

Managerial economics essay sample

[Profession](#), [Manager](#)



Q1. Define Managerial Economics and explain its main characteristics.

Q2. State and explain the law of demand.

Q3. What is Demand Forecasting? Explain in brief various methods of forecasting demand.

Q4. Define the term equilibrium. Explain the changes in market equilibrium and effects of shifts in supply and demand.

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Q6. Explain cost output relationship with reference to

* Total fixed cost and output

* Total variable cost and output

* Total cost and output

Q1. Define Managerial Economics and explain its main characteristics

Managerial economics is a science that deals with the application of various economic theories, principles, concepts and techniques to business management in order to solve business and management problems. It deals with the practical application of economic theory and methodology to decision-making problems faced by private, public and non-profit making organizations.

The same idea has been expressed by Spencer and Seigelman in the following words. “ Managerial Economics is the integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by the management”.

According to Mc Nair and Meriam, “ Managerial economics is the use of economic modes of thought to analyze business situation”. Brighman and

Pappas define managerial economics as, "the application of economic theory and methodology to business administration practice". Joel dean is of the opinion that use of economic analysis in formulating business and management policies is known as managerial economics.

Features of managerial Economics

1. It is more realistic, pragmatic and highlights on practical application of various economic theories to solve business and management problems.
2. It is a science of decision-making. It concentrates on decision-making process, decision-models and decision variables and their relationships.
3. It is both conceptual and metrical and it helps the decision-maker by providing measurement of various economic variables and their interrelationships.
4. It uses various macro economic concepts like national income, inflation, deflation, trade cycles etc to understand and adjust its policies to the environment in which the firm operates.
5. It also gives importance to the study of non-economic variables having implications of economic performance of the firm. For example, impact of technology, environmental forces, socio-political and cultural factors etc.
6. It uses the services of many other sister sciences like mathematics, statistics, engineering, accounting, operation research and psychology etc to find solutions to business and management problems.

7. It should be clearly remembered that Managerial Economics does not provide ready-made solutions to all kinds of problems faced by a firm. It provides only the logic and methodology to find out answers and not the answers themselves. It all depends on the manager's ability, experience, expertise and intelligence to use different tools of economic analysis to find out the correct answers to business problems.

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Characteristics of Managerial Economics

1. Microeconomics: It studies the problems and principles of an individual business firm or an individual industry. It aids the management in forecasting and evaluating the trends of the market.
2. Normative economics: It is concerned with varied corrective measures that a management undertakes under various circumstances. It deals with goal determination, goal development and achievement of these goals. Future planning, policy-making, decision-making and optimal utilisation of available resources, come under the banner of managerial economics.
3. Pragmatic: Managerial economics is pragmatic. In pure micro-economic theory, analysis is performed, based on certain exceptions, which are far

from reality. However, in managerial economics, managerial issues are resolved daily and difficult issues of economic theory are kept at bay.

4. Uses theory of firm: Managerial economics employs economic concepts and principles, which are known as the theory of Firm or 'Economics of the Firm'. Thus, its scope is narrower than that of pure economic theory.

5. Takes the help of macroeconomics: Managerial economics incorporates certain aspects of macroeconomic theory. These are essential to comprehending the circumstances and environments that envelop the working conditions of an individual firm or an industry. Knowledge of macroeconomic issues such as business cycles, taxation policies, industrial policy of the government, price and distribution policies, wage policies and antimonopoly policies and so on, is integral to the successful functioning of a business enterprise.

6. Aims at helping the management: Managerial economics aims at supporting the management in taking corrective decisions and charting plans and policies for future.

7. A scientific art: Science is a system of rules and principles engendered for attaining given ends. Scientific methods have been credited as the optimal path to achieving one's goals. Managerial economics has been is also called a scientific art because it helps the management in the best and efficient utilisation of scarce economic resources. It considers production costs, demand, price, profit, risk etc. It assists the management in singling out the

most feasible alternative. Managerial economics facilitates good and result oriented decisions under conditions of uncertainty.

8. Prescriptive rather than descriptive: Managerial economics is a normative and applied discipline. It suggests the application of economic principles with regard to policy formulation, decision-making and future planning. It not only describes the goals of an organisation but also prescribes the means of achieving these goals.

The term of demand is different from desire, want, will or wish. In the language of economics, demand has different meaning. Any want or desire will not constitute demand. The term demand refers to total or given quantity of a commodity or a service that are purchased by the consumer in the market at a particular price and at a particular time. The Law of Demand:

It explains the relationship between price and quantity demanded of a commodity. It says that demand varies inversely with the price. The law can be explained in the following manner: “ Keeping other factors that affect demand constant, a fall in price of a product leads to increase in quantity demanded and a rise in price leads to decrease in quantity demanded for the product”. The law can be expressed in mathematical terms as “ Demand is a decreasing function of price”. Symbolically, thus $D = F(p)$ where, D represents Demand, P stands for Price and F denotes the Functional relationship. The law explains the cause and effect relationship between the independent variable [price] and the dependent variable [demand]. The law explains only the general tendency of consumers while

buying a product. A consumer would buy more when price falls due to the following reasons: * A product becomes cheaper.[Price effect]

* Purchasing power of a consumer would go up.[Income effect] * Consumers can save some amount of money.

* Cheaper products are substituted for costly products [substitution effect].

Important Features of Law of Demand:

* There is an inverse relationship between price and quantity demanded. * Price is an independent variable and demand is a dependent variable * It is only a qualitative statement and as such it does not indicate quantitative changes in price and demand. * Generally, the demand curve slopes downwards from left to right.

The operation of the law is conditioned by the phrase “ Other things being equal”. It indicates that given certain conditions, certain results would follow. The inverse relationship between price and demand would be valid only when tastes and preferences, customs and habits of consumers, prices of related goods, and income of consumers would remain constant. Exceptions to the Law of Demand:

Generally speaking, customers would buy more when price falls in accordance with the law of demand. Exceptions to law of demand states that with a fall in price, demand also falls and with a rise in price demand also rises. This can be represented by rising demand curve. In other words, the demand curve slopes upwards from left to right. It is known as an exceptional demand curve or unusual demand curve. It is clear from the

diagram that as price rises from Rs. 4. 00 to Rs. 5. 00, quantity demanded also expands from 10 units to 20 units.

1. Giffen's Paradox: A paradox is an inconsistency or contrary. Sir Robert Giffen, an Irish Economist, with the help of his own example (inferior goods) disproved the law of demand. The Giffen's paradox holds that " Demand is strengthened with a rise in price or weakened with a fall in price". He gave the example of poor people of Ireland who were using potatoes and meat as daily food articles. When price of potatoes declined, customers instead of buying larger quantities of potatoes started buying more of meat (superior goods). Thus, the demand for potatoes declined in spite of fall in its price. 2. Veblen's effect: Thorstein Veblen, a noted American Economist contends that there are certain commodities which are purchased by rich people not for their direct satisfaction, but for their ' snob – appeal' or ' ostentation'. Veblen's effect states that demand for status symbol goods would go up with a rise in price and vice-versa. In case of such status symbol commodities it is not the price which is important but the prestige conferred by that commodity on a person makes him to go for it. More commonly cited examples of such goods are diamonds and precious stones, world famous paintings, commodities used by world famous personalities etc.

Therefore, commodities having ' snob – appeal' are to be considered as exceptions to the law of demand. 3. Fear of shortage: When serious shortages are anticipated by the people, (e. g., during the war period) they purchase more goods at present even though the current price is higher. 4. Fear of future rise in price: If people expect future hike in prices, they buy

more even though they feel that current prices are higher. Otherwise, they have to pay a still high price for the same product. 5. Speculation: Speculation implies purchase or sale of an asset with the hope that its price may rise or fall and make speculative profit. Normally speculation is witnessed in the stock exchange market. People buy more shares only when their prices show a rising trend. This is because they get more profit, if they sell their shares when the prices actually rise. Thus, speculation becomes an exception to the law of demand. 6. Conspicuous consumption: Conspicuous consumption are those items which are purchased by consumers even though their prices are rising on account of their special uses in our modern style of life.

In case of articles like wrist watches, scooters, motorcycles, tape recorders, mobile phones etc, customers buy more in spite of their high prices. 7.

Emergencies: During emergency periods like war, famine, floods, cyclone, accidents etc., people buy certain articles even though the prices are quite high.

8. Ignorance: Sometimes people may not be aware of the prices prevailing in the market. Hence, they buy more at higher prices because of sheer ignorance.

9. Necessaries: Necessaries are those items which are purchased by consumers whatever may be the price. Consumers would buy more necessaries in spite of their higher prices. Changes or Shifts in Demand

It is to be clearly understood that if demand changes only because of changes in the price of the given commodity, in that case there would be either expansion or contraction in demand. Both of them can be explained with the help of only one demand curve. If demand changes not because of

price changes but because of other factors or forces, then in that case there would be either increase or decrease in demand. If demand increases, there would be forward shift in the demand curve to the right and if demand decreases, then there would be backward shift in the demand curve.

Q3. What is Demand Forecasting? Explain in brief various methods of forecasting demand. Meaning and Features

Demand forecasting seeks to investigate and measure the forces that determine sales for existing and new products. Generally companies plan their business – production or sales in anticipation of future demand. Hence forecasting future demand becomes important. The art of successful business lies in avoiding or minimizing the risks involved as far as possible and face the uncertainties in a most befitting manner. Thus Demand Forecasting refers to an estimation of most likely future demand for product under given conditions. Important features of demand forecasting

- * It is an informed and well thought out guesswork.
- * It is in terms of specific quantities
- * A forecast is made for a specific period of time which would be sufficient to take a decision and put it into action. * It is based on historical information and the past data. Demand forecasting is needed to know whether the demand is subject to cyclical fluctuations or not, so that the production and inventory policies, etc, can be suitably formulated. Demand forecasting is generally associated with forecasting sales A firm can make use of the sales forecasts made by the industry as a powerful tool for formulating sales policy and sales strategy. They can become action guides to select the course of

action which will maximize the firm's earnings. To use demand forecasting in an active rather than a passive way, management must recognize the degree to which sales are a result not only of external economic environment but also of the action of the company itself. Managerial uses of demand forecasting:

In the short run:

Demand forecasts for short periods are made on the assumption that the company has a given production capacity and the period is too short to change the existing production capacity. Generally it would be one year period. * Production planning: It helps in determining the level of output at various periods and avoiding under or over production. * Helps to formulate right purchase policy: It helps in better material management, of buying inputs and control its inventory level which cuts down cost of operation. * Helps to frame realistic pricing policy: A rational pricing policy can be formulated to suit short run and seasonal variations in demand. * Sales forecasting: It helps the company to set realistic sales targets for each individual salesman and for the company as a whole. * Helps in estimating short run financial requirements: It helps the company to plan the finances required for achieving the production and sales targets. The company will be able to raise the required finance well in advance at reasonable rates of interest. * Reduce the dependence on chances: The firm would be able to plan its production properly and face the challenges of competition efficiently. * Helps to evolve a suitable labour policy: A proper sales and production policies help to determine the exact number of labourers to be employed in the short run. In the long run:

Long run forecasting of probable demand for a product of a company is generally for a period of 3 to 5 or 10 years. * Business planning: It helps to plan expansion of the existing unit or a new production unit. Capital budgeting of a firm is based on long run demand forecasting. * Financial planning: It helps to plan long run financial requirements and investment programs by floating shares and debentures in the open market. * Manpower planning: It helps in preparing long term planning for imparting training to the existing staff and recruit skilled and efficient labour force for its long run growth. * Business control: Effective control over total costs and revenues of a company helps to determine the value and volume of business. This in its turn helps to estimate the total profits of the firm. Thus it is possible to regulate business effectively to meet the challenges of the market. *

Determination of the growth rate of the firm: A steady and well conceived demand forecasting determine the speed at which the company can grow.

* Establishment of stability in the working of the firm: Fluctuations in production cause ups and downs in business which retards smooth functioning of the firm. Demand forecasting reduces production uncertainties and help in stabilizing the activities of the firm. * Indicates interdependence of different industries: Demand forecasts of particular products become the basis for demand forecasts of other related industries, e. g., demand forecast for cotton textile industry supply information to the most likely demand for textile machinery, colour, dye-stuff industry etc., * More useful in case of developed nations: It is of great use in industrially advanced countries where demand conditions fluctuate much more than supply conditions. The above analysis clearly indicates the significance of demand forecasting in the

modern business set up. Survey Methods: Survey methods help us in obtaining information about the future purchase plans of potential buyers through collecting the opinions of experts or by interviewing the consumers.

These methods are extensively used in short run and estimating the demand for new products. There are different approaches under survey methods.

They are Consumers' interview method: Under this method, efforts are made to collect the relevant information directly from the consumers with regard to their future purchase plans. In order to gather information from consumers, a number of alternative techniques are developed from time to time. Among them, the following are some of the important ones. 1. Survey of buyer's intentions or preferences: It is one of the oldest methods of demand forecasting. It is also called "Opinion surveys". Under this method, consumer-buyers are requested to indicate their preferences and willingness about particular products. They are asked to reveal their 'future purchase plans with respect to specific items. They are expected to give answers to questions like what items they intend to buy, in what quantity, why, where, when, what quality they expect, how much money they are planning to spend etc. Generally, the field survey is conducted by the marketing research department of the company or hiring the services of outside research organizations consisting of learned and highly qualified professionals.

The heart of the survey is questionnaire. It is a comprehensive one covering almost all questions either directly or indirectly in a most intelligent manner. It is prepared by an expert body who are specialists in the field or marketing.

The questionnaire is distributed among the consumer buyers either through mail or in person by the company. Consumers are requested to furnish all relevant and correct information. The next step is to collect the questionnaire from the consumers for the purpose of evaluation. The materials collected will be classified, edited analyzed. If any bias prejudices, exaggerations, artificial or excess demand creation etc., are found at the time of answering they would be eliminated. The information so collected will now be consolidated and reviewed by the top executives with lot of experience. It will be examined thoroughly. Inferences are drawn and conclusions are arrived at. Finally a report is prepared and submitted to management for taking final decisions. * The success of the survey method depends on many factors: * The nature of the questions asked

- * The ability of the surveyed

- * The representative of the samples

- * Nature of the product

- * Characteristics of the market

- * Consumer-buyers behavior, their intentions, attitudes, thoughts, motives, honesty etc. The management should not entirely depend on the results of survey reports to project future demand. Consumer buyers may not express their honest and real views and as such they may give only the broad trends in the market. In order to arrive at right conclusions, field surveys should be regularly checked and supervised. This method is simple and useful to the producers who produce goods in bulk. Here the burden of forecasting is put on customers. However this method is not much useful in estimating the future demand of the households as they run in large numbers and also do

not freely express their future demand requirements. It is expensive and also difficult. Preparation of a questionnaire is not an easy task. At best it can be used for short term forecasting. 2. Direct Interview Method

Experience has shown that many customers do not respond to questionnaire addressed to them even if it is simple due to varied reasons. Hence, an alternative method is developed. Under this method, customers are directly contacted and interviewed. Direct and simple questions are asked to them. They are requested to answer specifically about their budget, expenditure plans, particular items to be selected, the quality and quantity of products, relative price preferences etc. for a particular period of time. There are two different methods of direct personal interviews. They are as follows:

Complete enumeration method:

Under this method, all potential customers are interviewed in a particular city or a region. The answers elicited are consolidated and carefully studied to obtain the most probable demand for a product. The management can safely project the future demand for its products. This method is free from all types of prejudices. The result mainly depends on the nature of questions asked and answers received from the customers. However, this method cannot be used successfully by all sellers in all cases. This method can be employed to only those products whose customers are concentrated in a small region or locality. In case consumers are widely dispersed, this method may not be physically adopted or prove costly both in terms of time and money. Hence, this method is highly cumbersome in nature. Sample survey method or the consumer panel method:

Experience of the experts' show that it is impossible to approach all customers; as such careful sampling of representative customers is essential. Hence, another variant of complete enumeration method has been developed, which is popularly known as sample survey method. Under this method, different cross sections of customers that make up the bulk of the market are carefully chosen. Only such consumers selected from the relevant market through some sampling method are interviewed or surveyed. In other words, a group of consumers are chosen and queried about their preferences in concrete situations. The selection of a few customers is known as sampling. The selected consumers form a panel. This method uses either random sampling or the stratified sampling technique. The method of survey may be direct interview or mailed questionnaire to the selected consumers. On the basis of the views expressed by these selected consumers, most likely demand may be estimated.

The advantage of a panel lies in the fact that the same panel is continued and new expensive panel does not have to be formulated every time a new product is investigated. As compared to the complete enumeration method, the sample survey method is less tedious, less expensive, much simpler and less time consuming. This method is generally used to estimate short run demand by government departments and business firms. Success of this method depends upon the sincere co-operation of the selected customers. Hence, selection of suitable consumers for the specific purpose is of great importance. Even with careful selection of customers and the truthful information about their buying intention, the results of the survey can only be of limited use. A sudden change in price, inconsistency in buying

intentions of consumers, number of sensible questions asked and dropouts from the panel for various reasons put a serious limitation on the practical usefulness of the panel method. Collective opinion method or opinion survey method:

This is a variant of the survey method. This method is also known as “ Sales – force polling” or “ Opinion poll method”. Under this method, sales representatives, professional experts and the market consultants and others are asked to express their considered opinions about the volume of sales expected in the future. The logic and reasoning behind the method is that these salesmen and other people connected with the sales department are directly involved in the marketing and selling of the products in different regions. Salesmen, being very close to the customers, will be in a position to know and feel the customer’s reactions towards the product. They can study the pulse of the people and identify the specific views of the customers. These people are quite capable of estimating the likely demand for the products with the help of their intimate and friendly contact with the customers and their personal judgments based on the past experience. Thus, they provide approximate, if not accurate estimates.

Then, the views of all salesmen are aggregated to get the overall probable demand for a product. Further, these opinions or estimates collected from the various experts are considered, consolidated and reviewed by the top executives to eliminate the bias or optimism and pessimism of different salesmen. These revised estimates are further examined in the light of factors like proposed change in selling prices, product designs and

advertisement programs, expected changes in the degree of competition, income distribution, population etc. The final sales forecast would emerge after these factors have been taken into account. This method heavily depends on the collective wisdom of salesmen, departmental heads and the top executives. It is simple, less expensive and useful for short run forecasting particularly in case of new products. The main drawback is that it is subjective and depends on the intelligence and awareness of the salesmen. It cannot be relied upon for long term business planning. Delphi Method or Experts Opinion Method:

This method was originally developed at Rand Corporation in the late 1940's by Olaf Helmer, Dalkey and Gordon. This method was used to predict future technological changes. It has proved more useful and popular in forecasting non-economic rather than economic variables. It is a variant of opinion poll and survey method of demand forecasting. Under this method, outside experts are appointed. They are supplied with all kinds of information and statistical data. The management requests the experts to express their considered opinions and views about the expected future sales of the company. Their views are generally regarded as most objective ones. Their views generally avoid or reduce the “ Halo - Effects” and “ Ego - Involvement” of the views of the others. Since experts' opinions are more valuable, a firm will give lot of importance to them and prepare their future plan on the basis of the forecasts made by the experts. End Use or Input - Output Method

Under this method, the sale of the product under consideration is projected on the basis of demand surveys of the industries using the given product as an intermediate product. The demand for the final product is the end – use demand of the intermediate product used in the production of the final product. An intermediate product may have many end – users, For e. g., steel can be used for making various types of agricultural and industrial machinery, for construction, for transportation etc. It may have the demand both in the domestic market as well as international market. Thus, end – use demand estimation of an intermediate product may involve many final goods industries using this product, at home and abroad.

Once we know the demand for final consumption goods including their exports we can estimate the demand for the product which is used as intermediate good in the production of these final goods with the help of input – output coefficients. The input – output table containing input – output coefficients for particular periods are made available in every country either by the Government or by research organizations. This method is used to forecast the demand for intermediate products only. It is quite useful for industries which are largely producers’ goods, like aluminium, steel etc. The main limitation of the method is that as the number of end – users of a product increase, it becomes more inconvenient to use this method. Q4.

Define the term equilibrium. Explain the changes in market equilibrium and effects of shifts in supply and demand. Meaning of equilibrium

The word equilibrium is derived from the Latin word “ aequilibrium” which means equal balance. It means a state of even balance in which opposing

forces or tendencies neutralize each other. It is a position of rest characterized by absence of change. It is a state where there is complete agreement of the economic plans of the various market participants so that no one has a tendency to revise or alter his decision. In the words of professor Mehta: “ Equilibrium denotes in economics absence of change in movement.” Market Equilibrium:

When the supply and demand curves intersect, the market is in equilibrium. This is where the quantity demanded and quantity supplied are equal. The corresponding price is the equilibrium price or market-clearing price, the quantity is the equilibrium quantity. Changes in Market Equilibrium:

The changes in equilibrium price will occur when there will be shift either in demand curve or in supply curve or both: Supply and demand is an economic model of price determination in a market. It concludes that in a competitive market, the unit price for a particular good will vary until it settles at a point where the quantity demanded by consumers (at current price) will equal the quantity supplied by producers (at current price), resulting in an economic equilibrium of price and quantity. The four basic laws of supply and demand are:

1. If demand increases and supply remains unchanged, then it leads to higher equilibrium price and higher quantity
2. If demand decreases and supply remains unchanged, then it leads to lower equilibrium price and lower quantity.
3. If supply increases and demand remains unchanged, then it leads to lower equilibrium price and higher quantity.
4. If supply decreases

and demand remains unchanged, then it leads to higher equilibrium price and lower quantity.

Effects of Shift in demand

Demand changes when there is a change in the determinants of demand like the income, tastes, prices of substitutes and complements, size of the population etc. If demand raises due to a change in any one of these conditions the demand curve shifts upward to the right. If, on the other hand, demand falls, the demand curve shifts downward to the left. Such rise and fall in demand are referred to as increase and decrease in demand. A change in the market equilibrium caused by the shifts in demand can be explained with the help of a diagram.

Effects of Changes in Demand and Supply:

Changes can occur in both demand and supply conditions. The effects of such changes on the market equilibrium depend on the rate of change in the two variables. If the rate of change in demand is matched with the rate of change in supply there will be no change in the market equilibrium, the new equilibrium shows expanded market with increased quantity of both supply and demand at the same price. This is made clear from the diagram below:

Similar will be the effects when the decrease in demand is greater than the decrease in supply on the market equilibrium.

Q5. Explain features of LAC curve with a diagram

Features of long run AC curves:

1. Tangent curve: Different SAC curves represent different operational capacities of different plants in the short run. LAC curve is locus of all these points of tangency. The SAC curve can never cut a LAC curve though they are tangential to each other. This implies that for any given level of output, no SAC curve can ever be below the LAC curve. Hence, SAC cannot be lower than the LAC in the long run. Thus, LAC curve is tangential to various SAC curves.

2. Envelope curve: It is known as Envelope curve because it envelopes a group of SAC curves appropriate to different levels of output.

3. Flatter U-shaped or dish-shaped curve: The LAC curve is also U shaped or dish shaped cost curve. But It is less pronounced and much flatter in nature. LAC gradually falls and rises due to economies and diseconomies of scale.

4. Planning curve: The LAC curve is described as the Planning Curve of the firm because it represents the least cost of producing each possible level of output. This helps in producing optimum level of output at the minimum LAC. This is possible when the entrepreneur is selecting the optimum scale plant. Optimum scale plant is that size where the minimum point of SAC is tangent to the minimum point of LAC.

5. Minimum point of LAC curve should be always lower than the minimum point of SAC curve: This is because LAC can never be higher than SAC or SAC can never be lower than LAC. The LAC curve will touch the optimum plant SAC curve at its minimum point. A rational entrepreneur would select the optimum scale plant. Optimum scale plant is that size at which SAC is

tangent to LAC, such that both the curves have the minimum point of tangency. In the diagram, OM2 is regarded as the optimum scale of output, as it has the least per unit cost. At OM2 output $LAC = SAC$.

LAC curve will be tangent to SAC curves lying to the left of the optimum scale or right side of the optimum scale. But at these points of tangency, neither LAC is minimum nor will SAC be minimum. SAC curves are either rising or falling indicating a higher cost Managerial Use of LAC

The study of LAC is of greater importance in managerial decision making process.

It helps the management in the determination of the best size of the plant to be constructed or when a new one is introduced in getting the minimum cost output for a given plant. But it is interested in producing a given output at the minimum cost. The LAC curve helps a firm to decide the size of the plant to be adopted for producing the given output. For outputs less than cost lowering combination at the optimum scale i. e., when the firm is working subject to increasing returns to scale, it is more economical to under use a slightly large plant operating at less than its minimum cost – output than to overuse smaller unit. Conversely, at output beyond the optimum level, that is when the firm experience decreasing return to scale, it is more economical to over use a slightly smaller plant than to under use a slightly larger one. Thus, it explains why it is more economical to over use a slightly small plant rather than to under use a large plant.

LAC is used to show how a firm determines the optimum size of the plant. An optimum size of plant is one that helps in best utilization of resources in the most economical manner.

Long Run Marginal cost:

A long-run marginal cost curve can be derived from the long-run average cost curve. Just as the SMC is related to the SAC, similarly the LMC is related to the LAC and, therefore, we can derive the LMC directly from the LAC. In the diagram we have taken three plant sizes (for the sake of simplicity) and the corresponding three SAC and SMC curves. The LAC curve is drawn by enveloping the family of SAC curves. The points of tangency between the SAC and the LAC curves indicate different outputs for different plant sizes. If the firm wants to produce ON output in the long run, it will have to choose the plant size corresponding to SAC1. The LAC curve is tangent to SAC1 at point A. For ON output, the average cost is NA and the corresponding marginal cost is NB. If LAC curve is tangent to SAC1 curve at point A, the corresponding LMC curve will have to be equal to SMC1 curve at point B. The LMC will pass through point B.

In other words, where LAC is equal to SAC curve (for a given output) the LMC will have to be equal to a given SMC. If output OQ is to be produced in the long run, it will be done at point c which is the point of tangency between SAC2 and the LAC. At point C, the short-run average cost (SAC2) and the short-run marginal cost (SMC2) are equal and, therefore, the LAC for output OQ is QC and the corresponding LMC is also QC. The LMC curve will, therefore, pass through point C. Finally, for output OR, at point D the LAC is

tangent to SAC₃. For OR output at point E LMC is passing through SMC₃. By connecting points B, C and E, we can draw the long-run marginal cost curve.

Cost of Production: Formulas

Q6. Explain cost output relationship with reference to

- * Total fixed cost and output
- * Total variable cost and output
- * Total cost and output

Cost-output relationship and nature and behavior of cost curves in the short run In order to study the relationship between the level of output and corresponding cost of production, we have to prepare the cost schedule of the firm. A cost-schedule is a statement of a variation in costs resulting from variations in the levels of output. It shows the response of cost to changes in output. A hypothetical cost schedule of a firm has been represented in the following table.

On the basis of the above cost schedule, we can analyse the relationship between changes in the level of output and cost of production. If we represent the relationship between the two in a geometrical manner, we get different types of cost curves in the short run. In the short run, generally we study the following kinds of cost concepts and cost curves. 1. Total fixed cost (TFC)

TFC refers to total money expenses incurred on fixed inputs like plant, machinery, tools & equipments in the short run. Total fixed cost corresponds to the fixed inputs in the short run production function. TFC remains the

same at all levels of output in the short run. It is the same when output is nil. It indicates that whatever may be the quantity of output, whether 1 to 6 units, TFC remains constant. The TFC curve is horizontal and parallel to OX-axis, showing that it is constant regardless of output per unit of time. TFC starts from a point on Y-axis indicating that the total fixed cost will be incurred even if the output is zero. In our example, Rs 360 = 00 is TFC. It is obtained by summing up the product or quantities of the fixed factors multiplied by their respective unit price.

2. Total variable cost (TVC)

TVC refers to total money expenses incurred on the variable factor inputs like raw materials, power, fuel, water, transport and communication etc, in the short run. Total variable cost corresponds to variable inputs in the short run production function. It is obtained by summing up the production of quantities of variable inputs multiplied by their prices. The formula to calculate TVC is as follows. $TVC = TC - TFC$. $TVC = f(Q)$ i. e. TVC is an increasing function of output. In other words TVC varies with output. It is nil, if there is no production. Thus, it is a direct cost of output. TVC rises sharply in the beginning, gradually in the middle and sharply at the end in accordance with the law of variable proportion. The law of variable proportion explains that in the beginning to obtain a given quantity of output, relative variation in variable factors-needed are in less proportion, but after a point when the diminishing returns operate, variable factors are to be employed in a larger proportion to increase the same level of output. TVC curve slope upwards from left to right. TVC curve rises as output is expanded. When output is Zero, TVC also will be zero. Hence, the TVC curve starts from the origin.

3. Total cost (TC)

The total cost refers to the aggregate money expenditure incurred by a firm to produce a given quantity of output. The total cost is measured in relation to the production function by multiplying the factor prices with their quantities. $TC = f(Q)$ which means that the T. C. varies with the output. Theoretically speaking TC includes all kinds of money costs, both explicit and implicit cost. Normal profit is included in the total cost as it is an implicit cost. It includes fixed as well as variable costs. Hence, $TC = TFC + TVC$. TC varies in the same proportion as TVC. In other words, a variation in TC is the result of variation in TVC since TFC is always constant in the short run. The total cost curve is rising upwards from left to right. In our example the TC curve starts from Rs. 360-00 because even if there is no output, TFC is a positive amount. TC and TVC have same shape because an increase in output increases them both by the same amount since TFC is constant. TC curve is derived by adding up vertically the TVC and TFC curves. The vertical distance between TVC curve and TC curve is equal to TFC and is constant throughout because TFC is constant.