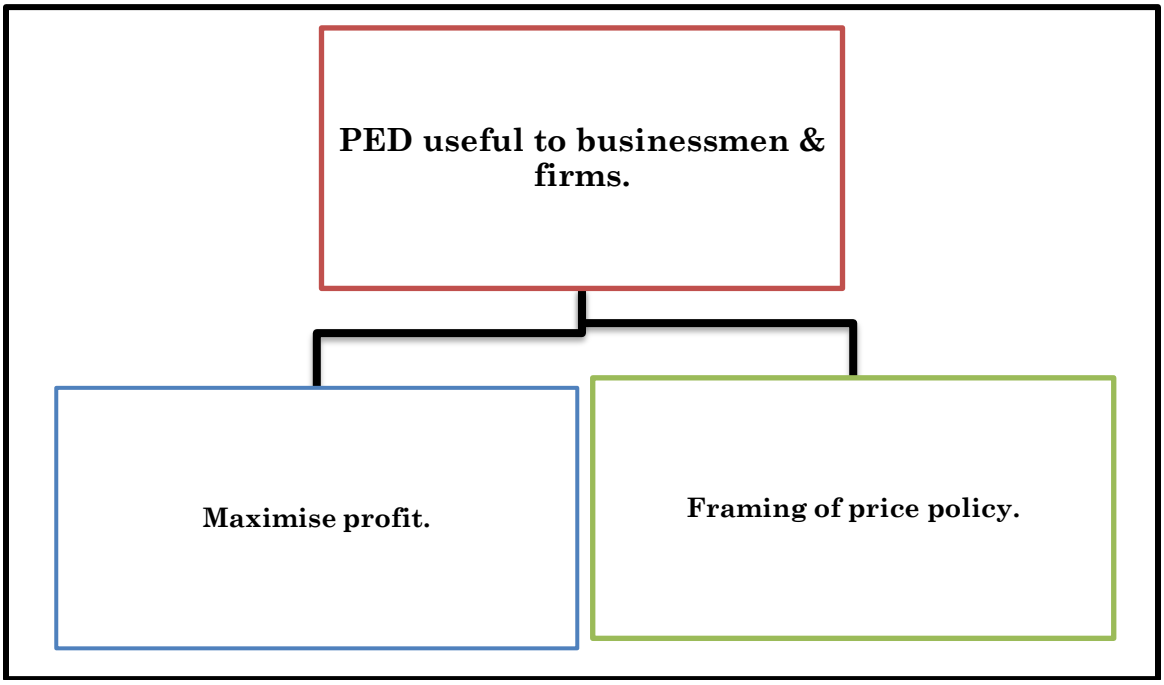
The following are the various areas where price elasticity of demand plays an important role.

Areas Where Price Elasticity Of Demand Plays An Important Role.

- **Businessmen & Firms.**
- **Government Authority.**
- **Determining Factor Prices.**
- **Foreign Trade.**
- **Trade Union.**
- **Monopolist.**
- **Nationalization of industries.**
- **Foreign exchange rate.**
- **Policy Makers.**

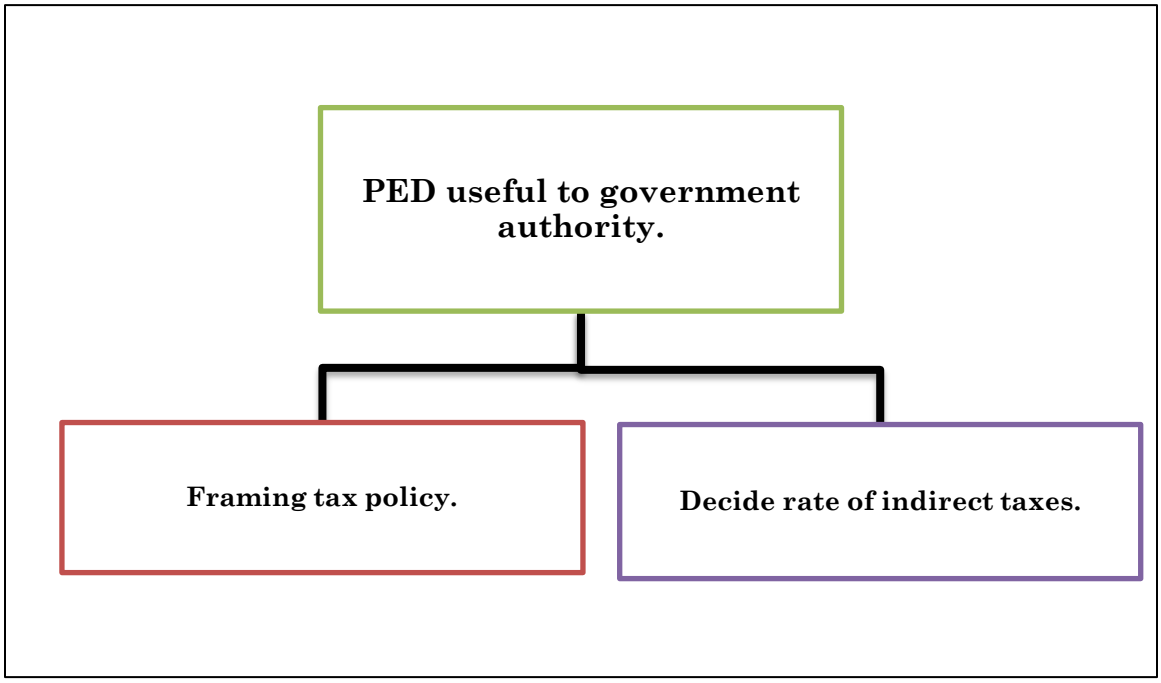
1. Businessmen & Firms:

- The concept of price elasticity of demand is useful to businessmen and firms.
- The crucial objective of a firm is to maximize profit.
- Firms would like to reduce prices of products, demand for which is inelastic or less elastic.
- The profit of a firm will fall if they reduce price in order to sell more.
- If the demand for products is inelastic a firm can raise the price and get more profit.
- If demand for product is elastic a firm can reduce the price and increases the sales in order to get more profit.



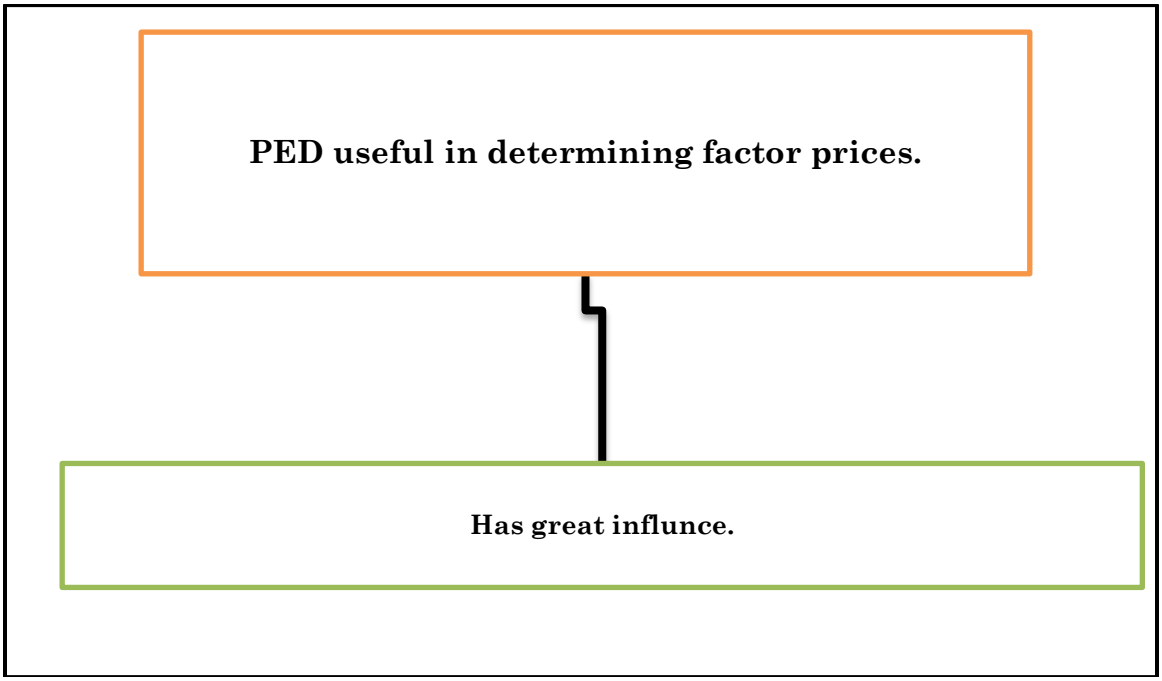
2. Government Authority:

- The concept of price elasticity of demand is useful to the government.
- It also helps to decide about the rate of indirect taxes.
- If the purpose is to collect more revenue the government must impose low taxes on those goods whose demand is elastic and high taxes on those goods whose demand is inelastic.
- If the purpose is to reduce inequality then necessary goods should not be taxed instead luxury goods should be taxed.



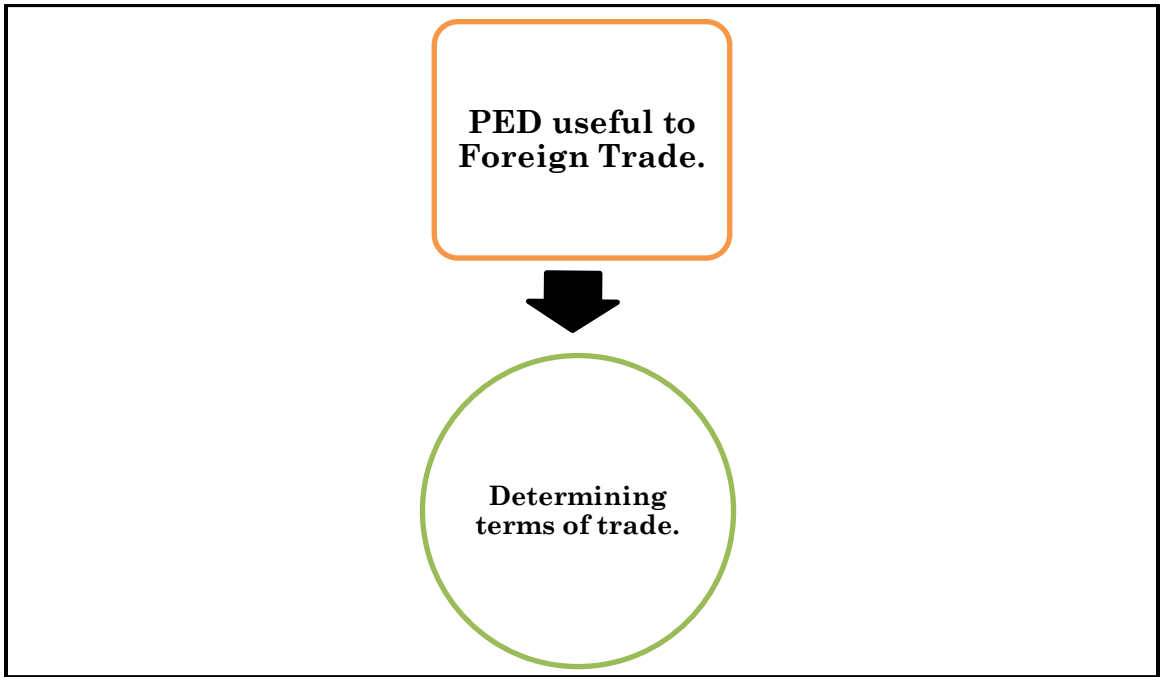
3. Determining factor prices:

- The concept of price elasticity of demand has a great influence on determining the factor prices.
- If demand for factor is inelastic factor price would be high & vice versa.



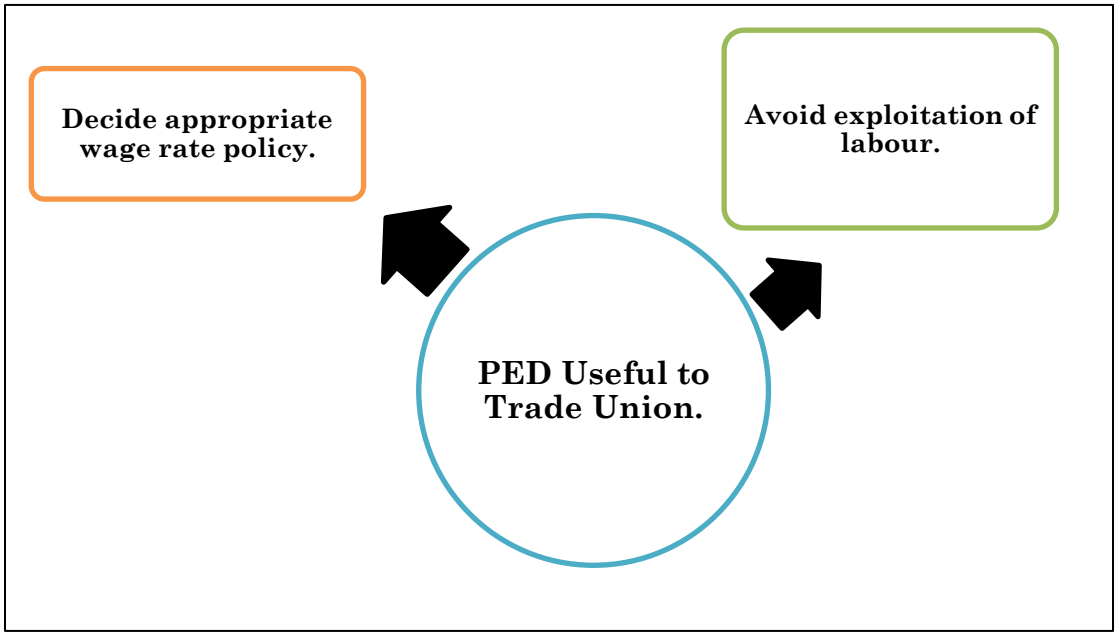
4. Foreign Trade:

- The concept of price elasticity of demand is also useful to determine terms of trade between two countries, especially import export policy.
- If a country has inelastic demand for imports and elastic demand for imports then a country's terms of trade will be favorable and vice versa.



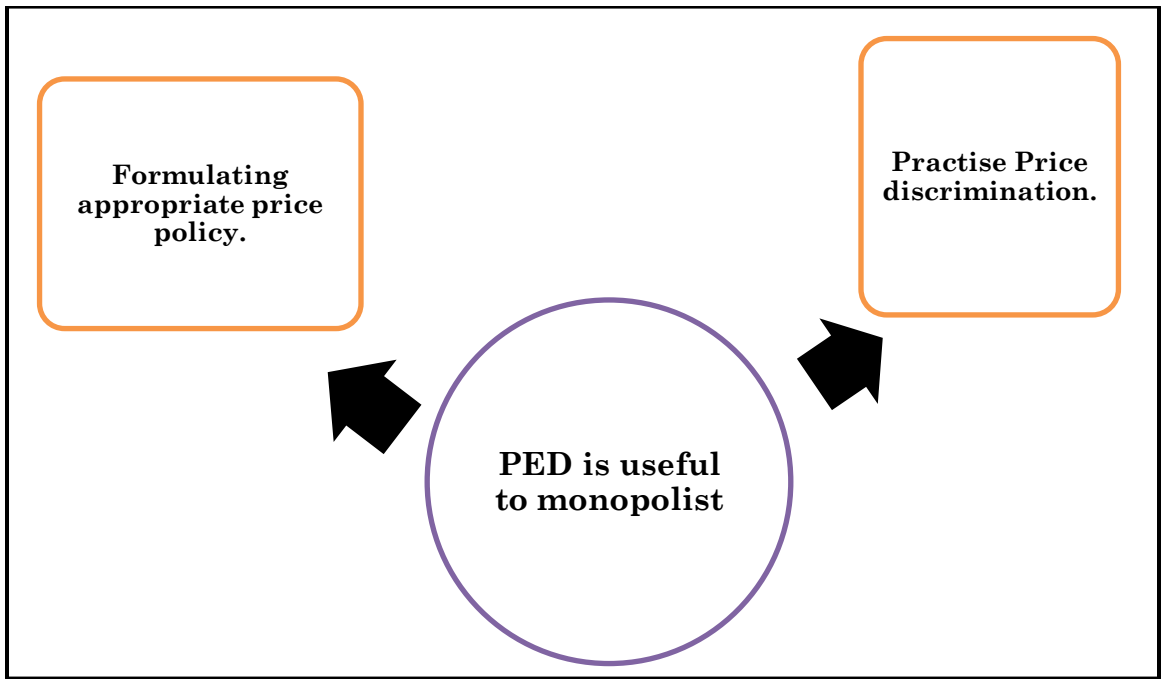
5. Trade Union:

- Concept of price elasticity of demand is useful to trade unionist to decide appropriate wage rate policy and avoid exploitation of labour.



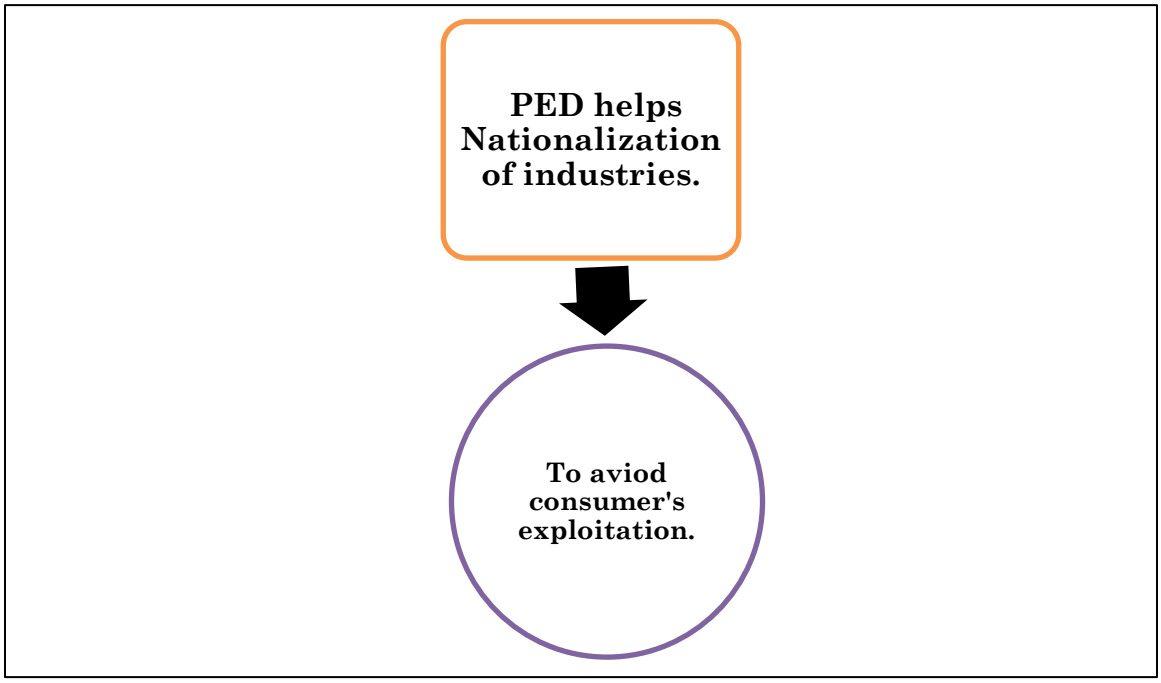
6. Monopolist:

- The concept of price elasticity of demand is useful to the monopolist in formulating appropriate price policy.
- It also helps to the monopolist while practicing price discrimination.



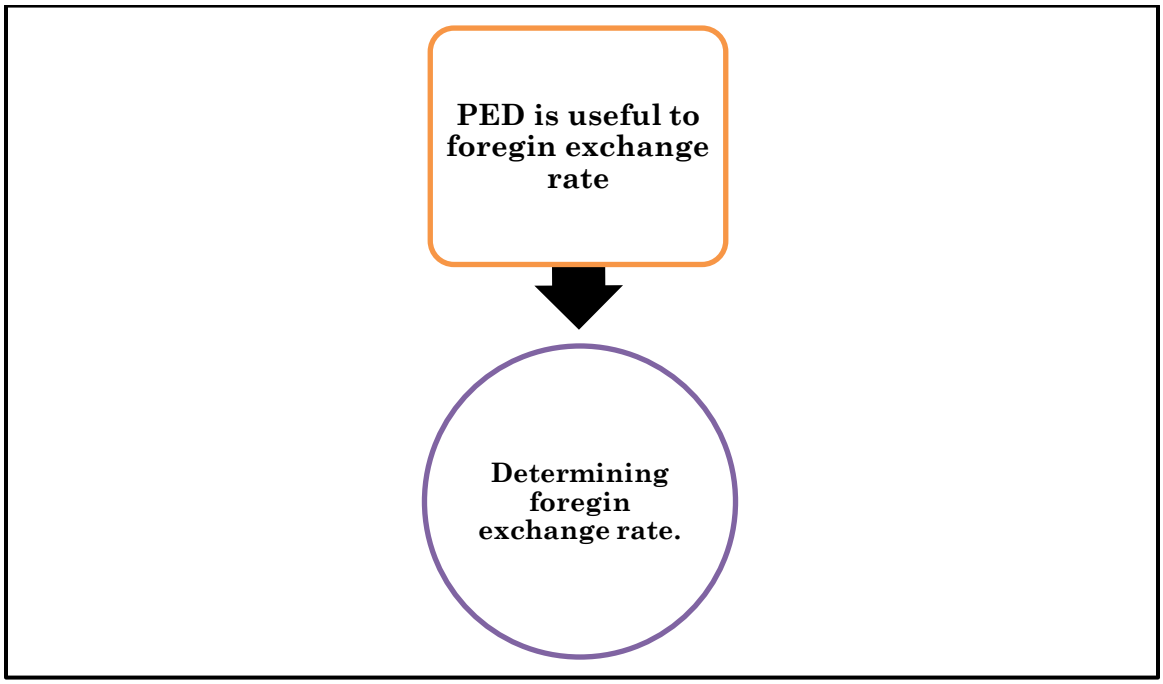
7. Nationalization of industries:

- If an industry is a monopoly one and the demand for its products is inelastic then such enterprises is taken over by the government to avoid consumer's exploitation. Eg: BEST service in Mumbai was privately run.
- It was later taken over by the Municipal Corporation Of Mumbai. (BMC).



8. Foreign Exchange Rate:

- The concept of price elasticity is useful while determining the foreign exchange rate.



9. Policy Maker:

- The concept of price elasticity of is useful to policy makers.
- It is useful while determining prices of agricultural commodities, framing the fiscal & monetary policy, commercial policy etc.

Questions.	Answers.
1. PED is useful to businessmen & firms as it helps in	Maximizing profits.
2. PED is useful to government authorities while framing the	Tax policy.
3. PED has a great _____ on determining factor prices.	Influence.
4. PED is useful to determine _____ between two countries.	TOT.
5. PED is useful to trade unionists to decide appropriate _____ policy & avoid exploitation of labor.	Wage rate.
6. PED is useful to monopolist in formulating _____ price policy.	Appropriate.
7. PED is useful while determining the _____ rate.	Foreign exchange.
8. PED is useful to policy makers in framing the ____ & _____ policy.	Fiscal & Monetary.

Concept of income elasticity of demand

Ans: Elasticity of demand is a **technical or mathematical term.** One of the most important feature of demand for any product is that it changes with change in any determinant like price, income of the buyer and prices of related goods or products.

This responsiveness of demand is called elasticity of demand.

- Income is the **major determinant of demand for a number of goods.**
- It suggests that the demand may change due to a change in the consumer's income, other factors remaining constant.

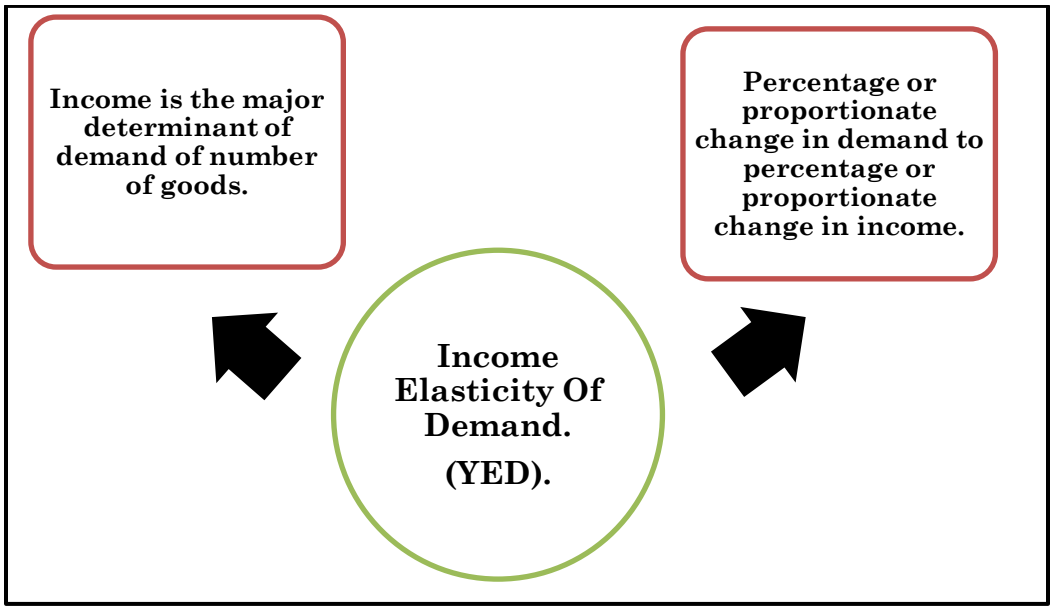
- The concept of income elasticity of demand is thus introduced to ascertain the extent of such change.
- The income elasticity of demand measure **the degree of responsiveness of demand for a good to changes in the consumers income.**
- The income elasticity of demand is defined as **"A ratio of percentage or proportionate change in demand to percentage or proportionate change in income."**

YED = % or proportionate change in demand

% or proportionate change in income.

$$E_P = \Delta Q/Q/\Delta Y/Y$$

$$= \Delta Q/\Delta Y.Y/Q$$

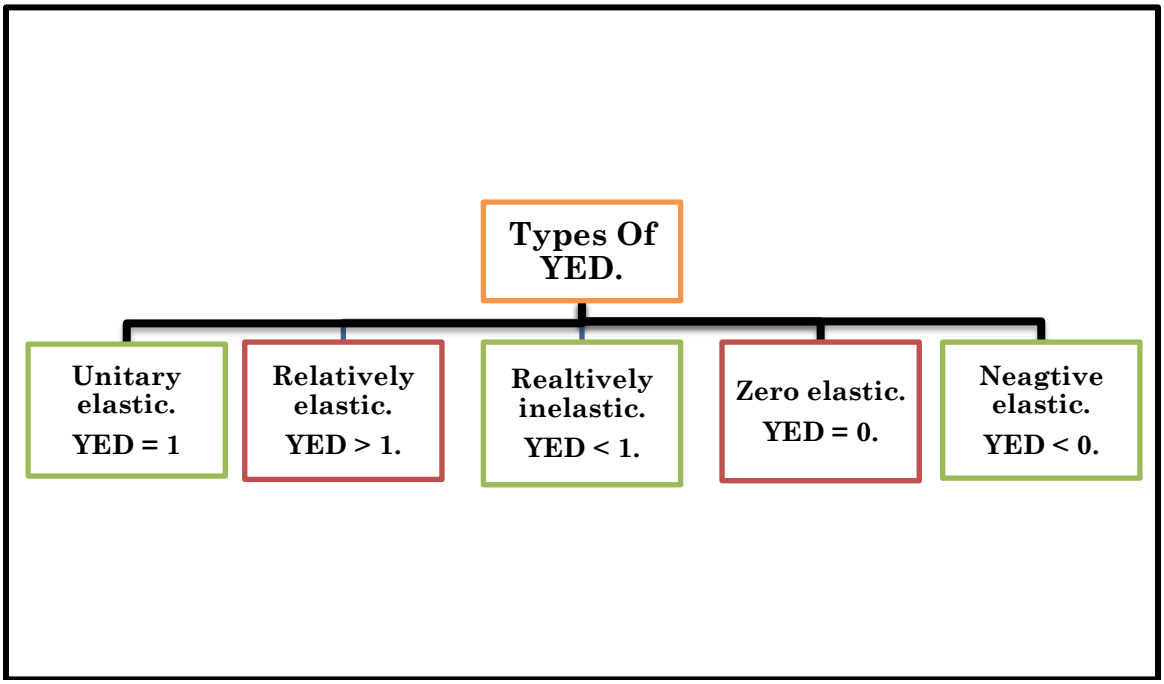


Questions.	Answers.
1. Is determinant of demand for a number of goods.	Income.
2. The concept of income elasticity of demand is thus to _____ the extent of such changes.	Ascertain.
3. Percentage or proportionate change in demand to percentage or proportionate change in	Income Elasticity Of Demand (YED).

income is known as	

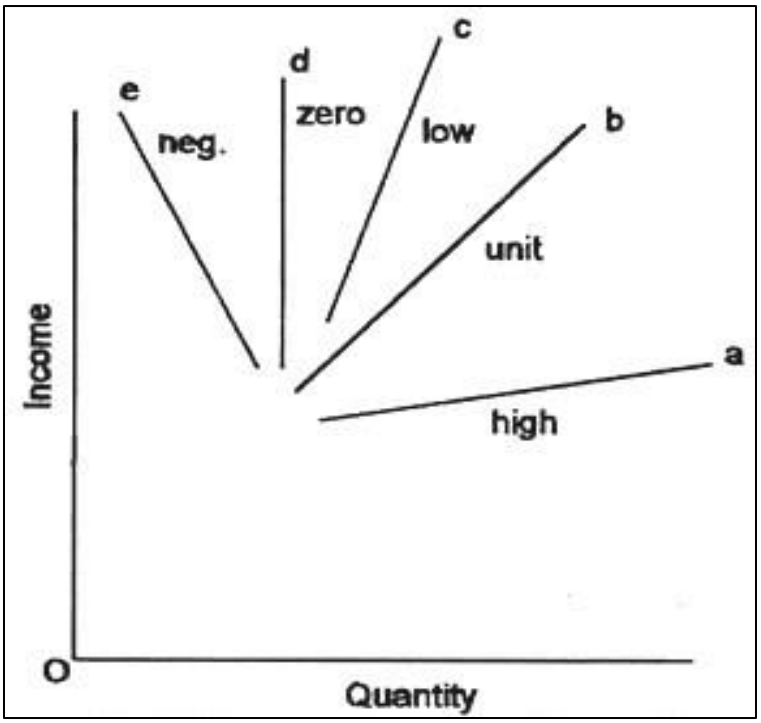
Types of income elasticity of demand:

The following are the various types of income elasticity of demand.



1. **Unitary income elasticity of demand. YED = 1.**
   - When the percentage change in demand is equal to the percentage in income, the demand is unitary income elastic. i.e YED = 1.
2. **Relatively elastic demand. YED > 1.**
   - When percentage change in demand is greater than percentage change in income it relatively elastic demand. i.e YED > 1.
3. **Relatively inelastic demand. YED < 1.**
   - When percentage change in demand is less than percentage change income it is relatively inelastic demand. i.e YED < 1.
4. **Zero income elastic demand. YED = 0.**
   - When the income changes in any direction or in any proportion but carries no effect on demand so that quantity demanded remains unchanged it is referred to as zero income elastic demand. i.e YED = 0.
5. **Negative income elastic demand. YED < 0.**

- When an increase in income causes a decrease in the demand for a commodity the deemand is said to be negative income elastic demand .i.e YED < 0.



The above diagram explains the various types of income elasticity of demand.

Questions.	Answers.
1. When percentage change in demand is equal to percentage change in income it is said	Unitary elastic demand.
2. When percentage change in demand is greater than percentage change in income it is said	Relatively elastic demand.
3. When percentage change in demand is less than percentage change in income it is said	Relatively inelastic demand.
4. When income changes in any direction & has no effect on demand it is said	Zero elastic demand.

5. When an increase in income causes a decrease in demand for a commodity it is said	Negative elastic demand.
6. The income elasticity of demand is unitary when	YED = 1.
7. The income elasticity of demand is relatively elastic when	YED > 1.
8. The income elasticity of demand is relatively inelastic when	YED < 1.
9. The income elasticity of demand is zero elastic when	YED = 0.
10. The income elasticity of demand is negatively elastic when	YED < 0.

Factors affecting income elasticity of demand and the importance or significance of income elasticity of income elasticity of demand

Ans: Elasticity of demand is a **technical or mathematical term.** One of the most important feature of demand for any product is that it changes with change in any determinant like price, income of the buyer and prices of related goods or products.

This responsiveness of demand is called elasticity of demand.

- Income is the **major determinant of demand for a number of goods.**
- It suggests that the demand may change due to a change in the consumer's income, other factors remaining constant.
- The concept of income elasticity of demand is thus introduced to ascertain the extent of such change.
- The income elasticity of demand measure **the degree of responsiveness of demand for a good to changes in the consumers income.**
- The income elasticity of demand is defined as **"A ratio of percentage or proportionate change in demand to percentage or proportionate change in income."**

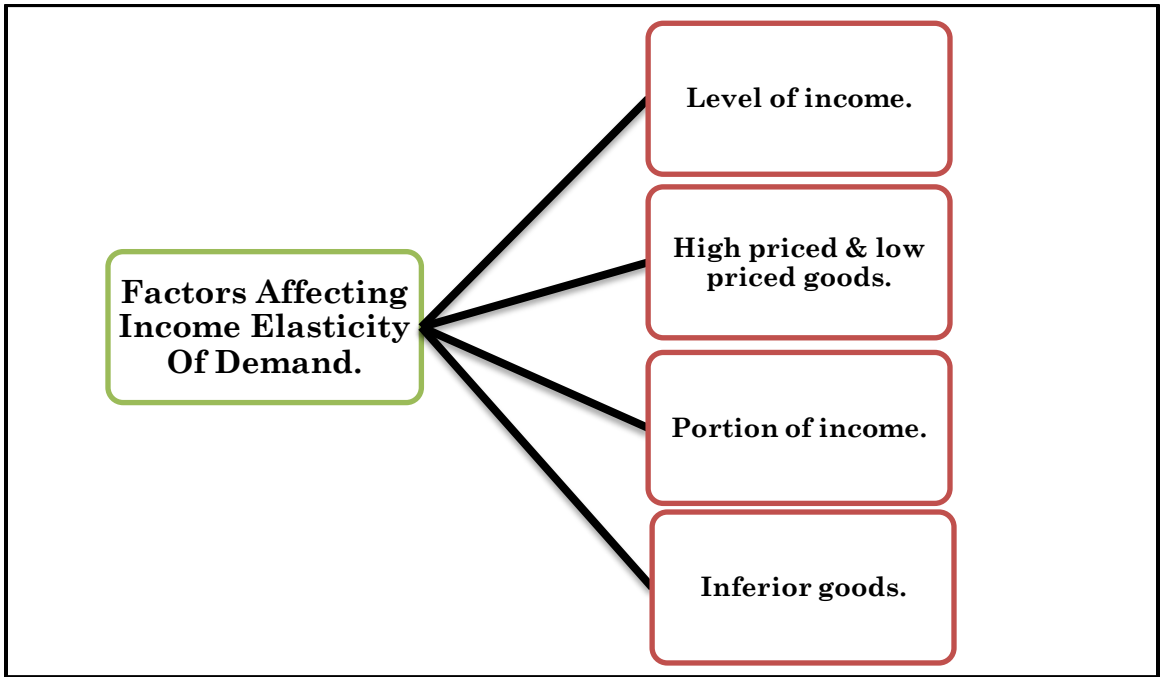
$$YED = \frac{\text{\% or proportionate change in demand}}{\text{\% or proportionate change in income.}}$$

$$E_P = \Delta Q/Q/\Delta Y/Y$$

$$= \Delta Q/\Delta Y.Y/Q$$

Factors affecting income elasticity of demand.

1. The main factor influencing income elasticity of demand is the level of income itself.
    - At very high levels of income elasticity of demand is likely to be low.
    - Lipsey has pointed out an initial increase in the income of a poor family is more likely to be spent than saved.
    - Thus the demand for certain essentials will increase more than proportionately with the increase in the income of a poor household.
    - But as income goes on increasing the elasticity which is positive will go on diminishing.
    - It may become zero and even negative at a very high level of income.
2. Generally the income elasticity of demand for jewellery, cars, refrigerator etc is high where as the same for low priced necessaries is like food, matches or cheap food is low.
3. If a very small portion of the income of the family is spent on the given commodity the income elasticity for it would be low.
    - Conversely the income elasticity would be high for the commodities on which a significant portion of the family's income is spent.
4. In cases where such commodities happened to be inferior goods for the family the income elasticity may turn out to be negative.



Question.	Answers.
1. Main factor influencing income elasticity of demand is	Level of income.
2. Pointed out an increase in the income of a poor family is more likely to spent then saved.	Lipsey.
3. Income elasticity of luxurious goods is	High.
4. Income elasticity of demand for inferior goods is	High.

Significance of income elasticity of demand.

1. Classification of goods:

- It helps in classifying the commodities.
- For instance if income elasticity of demand is positive the commodity is normal.

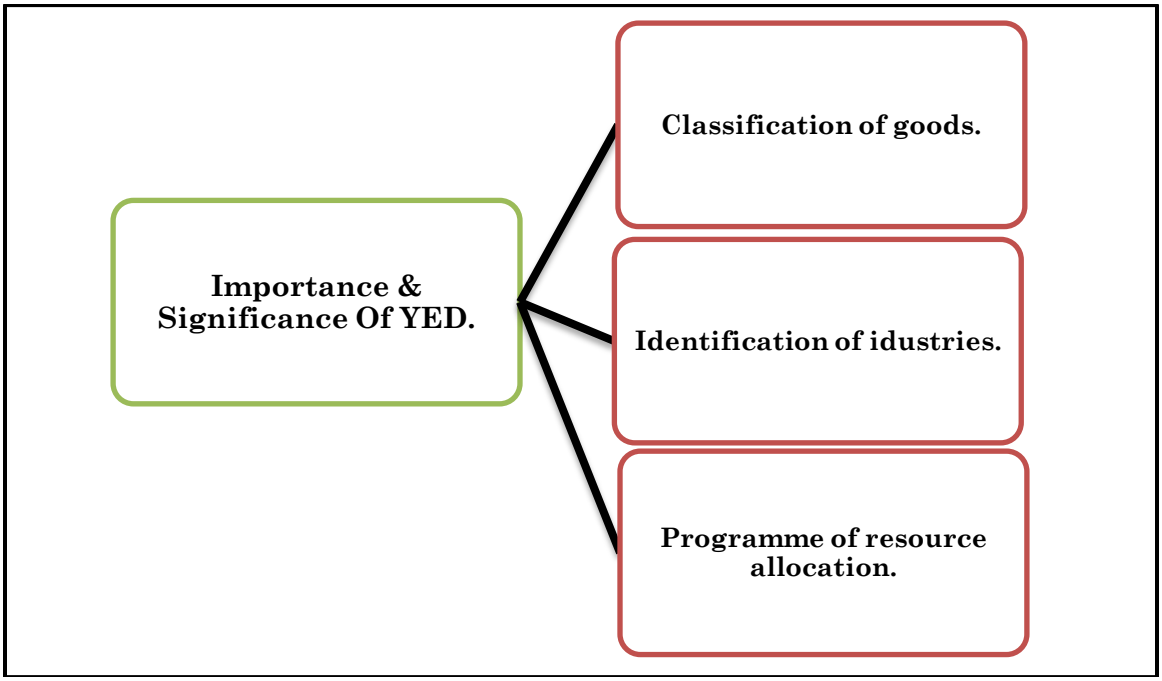
- If it is negative the commodity is inferior.
- If it is positive and greater than one the commodity is a luxury.
- If it is positive and less than one commodity is a necessity.

2. Identification of industries:

- The numerical values of income elasticity of demand are highly useful to individual producer's with help of these value they can identify expanding and contracting industries.
- If income elasticity of demand for product x is positive its demand can be expressed to increase with the increase in people's income.
- Hence producer's can plan beforehand to increase productive capacity in x industry.
- If income elasticity of demand for product y is negative its demand can be expected to decline with the increase in people's money incomes.
- Hence producer's can take steps to reduce productive capacity of y.

3. Programme of resource allocation:

- Similarly income elasticity of demand is helpful to the government or planning commission also.
- They can project future level of demand for various goods on the basis of the information about the values of their income elasticity of demand and possible increase in money income of the people.
- Then these demand projections can be used to fix output targets for different industries.
- They can prepare a programme of resource allocation among industries so that output targets may be realized on time.



Questions.	Answers.
1. Income elasticity of demand is useful in	Classification of goods.
2. Income elasticity of demand is important in	Identification of industries.
3. Income elasticity of demand has great significance in	Programme of resource allocation.

The concept of cross elasticity of demand

Elasticity of demand is a **technical or mathematical term.** One of the most important feature of demand for any product is that it changes with change in any determinant like price, income of the buyer and prices of related goods or products.

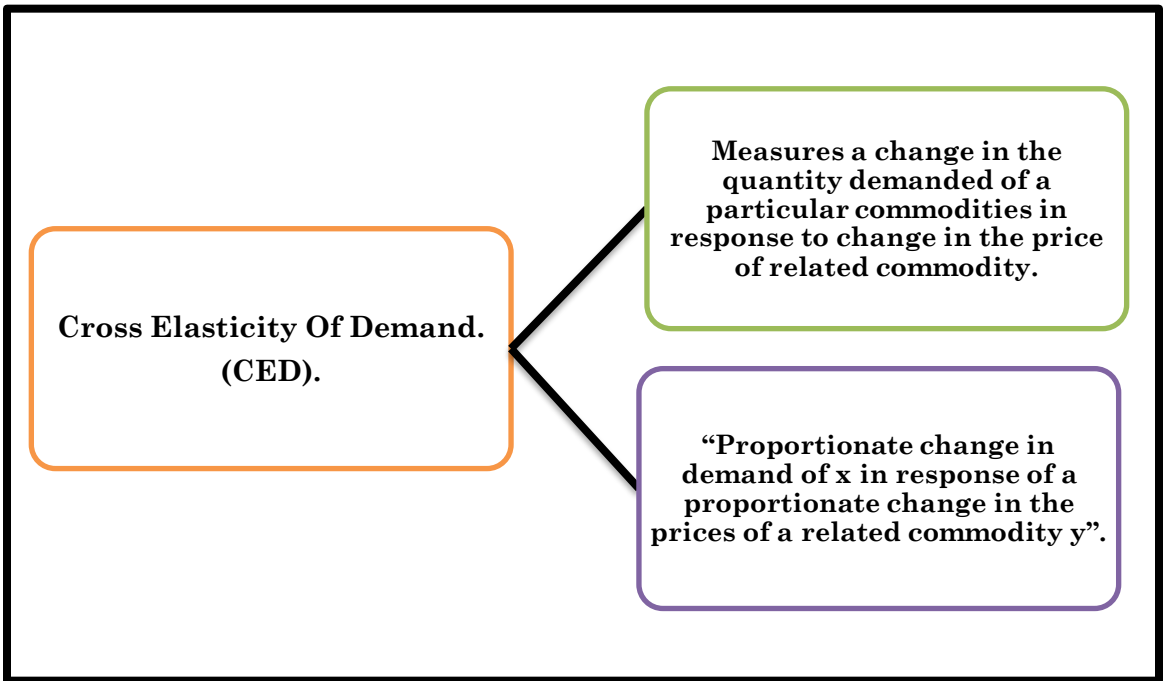
- **This responsiveness of demand is called elasticity of demand.** Cross elasticity of demand measures a change in the quantity demanded of a particular commodities in response to change in the price of related commodity.
- It can be defined as **"Proportionate change in demand of x in response of a proportionate change in the prices of a related commodity y".**

CED = % or proportionate change in demand of x

% or proportionate change in price of y.

= E_P = ΔQx/Qx/ΔPy/Py

= ΔQx/ΔPy.Py/Qx

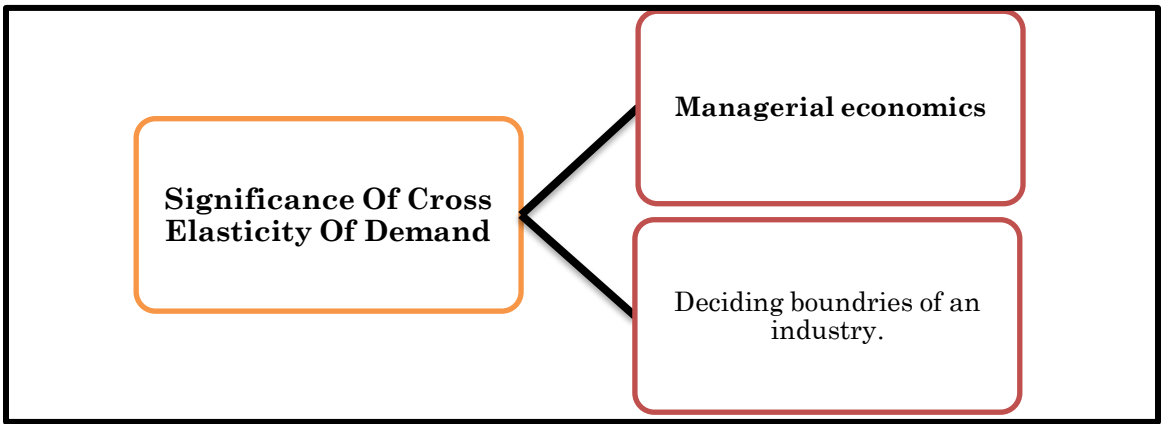


Question.	Answer.
1. When there is proportionate change in demand of x resulting proportionate change in price of y is said as	Cross elasticity of demand.
2. Cross elasticity of demand means	Measures a change in the quantity demanded of a particular commodities in response to change in the price of related commodity

Significance.

- This concept is of great importance in managerial economics, decision making and also in formulation of appropriate price strategy. The multi product firms often use this concept to measure the effect of the change in the price of one product on the demand for their other products. Suppose a firm produces A B C products which are close substitutes with high cross elasticity of demand among them. Hence if the firms lowers the price of a product say A it will have adverse effect on demand for B and C. On other hand suppose a firm produces goods A and B which are complements with high cross elasticity of demand. If the firm reduces the price of A demand for B will also increase along with that of A. If it follows that the multi product firms will have to be very careful in fixing prices of its various products.

- The concept of cross elasticity of demand is helpful in deciding boundaries of an industry and also in measuring interrelations among various industries. An industry is defined as a group of firms producing similar products so that cross elasticity of demand is positive and strong. For eg cross elasticity of demand for Phillips TV, Sony TV, Samsung TV, and LG TV is positive and high and that is why they are said to be the components of the same industry. In this case a firm cannot raise price without losing sales to other rival firms in the industry.



Questions.	Answers.
1. CED is useful in	Managerial economics.
2. CED has great significance in	Deciding boundaries of a industry.

Unit 3. Production Analysis.

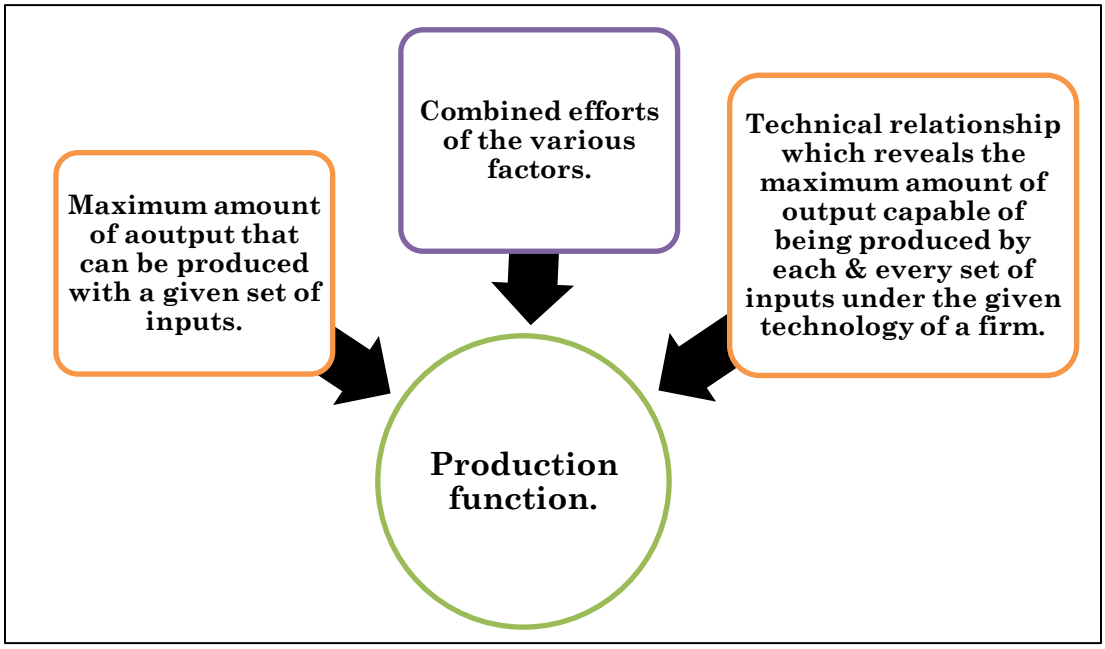
- Concept production functions.
- Law of variable proportion.
- Economies of scale.
- Iso-quant curve.
- Iso cost curve.
- Optimum input combination.
- Marginal productivity theory of distribution.

Law of variable proportion

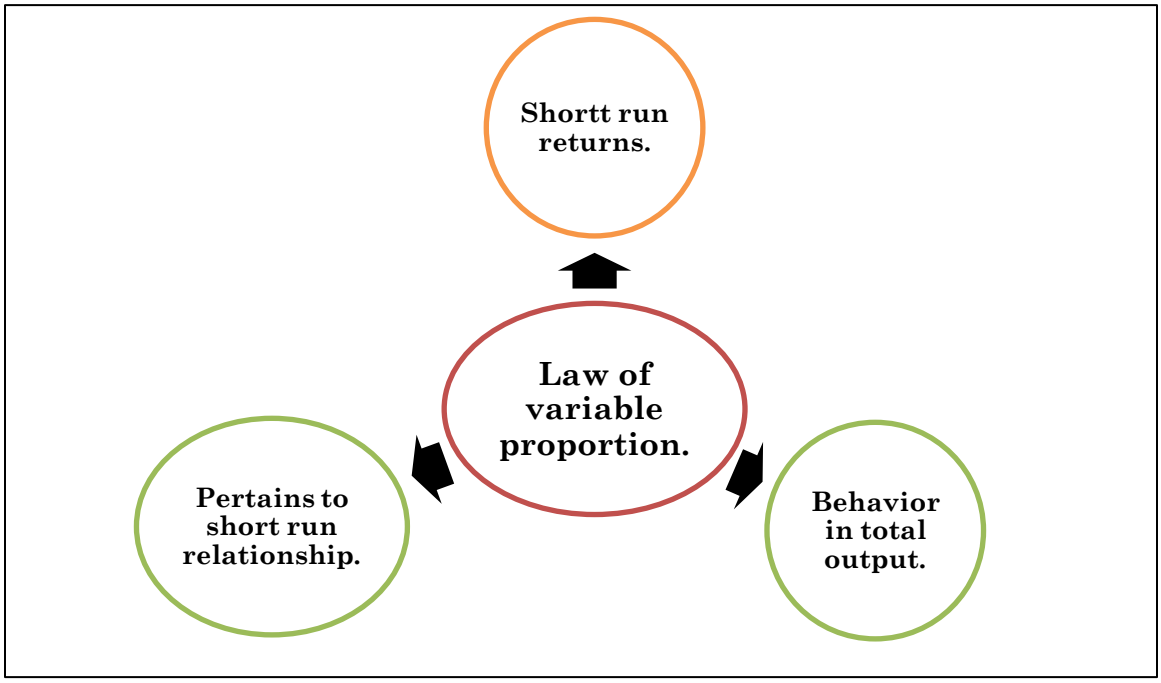
Ans: Production is the result of combined efforts of the various factors land labor capital and entrepreneur.

"Production Function is that function which defines the maximum amount of output that can be produced with a given set of inputs." Michael R Baye

"Production Function is the technical relationship, which reveals the maximum amount of output capable of being produced by each and every set of inputs, under the given technology of a firm." Samuelson



- The law of pertains to the short run relationship between changes in inputs & the resulting output.
- The law of variable proportion states that in the short run the returns to variable factors will be more than proportionate initially & after a point the returns will be less than proportionate.
- This is what the law describes about the behaviour in total output resulting from increased application of variable factors to fixed factors.

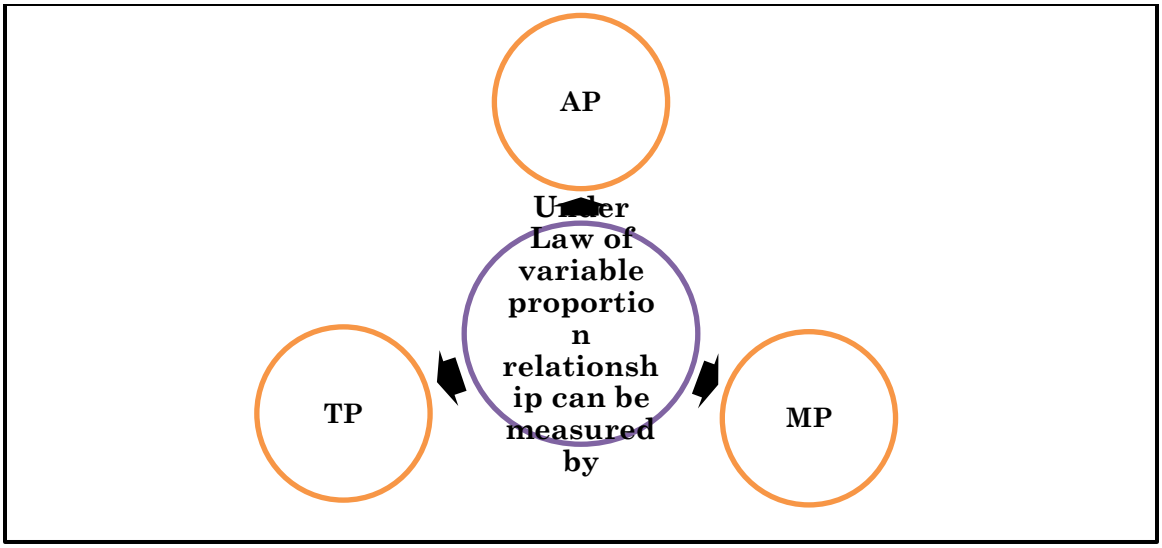


Questions.	Answers.
1. The law pertains to the _____ relationships between changes in inputs & resulting output.	Short run.
2. The law of variable proportion states that in short run the _____ to variable factors will be more than proportionate.	Returns.
3. The law describes about the _____ in total output resulting from increased application of variable factors to fixed factors.	Behaviour.
4. is the result of combined efforts of the various factors land labor capital and entrepreneur.	Production.
5. "Production Function is that function which defines the maximum amount of output that can be produced with a given set of inputs." is stated by	Michael R Baye.
6. "Production Function is the technical relationship, which reveals the maximum amount of output capable of being produced by	Samuleson.

each and every set of inputs, under the given technology of a firm." is stated by	

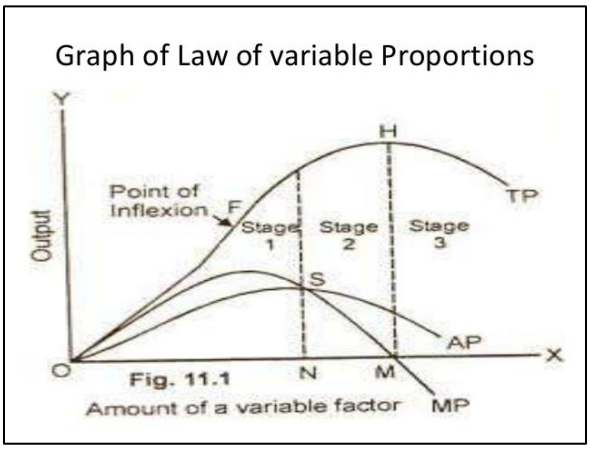
- According to the law **" In the short run as the amount of variable factors increases other things remaining equal to the output will increase more than proportionate to the amount of variable inputs in the beginning that it may increase in the same proportion & ultimately it will increase less proportionately."**
- To clarify the relationship further we may adopt the following measurements of products

1. **Total Product (TP):**
   - The total number of units of output produced per unit of time by all factor input.
   - **TP = f(QVF).**
   - Where TP denote total product & QVF denotes the quantity of a variable factor.
2. **Average Product (AP):**
   - The average product refers to total product per unit of a given variable factor.
   - Thus by dividing the total product by the quantity of the variable factors we get
   - **AP = TP / QVF.**
3. **Marginal Product (MP):**
   - Owning to an addition of a unit to a variable factor all other factors being held constant the addition realised in the total product is technically referred to as the marginal product.
   - **MPn = TPn – Tpn-1.**



Questions.	Answers.

1. Law of variable proportion states that	" In the short run as the amount of variable factors increases other things remaining equal to the output will increase more than proportionate to the amount of variable inputs in the beginning that it may increase in the same proportion & ultimately it will increase less proportionately."
2. Total Product means	TP = f(QVF).
3. Average Product means	AP = TP/ QVF.
4. Marginal Product means	MPn = TPn – TPn-1.



Units of variable inputs.	TP	AP	MP	
1	20	20	20	
2	50	25	30	**I**
3	90	30	40	
4	120	30	30	
5	135	27	15	
6	144	24	9	**II**
7	147	21	3	
8	148	18.5	1	
9	148	16.4	0	
10	145	14.5	-3	**III**

The above diagram and table explains the law of variable proportion.

SHREE H. N. SHUKLA COLLEGE OF I.T. & MGMT.
(AFFILIATED TO SAURASHTRA UNIVERSITY)
3- Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot – 360001
Ph. No–(0281)2471645
2 – Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot - 360001
Ph.No–(0281)2440478, 2472590

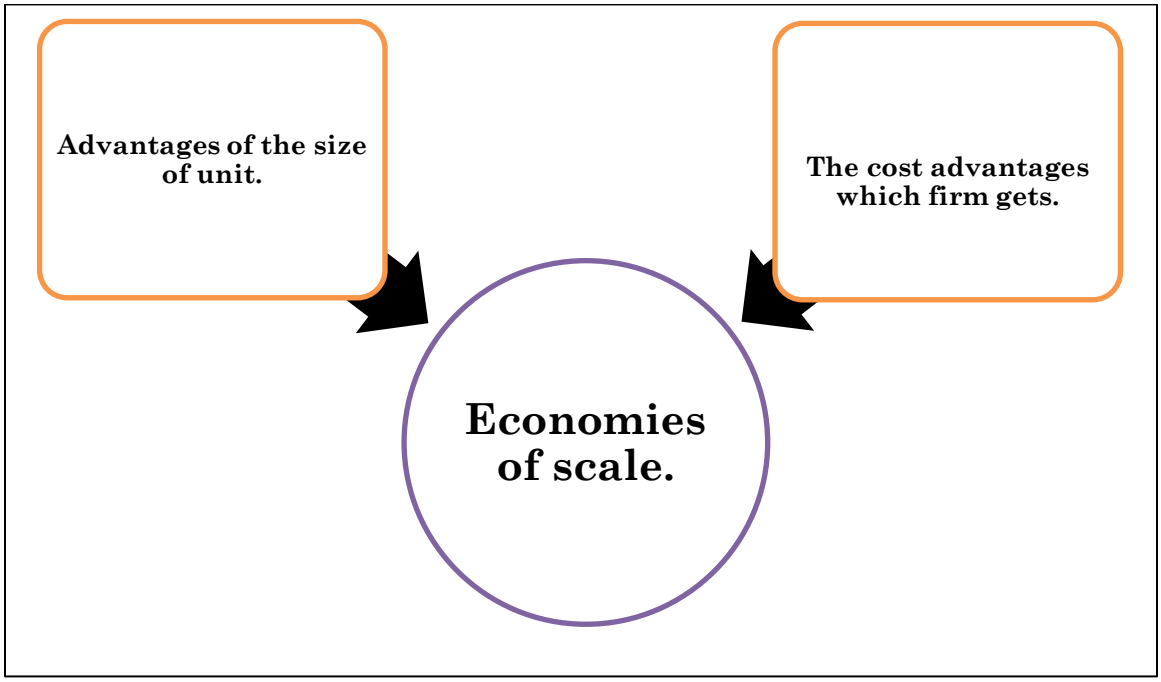
ECONOMIES OF SCALE

Production is the result of combined efforts of the various factors land labor capital and entrepreneur.

"Production Function is that function which defines the maximum amount of output that can be produced with a given set of inputs." Michael R Baye

"Production Function is the technical relationship, which reveals the maximum amount of output capable of being produced by each and every set of inputs, under the given technology of a firm." Samuelson.

- **"Economies" means advantages & scale refers to the size of unit.**
- When the producer start producing on a large scale in the long run he starts getting some economies as well as some diseconomies of scale.
- **Economies of scale refers to the cost advantages which a firm gets due to the large size of production.**
- As the size of production grows the cost of production reduces.
- **Diseconomies of scale refers to disadvantages which a firm suffers due to large scale production.**



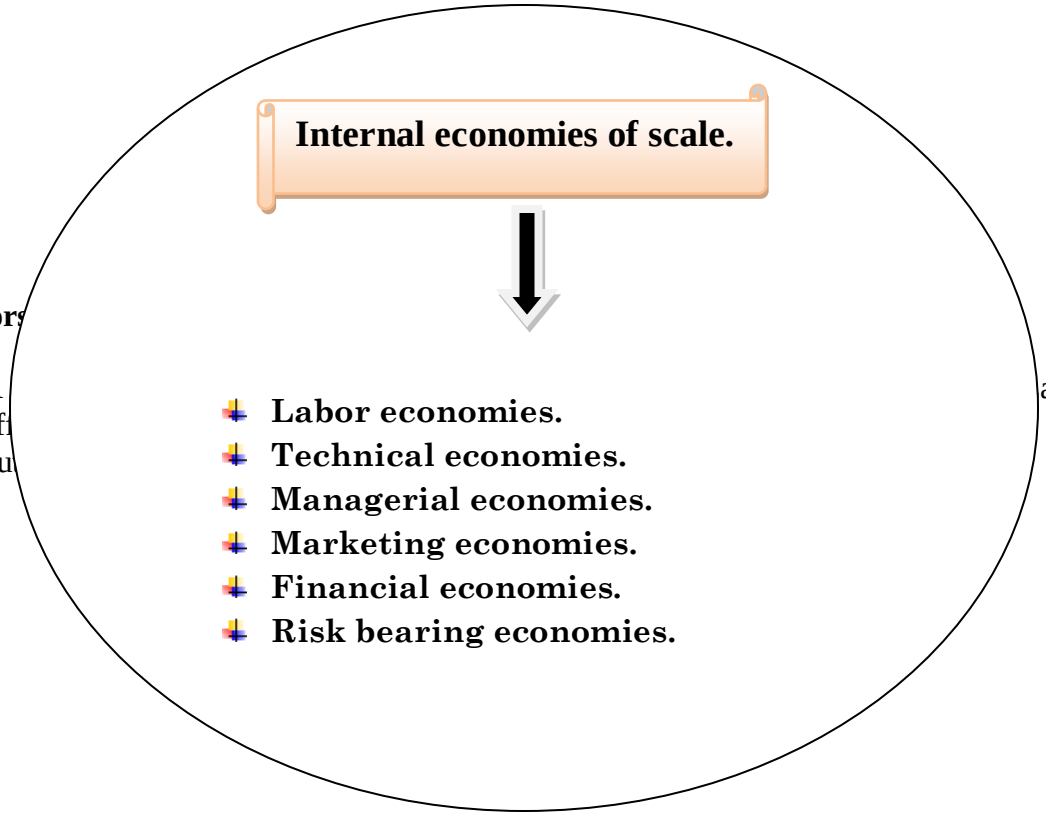
Questions.	Answers.
1. _____ means advantages.	Economies.
2. _____ refers to size of unit.	Scale.

3. _____ refers to the cost advantages which firms gets due to the large size production.	Economies of scale.
4. _____ refers to disadvantages which a firm suffers due to large scale production.	Diseconomies of scale.

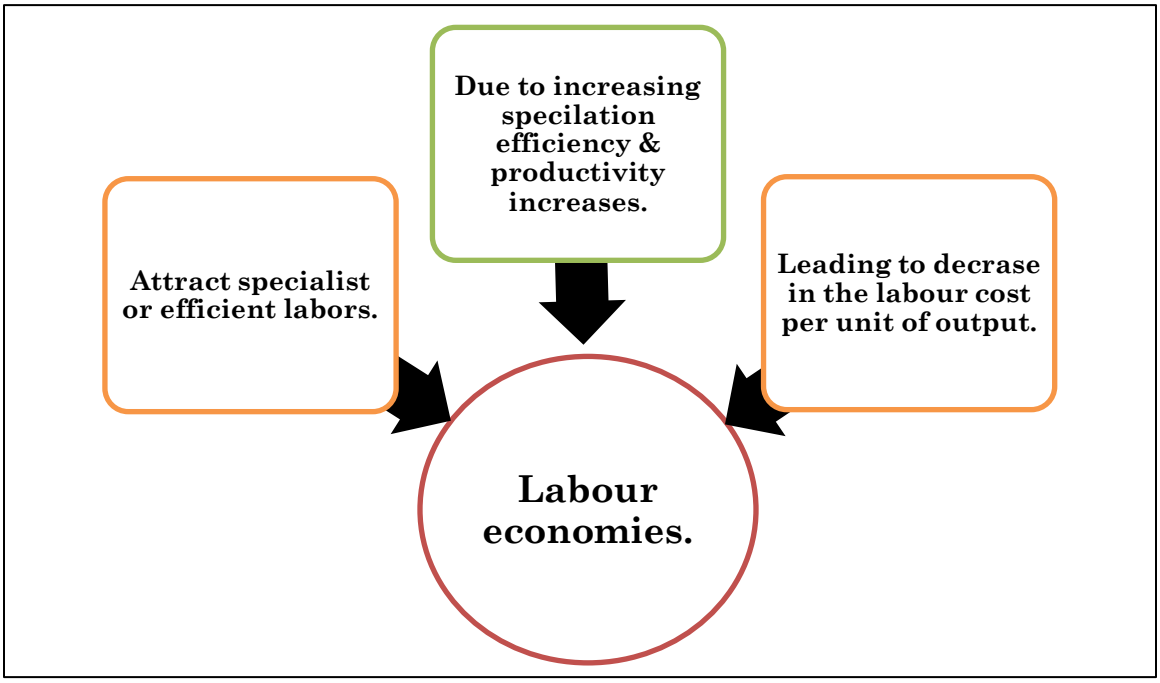
- **Economies of scale are divided into two parts internal economies of scale and external economies of scale.**

Internal Economies Of Scale:

- Internal economies are those advantages enjoyed by an individual firm if it increases its size and the output.
- The following are the types of internal economies of scale:

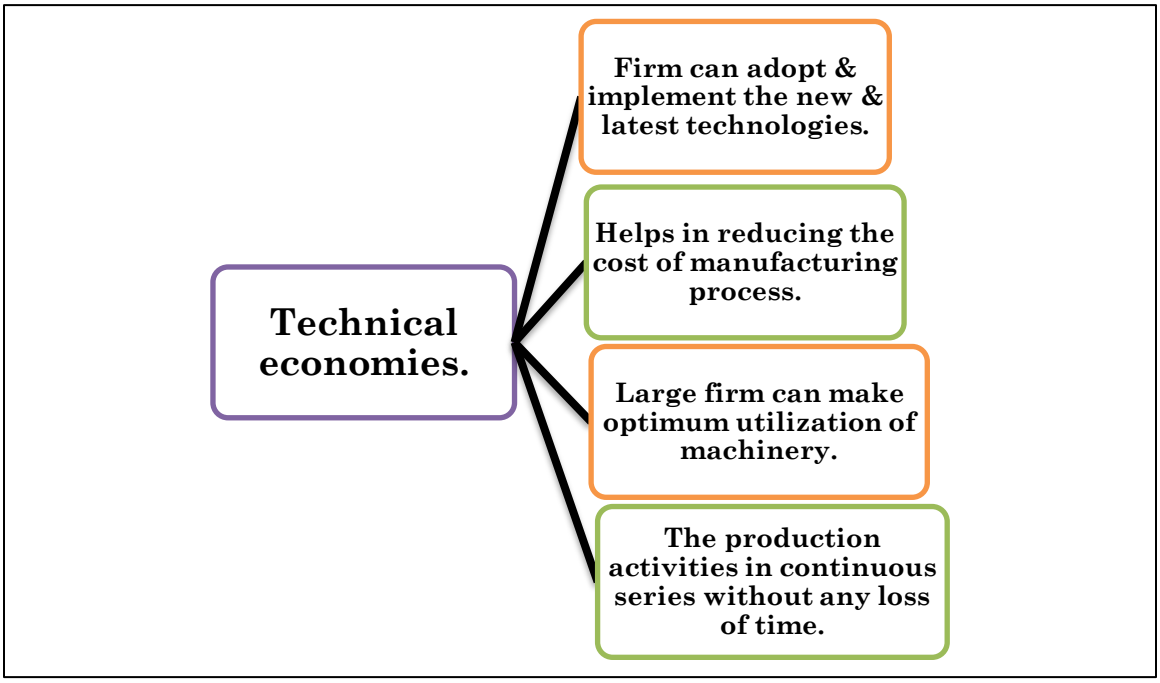


1. **Labors**
   - A ations the ef per unit of ou



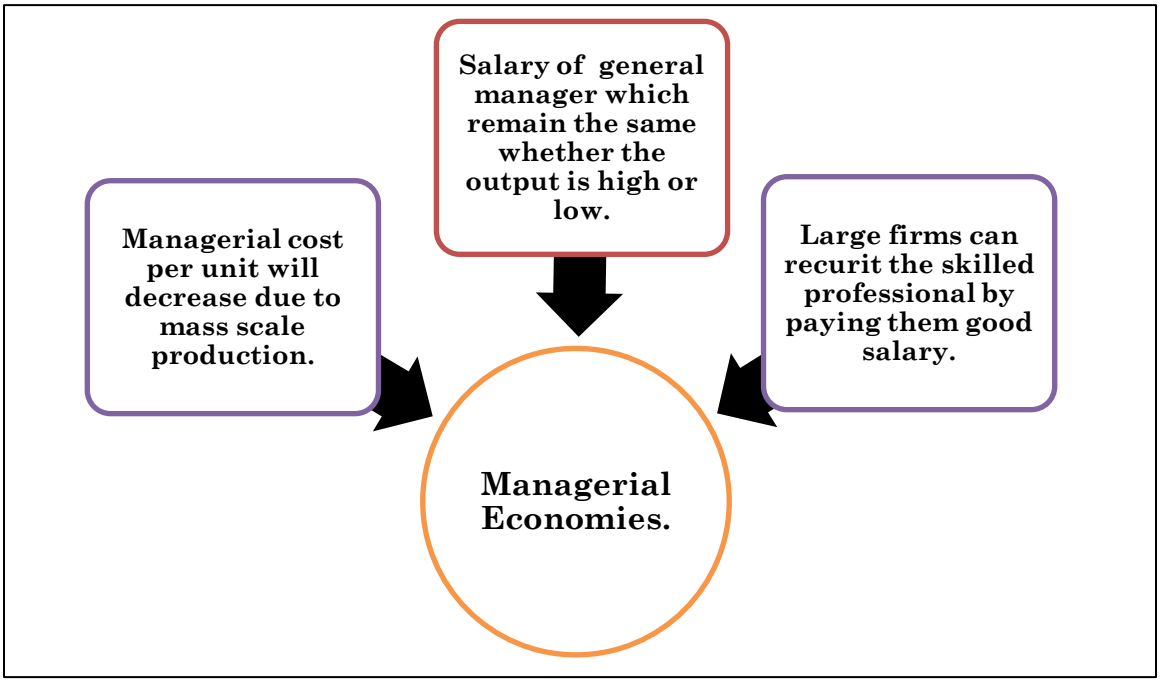
2. Technical Economies:

- A large firm can adopt and implement the new and latest technologies, which helps in reducing the cost of manufacturing process, whereas the small firm may not have the capacity to implement latest technologies.
- A large firm can make optimum utilization of machinery, and it can manage the production activities in continuous series without any loss of time thereby saving the time and transportation cost.



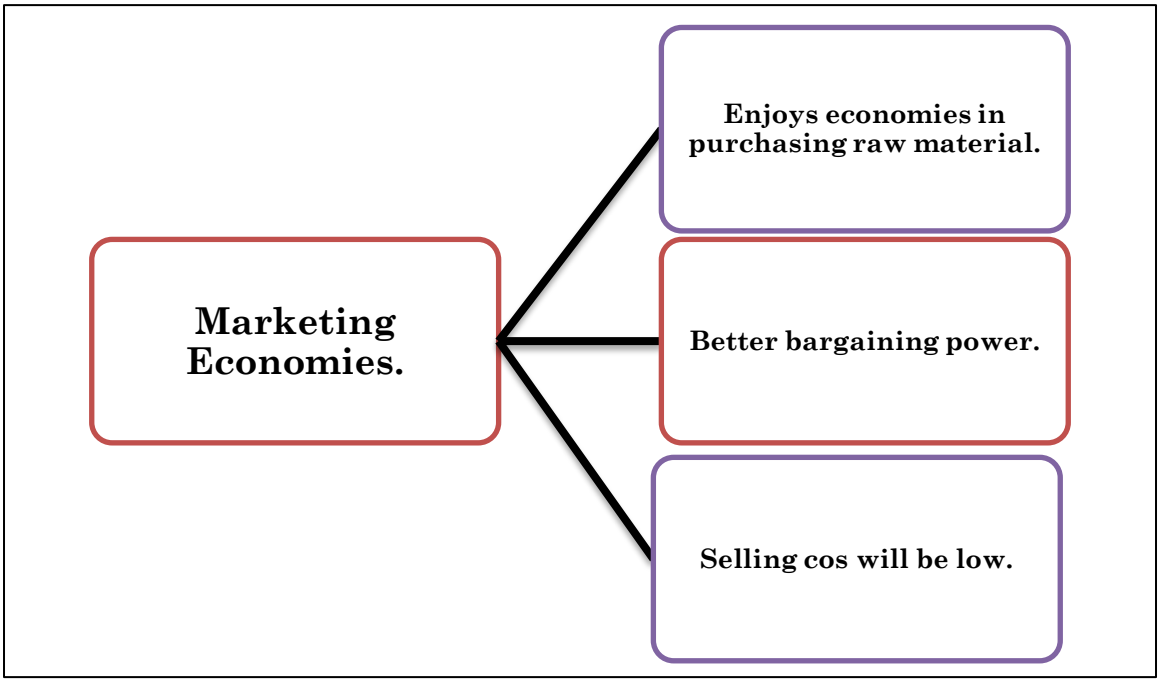
3. Managerial Economies:

- The managerial cost per unit will decrease due to mass scale production. Like, the salary of general manager, which remains the same whether, the output is high or low.
- Moreover, a large firm can recruit the skilled professionals by paying them a good salary, but a small firm does not have the much of capacity to pay high salaries.
- Thus, mass scale of production will decrease the managerial cost per unit.



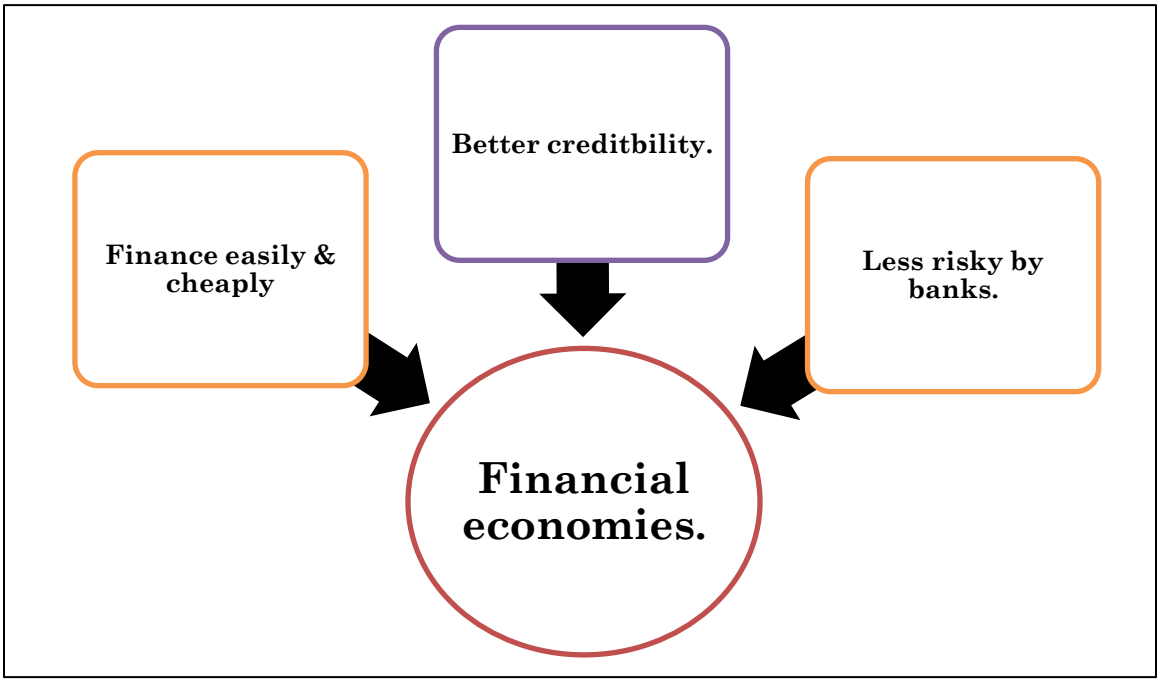
4. Marketing Economies:

- A large firm can purchase their requirements on a bulk scale therefore, they get a discount.
- Similarly the advertisement cost will be reduced because a large firm produces a variety of different types of products.
- Moreover, a large firm can employ sales professional for marketing their products effectively.



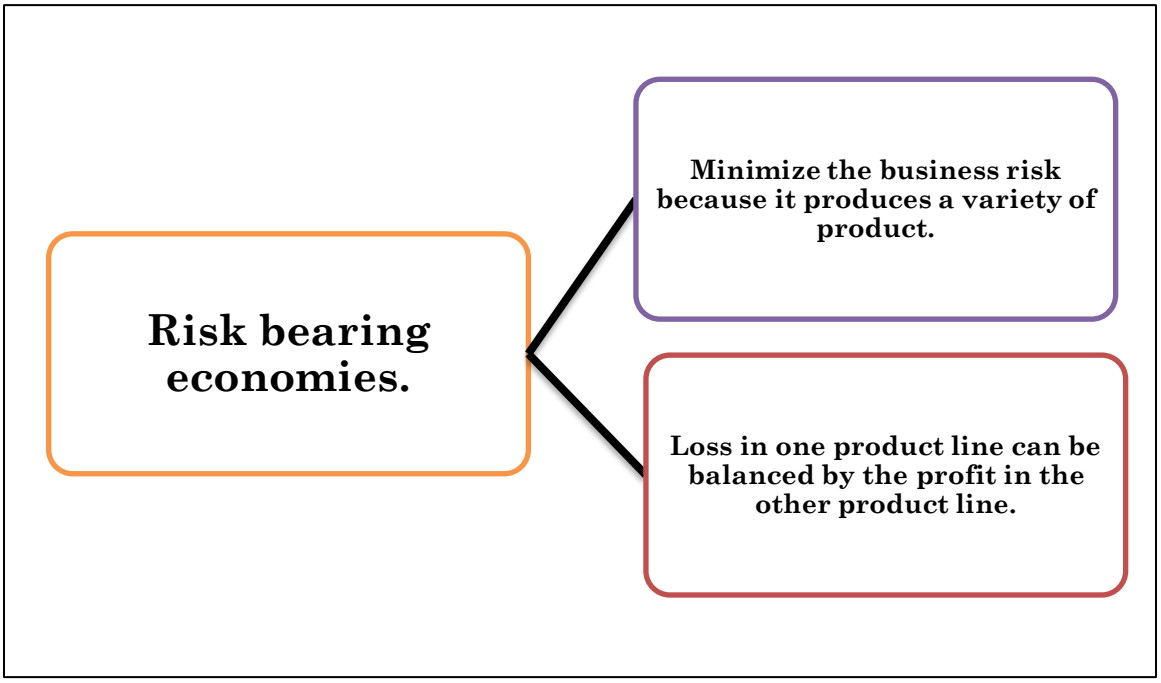
5. Financial Economies:

- A large firm can raise their financial requirements easily from different sources than a small one.
- A large firm can raise their capital easily from the capital market because the investor has more confidence on the large firm than in small firm.



6. Risk Bearing Economies:

- The large firm can minimize the business risk because it produces a variety of products.
- The loss in one product line can be balanced by the profit in other product line.

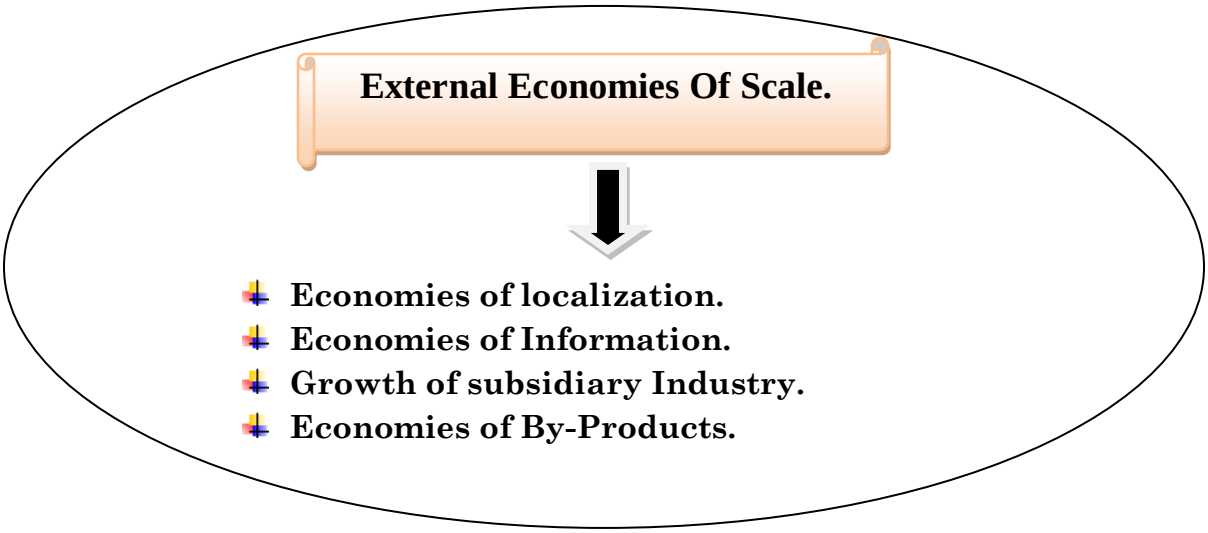


Questions.	Answers.
1. In labour economies a large firm can attract specilaist or efficient labours due to	Specialization.
2. _____ & _____ will be increased leading to decrease in labor cost.	Efficiency & productivity.
3. In technical economies a large firm can adopt & implement the new & latest _____.	Technologies.
4. Adoption of technologies helps in reducing the cost of _____ process.	Manufacturing.
5. In technical economies a large firm can make _____of machinery.	Optimum utilization.
6. In managerial economies the _____ cost per unit will decrease.	Managerial.
7. _____ production will decrease the managerial cost per unit.	Mass scale production.

8. Under marketing economies a large firm enjoys economies in _____ raw materials.	Purchasing.
9. Under marketing economies a large firm has better _____.	Bargaining power.
10. Under financial economies a large firm can get _____ easily & cheaply.	Finance.
11. In risk bearing economies a large firm can minimize the business _____ because it produces a _____ product.	Risk & variety.
12. The loss in one product line can be _____ by the profit in the other product line.	Balanced.

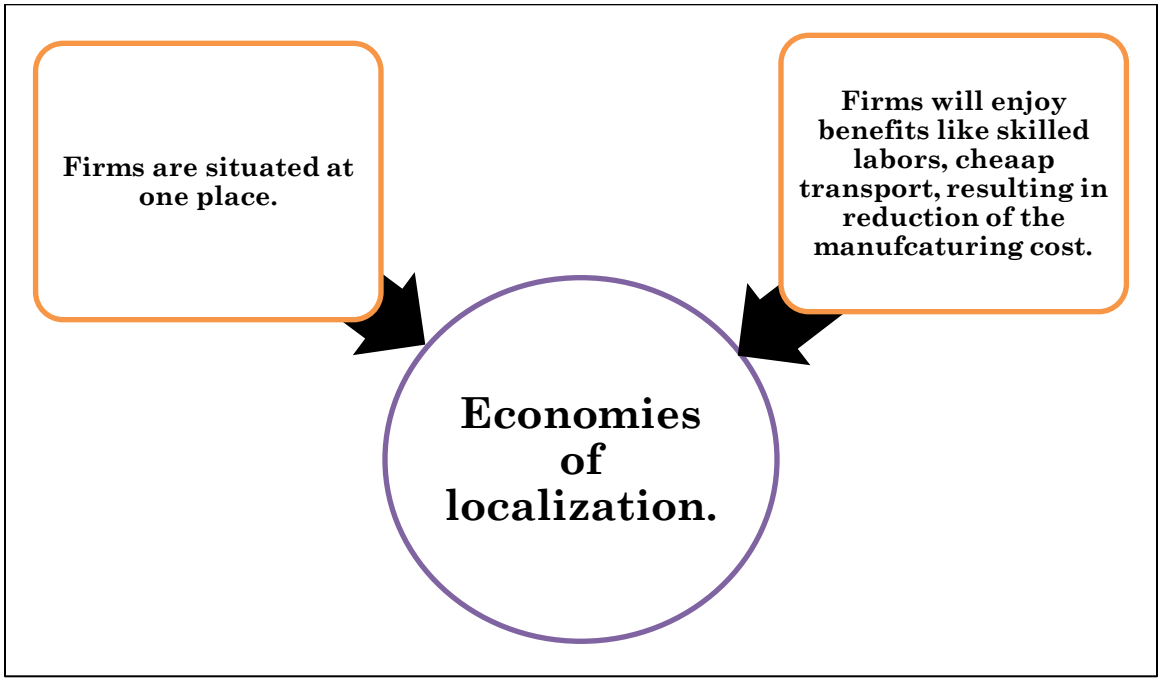
External Economies

External Economies are those benefits, which are enjoyed by all the firms in an industry irrespective of their increased size and output. All the firms in the industry share the following external economies of scale:



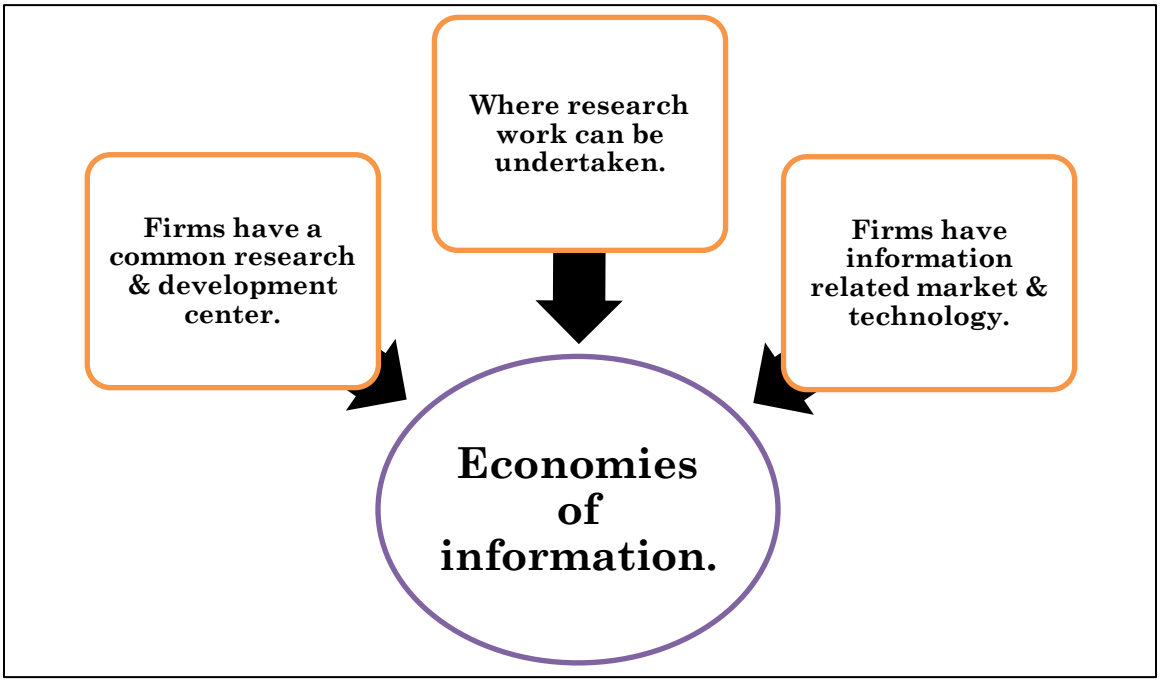
1. **Economies of Localization:**

- When all the firms are situated at one place, all the firms will be enjoying the benefits of skilled labors, infrastructure facilities and cheap transport thereby reducing the manufacturing cost.



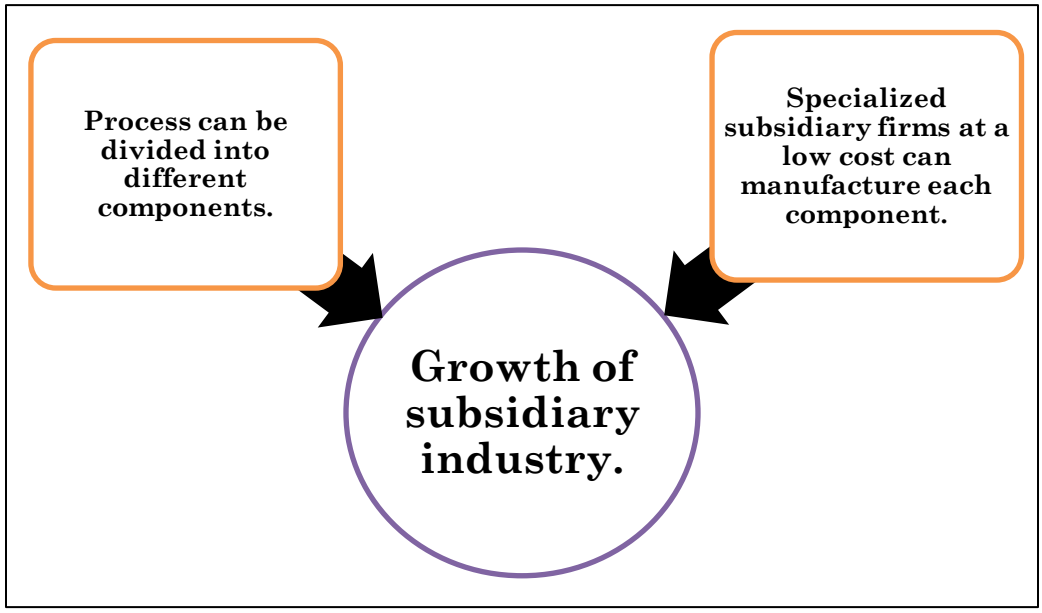
2. **Economies of Information:**

- All the firms in an industry can have a common research and development center through which the research work can be undertaken jointly.
- They can also have the information related to market and technology.



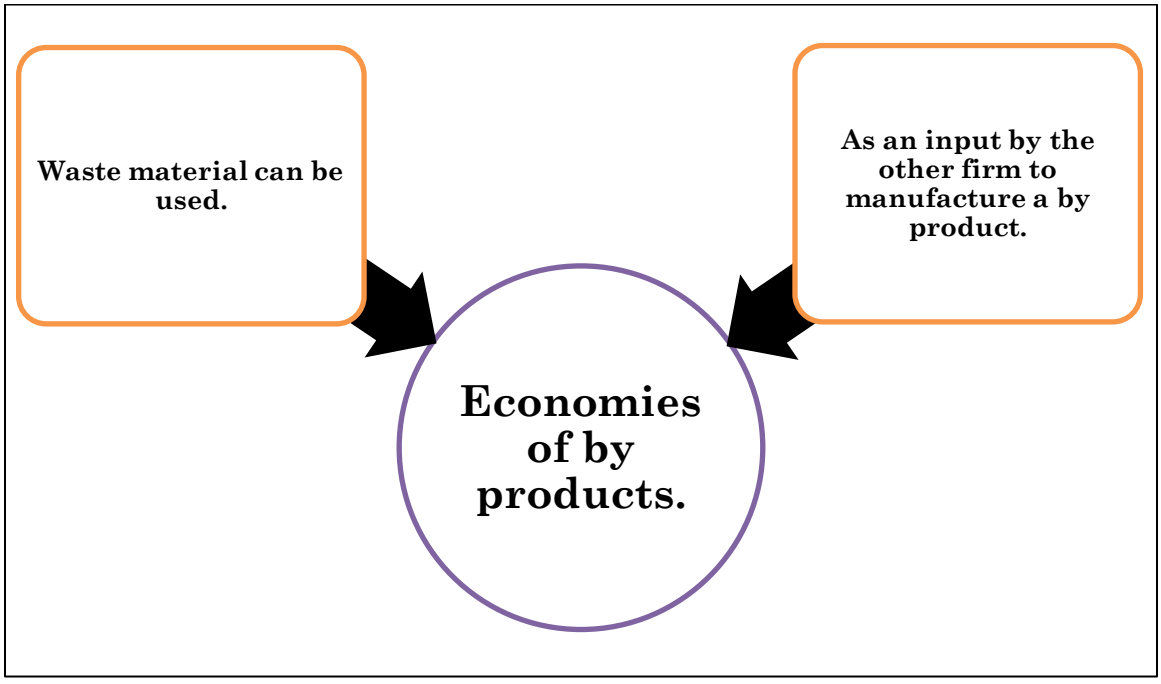
3. Growth of subsidiary Industry:

- The production process can be divided into different components.
- Specialized subsidiary firms at a low cost can manufacture each component.



4. Economies of By-Products:

- The waste materials released by a particular firm can be used as an input by the other firm to manufacture a by-product.



Questions.	
1. When all the firms are situated at one place all the firms will be enjoying.	Economies of localization.
2. Benefits of skilled labours, infrastructure facilities, & cheap transport reduces _____.	Manufacturing cost.
3. Under economies of information all firms in an industry can have a common _____& _____ centre.	Research & development.
4. Firms can also have ____ related to market & technology.	Information.
5. ____ can be divide into different components in case of growth of subsidiary industry.	Production process.
6. _____ subsidiary firms at a low cost can manufacture each component.	Specialized.
7. Under economies of by products the _____ released by a particular firm can be used as an input by the other firm to ____ a by product.	Waste material & manufacture.

PROPERTIES of iso quants.

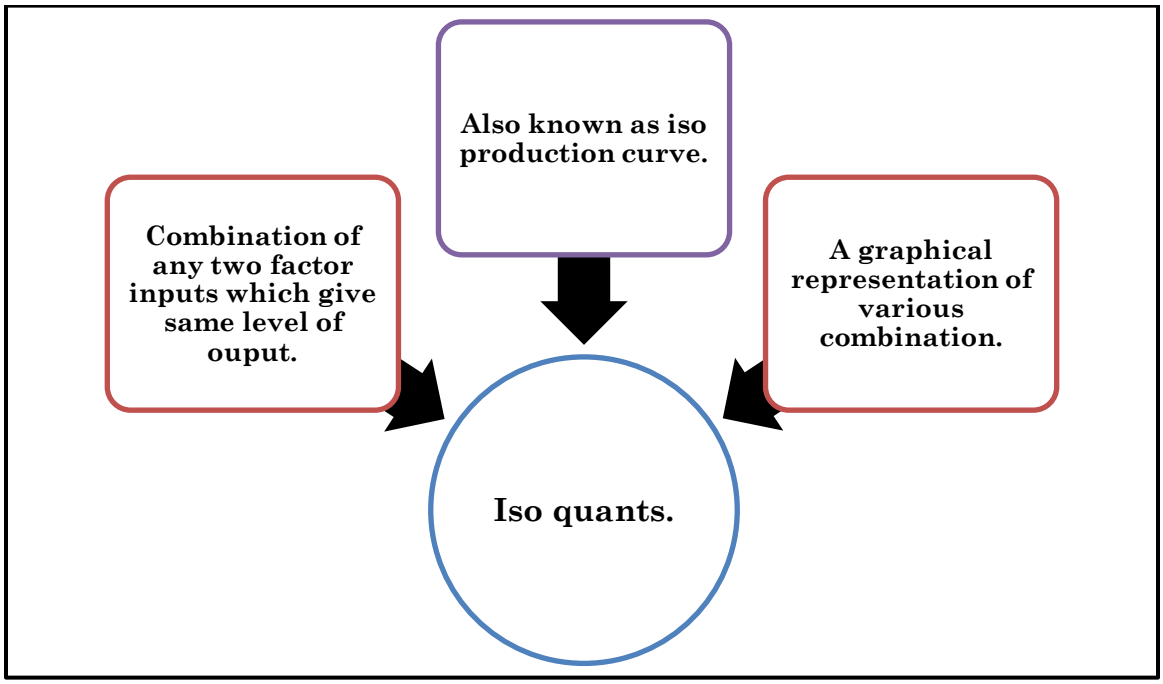
Production is the result of combined efforts of the various factors land labor capital and entrepreneur.

"Production Function is that function which defines the maximum amount of output that can be produced with a given set of inputs." Michael R Baye

"Production Function is the technical relationship, which reveals the maximum amount of output capable of being produced by each and every set of inputs, under the given technology of a firm." Samuelson

- 'Iso' refers to 'equal', 'quanta' refers to 'quantity'.
- An isoquant may be defined as **" A curve, which shows the different combinations of two inputs producing the same level of output."**
- Graphically the isoquant can be drawn conveniently for two factors of production.
- Isoquant is also called as equal product curve or production indifference curve or constant product curve.

- Isoquant indicates various combinations of two factors of production which give the same level of output per unit of time.
- The significance of factors of productive resources is that, any two factors are substitutable e.g. labor is substitutable for capital and vice versa.
- No two factors are perfect substitutes.
- This indicates that one factor can be used a little more and other factor a little less, without changing the level of output.
- It is graphical representations of various combinations of inputs say Labor (L) and capital (K) which give an equal level of output per unit of time.



Questions.	Answers.
1. Iso quant refers to	A combination of any two factor inputs that represent & give same level of output.
2. Iso quants are also known as	Iso production curve.
3. A combination of any two factor inputs that represent & give same level of output is known as	Iso quants.

Assumptions

1. There are two factor inputs labor and capital

2. The proportions of factor are variable.

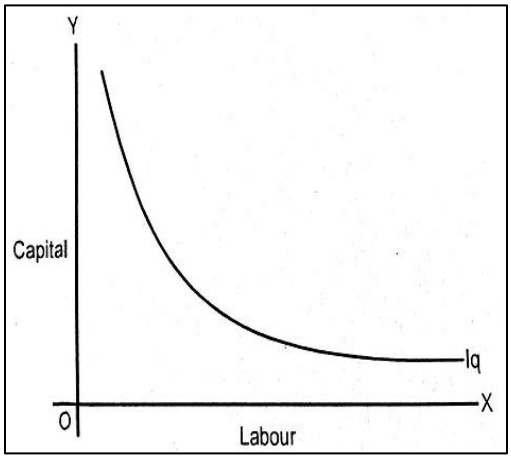
3. Physical production conditions are given

4. The Scale of operation is variable

5. The state of technology remains constant

Based on the above definition and assumption we have the iso quant schedule & graph which represent various combination of two factor inputs labor and capital giving same level of output.

Combination.	Labor.	Capital.	Output.
A	1	200	100
B	2	150	100
C	3	100	100
D	4	50	100
E	5	25	100



The above schedule and diagram explains that an iso quant is a combination of two factor inputs giving same level of output where one variable increases and other decreases to maintain the same level of output.
Based on the above definition assumption & graphical representation we have the following main properties of isoquants.

Properties of isoquants:

1. Iso-Product Curves are negatively sloped from Left to Right:

They slope downward because MTRS of labour for capital diminishes. When we increase labour, we have to decrease capital to produce a given level of output.

The downward sloping iso-product curve can be explained with the help of the following figure:

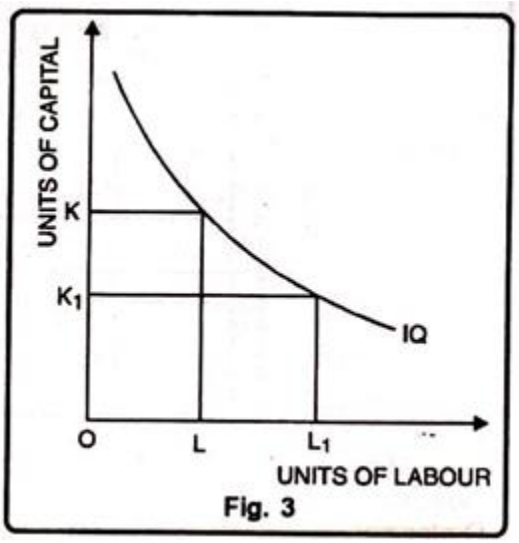


Fig. 3

The Fig. shows that when the amount of labour is increased from OL to OL_1, the amount of capital has to be decreased from OK to OK_1, The iso-product curve (IQ) is falling as shown in the figure.

2. Isoquants are Convex to the Origin:

Like indifference curves, isoquants are convex to the origin. In order to understand this fact, we have to understand the concept of diminishing marginal rate of technical substitution (MRTS), because convexity of an isoquant implies that the MRTS diminishes along the isoquant. The marginal rate of technical substitution

between L and K is defined as the quantity of K which can be given up in exchange for an additional unit of L. It can also be defined as the slope of an isoquant.

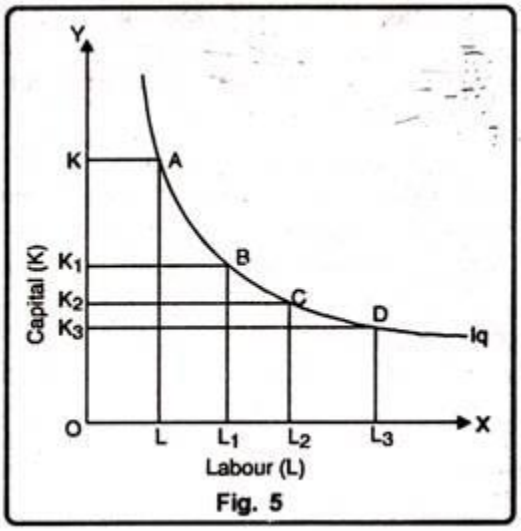


Fig. 5

This fact can be explained in Fig. As we move from point A to B, from B to C and from C to D along an isoquant, the marginal rate of technical substitution (MRTS) of capital for labour diminishes. Everytime labour units are increasing by an equal amount (AL) but the corresponding decrease in the units of capital (AK) decreases.**Thus it may be observed that due to falling MRTS, the isoquant is always convex to the origin.**

3. Two Iso-Product Curves Never Cut Each Other:

As two indifference curves cannot cut each other, two iso-product curves cannot cut each other. In Fig. two Iso-product curves intersect each other. Both curves IQ1 and IQ2 represent two levels of output. But they intersect each other at point A. Then combination A = B and combination A= C. Therefore B must be equal to C. This is absurd. B and C lie on two different iso-product curves. Therefore two curves which represent two levels of output cannot intersect each other.

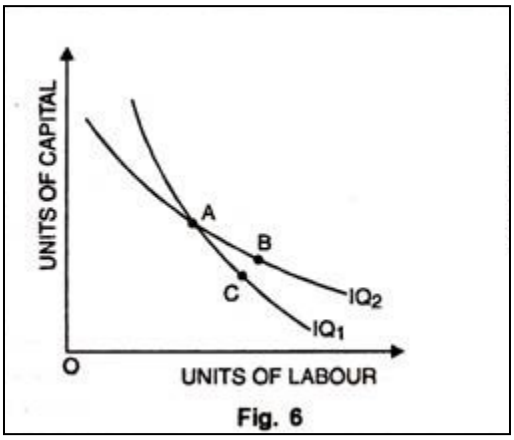


Fig. 6

4. Higher Iso-Product Curves Represent Higher Level of Output:

A higher iso-product curve represents a higher level of output as shown in the figure given below:

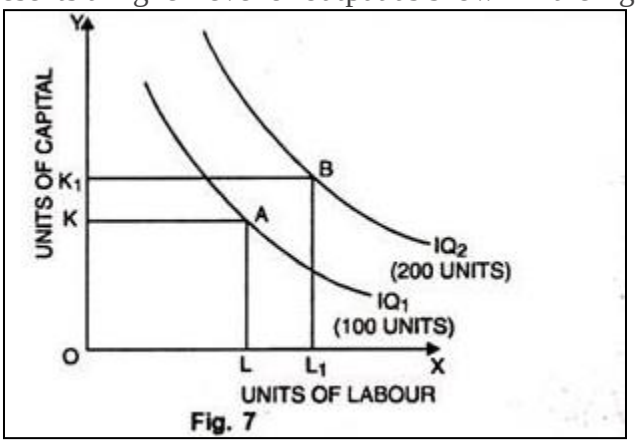


Fig. 7

In the Fig. units of labour have been taken on OX axis while on OY, units of capital. IQ_1 represents an output level of 100 units whereas IQ2 represents 200 units of output.

5. Isoquants Need Not be Parallel to Each Other:

It so happens because the rate of substitution in different isoquant schedules need not be necessarily equal. Usually they are found different and, therefore, isoquants may not be parallel as shown in Fig. We may note that the isoquants Iq_1 and Iq_2 are parallel but the isoquants Iq_3 and Iq4 are not parallel to each other.

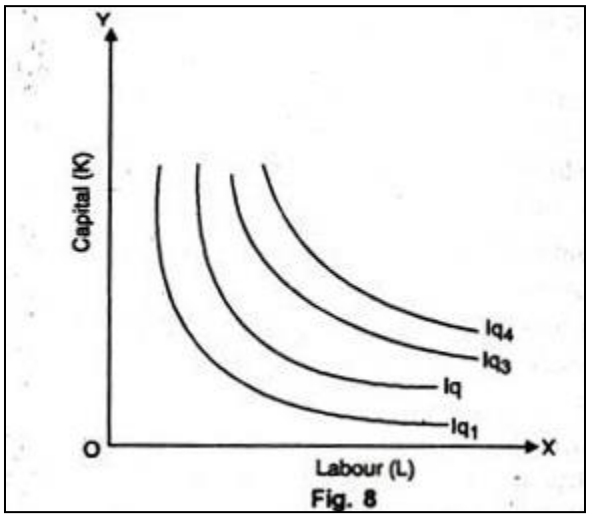


Fig. 8

6. No Isoquant can Touch Either Axis:

If an isoquant touches X-axis, it would mean that the product is being produced with the help of labour alone without using capital at all. These logical absurdities for OL units of labour alone are unable to produce anything. Similarly, OC units of capital alone cannot produce anything without the use of labour. Therefore as seen in figure IQ and IQ_1 cannot be isoquants.

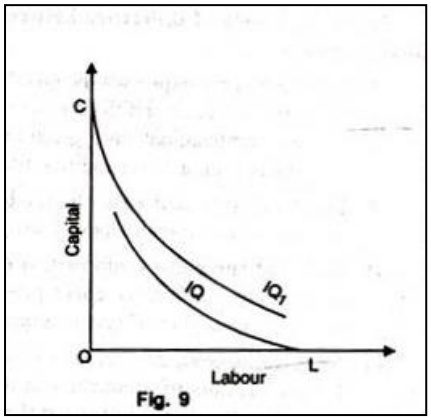


Fig. 9

Properties of isoquants.

- Isoquants are negatively slopped from left to right.
- Isoquants are Convex to the Origin.
- Two Isoqunats Never Cut Each Other.
- Higher Isoquant Represent Higher

Questions.	Answers.
1. Iso quants are ____ slopped.	Negatively.
2. Iso quants are _____ to origin.	Convex.
3. Two isoquants never _____ each other.	Intersect.
4. Isoquants neither intersect either ____.	Axis.
5. No iso qunats are _____ to each other.	Parallel.
6. Higher isoquants give ____ level of output.	High.

Iso cost line & product optimization

Production is the result of combined efforts of the various factors land labor capital and entrepreneur.

"Production Function is that function which defines the maximum amount of output that can be produced with a given set of inputs." Michael R Baye

"Production Function is the technical relationship, which reveals the maximum amount of output capable of being produced by each and every set of inputs, under the given technology of a firm." Samuelson

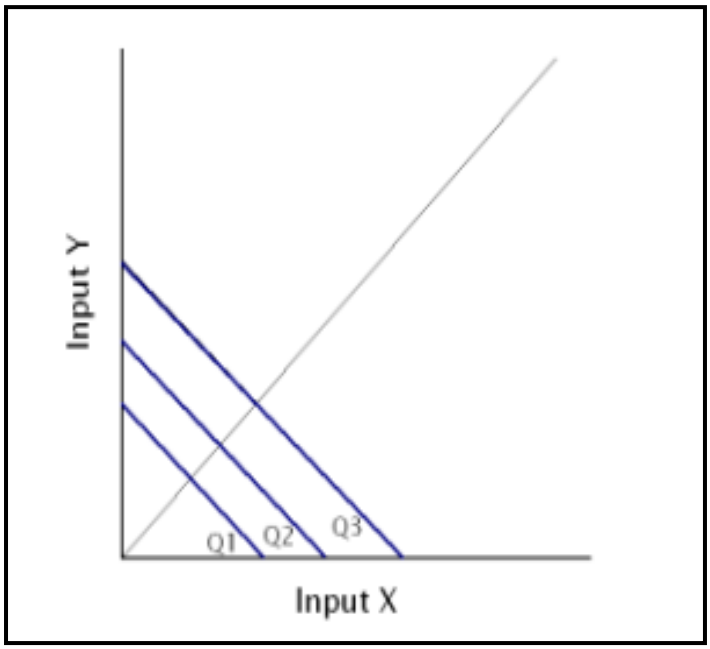
Iso-cost lines represent the prices of factors.

- An iso-cost line graphically represents all the combinations of the inputs which the firm can achieve with a given budget for production or given outlay.

- Suppose the firm has 100 Rs. which it can spend on combinations of factor X and factor Y, the former priced at Rs. 10 per unit and the latter priced at Rs. 20. The firm can spend the entire amount on factor X or factor Y.
- Further, there will be various combinations of both factors which amount to the outlay.
- The iso-cost line represents all these combinations.
- Q1, Q2 and Q3 are three different isocosts.
- The isocost on the right represents a higher outlay.

ISO COST LINES.

- **Represent prices of factors.**
- **Graphically represent all the combination of inputs which the firm can achieve with a given budget for production or given outlay.**

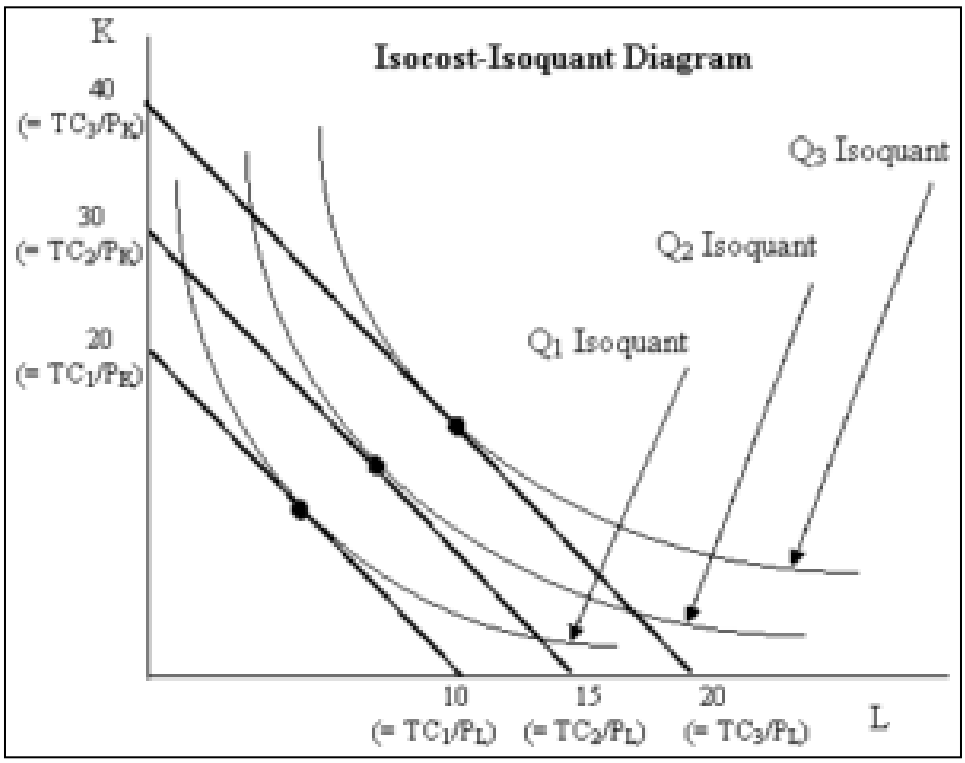


Production Optimization

- Isocosts and Isoquants can together help us to determine the optimum production for a firm.
- We can achieve production optimisation in two ways.
- Either we can maximize the production for a given outlay or we can minimize the cost of producing a given level of output.
- In case a firm has decided to achieve a given level of production, the next step would be to choose the combination of factors to achieve this target.
- Definitely, a rational firm would choose the least cost combination.
- This least cost combination is found out by superimposing the iso-quant on the iso-cost line.

Production Optimization.

- **Isocost & isoquants together helps in determining the optimum production of a firm.**
- **2 ways of production optimization.**
  - **Maximize the production for a given**



- We define the least-cost combinations for three different iso-quants show above at a point where the isocosts are tangential to the isoquants.
- Evidently, the least cost combination for a given isoquant is at the point of tangency of the isoquant with the isocost line.

Questions.	Answers.
1. _____ represent the prices of factors.	Iso cost line.
2. An isocost line graphically represents all the	Combinations.

____ of inputs which the firm can achieve with a given budget for production or given outlay.	
3. _____ & _____ can together help us in determine the optimum production of a firm.	○ Iso cost. ○ Iso quants.
4. We can _____ the production for a given outlay.	Maximize.
5. We can ____ the cost of producing a given level of output.	Minimize.
6. A rational firm would choose the_____.	Least cost combination.
7. The least cost combination for a given isoquant is at the _____ of the isoquant with the isocost line.	Point of tangency.

Marginal productivity theory of distribution.

Production is the result of combined efforts of the various factors land labor capital and entrepreneur.

"Production Function is that function which defines the maximum amount of output that can be produced with a given set of inputs." Michael R Baye

"Production Function is the technical relationship, which reveals the maximum amount of output capable of being produced by each and every set of inputs, under the given technology of a firm." Samuelson

- Marginal Productivity theory is a bold attempt to explain the determination of rewards of various factors of production.
- It is the work of many writers each improving, amending and modifying the ideas of the others. David Record was the first to use the theory for the determination of "Rent of Land".

According to J. B. Clark, "Under static conditions, every factor including the entrepreneur would get a remuneration equal to its marginal product.

According to Prof. Mark Blaug, "The Marginal productive theory contends that in equilibrium each productive agent will be rewarded in accordance with its marginal productivity.

Marginal Productivity Theory.

- **Bold attempt to explain the determination of rewards of various factors of production.**
- **According to J. B. Clark, "Under static conditions, every factor including the entrepreneur would get a remuneration equal to its marginal product.**

Questions.	Answers.
1. _____ is a bold attempt to explain the determination of rewards of various factors of production.	Marginal productivity theory.
2. J . B. Clark states that	"Under static conditions, every factor including the entrepreneur would get a remuneration equal to its marginal product".
3. Prof Mark Blaug states that	"The Marginal productive theory contends that in equilibrium each productive agent will be rewarded in accordance with its marginal productivity."

Marginal Physical Product (MPP):

- It is defined as addition to the total product when one more unit of the variable factor is employed, the amount of all other factors remaining unchanged.
- For example, if two workers produce 5 pencils and three workers produce 7 pencils then MP will be 2 pencils.

Marginal Revenue Product (MRP):

- It is defined as the addition to the total revenue resulting from the employment of one more unit of the variable factor and the sale of the additional product.
- In mathematical notation, MRP is calculated as:
  MRP = MP x MR

Value of Marginal Product (VMP):

- It is defined as the proceeds from the sale of the marginal product.
- In mathematical notation, **VMP** is calculated as: **VMP = MP x P.**

Average Revenue Productivity (ARP) :

- It is the average revenue per unit of a factor of production.
- **Under** Perfect Competition

since P (Price) = MR
∴ VMP = MRP

- **Under** Imperfect Competition,

Since P > MR
∴ VMP > MRP

Determinants of marginal productivity theory.

- **MPP.**
- **MRP.**
- **VMP.**
- **ARP.**

Questions.	Answers.
1. MPP is defined as	The total product when one more unit of the variable factor is employed, the amount of all other factors remaining unchanged.
2. MRP is defined as	The addition to the total revenue resulting from the employment of one more unit of variable factor & sale of additional product.
3. MRP is calculated as	MRP = MP x MR.
4. VMP is defined as	The proceeds from the sale of marginal product.
5. VMP is calculated as	VMP = MP x P.
6. ARP is defined as	It is the average revenue per unit of a factor of production.
7. Under perfect competition ARP is denoted as	VMP = MRP.
8. Under imperfect competition ARP is denoted as	VMP > MRP.

Marginal Productivity theory explains the following main facts.

Reward of each Factor unit is equal to its marginal productivity:

- We know that a rational producer aims either at maximizing his profit or minimizing his loss.
- Producer is in equilibrium only when the marginal cost is equal to marginal revenue.
- In other words, a producer will employ the factors only up to the point where the cost of an additional factor unit equals its marginal revenue.

Hence Factor Price = Marginal Revenue Productivity (Or VMP)

Determination of factor Employment and firms Equilibrium in a factor market:

- The theory states that a firm should employ that many units of a factor (labor in our example) where marginal revenue productivity (or VMP) becomes equal to the factor -price (i.e. wage -rate in our example).
- VMP of a factor = Factor Price. It is here that a firm will be in equilibrium and will get the maximum possible profit in a given situation.
- This is explained in the following example and diagram:

Labour (units)	AW = MW or Wage-Rate (Rs.)	MRP (Rs.)
1	50 <	70
2	50 <	80
3	50 <	70
4	50 <	60
5	50 =	50
6	50 >	40
7	50 >	30

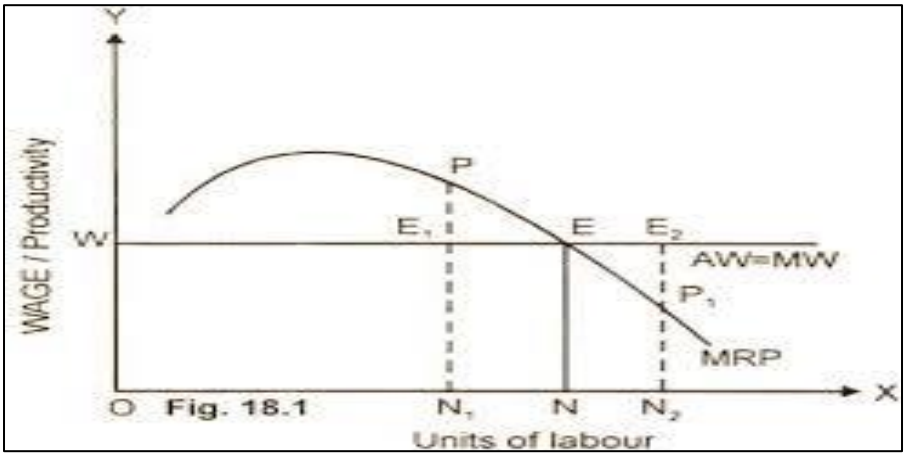


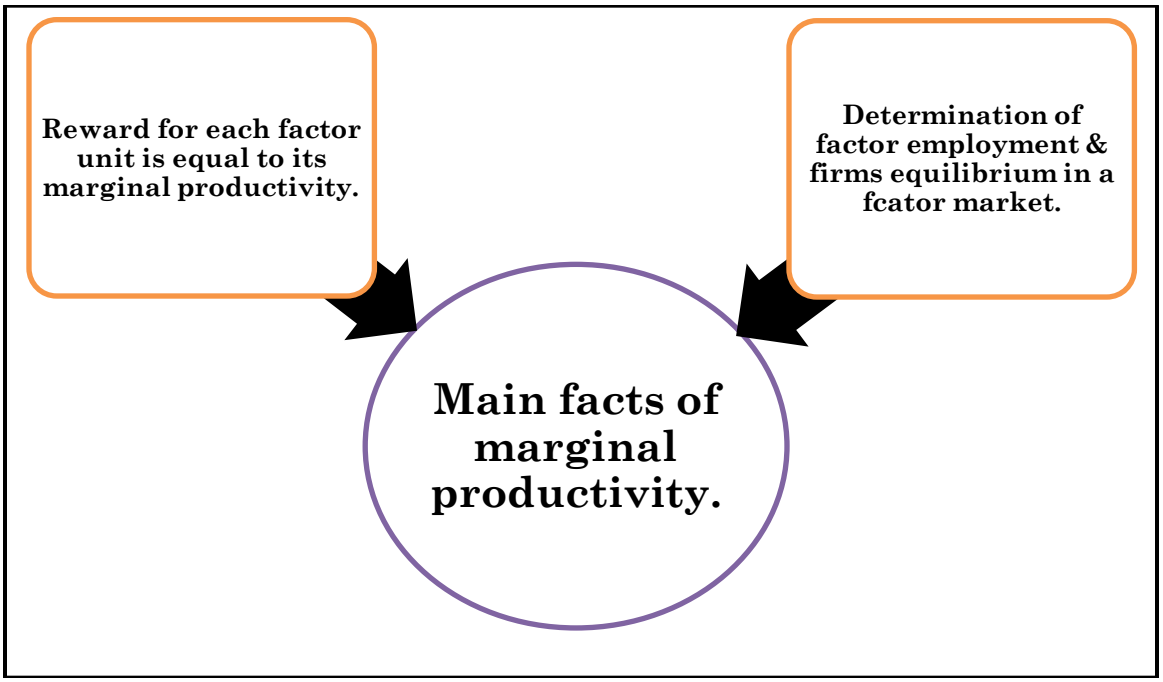
Fig. 18.1

- It is clear from the above table and Figure that when MRP (or VMP) is greater than wage -rate (MW = AW), firm can increase its profit by employing more laborers.
- With the employment of more laborers, MRP will decline and it will eventually become equal to wage rate.
- Similarly, if wage rate is greater than MRP, firm will be in loss.
- Then it will go on reducing the number of laborers till wages and MRP become equal.
- Hence firm will employ 5 (Example) or ON (Figure) units of labor.

Thus, under perfect competition in the labor market a firm is in equilibrium when two conditions are fulfilled:

(i) MRP (or VMP) = AW = MW (wage rate).
(ii) MRP curve should cut MW (= AW) curve form above.

- These two conditions are fulfilled in at point E (above figure).
- According to it, this firm will employ ON laborers at OW rate of wages.



Questions.	Answers.
1. A rational producer aims either at _____ his profits or _____ his loss.	• Maxmizing. • Minimizing.
2. Producer is in equilibrium only when.	MC = MR.
3. A producer will employ the factors only up to the point where the cost of an additional unit equals its	MR.

Assumptions of the Theory:

1. All the factor units are identical.
2. Perfect competition in the factor market.
3. Variable input coefficients it means that the proportion in which different factors are combined to produce a commodity can be changed.
4. Given stock of each factor and their full employment (called stationary condition).
5. Given state of technology (called stationary condition).
6. This theory hold good in the long run.

Criticism:

1. It is difficult to calculate the MP of a factor because production is a joint efforts of all factors.
2. The theory ignores the role of supply curve of factors in determination of price of a factor.
3. The theory is based on the assumption of perfect competition. It is an unrealistic assumption which rarely exist in the real world.
4. The theory assumes full employment. Full employment rarely exist in the real world.
5. Short period is ignored.
6. It only explains the demand side of factors.

SHREE H. N. SHUKLA COLLEGE OF I.T. & MGMT.
(AFFILIATED TO SAURASHTRA UNIVERSITY)
3- Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot – 360001
Ph. No–(0281)2471645
2 – Vaishalinagar
Nr. Amrapali Railway Crossing
Raiya Road, Rajkot - 360001
Ph.No–(0281)2440478, 2472590

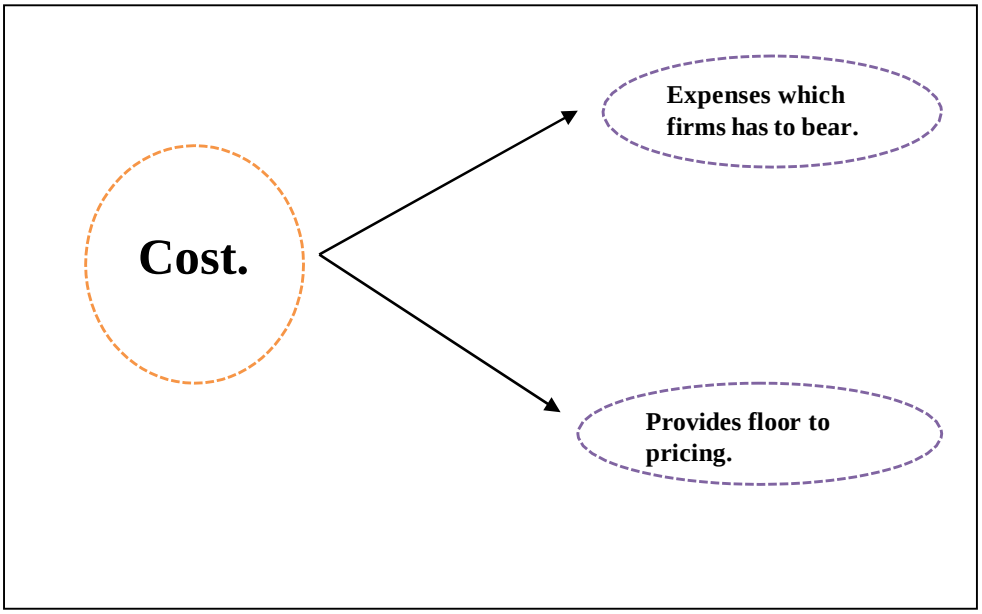
Unit 4: Production Cost Analysis.

- Concept of cost.
- Types of cost.
- Behavior of short run cost curves.
- Behavior of long run cost curves.

Q 1. Explain in detail the behavior of short run cost curves?

Ans: Cost refers to all the expenses which the firms has to bear for producing the commodities.

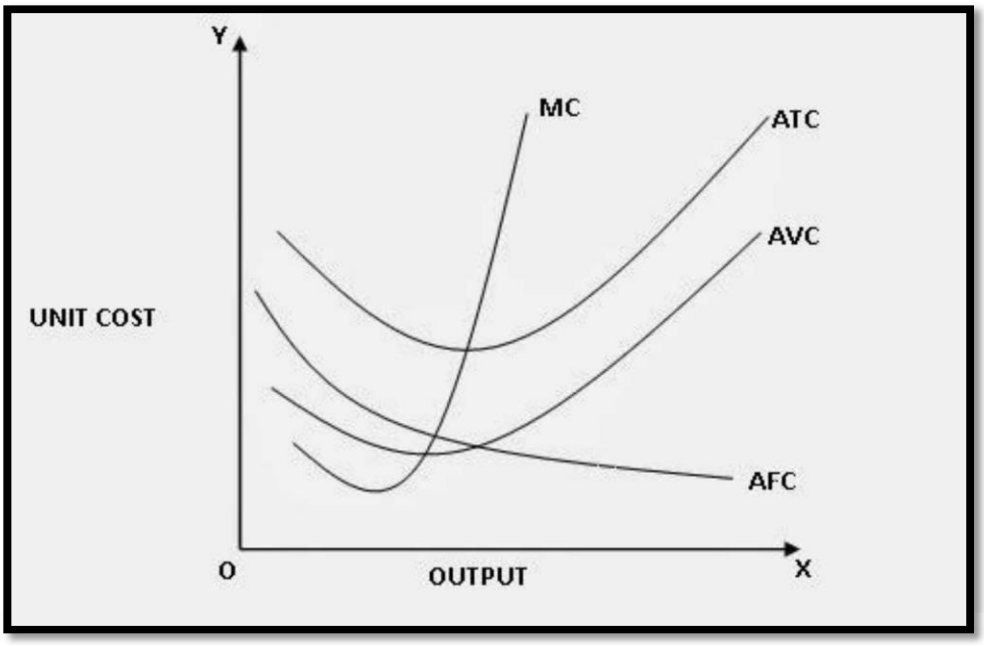
- Cost of production provides floor to pricing.

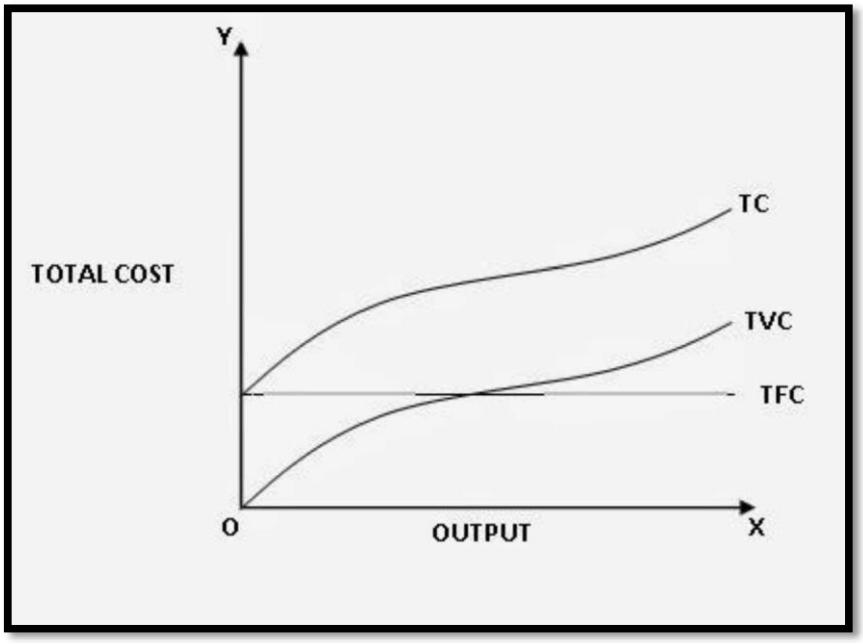


Questions.	Answers.
1. _____refers to all the expenses which the firms has to bear for producing the commodities.	Cost.
2. _____provides floor to pricing.	Cost of production.
3. Cost refers to all the_____which the firms has to bear for producing the commodities.	Expenses.
4. Cost of production provides_____to pricing.	Floor.

Behavior of short run cost curves is explained by the following table & diagram.

Output.	TFC	TVC	TC	AFC	AVC	AC	MC
0	100	0	100	-	-	-	-
1	100	20	120	100	20	120	20
2	100	25	125	50	12.5	62.5	5
3	100	40	140	33.33	13.33	46.66	15
4	100	50	150	25	12.5	37.5	10
5	100	80	180	20	16	36	30





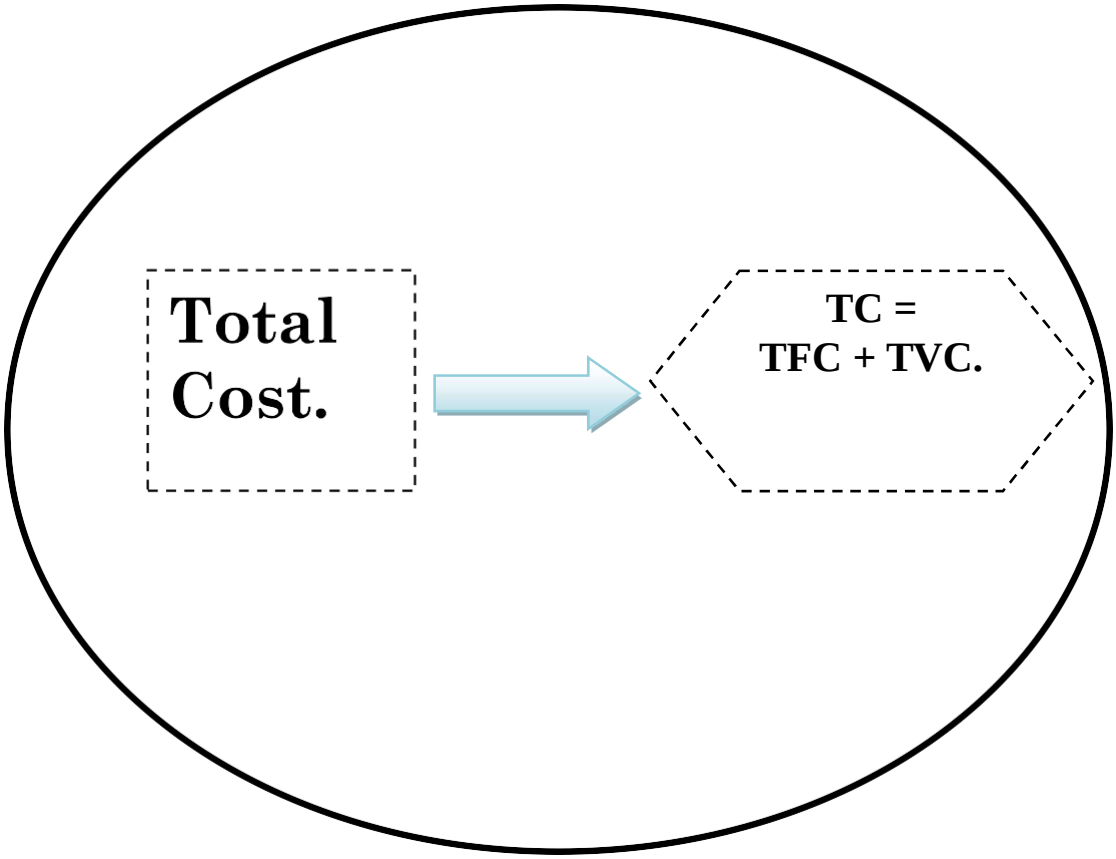
- The above diagram & table shows the behavior of short run cost curves.

- In the above table & diagram we can find the following:

❖ **Total Cost (TC):**

- Total costs are the total expenses incurred by a firm in producing a given quantity of a commodity.
- They include both fixed costs & variable costs.
- Total cost keeps on rising as the volume of output rises.

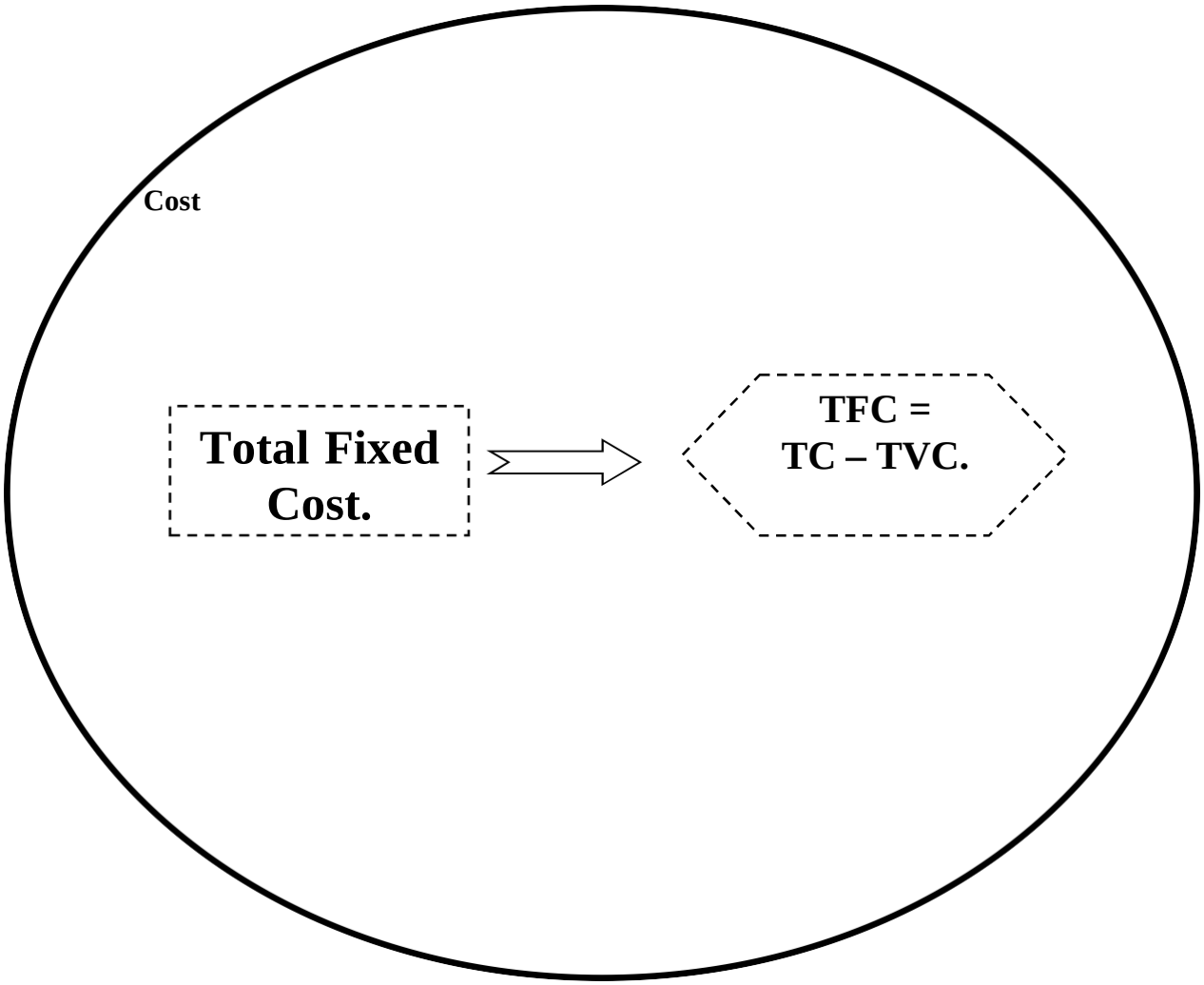
TC = TFC + TVC.



❖ **Total Fixed Cost (TFC):**

- They are those cost of production that do not change with output.
- They are independent of the level of output.
- They have to incurred even when the production is nil.
- They include payments for rent, interest on borrowed money, insurance charges, property tax, depreciation, wages & salaries of permanent staff etc.

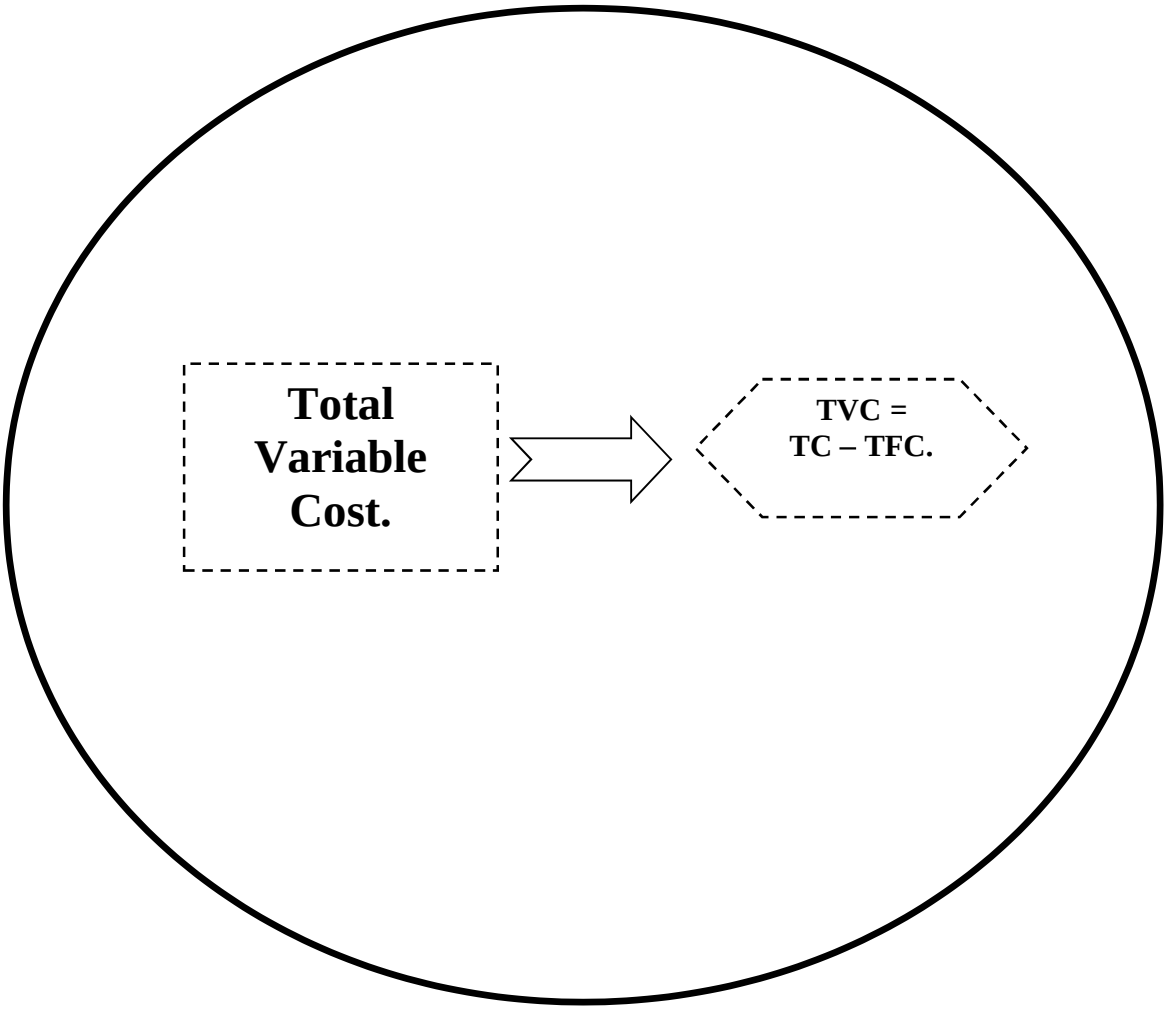
TFC = TC TVC.



❖ **Total Variable Cost (TVC):**

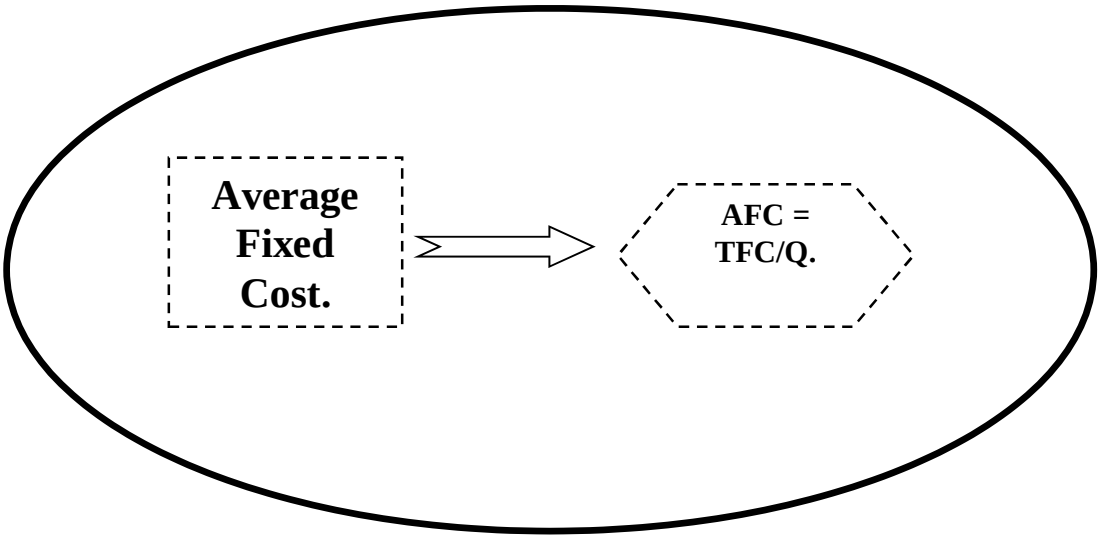
- These cost of production changes directly with the output.
- These costs are nil when production is zero.
- When output falls or increases these costs also falls or increases.
- They include expenses on raw materials, power, water taxes, hiring of labor, advertising etc.

TVC = TC TFC.



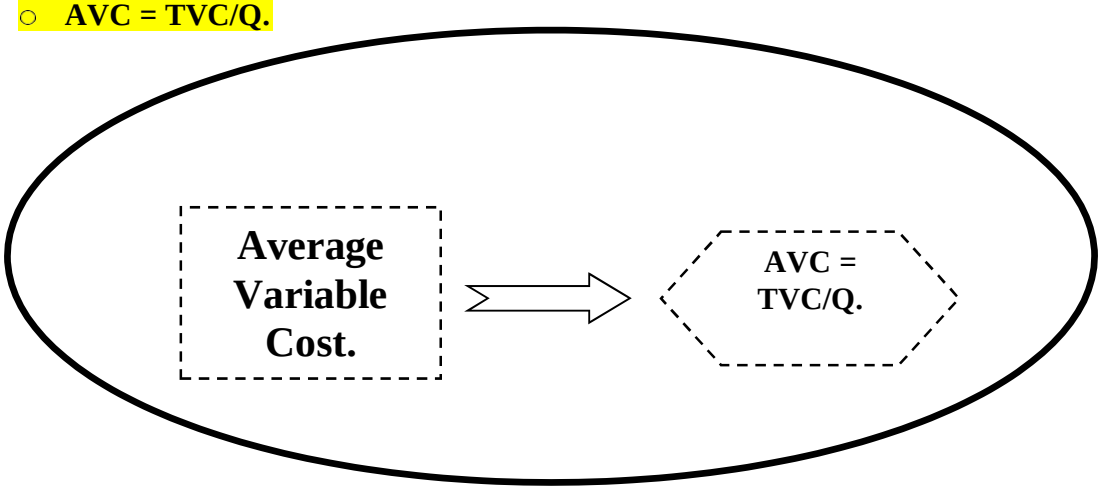
❖ **Average Fixed Cost (AFC):**

- AFC are obtained by dividing the total fixed cost by the number of units produced.
- **AFC = TFC/ Q.**
- This is because when the TFC diminish continuously as output increases.
- This is also because when TFC are divided by the increasing unit of output the result is continuously diminishing AFC.



❖ **Average Variable Cost (AVC):**

- AVC are obtained by dividing the TVC at each level of output by number of units produced.
- **AVC = TVC/Q.**

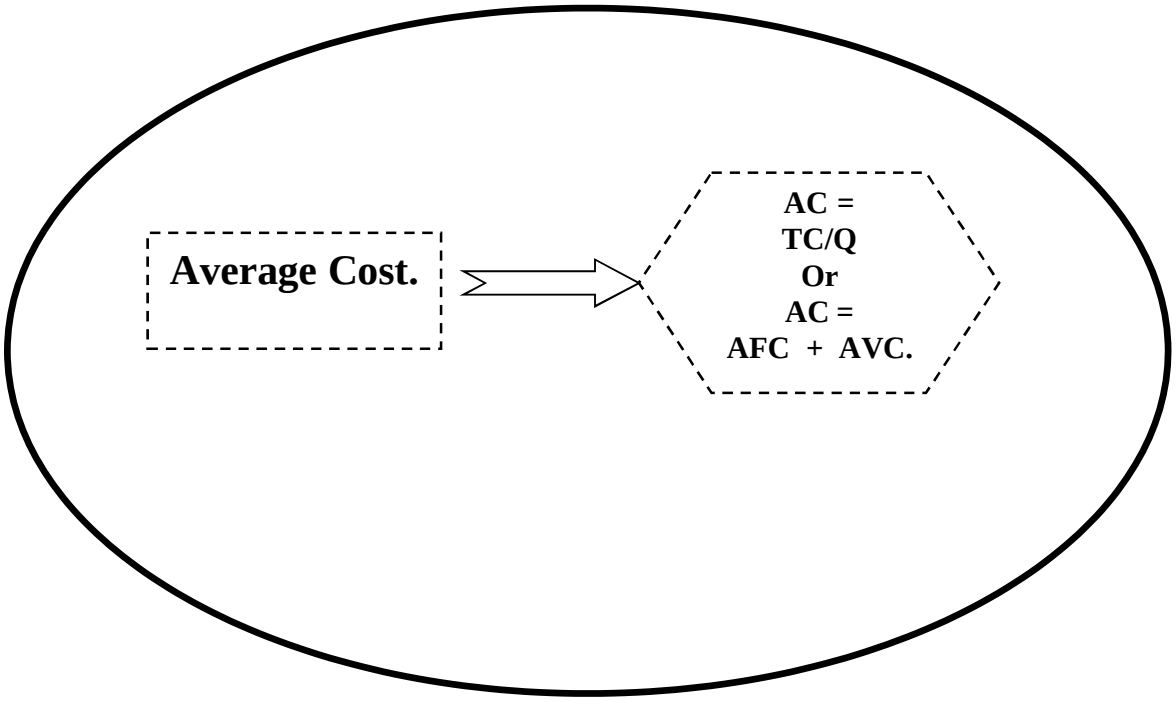


❖ **Average Cost (AC):**

- AC is obtained by dividing the TC at each level of output by the number of units produced.

AC = TC/Q or AC = AFC + AVC.

- AC is obtained by combining AFC & AVC.
- Initially AC are high at low levels of output but as output increases the AC falls because of the decline of both AFC & AVC till they reach the minimum.

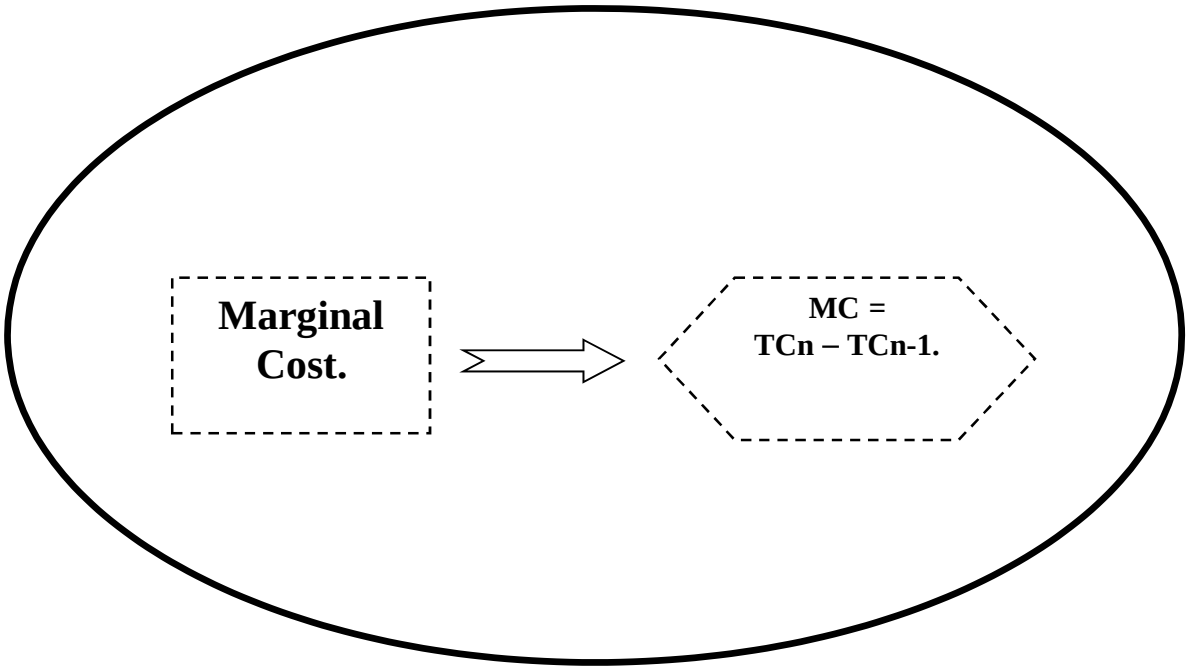


❖ **Marginal Cost (MC):**

- MC is the addition to total cost by producing an additional unit of output.

MC = TCn TCn-1.

- M C initially falls & then rises.



The above diagram & table also shows the relationship between AC & MC which is been stated as follows:

- When AC is falling MC is also falling.
- When MC & AC are filling MC curve lies below the AC curve.
- When AC is rising MC also rises.
- In this case MC curve will lie above the AC curve.
- When AC is minimum MC = AC..
- Thus MC curve intersects the AC curve at its minimum point.

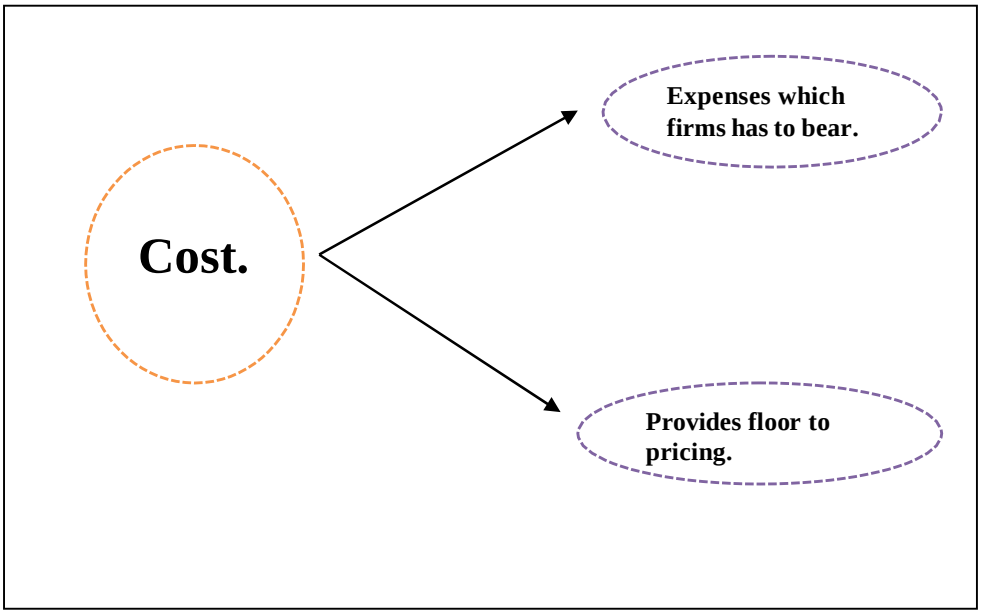
Questions.	Answers.

1. _____ are the total expenses incurred by a firm.	Total Cost.
2. _____ are those costs of production that do not change with output.	Total Fixed Cost.
3. _____are cost of production that change directly with output.	Total Variable Cost.
4. _____is obtained by dividing the _____ by the number of units produced.	○ Average Fixed Cost. ○ Total Fixed Cost.
5. _____is obtained by dividing the _____by the number of units produced.	○ Average Variable Cost. ○ Total Variable Cost.
6. _____ is obtained by dividing the TC at each level of output by the number of units produced.	Average Cost.
7. _____ is the addition to the total cost by producing an additional unit of output.	Marginal Cost.
8. TC =_____.	TFC + TVC.
9. TFC = _____.	TC _ TVC.
10. TVC =_____.	TC _ TFC.
11. AFC = _____.	TFC/Q.
12. AVC = _____.	TVC/Q.
13. AC =_____.	TC/Q Or AFC + AVC.
14. MC **=**_____**.**	TCn _ TCn-1.
15. TFC + TVC =_____.	TC.
16. TC _ TVC =_____.	TFC.
17. TC _ TFC =_____.	TVC.
18. TFC/ Q =_____.	AFC.
19. TVC / Q = _____ _.	AVC.
20. TC/Q =_____. Or AFC + AVC = _____.	AC.
21. TCn - TCn-1 = _____.	MC.

Q 4. Explain in detail the behavior of long run cost curves?

Ans: Cost refers to all the expenses which the firms has to bear for producing the commodities.

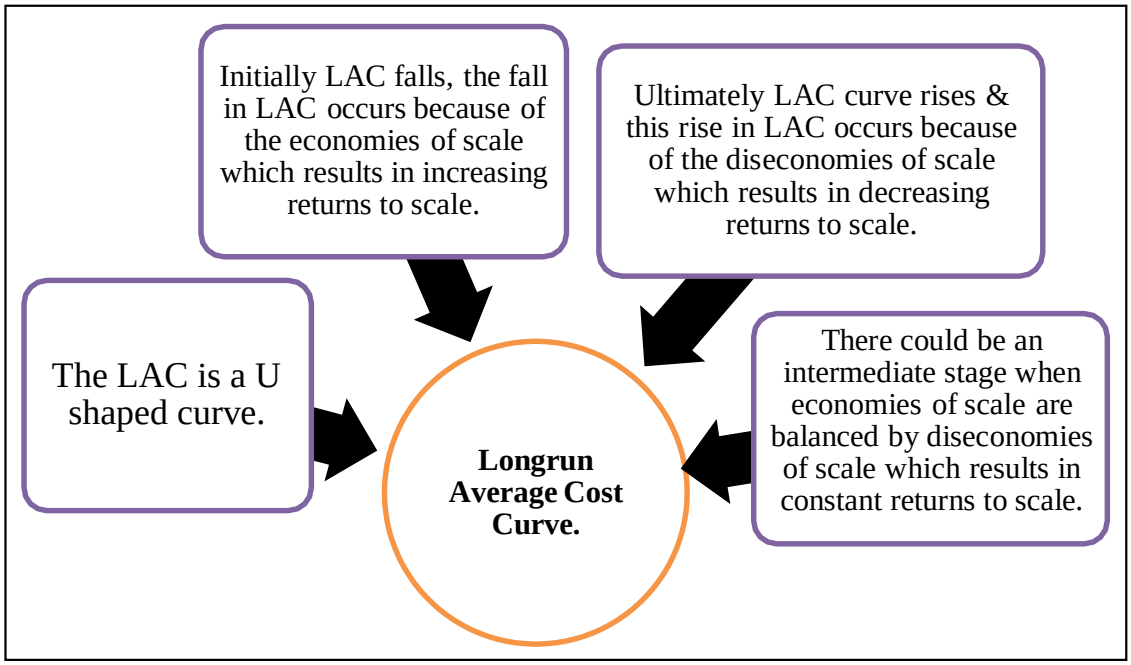
- Cost of production provides floor to pricing.



Questions.	Answers.
1. _____refers to all the expenses which the firms has to bear for producing the commodities.	Cost.
2. _____provides floor to pricing.	Cost of production.
3. Cost refers to all the_____which the firms has to bear for producing the commodities.	Expenses.
4. Cost of production provides _____to pricing.	Floor.

- In long run there is no distinction between the fixed inputs and the variable inputs while the scale of production under goes a change.
- Therefore we talk only about the LAC & the LMC.
- The LAC is a U shaped curve which means that
  - Initially LAC falls, the fall in LAC occurs because of the economies of scale which results in increasing returns to scale.
  - Ultimately LAC curve rises & this rise in LAC occurs because of the diseconomies of scale which results in decreasing returns to scale.

- There could be an intermediate stage when economies of scale are balanced by diseconomies of scale which results in constant returns to scale.



Questions.	Answers.
1. In_____there is no distinction between the	Long run.

fixed & variable output.	
2. The LAC is a _____shaped curve.	U.
3. The ___in the LAC occurs because of the economies of scale which results in increasing returns to scale.	Fall.
4. The __ in LAC occurs because of the diseconomies of scale which results in decreasing returns to scale.	Rise.
5. An _____stage when economies of scale are balanced by diseconomies of scale which results in constant returns to scale.	Intermediate.

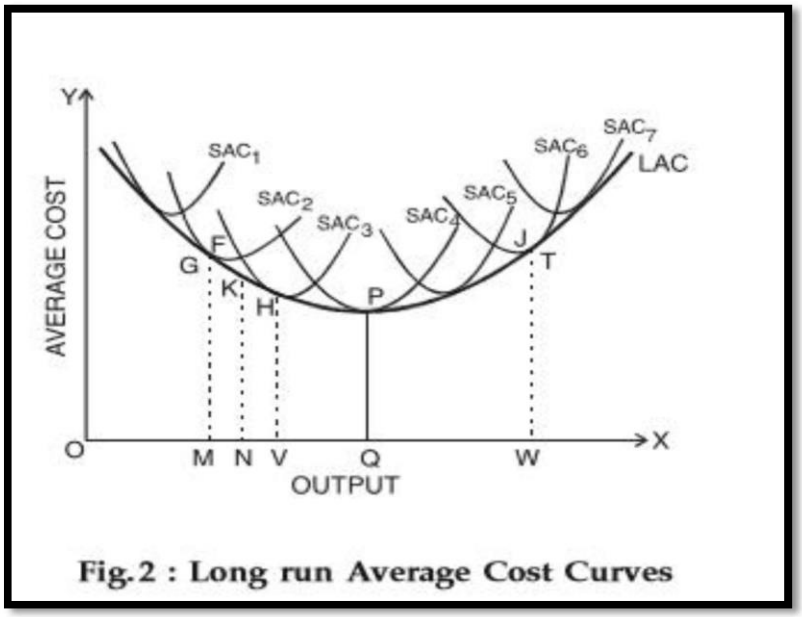
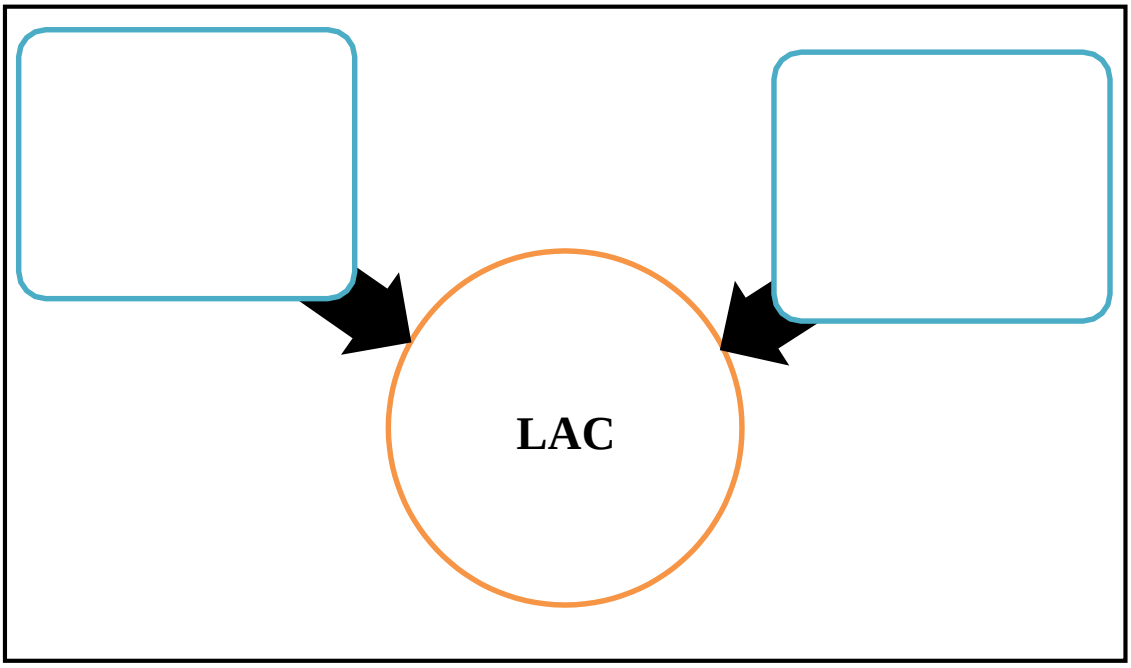


Fig.2 : Long run Average Cost Curves

- As you can see in the figure above, the long run average cost curve is drawn tangential to all SACs.
- In other words, every point on the long run average cost curve is a tangent point on some SAC.

- Hence, whenever a firm desires to produce a certain output, it operates on the corresponding SAC.
- From the Fig. above, you can observe that to produce an output OM, the corresponding point on the long run average cost curve is 'G'. Also, the corresponding SAC is SAC_2.
- Therefore, the firm operates on SAC_2 at point G. Similarly, the firm chooses different SACs based on its output requirement.
- It is also possible for the firm to produce the output OM with SAC_3.
- However, this will lead to a higher cost of production as compared to SAC_2.
- On the other hand, to produce a higher output OV, the firm requires SAC_3. If the firm uses SAC2 for the same, then it results in higher unit similarity.



Relationship between long run average cost curve and marginal cost curve.

- In the long-run, the ability to change capital input allows the firm to reduce costs along its expansion path as we can look at the long-run average (LRAC) and marginal cost curves.
- The most important determinant of the shape of the LRAC and LMC curves is whether there are increasing, constant, or decreasing returns to scale.
- Suppose that the firm's production process exhibits constant returns to scale, and, thus, the average cost of production must be the same for all levels of output.
- Suppose instead, that the firm's production process is subject to increasing returns to scale and the average cost of production falls as output increases.
- Similarly, when there are decreasing returns o scale the average cost of production must be increasing with output. Fig. shows a typical LRAC and LRMC.

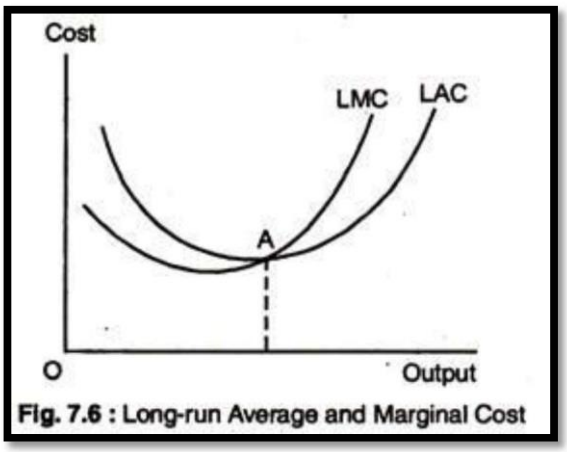
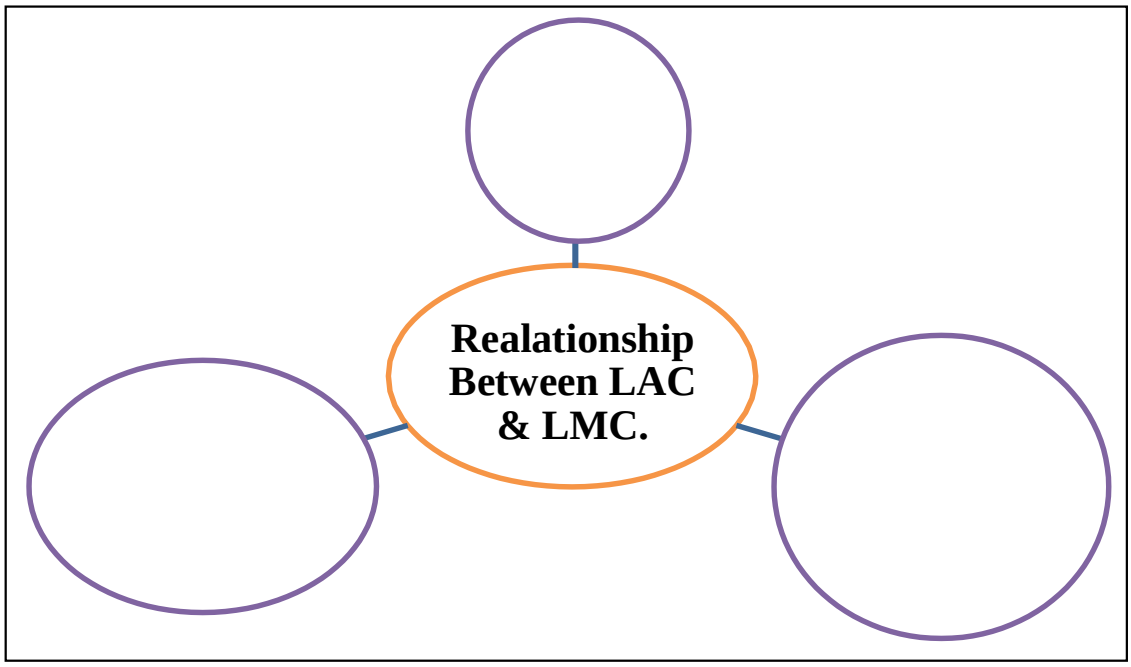


Fig. 7.6 : Long-run Average and Marginal Cost

- The LAC curve is U-shaped, just like the SAC curve but the source of the U-shape is increasing and decreasing returns to scale, rather than diminishing returns to a factor of production.
- In the long-run, it may be in the firm's interest to change the input propositions as the level of output changes.
- When input proportions do change, the concept of returns to scale no longer applies.
- Rather, we can say that a firm enjoys economies of scale when it can double its output at less than twice the cost.
- Correspondingly there are diseconomies of scale when a doubling of output requires more than twice the cost.
- The term economy of scale includes increasing returns to scale as a special case, but it is more general because a lows for input combinations to be altered as the firm changes its output level.
- In this more general setting a U-shaped LRAC curve is consistent with the firm facing economies of scale for relatively low levels of output and diseconomies of scale for higher levels.
- The LMC curve is determined from the LRAC curve; it measures the change in LRTCs as output is increased LMC lie below the ZAC curve when LAC is falling, and above the LAC curve when LAC is rising.
- The two curves intersect at A, where the LAC curve is at its minimum and also where LAC is constant, LAC is equal to LMC.


Realationship
Between LAC
& LMC.