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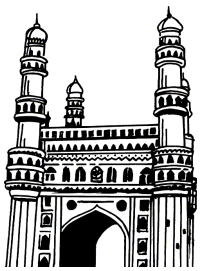

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SYLLABUS

UNIT - I

Introduction to Business Economics:

Definition, Nature and Scope, Relationship with other disciplines – business decision making process- The role of managerial economist- Basic economic principles – the concept of opportunity cost, Marginalism, Equi-marginalism, incremental concept, Time perspective, discounting principle, risk and uncertainty.

UNIT - II

Theory of Demand and Supply:

Demand Analysis - demand function, law of demand, determinants of demand, types of demand. Elasticity of demand, types, Measurement and significance of Elasticity of Demand. Demand Forecasting, Need for Demand Forecasting, Methods of Demand Forecasting.

Supply – Supply function, determinants of supply, law of supply, Elasticity of Supply.

UNIT - III

Production and Cost Analysis:

Production function, Production function with one, two variables, Cobb-Douglas Production Function, Marginal Rate of Technical Substitution, Isoquants and Isocosts, Returns to Scale, Economies of scale - Innovations and global competitiveness. Cost concepts, determinants of cost, cost-output relationship in the short run and long run, short run vs. long run costs, average cost curves, Break Even Analysis.

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UNIT I

Introduction to Business Economics: Definition, Nature and Scope, Relationship with other disciplines – business decision making process- The role of managerial economist- Basic economic principles – the concept of opportunity cost, Marginalism, Equi-marginalism, incremental concept, Time perspective, discounting principle, risk and uncertainty.

1.1 Introduction to Business Economics

1.1.1 Definition

Q1. Define Business Economics.

Ans : **(July-18)**

Business Economics, also called Managerial Economics, is the application of economic theory and methodology to business. Business involves decision-making; and business economics serves as a bridge between economic theory and decision-making in the context of business. Economic theories, economic principles, economic laws, economic equations, and economic concepts are used for decision making. On this ground students of commerce should know the importance of basic theories in actual business application.

Business economics is the study of the financial issues and challenges faced by corporations operating in a specified marketplace or economy. Business economics deals with issues such as business organization, management, expansion and strategy.

Business economics assists in the following,

(a) It helps in solving the business problems easily.

(b) It helps in improving the quality and accuracy of decisions.

(c) It facilitates in taking the right decision.

Thus, business economics deals with analyzing allocation of the resources available to a firm or other management among the activities of that unit.

The outcomes of positive analysis does not change with the changes in the norms. Positive statements are conditional in nature.

Meaning of Business Economics

Business economics is that part of economics which are related to economic activities and sole aim to growth in business. Every business is operated by some resources and these are limited. Business economics tells the techniques about how to utilize resources for maximum satisfaction.

Definitions of Business Economics

According to MeNair and Meriam, " Managerial economics consists of the use of economic modes of thought to analysis business situations."

According to Joel Dean, "The purpose of managerial economics is to show how economic analysis can be used in formulating business policies."

According to Mansfield, "Managerial economics attempts to bridge the gap between the purely analytically problems that intrigue many economic theorists and the day-to-day decisions that the management must face."

According to Hague, "Managerial economics is concerned with using logic of economics, mathematics and statistics of providing effective ways thinking about business decision problem."

According to Pappas, Brigham and Hirschey, "Managerial economics applies economic theory and methodology to business and administrative decision making."

Q2. What are the objectives of business economics?

Ans :

The various objectives of business economics are:

1. To integrate economic theory with business practice.
2. To apply economic concepts: and principles to solve business problems.
3. To employ the most modern instruments and tools to solve business problems.
4. To allocate the scarce resources in the optimal manner.
5. To make overall development of a firm.
6. To help achieve other objectives of a firm like attaining industry leadership, expansion of the market share etc.
7. To minimize risk and uncertainty
8. To help in demand and sales forecasting.
9. To help in operation of firm by helping in planning, organizing, controlling etc.
10. To help in formulating business policies.
11. To help in profit maximization.

Q3. Explain the characteristics of business economics.

Ans :

The following characteristics of business economics will indicate its nature:

1. Business Economics is a Normative Science

Managerial economics is a normative science. It is concerned with what management should do under particular circumstances. It determines the goals of the enterprise. Then it develops the ways to achieve these goals.

2. Pragmatic

Managerial economics is pragmatic. It concentrates on making economic theory more application oriented. It tries to solve the managerial problems in their day-today functioning.

3. Prescriptive

Managerial economics is prescriptive rather than descriptive. It prescribes solutions to various business problems.

4. Uses Theory of Firm

Business economics largely uses the body of economic concepts and principles towards solving the business problems. Managerial economics is a special branch of economics to bridge the gap between economic theory and managerial practice.

5. Management Oriented

The main aim of business economics is to help the management in taking correct decisions and preparing plans and policies for future. Managerial economics analyses the problems and give solutions just as doctor tries to give relief to the patient.

7. Multi Disciplinary

Managerial economics make use of most modern tools of mathematics, statistics and operation research. In decision making and planning principles include accounting, finance, marketing, production and personnel etc.

8. Art and Science

Managerial economics is both a science and an art. As a science, it establishes relationship between cause and effect by collecting, classifying and analyzing the facts on the basis of certain principles. It points out to the

objective and also shows the way to attain the said objectives.

1.1.2 Nature and Scope Business Economics

Q4. Explain the nature of business economics.

Ans : **(Jan.-20, July-18)**

The nature of business economics can be summarized as follows:

1. Demand Forecasting

Demand forecasting is an important topic studied in Business Economics. Every business firm initiates and continues its production process on the basis of the anticipation of more demand for its goods in the future. It makes research and conducts market survey with a view to know the tastes and fashions of the consumers. It pools up the resources and starts production for meeting the future demand. Business economics analyses the demand behaviour and forecasts the quantity demanded by the consumers.

2. Cost Analysis

Business Economics deals with the analysis of different costs incurred by the business firms. Every firm desires to minimize its costs and increase its output by securing several economies of scale. But is does not know in advance about the exact costs involved in production process. Business Economics deals with the cost estimates and acquaints the entrepreneurs with the cost analysis of their firm.

3. Profit Analysis

Every business firm aims to secure maximum profits. But at the same time it faces uncertainty and risk in getting profits. It has to make innovations in production and marketing of its goods. Business Economics deals with the matters relating to profit analysis like profit techniques, policies and break-even analysis.

4. Capital Management

Capital management is another topic dealt in Business Economics. It denotes planning and control of capital expenditure in business organization. It studies matters like cost of capital, rate of return, selection of best project etc.

5. Effective Utilization of Business Resources

Business economics study is very helpful for effective utilization of business resources. It determines every factors price on supply and demand of such factor so, that the price becomes optimize by this supply demand analysis.

6. Effective use of Economic Policies for Business Development

Business economics makes different economic policies under macro economics and these policies utilize for business and trade development. For instance, we can take monetary policies. In monetary policies, RBI has power to change CRR and other interest rate for development of business.

Q5. Explain the scope of business economics.

Ans : **(Jan.-20, July-18, Jan.-18)**

The scope of managerial economics include all the economic concepts, theories, ideas, principles, tools and techniques that can be used to analyze the business environment and find solutions to practical business problems. The following business areas can be considered as the scope of managerial economics.

1. Objectives of a Business Firm or Organization

Managerial economics provides a sound framework by facilitating a business firm to frame its objectives both in the short-run and long-run.

2. Resource Allocation

Managerial economics provide the methods of effective resource allocation. It mainly aims at achieving high output through low and proper allocation of resources.

3. Demand Analysis and Demand Forecasting

It suggests the methodologies for analyzing the demand of a product. The demand forecasting techniques it provides are proven to be quite efficient for meeting the competition.

4. Competitive Analysis

The techniques provided by managerial economics facilities a firm to withstand in a competitive situation.

5. Strategic Planning

Managerial economics guides a business manager in making strategic decisions.

6. Production Management

Managerial economics plays a vital role in production management. It's effective tools helps to plan the business schedule, regulate the production process and effectively place the output in the market.

7. Cost Analysis

Managerial economics provide various cost concepts and cost curves that facilitate in determining cost-output relationship both in short-run and long-run.

8. Pricing Strategies

Managerial economics provide various cost concepts and cost curves that facilitate in determining cost-output relationship both in short-run and long-run.

9. Market Structure Analysis

The techniques and concepts of managerial economics analyze the market structure and guide in taking necessary decisions that are required for a firm to exist in the market.

10. Investment and Capital Budgeting Decisions

The concept of opportunity cost provided by managerial economics facilitates in making appropriate investment decisions and choose the best alternative that fits the organizational requirements.

11. Marketing Strategies

Managerial economics provide marketing strategies like

- Product policy
- Sales promotion
- Segmentation, Targeting and positioning of markets.

12. Economics of Scale

Managerial economics in the long-run helps a firm to enjoy economics and dis-economics of scale.

13. Profit Management

Managerial economics mainly concentrates on the primary goal of a firm i.e., profit maximization. It deals with the activities like profit estimation and profit planning.

14. Input and Output Analysis

The concept of production function managerial economics depicts the input and output relationship.

15. Inventory Control

Effective inventory control techniques of managerial economics readily meet the organizational requirements.

Q6. What are the Responsibilities of Business economics?

Ans :

A business economist is well familiar with his responsibilities. He must keep in the mind the main objective of making a reasonable profit on the invested capital in his firm. Firms are not always

after profit-maximization, but to continue in business, every firm has to operate for profit. Therefore, a business economist has the main responsibility of helping the management to make more profits than before. All his other responsibilities flow from this basic obligation. The responsibilities of a business economists are summarized below :

1. Making successful Forecasts

Managements have to take decisions concerning the future and it is uncertain. This uncertainty cannot be eliminated altogether but it can be reduced through scientific forecasts of the economic environment to his employers. This is required for business planning. If a business economist can make successful forecasts about business trends, the management will hold him in great esteem.

A wise managerial economist will revise his forecasts from time to time keeping in view new developments in his business. As soon as he finds a change in his forecasts, he has to alert the management about it. He assists the management in making the needed adjustments. This will help him to strengthen his position as a member of the managerial team.

2. Maintaining Relationships

The managerial economists must establish and maintain contacts with data sources for his analysis and forecasts. He makes contacts with individual who are specialists in the different fields. He must join professional associations and subscribe to the journals giving him fresh and latest information. In other words, his business biggest quality is his ability to obtain information quickly by establishing contacts with the sources of such information.

3. Earning full Status on the Managerial team

A business economist has to participate in decision-making and forward- planning. For this he must be able to earn full status on the business team. He must be prepared to take up assignments on special project also. He should be able to express himself clearly so that his advice is understood and accepted. Finally, he must be in tune with the industry's thinking, and not lose the national perspective in giving advice to the management.

Thus, we can conclude from our discussion that managerial economists can earn an important place in the managerial team only if they understand and undertake his responsibilities.

1.1.3 Relationship with other disciplines

Q7. Explain how managerial economics is link with other disciplines.

Ans : **(Nov.-21)**

Managerial Economics and Production

Production is a type of an activity wherein, inputs are transformed into outputs. It deals with several manufacturing activities and its operations include economic activity which generates economic utility. Usually, operations personnel have four primary responsibilities to fulfill during the production of goods, the delivery of service and those responsibilities are as follows,

1. The supply of right quantity at right time.
2. The maintenance of time-bound deliveries.
3. The fulfillment of quality and quantity requirement of customers.
4. Economising the production operations.

The personnel performing all such purposes need to focus on several inter-related areas such as, production planning, production control, quality control, method analysis, materials handling, plant layout, inventory control, work management and wage incentives. Knowledge of economics enable the production and operations personnel to economise their production operations along with efficiently dealing with the following aspects,

(a) For monitoring and reviewing the input market.

(b) For analysing the market maturity, technical maturity and competitive maturity associated with different product offerings.

(c) For making decisions related to the production targets.

i) Managerial Economics and Marketing

Generally, managerial economics facilitates marketing in two different ways which are as follows,

1. It acts as a basic discipline through which tools and concepts of analysis can be offered.
2. It serves as an integrating area wherein the judgements have to be made on the optimum sales volume under the given cost function of a firm, market structure and the objective function which needs to be optimized.

Economics play a significant role in marketing in the context of pricing decisions. Among the three fundamental aspects of pricing namely value theory, price theory and pricing techniques, the first two aspects come under the purview of managerial economics, whereas the third constitutes an integral part of both managerial economics and marketing. For pricing techniques there are several practices in different organizations. But in most of the organization, pricing practices are usually managed by the accounts staff like chartered accountants and company secretaries. But, in marketing there exists several areas which as considerably (or) heavily relies on economic theory, such areas are as follows,

(a) Theory of the firm

(b) Concepts of goals and goal formulation

(c) Market structures

(d) Pricing.

(a) Theory of the Firm

The lack of awareness regarding the effective 'marketing theory of the firm' is considered as responsible for the constant decline in the role of marketing at higher levels. The key reason behind such decline is the absence of systematic procedure of knowledge possessed by the marketing managers. However, this form of knowledge plays a crucial role in assisting their functioning more efficiently at the top level.

(b) Goals and the Goal Formulation

Marketing relies upon the managerial economics and other functional areas of management for the formulation of goals and for the establishment of goal system. But marketing has displayed a consistency towards the concept of corporate goals. The objectives of marketing have been formulated on the basis of maximizing behaviour which are neo-classical in character after making few changes. The fundamental assumption of neo-classical economics namely profit maximization involves normative literature in marketing management.

(c) Market Structure

Market structure is considered as the key area where marketing substantially rely on economic theory. Economic theory sets the boundaries of market on the basis of different criteria like number of buyers and sellers, nature of the product, and access to the nature of the flow of information.

(d) Pricing

Pricing is another area of marketing which is closely dependent on economics. The value theory of pricing which decides the value of commodity (or) service in relation to another is not currently in the commodity market, but it is used in the determination of the exchange rate. The basis of marketing is the pricing theory as it examines the competitive strengths of a firm and recommends about pricing products in several market. The pricing techniques is the domain of accountants and marketers.

ii) Managerial Economics and Financial Manage ment

The main purpose of finance is to procure funds and their effective utilization in any business. Financial management is considered as an integral part of an overall management relating to the various functional areas where finance has to be allocated. This view point suggested that financial management analyses the various financial aspects of managerial decision making. According to Kuchchhal, field of finance is considered to be "a subset of behavioural sciences and derives its analytical foundations from economic theory of the firm".

Until 1890, financial management was considered as a part of economics. From 1890-1950 it had become an integral part of financial economics and was popularly known as "Applied Financial Economics". Many authorities commented about financial management and economics, in this regard summers are of the opinion that "the fields of economics and finance are found to be allied. Indeed finance is sometimes defined as the sub-field of economics concerned with temporal and financial decisions". Pandey stated that financial management as a separate activity (or) disciple which has been emerged in the recent era. He opined that it was lying under the purview of economics until 1890. However, today it does not have any separate body of knowledge. Thus, it draws heavily from economics for crafting its theoretical concepts. In fact, finance is considered as a branch of economics adopting several economic tools and techniques. Therefore, financial management can be observed as a form of applied economics which relies substantially on theoretical constructs.

Financial economics mainly deals with some of the most significant aspects which are found to be important in the present context,

(a) The absence of interaction and appreciation among the two streams of the similar phenomenon.

(b) The evolution of investment teaching.

Few authors consider financial economics as an integration of many sub-components of economics such as, macro-economics, micro-economics and managerial economics. It has been observed that the financial economics include the general equilibrium type of analysis which plays a vital role in determining the macro-economics perspective of the theory of the firm. The macro economic perspective is an inclusive of transactions costs and property rights of individuals. Like managerial economics, financial economics also tries to focus on the firm thereby emphasizing on its internal functioning.

iii) Managerial Economics and Personnel Management

On the other hand, a human resource manager needs to focus on two types of issues which are as follows,

1. The optimal allocation of human resources by reducing the cost of operations and productivity.
2. Improving the terms and conditions of employment which acts as an additional part to employee satisfaction.

At the micro level; manpower planning constitutes the key function of an HRD manager where in the firm gives an assurance that it has recruited the right number and right type of individuals, at right places, and at the right time which are capable of preforming the task on time, that are found to be useful.

Managerial economics further facilitates the personnel management to analyse their economic and financial issues relating to the economic welfare of the firm and also the existing environment of economy as a whole. It efficiency describes the economic implications of policies and strategies and decides upon their consistency in relation to the organizational objectives and internal and external constraints. It can also provide safety measures for wage negotiations with trade unions.

iv) Managerial Economics and Operations Research

Operations research helps in addressing the issue of optimization under the given set of constraints unlike the mathematical methods principles which gives solutions to the problems of unbounded' optimization in economics. Through OR economic analysis is found to be more closer to real life by building the real life situation into a mathematical model and by abstracting the key elements for bringing an appropriate solution to the objectives of decision makers.

But for OR, it lies beyond the scope of operations to define the objective function and also the criteria within which the optimization could be achieved. After analysing the internal and external conditions of the firm, objective function can be stated. It is limited to the internal efficiency of the firm. Managerial economics, has both wide coverage as well as broad perspective. Perhaps managerial economics addresses the short and long-term problems and even analyses the internal and external efficiencies of the firm.

1.2 Business Decision Making Process

Q8. What is Decision Making ? Explain the various steps in the process of decision making.

Ans : **(Jan.-20, Dec.-18, July-18, Imp.)**

Definition of Decision Making

Decision making is a process of identification and selection of an action from a number of alternative courses of action for resolving a problem in the organization.

Decision making acts as the basis for planning an activity in the organization. It is one of the important managerial functions. Decision making must be rational for achieving the set goals successfully. It is very important to take the decisions at every stage of the organization. The decisions which are taken by top management are called strategic decisions and the decision which are related to the normal day-to-day activities of organization are called as tactical or operational decisions.

Process of Decision Making

The process of decision making deals with a series of activities which results in the best solution to a problem. The decision making process involves seven steps which are as follows,

Step 1: Specifying the objectives

Step 2: Identifying and defining the problem

Step 3: Generating alternatives

Step 4: Evaluation of alternatives

Step 5: Selection of the best alternative

Step 6: Implementation of the action and

Step 7: Evaluating the results.

Step 1: Specifying the Objectives

The first step in the decision making process is to specify the objectives or goals of organization. Based on these objectives, the decisions relating to the actions which need to be taken by managers to accomplish the set objectives are taken.

Step 2: Identifying and Defining the Problem

The second step of decision making process is the identification of the problem. In this step, the management collects adequate information about the organizational processes and processes the information to diagnose and identify the problem. It is very important for managers to diagnose the real problem in the situation as this helps in resolving the problem easily and taking an effective decision.

Step 3: Generating Alternatives

After identifying and defining the actual problem, the manager has to gather appropriate information about the problem. Based on the gathered information, the manager can generate alternatives to solve a problem by analyzing it thoroughly. The information also helps in anticipating the results for each alternative. The manager has to find maximum possible alternatives which are available to resolve the problem. The

alternatives should be clear, understandable and specific and should be able to produce a best solution for the problem identified.

Step 4: Evaluation of Alternatives

After generating the alternatives, the manager should evaluate them for selecting the best alternative. The possible alternatives can be evaluated by using the following methods,

(a) Stakeholder Analysis

In stakeholder analysis, the key aspects involved in the problem are identified and the impact of each alternative on the problem is considered.

(b) Marginal Analysis

In marginal analysis, the alternatives are evaluated by comparing the additional revenues generated with respect to the additional costs. The factors other than costs and revenues can also be used for evaluation.

(c) Cost-benefit Analysis

Marginal analysis is a traditional method and is cost consuming while cost benefit analysis is a variation of marginal analysis. In this method, the manager compares the costs and the anticipated benefits of each potential course of action. The alternative which involves low cost and high profits can be selected by the manager.

(d) Quantitative and Qualitative Factors

Evaluation of alternatives can also be done by considering the qualitative and quantitative factors. Qualitative factors are intangible in nature such as labor relations, risk of technological change etc., whereas quantitative factors are tangible such as the costs and benefits. These factors can be measured in terms of numbers but qualitative factors cannot be expressed in numerical terms.

By rating and comparing the outcomes of these factors, the managers can determine the importance of each alternative in solving the problem.

Step 5: Selection of the Best Alternative

In this stage, the actual decision is made by selecting one best course of action from the various alternatives. The managers mostly make use of three approaches for selecting the best alternative. These approaches are as follows,

(a) Experimentation

In this approach, the manager selects the best alternative by testing all the proposed alternative courses of action. It is the most expensive technique as it requires huge amount of money for conducting the experiments.

(b) Experience

In this approach, the manager selects the best alternative based on his past experience. The degree of success depends on the experience of the manager in selecting the best alternative.

(c) Research and Analysis

In this approach, the best alternative is selected by using various models. The important step in this approach is to build a simulation model to find the best solution among the various alternatives for the problem.

Step 6: Implementation of the Action

After selecting the best alternative, the action should be implemented by the manager. The implementation of an action needs the active support of the organization and employees at all levels of the organization.

This stage can have an effect on all the above stages. The errors in this stage can occur due to the lack of active participation of all the staff of the organization. This can be avoided by involving the

right and capable workers and managers in the decision making.

Step 7: Evaluation of Results

After implementation, it is necessary to evaluate the results obtained from the action. If the results are in accordance with the specified objectives, then the decision is a successful decision. The manager should evaluate the results for controlling the performance of the organization and for measuring the performance of the decision. If any negative results occur, then the manager should reassess the decision and repeat the above steps for taking appropriate decision to resolve the problem.

Q9. Discuss in detail the various types of decision making.

Ans :

The decisions are categorized broadly into six categories based on the different criteria. They are as follows,

1. Classification based on their impact on organization.
2. Classification based on the nature of decision and the nature of problems involved.
3. Classification based on the number of individuals involved in the process.
4. Classification based on their importance.
5. Classification based on the extent of freedom to decide.
6. Classification based on the persons involved.

1. Classification Based on their Impact on Organization

The decisions are classified into two types based on their impact on the organization. They are as follows,

(a) Basic Decisions

The decisions which are important to the organization and are strategic in nature are called basic decisions. These decisions are also called strategic decisions. These decisions have a major impact on the success of the organization.

Example

Location of plant, decisions relating to distribution channels, design of the organizational structure etc.

(b) Routine Decisions

The decisions which are related to the routine day-to-day activities are called as routine decisions. These decisions do not have a significant impact on the performance of the organization.

Example

The decisions related to the movement of raw materials to production process, marketing of a product at a selected place etc.

2. Classification Based on Nature of Problems involved

The decisions are classified into two types, based on the nature of the problems involved. They are as follows,

(a) Programmed Decisions

The decisions which are taken by the management based on its past experience for resolving the structured problems are called programmed decisions. Structured problems are clear and definite. They can be anticipated and are routine in nature. For solving these problems, the management can plan the decisions before its occurrence. The programmed decisions follows the policies, procedures and rules which are fixed by the organization for a particular period of time.

Programmed decisions may limit the freedom of the (employees) managers as they are taken as per the policies. It is

a time saving process as the problems are anticipated and the management can plan to resolve the problems in advance.

(b) Non-programmed Decisions

The decisions which are taken by the management for resolving the complex, unanticipated and exceptional problems are called non-programmed decisions. These problems are also called unstructured problems.

It is very important to take non-programmed decisions at every level of management. These decisions are specific in nature for resolving the non-routine problems.

Example

Decisions relating to the allocation of resources, improvement of community relations etc., are the examples of non-programmed decisions.

3. Classification Based on Number of Individuals Involved

The decisions are classified into two types based on the number of individuals involved in the decision making process. They are as follows,

(a) Individual Decisions

The decisions which are taken by the managers individually or by any individual person of the organization without consulting others are called individual decisions. These are routine in nature and do not have any major impact on the organizational success. The managers have the right to take individual decisions in certain conditions.

(b) Group Decisions

The organizations mostly opt for group decision making. The decisions in which a group of members or managers and associates consult with the other group members are called group decisions. These decisions are taken after reviewing the advantages and limitations of each alternative proposed by all the members. All the group members collectively resolve the problem. Strategic decisions are a type of group decisions which are taken by a group of managers from each department and board of directors.

4. Classification Based on their Importance

The decisions are classified into two types, based on their importance in the organization activities. They are as follows,

(a) Major Decisions

The decisions which are strategic in nature and are related to the significant aspects of organization like construction of building for production, processing of products, business expansion are called major decisions. These decisions require huge mount of money for implementation and are very specific decisions.

(b) Minor Decisions

The decisions which are routine in nature and deal with the organizational aspect are less significant are called minor decisions. These decisions require low cost for implementation and are not specific decisions.

5. Classification Based on the Extent of Freedom to Decide

The decisions are classified into two types based on the extent of freedom given to the managers to decide. They are as follows,

(a) Personal Decisions

The decisions are taken by the manager without consulting others in the

organization are called personal decisions. The manager has the freedom to take personal decisions.

(b) Organizational Decisions

The decisions which a manager takes by considering the organizational and environmental conditions and factors that are within the boundaries of the organizational policy are called organizational decisions. The manager either consults with the colleagues or subordinates or superiors while taking decisions or takes the decisions independently.

6. Classification Based on the Persons Involved in Taking Decisions

The decisions are classified into two types, based on the persons who are involved in taking the decisions. They are as follows,

(a) Departmental Decisions

The decisions which are taken by the head of the department or chief of the department are called departmental decisions. These decisions are mostly based on the past performance and the opinions of the people in the department.

Example

Decisions relating to the development of the department etc.

(b) Interdepartmental Decisions

The decisions which are taken by the heads of two separate departments or the chiefs of all the departments of the organization are called interdepartmental decisions. In some cases, instead of the chief of the departments a group of senior managers of the department or general managers take the related decisions.

1.3 The Role of Managerial Economist

Q10. Explain the role of Managerial Economist.

Ans : **(Jan.-20, Dec.-18, Imp.)**

1. Study of the Business Environment

Every firm has to take into consideration such external factors as the growth of national income, volume of trade and the general price trends, for its policy decision. A firm works within a business environment. The basic element of business environment for a firm are the trend of growth of national economy and world economy and phase of the business cycle in which the economy is moving. At what rate and where is population getting concentrated? Where are the demand prospects for established and new products? Where are the prospective markets? These questions lead the economists into purposeful studies of the economic environment.

The international economic outlook is a very important environmental factor for exporting firms. The nature and degree of competition within the industry in which a firm is placed are also a part of the business environment. The kind of economic policies pursued by the government constitute a powerful element of the business environment of a firm. What are the priorities of the new five year plan? In which sectors of the economy have the outlays been bran increased? What are the budgetary trends? What about changes in expenditure, tax rates tariffs and import restrictions? For all purposes the economists place a significant role.

2. Business Plan and Forecasting

The business economists can help the management in the formation of their business plan by forecasting and economic

environment. The management can easily decide the timing and locating of their specific action. The managerial economists has to interpret the national economic trends and industrial outlook for their relevance to the firm in which he is working. He advises top management by means of short, business like practical notes. In a partially controlled economy like India, the business economists translates the government's intentions in business jargon and also transmits the reaction of the industry to propose changes in government policy.

3. Study of Business Operations

The business economist can also help the management in decision making relating to the internal operations of a firm, i.e., in deciding about price, rate of operations, investment and growth of the firm for offering this advice ; the economist has specific analytical and forecasting techniques which yield meaningful conclusions. What will be the reasonable sales and profit budget for the next year? What are the suitable production schedules and inventory policies? What changes in wage and price policies are imperative now? What would be the sources of finance? Thus, he is trained to answer such questions posted by the top management.

4. Economic Intelligence

The business economist also provides general intelligence services by supplying the management with economic information of general interest so that they can talk intelligently in conferences and seminars. They are also supplied the facts and figures for preparing the annual reports of the firm. Those facts and figures are collected by the business economist as he understands the literature available on business activities.

5. Specific functions

Business economists are now performing specific functions as consultants also. Their specific functions are demand forecasting, industrial market research, pricing problems of industry, production programmes, investment analysis and forecasts. They also offer advice on trade and public relations, primary commodities and foreign to capital projects in agriculture, industry, transport and tourism and also of the export environment.

6. Participation in Public Debates

The business economists participate in public debates organized by different agencies. Both governments and society seek their advice. Their practical experience in business and industry gives value to their observation. In nut shell a business economist can play a multi-faceted role. He is not only an analyst of current trends and policies for his employers but also a bridge between the businessmen in the specific industry and the Govt.

1.4 BASIC ECONOMIC PRINCIPLES

1.4.1 The Concept of Opportunity Cost

Q11. Define opportunity cost. Explain the importance of opportunity cost.

(Aug.-21, Nov.-20, Jan.-20, Dec.-18, Jan.-18, Imp.)

Ans :

Opportunity cost of a decision is the sacrifice of alternative courses of action for that decision. It is the problem revenue from alternative sacrificed. Opportunity cost may be defined as the revenue foregone or opportunity lost by not using the resources in second best alternative use. These are also called imputed costs. Opportunity cost requires measurement of sacrifice. It measures the sacrifice made for taking a decision. The concept can be explained by following points :

i) The opportunity cost of the funds employed in one's own business is the interest that could be earned on those funs had they been employed in other ventures;

ii) The opportunity cost of the time an entrepreneur devotes to his own business is the salary he could earn by seeking employment;

iii) The opportunity cost of using a machine to produce one product is the earnings forgone which would have been possible from other products:

iv) The opportunity cost of using a machine that is useless for any other purpose is zero since its use requires not sacrifice of other opportunities.

v) If a machine can produce either X or Y, the opportunity cost of producing a given quantity of X is therefore the quantity of Y which it would have produced. If that machine can produce 10 units of X or 20 units of Y, the opportunity cost of 1 X is 2Y.

vi) Suppose we have on information about quantities produced, but have information about their prices. In this case, the opportunity costs can be computed in terms of the ratio of their respective prices, say $\frac{Px}{Py}$.

vii) The opportunity cost of holding Rs.500 as cash in hand for one year is the 10% rate of interest, which would have been earned had the money been kept as fixed deposit in a bank.

Thus, it should be clear that opportunity costs require ascertainment of scarifies. If a decision involves no sacrifice, its opportunity cost in nil.

For decision-making, opportunity costs are the only relevant costs. The opportunity cost principle may be stated as under: The cost involved in any decision consists of the sacrifice of alternatives required by that decision. If there are no sacrifices, there is no cost.

Opportunity cost need not be expressed in monetary terms. It could be expressed in terms of goods as well. In economic terminology, opportunity cost need not necessarily be nominal variable it could be a real variable as well.

Importance of Opportunity Costs

In managerial decision-making, opportunity cost concept is very important. The economic significance of opportunity cost is as follows:

1. It Helps in Determining Relative Price of Goods

This concept is useful in the determination of the relative prices of different goods. For example, if a given amount of factors can produce one table or three chairs, then the price of one table will tend to be equal to three times that of one chair.

2. Fixation of Remuneration to a Factor

This concept is also useful in fixing the price of a factor. For example, let us assume that the alternative employment of a college professor is to work as an officer in an insurance company at a salary of ` 10,000 per month. In such a case he has to be paid at least ` 10,000 to continue to retain him in the college.

3. Efficient Allocation of Resources

The concept is also useful in allocating the resources efficiently. For example, opportunity cost of one table is three chairs and price of a chair is `100, while the price of a table is ` 400. Under such conditions it is beneficial to produce one table rather than three chairs. Because, if he produces three chairs, he will get only `300, whereas a table fetches him ` 400, i.e, `100 more. Hence it helps manager to decide what should be produced.

1.4.2 Marginalism

Q12. What do you understand by marginalism ?

Ans : **(Nov.-20)**

Marginalism is a theory of economics that attempts to explain the discrepancy in the value of goods and services by reference to their secondary, or marginal, utility. The reason why the price of diamonds is higher than that of water, for example, owes to the greater additional satisfaction of the diamonds over the water. Thus, while the water has greater total utility, the diamond has greater marginal utility.

Although the central concept of marginalism is that of marginal utility, marginalists, following the lead of Alfred Marshall, drew upon the idea of marginal physical productivity in explanation of cost. The neoclassical tradition that emerged from British marginalism abandoned the concept of utility and gave marginal rates of substitution a more fundamental role in analysis.

Important Marginal Concepts

1. Marginality

Constraints are conceptualized as a border or margin. The location of the margin for any individual corresponds to his or her endowment, broadly conceived to include opportunities. This endowment is determined by many things including physical laws (which constrain how forms of energy and matter may be transformed), accidents of nature (which determine the presence of natural resources), and the outcomes of past decisions made both by others and by the individual.

A value that holds true given particular constraints is a marginal value. A change that would be affected as or by a specific loosening or tightening of those constraints is a marginal change.

Neoclassical economics usually assumes that marginal changes are infinitesimals or limits. (Though this assumption makes the analysis less robust, it increases tractability.) One is therefore often told that "marginal" is synonymous with "very small", though in more general analysis this may not be operationally true (and would not in any case be literally true). Frequently, economic analysis concerns the marginal values associated with a change of one unit of a resource, because decisions are often made in terms of units; marginalism seeks to explain unit prices in terms of such marginal values.

2. Marginal Use

The marginal use of a good or service is the specific use to which an agent would put a given increase, or the specific use of the good or service that would be abandoned in response to a given decrease.

Marginalism assumes, for any given agent, economic rationality and an ordering of possible states-of-the-world, such that, for any given set of constraints, there is an attainable state which is best in the eyes of that agent.

Descriptive marginalism asserts that choice amongst the specific means by which various anticipated specific states-of-the-world (outcomes) might be affected is governed only by the distinctions amongst those specific outcomes; prescriptive marginalism asserts that such choice ought to be so governed.

On such assumptions, each increase would be put to the specific, feasible, previously unrealized use of greatest priority, and each decrease would result in abandonment of the use of lowest priority amongst the uses to which the good or service had been put.

3. Marginal Utility

The marginal utility of a good or service is the utility of its marginal use. Under the assumption of economic rationality, it is the

utility of its least urgent possible use from the best feasible combination of actions in which its use is included.

In 20th century mainstream economics, the term "utility" has come to be formally defined as a quantification capturing preferences by assigning greater quantities to states, goods, services, or applications that are of higher priority. But marginalism and the concept of marginal utility predate the establishment of this convention within economics.

The more general conception of utility is that of use or usefulness, and this conception is at the heart of marginalism; the term "marginal utility" arose from translation of the German "Grenznutzen", which literally means border use, referring directly to the marginal use, and the more general formulations of marginal utility do not treat quantification as an essential feature.

On the other hand, none of the early marginalists insisted that utility were not quantified, some indeed treated quantification as an essential feature, and those who did not still used an assumption of quantification for expository purposes. In this context, it is not surprising to find many presentations that fail to recognize a more general approach.

1.4.3 Equi-Marginalism

Q13. Examine the concept of Equi-Marginalism.

Ans : **(Jan.-20, Jan-18)**

The equi-marginal principle is a fundamental concept in economic analysis. It plays a vital role in helping the managers in resource allocation strategies. It deals with the allocation of available resources among the alternative activities.

Equi-marginal principle says that, "an input should he so allocated that the value added by the last units is same in all cases." In other words a factor input should be employed in different activities in such a proportion that its value of marginal product is same in all the uses such that an optimal level is reached. Symbolically it can be represented as,

$$(VMPL)_P = (VMPL)_Q = (VMPL)_R = (VMPL)_5$$

Where,

VMPL = Value of Marginal Product of Labour.

P, Q, R, S = Four different activities that need labour services.

The following are the important points regarding equi-marginal principle,

- The Value of Marginal Product (VMP) is the net of incremental costs.
- If the revenues resulting from the addition of labour are to occur in future, these revenues ought to. be discounted before comparisons in the alternative activities are possible.
- The measurement of value of the marginal product may have to be corrected if the expansion of an activity requires a reduction in the prices of the output.
- The equi-marginal principle may break under sociological pressures.

Let us consider an example of a firm that uses 500 units of labour for performing four different activities say P, Q, R and S.

The firm if it wants to enhance any one of the four activities, it adds more labour units only at the cost of other three activities. It should be noted that if the marginal product of one activity is higher, then an optimum allocation of labour units is to be done. It would be profitable to shift labour units from low marginal value activity to high marginal value activity, thus increasing the total value of all products taken together.

Let us suppose that if the value of marginal product of activity P is Rs. 200 and that of Q is Rs. 300. Therefore, it is profitable for the firm to shift

the labour units from activity P to activity Q thereby enhancing the activity Q and reducing the activity P. Marginal product will reach its optimum value when the marginal products of all the four activities are equal i.e.,

$(VMPL)_p = (VMPL)_Q = (VMPL)_{fi} = (VMPL)_s$.

1.4.4 Incremental Concept

Q14. Explain briefly about incremental principle concept.

Ans : **(Aug.-21, Jan.-20, Dec.-18, July-18, Imp.)**

Increment concept is closely related to the marginal costs and marginal revenues of economics theory. Incremental concept involves estimating the impact of decision alternatives on costs and revenues, emphasizing the changes in total cost and total revenue resulting from changes in prices, produces, procedures investments or whatever may be at stake in the decision.

The two basic components of incremental reasoning are: incremental cost and incremental revenue. Incremental cost may be defined as the change in total cost resulting from a particular decision. Incremental revenue is the change in total revenue resulting from a particular decision.

The incremental principle may be stated as under :

i) It increases revenue more than costs;

ii) It decreases some costs to a greater extent than it increases others;

iii) It increases some revenues more than it decreases others; and

iv) It reduces costs more than revenues.

Some businessmen take 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 cost (labor, materials and overhead) plus a provision for profit. Incremental reasoning indicates that this rule may be consistent 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 to cost. The relevant cost in not the full cost but rather the incremental cost.

Example

Suppose a new order is estimated to bring in additional revenue of Rs. 5,000. The costs are estimated as under:

Labour	Rs. 1,500
Material	Rs. 2,000
Overhead (Allocated at 120% of labour cost)	Rs. 1,800
Selling administrative expenses (Allocated at 20% of labour and material cost)	Rs. 700
Total Cost	Rs. 6,000

The order at first appears to be unprofitable. However, suppose, if there is idle capacity, which can be, utilized to execute this order then the order can be accepted. If the order adds only Rs. 500 of overhead (that is, the added use of heat, power and light, the added wear and tear on machinery, the added costs of supervision, and so on), Rs. 1,000 by way of labour cost because some of the idle workers already on the payroll will be deployed without added pay and no extra selling and administrative cost then the incremental cost of accepting the order will be as follows.

Labour	Rs. 1,500
Material	Rs. 2,000
Overhead	Rs. 500
Total Incremental Cost	Rs. 3,500

While it appeared in the first instance that the order will result in a loss of Rs. 1,000, it now appears that it will lead to an addition of Rs. 1,500 (Rs. 5,000- Rs. 3,500) to profit. Incremental reasoning does not mean that the firm should accept all orders at prices, which cover merely their incremental costs. The acceptance of the Rs. 5,000 order depends upon the existence of idle capacity and labour that would go unutilized in the absence of more profitable opportunities. Earley's study of "excellently managed" large firms suggests that progressive corporations do make formal use of incremental analysis. It is, however, impossible to generalize on the use of incremental principle, since the observed behaviour is variable.

Q15. How is incremental cost different from opportunity cost ?

Ans :

	Incremental Cost		Opportunity cost
1.	Incremental cost is the cost which involves in identifying the impact of decision alternatives.	1.	Opportunity cost is the cost which incurred in selecting the next best alternative.
2.	It includes incremental revenue	2.	It includes either real or monetary implicti or explicit, tangible/quantifiable or intangible / non - quantifiable.
3.	Under this managerial decision taken is profitable, if revenue is increased more than cost.	3.	Under this, manager should aim at minimization of opportunity cost.
4.	It increases more revenues	4.	It represents the benefits or revenues foregone by pursuing one course of action rather than other.
5.	A manager while making decision always sees that the incremental revenue is greater than the incre-mental cost.	5.	It facilitates the managers in making decisions regarding make or buy and replacement etc.

1.4.5 Time Perspective

Q16. Define time perspective.

Ans : **(Aug.-21, Dec.-18)**

Principle

A decision by the firm should take into account of both short-run and long-run effects on revenues and cost & maintain the right balance between the long run and short run.

According to this principle, a manger/decision maker should give due emphasis, both to short-term and long-term impact of his decisions, giving apt significance to the different time periods before reaching any decision. Short-run refers to a time period in which some factors are fixed while others are variable. The production can be increased by increasing the quantity of variable factors. While long-run is a time period in which all factors of production can become variable. Entry and exit of seller firms can take place easily. From consumers point of view, short-run refers to a period in which they respond to the changes in price, given the taste and preferences of the consumers, while long-run is a time period in which the consumers have enough time to respond to price changes by varying their tastes and preferences.

Example

ABC is a firm engaged in continuous production of X commodities (long run). In the production process, it is having daily an ideal time (free time) for few hours. In that ideal time, firm can take an order for manufacturing other similar goods instead of wasting time. By manufacturing goods in the ideal time firm does not incur any extra fixed cost like (salaries, wages and rent and) because it is constant. So the fixed cost is absent in the production which is done in the ideal time. Generally in production of goods, fixed and variable cost (raw material & labour) is present. However, here the production made in the ideal time, fixed cost is absent. This shows the cost is reduced in production that is made in the ideal time. Investment made in the business can also be recovered very quickly and in short time.

For example,

Suppose there is a firm with a temporary idle capacity. An order for 5000 units comes to management's attention. The customer is willing to pay Rs 4/- unit or Rs. 20000/- for the whole lot but not more. The short run incremental cost (ignoring the fixed cost) is only Rs. 3/-. There fore the contribution to overhead and profit is Rs. 1/- per unit (Rs. 5000/- for the lot) Analysis: From the above example the following long run repercussion of the order is to be taken into account:

If the management commits itself with too much of business at lower price or with a small contribution it will not have sufficient capacity to take up business with higher contribution.

If the other customers come to know about this low price, they may demand a similar low price. Such customers may complain of being treated unfairly and feel discriminated against.

In the above example it is therefore important to give due consideration to the time perspectives. "a decision should take into account both the short run and long run effects on revenues and costs and maintain the right balance between long run and short run perspective".

Here the principle of time perspective applies, where maintains right balance between long run and short-run markets.

1.4.6 Discounting Principle

Q17. What do you understand by discounting principle?

Ans : **(Aug.-21, Nov.-20, July-18)**

It is the One of the fundamental ideas in economics is that a rupee tomorrow is worth than a rupee today. This seems similar to saying that a bird in hand is worth two in the bush. A simple example

would make this point clear. Suppose a person is offered a choice to make between a gift of Rs.100 today or Rs.100 next year. Naturally he will choose the Rs.100 today. This is true for two reasons.

First, the future is uncertain and there may be uncertainty in getting Rs. 100 if the present opportunity is not availed of secondly, even if he is sure to receive the gift in future, today's the Rs.100 of today will become Rs.108 whereas if he does not accept Rs.100 today, he will get Rs.100 only one year hence.

Naturally, he would prefer the first alternative because he is likely to gain by Rs. 8 in future. Another way of paying the same thing is that Rs.100 one year hence is not equal to Rs.100 one year hence? To find it out, we shall have to find out the relevant rate of interest which one would earn if one decides to invest the money.

Suppose the rate of interest is 8 per cent. Then we shall have to discount Rs.100 at 8 percent in order to ascertain how much money today will become Rs.100 one year after. The formula is :

$$V = \frac{Rs.100}{1+i}$$

where

V = present value

i = rate of interest.

1.4.7 Risk and Uncertainty

Q18. Write about the economies of risk and uncertainty.

Ans : **(Nov.-20, Jan.-20, Imp.)**

Risk and uncertainty go hand in hand, risk and uncertainty coexists.

i) Risk

From decision-making point of view it is defined as a situation in which there is more than one possible outcome to a business decision and the probability of each outcome is known to the decision-makers or can be reliably estimated.

For example, introducing a new product can lead to one of a set of possible outcomes i.e., each has a equal chance (product will be successful or product will not succeed). Probability of each possible outcome can be estimated from past experiences or previously conducted market studies. Greater the number and range of possible outcomes, greater is the risk associated with the decision or action.

Two approaches to probable outcomes of a business decision.

(a) **Priori approach** - based on deductive thinking.

(b) **Posteriori approach** - based on probability statistically past data.

ii) Uncertainty

Arises from changes and refers to a situation in which there is more than one possible outcome of a business decision and where the probability of each specific outcome occurring is not known or can be meaningfully estimated.

This uncertainty may be due to inadequate data of past records.

Example

Insurance companies cannot predict fairly accurately the probability of death rate of people insured.

Uncertainty for decision-making is classified into,

(a) Complete Ignorance

Investors investing without any rational criteria, investor can be risk overture, neutral or risk inviter or lover.

(b) Partial Ignorance

Some knowledge can be gained from experts regarding future market condition and so probability estimates can be made.

Short Question & Answers

1. Define Business Economics.

Ans :

Business Economics, also called Managerial Economics, is the application of economic theory and methodology to business. Business involves decision-making; and business economics serves as a bridge between economic theory and decision-making in the context of business. Economic theories, economic principles, economic laws, economic equations, and economic concepts are used for decision making. On this ground students of commerce should know the importance of basic theories in actual business application.

Business economics is the study of the financial issues and challenges faced by corporations operating in a specified marketplace or economy. Business economics deals with issues such as business organization, management, expansion and strategy.

Business economics assists in the following,

(a) It helps in solving the business problems easily.

(b) It helps in improving the quality and accuracy of decisions.

(c) It facilitates in taking the right decision.

Thus, business economics deals with analyzing allocation of the resources available to a firm or other management among the activities of that unit.

The outcomes of positive analysis does not change with the changes in the norms. Positive statements are conditional in nature.

Meaning of Business Economics

Business economics is that part of economics which are related to economic activities and sole aim to growth in business. Every business is operated by some resources and these are limited. Business economics tells the techniques about how to utilize resources for maximum satisfaction.

Definitions of Business Economics

According to MeNair and Meriam, " Managerial economics consists of the use of economic modes of thought to analysis business situations."

According to Joel Dean, "The purpose of managerial economics is to show how economic analysis can be used in formulating business policies."

According to Mansfield, "Managerial economics attempts to bridge the gap between the purely analytically problems that intrigue many economic theorists and the day-to-day decisions that the management must face."

According to Hague, "Managerial economics is concerned with using logic of economics, mathematics and statistics of providing effective ways thinking about business decision problem."

2. Objectives of business economics.

Ans :

The various objectives of business economics are:

1. To integrate economic theory with business practice.
2. To apply economic concepts: and principles to solve business problems.
3. To employ the most modern instruments and tools to solve business problems.
4. To allocate the scarce resources in the optimal manner.
5. To make overall development of a firm.
6. To help achieve other objectives of a firm like attaining industry leadership, expansion of the market share etc.
7. To minimize risk and uncertainty
8. To help in demand and sales forecasting.
9. To help in operation of firm by helping in planning, organizing, controlling etc.
10. To help in formulating business policies.
11. To help in profit maximization.

3. What is Decision Making ?

Ans :

Definition of Decision Making

Decision making is a process of identification and selection of an action from a number of alternative courses of action for resolving a problem in the organization.

Decision making acts as the basis for planning an activity in the organization. It is one of the important managerial functions. Decision making must be rational for achieving the set goals successfully. It is very important to take the decisions at every stage of the organization. The decisions which are taken by top management are called strategic decisions and the decision which are related to the normal day-to-day activities of organization are called as tactical or operational decisions.

4. Various types of decision making.

Ans :

The decisions are categorized broadly into six categories based on the different criteria. They are as follows,

1. Classification based on their impact on organization.
2. Classification based on the nature of decision and the nature of problems involved.
3. Classification based on the number of individuals involved in the process.
4. Classification based on their importance.
5. Classification based on the extent of freedom to decide.
6. Classification based on the persons involved.

5. Define opportunity cost.

Ans :

Opportunity cost of a decision is the sacrifice of alternative courses of action for that decision. It is the problem revenue from alternative sacrificed. Opportunity cost may be defined as the revenue foregone or opportunity lost by not using the resources in second best alternative use. These are also called imputed costs. Opportunity cost requires measurement of sacrifice. It measures the sacrifice made for taking a decision. The concept can be explained by following points :

i) The opportunity cost of the funds employed in one's own business is the interest that could be earned on those funs had they been employed in other ventures;

ii) The opportunity cost of the time an entrepreneur devotes to his own business is the salary he could earn by seeking employment;

iii) The opportunity cost of using a machine to produce one product is the earnings forgone which would have been possible from other products:

iv) The opportunity cost of using a machine that is useless for any other purpose is zero since its use requires not sacrifice of other opportunities.

6. Marginalism.

Ans :

Marginalism is a theory of economics that attempts to explain the discrepancy in the value of goods and services by reference to their secondary, or marginal, utility. The reason why the price of diamonds is higher than that of water, for example, owes to the greater additional satisfaction of the diamonds over the water. Thus, while the water has greater total utility, the diamond has greater marginal utility.

Although the central concept of marginalism is that of marginal utility, marginalists, following the lead of Alfred Marshall, drew upon the idea of marginal physical productivity in explanation of cost. The neoclassical tradition that emerged from British marginalism abandoned the concept of utility and gave marginal rates of substitution a more fundamental role in analysis.

7. Incremental principle concept.

Ans :

Increment concept is closely related to the marginal costs and marginal revenues of economics theory. Incremental concept involves estimating the

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

The two basic components of incremental reasoning are: incremental cost and incremental revenue. Incremental cost may be defined as the change in total cost resulting from a particular decision. Incremental revenue is the change in total revenue resulting from a particular decision.

The incremental principle may be stated as under :

i) It increases revenue more than costs;

ii) It decreases some costs to a greater extent than it increases others;

iii) It increases some revenues more than it decreases others; and

iv) It reduces costs more than revenues.

Some businessmen take 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 cost (labor, materials and overhead) plus a provision for profit. Incremental reasoning indicates that this rule may be consistent 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 to cost. The relevant cost in not the full cost but rather the incremental cost.

8. How is incremental cost different from opportunity cost ?

Ans :

	Incremental Cost		Opportunity cost
1.	Incremental cost is the cost which involves in identifying the impact of decision alternatives.	1.	Opportunity cost is the cost which incurred in selecting the next best alternative.
2.	It includes incremental revenue	2.	It includes either real or monetary implicti or explicit, tangible/quantifiable or intangible / non - quantifiable.
3.	Under this managerial decision taken is profitable, if revenue is increased more than cost.	3.	Under this, manager should aim at minimization of opportunity cost.
4.	It increases more revenues	4.	It represents the benefits or revenues foregone by pursuing one course of action rather than other.
5.	A manager while making decision always sees that the incremental revenue is greater than the incre-mental cost.	5.	It facilitates the managers in making decisions regarding make or buy and replacement etc.

9. Define time perspective.

Ans :

A decision by the firm should take into account of both short-run and long-run effects on revenues and cost & maintain the right balance between the long run and short run.

According to this principle, a manger/decision maker should give due emphasis, both to short-term and long-term impact of his decisions, giving apt significance to the different time periods before reaching any decision. Short-run refers to a time period in which some factors are fixed while others are variable. The production can be increased by increasing the quantity of variable factors. While long-run is a time period in which all factors of production can become variable. Entry and exit of seller firms can take place easily. From consumers point of view, short-run refers to a period in which they respond to the changes in price, given the taste and preferences of the consumers, while long-run is a time period in which the consumers have enough time to respond to price changes by varying their tastes and preferences.

10. Discounting principle?

Ans :

It is the One of the fundamental ideas in economics is that a rupee tomorrow is worth than a rupee today. This seems similar to saying that a bird in hand is worth two in the bush. A simple example would make this point clear. Suppose a person is offered a choice to make between a gift of Rs.100 today or Rs.100 next year. Naturally he will choose the Rs.100 today. This is true for two reasons.

First, the future is uncertain and there may be uncertainty in getting Rs. 100 if the present opportunity is not availed of secondly, even if he is sure to receive the gift in future, today's the Rs.100 of today will become Rs.108 whereas if he does not accept Rs.100 today, he will get Rs.100 only one year hence.

Naturally, he would prefer the first alternative because he is likely to gain by Rs. 8 in future. Another way of paying the same thing is that Rs.100 one year hence is not equal to Rs.100 one year hence? To find it out, we shall have to find out the relevant rate of interest which one would earn if one decides to invest the money.

Suppose the rate of interest is 8 per cent. Then we shall have to discount Rs.100 at 8 percent in order to ascertain how much money today will become Rs.100 one year after. The formula is :

$$V = \frac{Rs.100}{1+i}$$

where

V = present value

i = rate of interest.

UNIT II

Theory of Demand and Supply: Demand Analysis - demand function, law of demand, determinants of demand, types of demand. Elasticity of demand, types, Measurement and significance of Elasticity of Demand. Demand Forecasting, Need for Demand Forecasting, Methods of Demand Forecasting.

Supply – Supply function, determinants of supply, law of supply, Elasticity of Supply.

2.1 DEMAND ANALYSIS

Q1. Define demand. What are the objectives of demand?

Ans : **(July-18)**

In economic science, the term "demand" refers to the desire, backed by the necessary ability to pay. The demand for a good at a given price is the quantity of it that can be bought per unit of time at the price. There are three important things about the demand :

1. It is the quantity desired at a given price.
2. It is the demand at a price during a given time.
3. It is the quantity demanded per unit of time.

Meaning of Demand

Demand is the amount of particular economic goods or services that a consumer or group of consumers will want to purchase at a given price at a particular time.

Therefore, demand means desire backed up by adequate purchasing power to pay for the product when demanded and willingness to spend the money for the satisfaction of that desire.

Demand = Desire to buy + Ability to pay + Willingness to pay.

Definition of Demand

According to Benham, "The demand for anything, at a given price, is amount of it, which will be bought per unit of time, at that price".

According to Bobber, "By demand we mean the various quantities of a given commodity or service which consumers would buy in one market in a given period of time at various prices".

According to G.L. Thiekettle, "The demand for any commodity or service is amount that will be bought at any given price per unit of time".

Objectives of Demand

1. Demand Forecasting

Forecasting of demand is the art of predicting demand for a product or a service at some future date on the basis of certain present and past behaviour patterns of some related events.

2. Production Planning

Demand analysis is prerequisite for the production planning of a business firm. Expansion of output of the firm should be based on the estimates of likely demand, otherwise there may be overproduction and consequent losses may have to be faced.

3. Sales Forecasting

Sales forecasting is based on the demand analysis. Promotional efforts of the firm should be based on sales forecasting.

4. Control of Business

For controlling the business on a sound footing, it is essential to have a well conceived budgeting of costs and profits that is based on the estimation of annual demand/sales and prices.

5. Inventory Control

A satisfactory control of business inventories, raw materials, intermediate goods, semi-finished product, finished product, spare parts, etc., requires satisfactory estimates of the future requirements which can be traced through demand analysis.

6. Growth and Long-Term Investment Programs

Demand analysis is necessary for determining the growth rate of the firm and its long-term investment programs and planning.

7. Economic Planning and Policy Making

Demand analysis at macro level for the nation as a whole is of a great help to the planners and policy-makers for a better planning and rational allocation of the country's productional resources. The Government can determine its import and export policies in view of the long- term demand forecasting and estimation for various goods in the country.

Q2. Explain the features of demand.

Ans :

Features of demand

The various features of demand are:

a) Difference between Desire and Demand

Demand is the amount of commodity for which a consumer has the willingness and the ability to buy .These is difference between need and demand .Demand is not only the need, it also implies that the consumer has the money to purchase it.

b) Relationship between Demand and price

Demand is always at a price .unless price is stated, the amount demanded has no meaning. the consumer must know both the price and the commodity and he will tell his amount demanded.

c) Demanded at a point of time

The amount demanded must refer to some period of time such as 10 quintals of wheat per year or six shirts per year of five kilos of sugar per month .not only this, the amount demanded and the price must refer to a particular data.

2.1.1 Demand Function

Q3. What do you understand by demand functions? Explain its types.

Ans : **(Jan.-20)**

Demand Function

A demand function is a mathematical relationship between the quantity demanded of the commodity and its determinants. A demand function can be represented as,

$Q = f$ (demand determinants)

Where,

$Q =$ Quantity demanded of a commodity.

Types of a Demand Function

Generally, a demand function is of two types,

1. Individual Demand Function

Individual demand function is a mathematical relationship between the demand by an individual consumer and the determinants of individual demand. Mathematically, it can be expressed as,

$Q_x = f(P_x, I, P_1 \ldots P_n, T, A, E_p, E_i U)$

Where,

Q_x = Quantity demanded of the commodity x

P_1 = Price of the commodity itself

I = Consumer's Income

$P_x \ldots P_n$ = Prices of the related goods

T = Consumer tastes and preferences

A = Advertisement

$\in_1$ = Consumer's expectation about future prices

E_j = Consumer's expectation about his/her future income

U = Other determinants.

An individual demand function can also be defined as the functional relationship of the quantity demanded by an individual and its determinants.

2. Market/Aggregate Demand Function

Market/Aggregate demand function is the functional relationship between the market demand for a commodity and the determinants of market demand. Mathematically it can be expressed as,

$Q = f(P_x, I, P_1, ... P_n, T. A, E_p, E_I, P, D, U)$

Where,

Q_x = Quantity demanded of the commodity x.

P_x = Price of the commodity itself

I = Consumer's Income

$P_1 ... P_n$ = Prices of the related goods

T = Consumer tastes and preferences

A = Advertisement

E_p = Consumer's expectation about future prices

E_I = Consumer's expectation about his/her future income.

P = Population or market size

D = Distribution of consumers in the market according to income, age, gender etc.

U = Other determinants.

Comparison of Individual Demand Function and Market/Aggregate Demand Function

The major difference between the individual demand function and market demand function is that in market demand function, the size and the nature of the consumers in a given market are also considered. Mathematically the terms P-size of the market and D-distribution of consumers in the market are also added in market demand function.

Q4. Define demand curve? What are the characteristics of demand curve?

Ans :

The graphical representation of the demand schedule is known as demand curve. The demand curve always slopes downwards from left to right. This negative slope of the demand curve indicates the opposite relationship between the price and the quantity demanded.

Characteristics of Demand Curve

The characteristics of demand curve can be summarized as follows:

1. Position of the Curve

A demand curve's position refers to its placement on a graph. Since economic analysts use the same graph to chart both a demand curve and the related, inverse supply curve, the scales representing price and quantity must remain the same. If a demand curve is positioned far to the right, it indicates a high quantity of demand from consumers at a given price. When a demand curve is low on the graph, it indicates that low prices create steady demand.

2. Slope of the Curve

The rate of change in demand over various price points gives a demand curve its slope. Demand curves can be concave, convex or form straight lines. In each case, the rate of change in quantity demanded as price decreases forms the changing angle of the curve. A steep demand curve means that price reductions only increase quantity demanded slightly, while a concave demand curve that flattens as it moves from left to right reveals an increase in quantity demanded when low prices drop even slightly lower.

3. Shifting of Curve

Shift refers to a demand curve's change in position over time. As the demand curve moves to new positions on the graph, it

reveals changing trends in consumer behavior. For example, when a demand curve falls on graph from one measuring period to another, it indicates that lower prices produce the same level of demand as higher prices did during an earlier measuring period. Comparing demand curves over time allows business leaders to make important decisions about changing prices or altering supply levels to maximize profit.

Q5. Why the demand curve slope downwards from left to right ?

Ans :

According to traditional approach, the cause of the slopping downward trend of demand curve is the application of the law of diminishing marginal utility. Professor Marshall expresses this view. J.R. Hicks, Allen and other modern economist argue that it is due to the income effect and substitution effect. Following are the main causes, which are responsible for this relationship and downward slopping of demand curve:

1. Entry and Exit of Consumer

If the price of a particular commodity falls, some new consumers enter in the market and start purchasing the commodity. The old consumers also start consuming more of the commodity. If the price increases, new consumers withdraw and old consumers start consuming lesser commodity. The result of the consumer's behaviour is the operation of law of demand and the downward of demand curve.

2. Law of Diminishing Marginal Utility

The satisfaction derived from the consumption of successive units goes on falling, because earlier units have partly satisfied our wants. In this way, every additional unit of the commodity will give us lesser utility (satisfaction). So a consumer wants to pay lesser price for additional unit and he only purchases additional unit when the price falls. Therefore demand curve come slopes down wards.

3. Multiple Uses of Goods

If the price of the goods falls, consumers use more of those particular goods for different purpose and quantity demand increases. For example, when the price of electricity falls, consumers use electricity for different purpose.

4. Substitution Effect

When the price of any substitute good falls, the consumer gives up the dearer good and buys additional units of the cheaper good. In the same way, when the price falls, the consumers, who are consuming other goods, are also attracted to the cheaper goods and it makes the demand curve downward slopping.

5. Income Effect

When the price of a commodity falls, the real income (purchasing power of money income) of the consumer increases. This enables the consumer to buy more units. For example, let money income of the consumer be 100, using this consumer wants to buy commodity 'X' whose price is 25 per kg. In that case consumer would buy only 4 kg. On the other hand, assuming money income to be constant (100), if the price of commodity falls to 20, he will be able to buy 5 kg. That is the real income of the consumer increases with the fall in price and vice versa.

Q6. Define demand schedule? Explain different types of demand schedule?

Ans :

A demand schedule is a tabular representation of the relationship between the amount demanded of a commodity and different price levels of that commodity. In other words, a demand schedule is a tabular statement of price and quantity relationship. It relates to the amount of the commodity the consumer is willing to purchase corresponding to the given price of that commodity per unit of time.

Example

The table below is an example of a demand schedule of product x.

Price of the Commodity x (`)	Quantity Demanded of Commodity x (kg)
5	15
8	14
10	12
12	10
15	8
20	5

Characteristics of Demand Schedule

The following are the characteristics of a demand schedule,

- A demand schedule shows variation - in demand of a commodity at its varying prices.
- It indicates the behaviour of an individual consume in purchasing the commodity at a ernative prices.
- It shows the inverse relation between the quantity demanded and the price of the commodity.

Types of Demand Schedule

There'are two types of demand such like,

(i) Individual demand schedule

(ii) Market demand schedule

(i) Individual Demand Schedule

An individual demand schedule is a tabular form showing the list of the quantities of a commodity that an individual consumer is willing to purchase corresponding to the given price of that commodity per unit of time. The table below shows a demand schedule of an individual consumer, say Mr. M for oranges.

Price of oranges per dozen (`)	Quantity demanded by Mr. M
45	2
38	3
30	4
25	6
20	10

(ii) Market Demand Schedule

Market demand schedule is a tabular form representing the list of quantities demanded of a commodity by all the buyers in a given market at different price levels. In other words, the market

demand schedule represents the total market demand at various prices. A market demand schedule is obtained as a combination of all individual demand schedules. Theoretically, a market demand schedule is obtained by compiling and combining all the individual demand schedules in a given market. Mathematically, it is obtained by the horizontal additions of quantities at various prices related in the individual demand schedules. The table below shows an example of a market demand schedule with individual consumers P, Q and R.

Price of the Commodity (`)	Quantity Demanded by Individuals A + B + C			Total Market Demand
6	1	1	2	4
5	2	3	4	9
4	3	5	5	13
3	4	6	7	17
2	5	7	10	22
1	6	8	12	26

Q7. What are the various reasons for change in demand?

Ans :

A change in demand occurs when the basic conditions of demand change. An alteration in the demand pattern is caused by many kinds of changes. Some of the important changes are:

1. Changes in Income

A change in the income of the consumer significantly influences his demand for most commodities. The demand for superior commodities in general and for comforts and luxury articles increases with a rise in the consumer's income. Similarly, overall demand generally decreases with a fall in income. In estimating demand function for commodities such as cars, for instance, changes in gross national product (GNP) or per capita real income is considered as crucial factors by the researchers in general.

2. Changes in Taste, Habits and Preference

When there is a change in taste, habits or preference of the consumer, his demand will change. When, a person gives up his smoking habit the demand for cigarettes decreases.

3. Change in Fashions and Customs

Fashions and customs of our society determine many of our demands. When these change, demands also change.

4. Change in the Distribution of Wealth

Through fiscal measures, government can reduce inequality of income and wealth and bring about a just distribution of wealth; consequently the demand pattern may change in a dynamic welfare society. Welfare programs like free medical aid, free education, pension schemes, etc., raise the purchasing power of the poorer sections of the community and their standard of living, so the overall demand pattern may change.

5. Change in Substitutes

Changes in the supply of substitutes, change in their prices, and the development of new and better quality substitutes certainly affect the demand for the given product. For instance, introduction of ballpoint pens has caused a fall in the demand for fountain pens.

6. Change in Demand for Complementary Goods

When there is a change in the demand conditions of a complementary good (which is jointly demanded), there will be side effects on demand. For instance, a change in the demand for shoes will automatically bring about a similar change in the demand for shoe laces.

7. Change in Population

The market demand for a commodity substantially changes when there is change in the total population or change in its age or sex composition. For instance, if the birth rate is high in a country, more toys and chocolates will be demanded. But when the birth rate is substantially reduced through overall family planning efforts, their demand will decrease. Similarly, if the sex ratio of the country changes and if females outnumber males, demand for skirts will increase and that for shirts will decrease.

8. Advertisement and Publicity Persuasion

A clever and persistent advertisement and publicity programmes by the producers affects consumer's preference and causes alteration in the demand for products. Generally, demand for patent medicines and toilet articles are very much determined by salesmanship and publicity.

2.1.2 Law of Demand

Q8. Define law of Demand? What are the assumptions of law of demand.

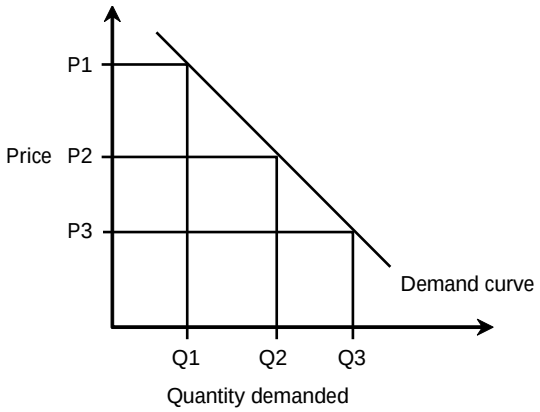
Ans : **(July-18)**

Definition

The law of demand states that other factors being constant (cetris peribus), price and quantity demand of any good and service are inversely related to each other. When the price of a product increases, the demand for the same product will fall.

Description

Law of demand explains consumer choice behavior when the price changes. In the market, assuming other factors affecting demand being constant, when the price of a good rises, it leads to a fall in the demand of that good. This is the natural consumer choice behavior. This happens because a consumer hesitates to spend more for the good with the fear of going out of cash.



The above diagram shows the demand curve which is downward sloping. Clearly when the price of the commodity increases from price p3 to p2, then its quantity demand comes down from Q3 to Q2 and then to Q3 and vice versa.

Assumptions to Law of Demand

The statement of the law of demand, demonstrates that this law operates only when all other things remain constant. These are then the assumptions of the law of demand. We can state the assumptions of the law of demand as follows:

1. Income level should remain constant

The law of demand operates only when the income level of the buyer remains constant. If the income rises while the price of the commodity does not fall, it is quite likely that the demand may increase. Therefore, stability in income is an essential condition for the operation of the law of demand.

2. Tastes of the buyer should not alter

Any alteration that takes place in the taste of the consumers will in all probability thwart the working of the law of demand. It often happens that when tastes or fashions change people revise their preferences. As a consequence, the demand for the commodity which goes down the preference scale of the consumers declines even though its price does not change.

3. Prices of other goods should remain constant

Changes in the prices of other goods often impinge on the demand for a particular commodity. If prices of commodities for which demand is inelastic rise, the demand for a commodity other than these in all probability will decline even though there may not be any change in its price. Therefore, for the law of demand to operate it is imperative that prices of other goods do not change.

4. No new substitutes for the commodity

If some new substitutes for a commodity appear in the market, its demand generally declines. This is quite natural, because with the availability of new substitutes some buyers will be attracted towards new products and the demand for the older product will fall even though price remains unchanged. Hence, the law of demand operates only when the market for a commodity is not threatened by new substitutes.

5. Price rise in future should not be expected

If the buyers of a commodity expect that its price will rise in future they raise its demand in response to an initial price rise. This behavior of buyers violates the law of demand. Therefore, for the operation of the law of demand it is necessary that there must not be any expectations of price rise in the future.

6. Advertising expenditure should remain the same

If the advertising expenditure of a firm increases, the consumers may be tempted to buy more of its product. Therefore, the advertising expenditure on the good under consideration is taken to be constant.

Q9. Explain the exceptions of law of demand.

Ans :

The law of demand does not apply in every case and situation. The circumstances when the law of demand becomes ineffective are known as exceptions of the law. Some of these important exceptions are as under.

1. Giffen Goods

Some special varieties of inferior goods are termed as Giffen goods. Cheaper varieties of this category like bajra, cheaper vegetable like potato come under this category. Sir Robert Giffen or Ireland first observed that people used to spend more their income on inferior goods like potato and less of their income on

meat. But potatoes constitute their staple food. When the price of potato increased, after purchasing potato they did not have so many surpluses to buy meat. So the rise in price of potato compelled people to buy more potato and thus raised the demand for potato. This is against the law of demand. This is also known as Giffen paradox.

2. Conspicuous Consumption

This exception to the law of demand is associated with the doctrine propounded by Thorsten Veblen. A few goods like diamonds etc., are purchased by the rich and wealthy sections of the society. The prices of these goods are so high that they are beyond the reach of the common man. The higher the price of the diamond the higher the prestige value of it. So when price of these goods falls, the consumers think that the prestige value of these goods comes down. So quantity demanded of these goods falls with fall in their price. So the law of demand does not hold good here.

3. Conspicuous Necessities

Certain things become the necessities of modern life. So we have to purchase them despite their high price. The demand for T.V. Sets, automobiles and refrigerators etc. has not gone down in spite of the increase in their price. These things have become the symbol of status. So they are purchased despite their rising price. These can be termed as "U" sector goods.

4. Ignorance

A consumer's ignorance is another factor that at times induces him to purchase more of the commodity at a higher price. This is especially so when the consumer is haunted by the phobia that a high-priced commodity is better in quality than a low-priced one.

5. Emergencies

Emergencies like war, famine etc. negate the operation of the law of demand. At such times, households behave in an abnormal way. Households accentuate scarcities and induce further price rises by making increased purchases even at higher prices during such periods. During depression, on the other hand, no fall in price is a sufficient inducement for consumers to demand more.

6. Future Changes in Prices

Households also act speculators. When the prices are rising households tend to purchase large quantities of the commodity out of the apprehension that prices may still go up. When prices are expected to fall further, they wait to buy goods in future at still lower prices. So quantity demanded falls when prices are falling.

7. Change in Fashion

A change in fashion and tastes affects the market for a commodity. When a broad toe shoe replaces a narrow toe, no amount of reduction in the price of the latter is sufficient to clear the stocks. Broad toe on the other hand, will have more customers even though its price may be going up. The law of demand becomes ineffective.

2.1.3 Determinants of Demand

Q10. Explain the factors determining demand?

(or)

What are the factors determining demand ?

Ans : **(Aug.-21,Jan.-20,June-18,Jan.-18, Imp.)**

The main factors determining demand are as follows:

1. Price of the Commodity

The law of demand states that if other things remain the same, the demand of the commodity is inversely related to its price. It implies that a rise in price of a commodity brings about a fall in its purchase and vice-versa. This happens because of income and substitution effects.

2. Income of the Consumer

The income of the consumer is another important variable which influences demand. The ability to buy a commodity depends upon

the income of the consumer. When the income of the consumers increases, they buy more and when income falls they buy less. A rich consumer demands more and more goods because his purchasing power is high.

3. Tastes and Preferences

The demand for a product depends upon tastes and preferences of the consumers. If the consumers develop taste for a commodity they buy whatever may be the price. A favourable change in consumer preference will cause the demand to increase. Likewise an unfavourable change in consumer preferences will cause the demand to decrease.

4. Prices of Related Goods

The related goods are generally substitutes and complementary goods. The demand for a product is also influenced by the prices of substitutes and complements. When a want can be satisfied by alternative similar goods they are called substitutes, such as coffee and tea. When commodities are complement, a fall in the price of one (other things being equal) will cause the demand of the other to rise such as car and petrol. Thus, the price of one good and the demand for another are inversely related.

5. Advertisement and Sales Propaganda

In modern times, the preferences of consumers can be altered by advertisement and sales propaganda. Advertisement helps in increasing demand by informing the potential consumers about the availability of the product, by showing the superiority of the product, and by influencing consumer choice against the rival products. The demand for products like detergents and cosmetics is mainly caused by advertisement.

6. Consumer's Expectation

A consumer's expectation about the future changes in price and income may also affect his demand. If a consumer expects a rise in prices he may buy large quantities of that particular commodity. Similarly, if he expects its prices to fall in future, he will tend to buy less at present. Similarly, expectation of rising income may induce him to increase his current consumption.

7. Growth of Population

The growth of population is also another important factor that affects the market demand. With the increase in population, people naturally demand more goods for their survival.

8. Weather Conditions

Seasonal factors also affect the demand. The demand for certain items purely depends on climatic and weather conditions. For example, the growing demands for cold drinks during the summer season and the demand for sweaters during the winter season.

9. Tax Rate

The tax rate also affects the demand. High tax rate would generally mean a low demand for the goods. At certain times the government restricts the consumption of a commodity and uses the tax as a weapon. A highly taxed commodity will have a lower demand.

10. Availability of Credit

The purchasing power is influenced by the availability of credit. If there is availability of cheap credit, the consumers try to spend more on consumer durables thereby the demand for certain products increase.

11. Pattern of Saving

Demand is also influenced by the pattern of saving. If people begin to save more, their demand will decrease. It means the disposable income will be less to purchase the goods and services. On the contrary, if saving is less their demand will increase.

12. Circulation of Money

An expansion or a contraction in the quantity of money will affect demand. When more money circulates among the people, more of a thing is demanded by the people because they have more purchasing power and vice versa.

2.1.4 Types of Demand

Q11. Explain different types of demand.

Ans : **(Aug.-21)**

The following are the different types of demand,

1) Individual and Market Demand

i) Individual Demand

The demand for commodity by a single consumer is known as individual demand. The quantity of a commodity which an individual is willing to buy at a particular price of the commodity during a specific time period, given his money income, his taste and prices of other commodities (particularly substitutes and complements), is known as "individual demand" for a commodity.

Example : Demand for one apple, chocolate, watch etc.

ii) Market Demand

The total quantity which all the consumers of a commodity are willing to buy at a given price per time unit, given their money income, taste and prices of other commodities (mainly substitutes) is known as 'market demand' for the commodity. In other words, the market demand for a commodity is the sum of individual demands by all the consumers (or buyers) of the commodity, over a time period and at a given price, other factors remaining the same.

Example : Quantity demanded for eggs in dozen.

2) Demand for Firm's Product and Industry's Products

i) Firm's Product Demand

The quantity of a firm's produce that can be disposed of at a given price over a time period denotes the demand for the "firm's product".

Example : Demand for steel produced by Tisco.

ii) Industry's Product Demand

The aggregate of demand for the product of all the firms of an industry is known as the market demand for 'industry's product'.

Example : The total demand for steel in the country.

3) Autonomous and Derived Demand

i) Autonomous Demand

Autonomous demand for a commodity is one that arises independent of the demand for any other commodity.

Example : Demand for food, clothes, shelter, etc., is autonomous demand.

ii) Derived Demand

Derived demand is one that tied to the demand for some parent products.

Example : Demand for land, fertilizers and agricultural tools and implements are a derived demand, for these goods are demanded because food is demanded.

4) Demand for Durable and Non-Durable Goods

i) Durable Good Demand

Durable goods are those, whose total utility (or use) is not exhausted by a single use. Such goods can be used repeatedly or continuously over a period. Durable goods may be consumer as well as producer goods.

Example : Durable consumer goods include clothes, shoes, owners occupied residential houses, furniture, utensils, refrigerators, scooters, cars, etc. The durable producer goods include mainly the items under 'fixed assets', such as building, plant, machinery, etc.

ii) Non-Durable Good Demand :

Non-durable goods are those, which can be used or consumed only once.

Example : Food items and their total utility is exhausted in a single use.

5) Short-Term and Long-Term Demand

i) Short-Term Demand

Short-term demand refers to the demand for such goods as are demanded over a short period.

Example : In this category, fall mostly the fashion consumer goods, goods of seasonal use and inferior substitutes during the scarcity period of superior goods, etc.

ii) Long-Term Demand

The long-term demand refers to the demand, which exists over a long period. The change in long term demand is perceptible only after a long period. Most generic goods have long-term demand.

Example : Demand for consumer and producer goods, durable and non-durable goods, is long-term demand, though their different varieties or brands may have only short-term demand.

6) Joint Demand and Composite Demand

i) Joint Demand

When two or more goods are jointly demanded at the same time to satisfy a single want it is called joint or complementary demand.

Example : There is joint demand for cars and petrol, pens and ink, tea and sugar, etc.

ii) Composite Demand

A commodity is said to have composite demand when it can be put to several alternative uses. This is not only peculiar to commodities like leather, steel, coal, paper, etc., but also to factors of production like land, labour and capital.

Example : Coal is demanded by railways, by factories, by households, etc.

7) Direct and Indirect Demand

i) Direct Demand

Demand for goods that are directly used for consumption by the ultimate consumer is known as direct demand. Since such goods are used for final consumption, such demand is also called consumers goods demand.

Example : Demand for all consumers goods such as bread, tea, readymade shirts, scooters, houses is direct demand.

ii) Indirect Demand

Indirect demand is the demand for goods that are not used by consumers directly. They are used by producers for producing other goods. So, indirect demand is also known as producer's goods demand.

Example : Machines, looms, ships etc.

8) Total Market and Segment Market Demand

i) Total Market Demand

The total market demand will be aggregate demand for the product from all the segments. Demand analysis requires not only the total demand for a product but also a breakup of the demand for the product in different parts of the market.

ii) Segment Market Demand

Market segment demand would refer to demand for the product in which that specific market requirements. The market may be segmented on the basis of age, sex, geographical region, etc.

Example : The demand for Amul ice-cream in India is total market demand, demand for Amul ice-cream in Hyderabad is a segment market demand.

Q12. Differentiate between individual demand and market demand.

Ans :

Difference between individual demand and market demand are as follows,

Area	Individual Demand	Market Demand
1. Definition	When the demand for a product arises from an individual consumer, then it is known as individual demand	When the demand of all the individuals and households arises for a product in a given market then it is known as market then it is known as market demand.
2. Nature	It is the demand of a individual	It is the demand of number of individuals
3. Individual demand curve V/s Market demand curve	Individual demand curve shows the maximum price which an individual consumer is willing to pay for the different amounts of the commodity under given conditions of demand.	Market demand curve shows the maximum amount of the commodity which all the consumers in a given market are willing to buy at each possible price of the commodity under given conditions of demand.
4. Individual demand schedule V/s market demand schedule	Individual demand schedule shows the list of quantities of a commodity which was demanded by an individual at various prices.	Market demand schedule shows the list of quantities demanded by all the individuals at various prices in the market
5. Individual and market demand function	Individual demand function is a mathematical relationship between the demand by an individual consumer and the determinants of individual demand.	Market demand function shows the functional relationship between the market demand for a commodity and the determinants of market demand.

2.2 Elasticity of Demand

Q13. What do you understand by elasticity of Demand?

Ans :

The law of demand simply explains the inverse relationship between price and quantity demanded. It doesn't specify how much more is purchased when price falls and how much less is purchased when price rises. In order to understand the rate of change in price and consequent changes in demand, elasticity of demand concept is used.

Elasticity is one of the most important concepts in necoclassical economic theory. It is useful in understanding the incidence of indirect taxation, marginal concepts as they relate to the theory of the firm and distribution of wealth and different types of goods. Elasticity is also crucially important in any discussion of welfare distribution, in particular consumer surplus, producer surplus or government surplus.

Meaning of Elasticity of Demand

Elasticity of demand is the responsiveness of demand for a commodity to changes in its determinants.

$$\text{Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded of commodity}}{\text{Percentage change in its price}}$$

Definition of Elasticity of Demand

In the words of Dr. Marshall, "Elasticity of Demand may be defined as the percentage change in the quantity demanded divided by the percentage change in the price."

According to Building, "Price elasticity of demand measures the responsiveness of the quantity demanded to the change in price."

In the words of Dooley, "The price elasticity of demand measures the responsiveness of the quantity demanded to a change in its price."

According to Antol Murad, "Elasticity of demand is the ratio of relative change in quantity to relative change in price."

Thus, price elasticity of demand is a device to measure the rate of change in the quantity of a product demanded in response to a small change in its price.

2.2.1 Types of Elasticity of Demand

Q14. Explain different types of elasticity of demand.

Ans : **(Dec.-18)**

After knowing what is demand and what is law of demand, we can now come to elasticity of demand. Law of demand will tell you the direction i.e. it tells you which way the demand goes when the price changes. But the elasticity of demand tells you how much the demand will change with the change in price to demand to the change in any factor.

1. Price Elasticity of Demand
2. Income Elasticity of Demand
3. Cross Elasticity of Demand
4. Advertisement Elasticity of Demand

Q15. What is price elasticity of demand ? Explain different types of price elasticity of Demand?

Ans : **(Nov.-20, July-18)**

The concept of price elasticity of demand was developed by ***Alfred Marshall.*** Price elasticity of demand is a technical term used by economist to explain the degree of responsiveness of the demand for a product to a change in its price.

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

$$\text{Price elasticity of demand} = \frac{\text{Proportionate change in the quantity demanded for product A}}{\text{Proportionate change in the price of B}}$$

The same is expressed as,

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

Where,

Q_1 = Quantity demanded before price change

Q_2 = Quantity demanded after price change

P_1 = Price before change

P_2 = Price after change

E > 1 (Elastic Demand)	Percentage change in quantity demanded greater than percentage change in revenue price increase.
e = 1 (Unity Elasticity)	Percentage change in quantity demanded is equal to percentage change in price revenue remain unchanged.
s < 1 (Inelastic Demand)	Percentage change in quantity demanded is less than percentage change in price revenue decreased.

Table : Price Elasticity of Demand

Types of Price Elasticity of Demands :

a) Perfectly Elastic Demand

b) Perfectly Inelastic Demand

c) Relatively Elastic Demand

d) Relatively Inelastic Demand

e) Unity Elasticity Demand

a) Perfectly Elastic Demand

When any quantity can be sold at given price, and when there is no need to reduce price, the demand is said to be *perfectly elastic*. In such cases, even a small increase in price will lead to complete fall in demand. This is illustrated in fig. below.

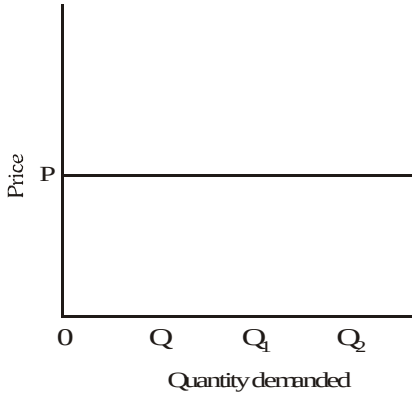


Figure : Perfectly Elastic Demand

b) Perfectly Inelastic Demand

When a significant degree of change in price leads to little or no change in the quantity demanded, then the elasticity is said to be perfectly inelastic.

In other words, the demand is said to be perfectly inelastic when there is no change in the quantity demanded even though there is a big change (increase or decrease) in price.

Figure below reveals that there is no change in the quantity demanded though there is change in price, say increase or decrease. In other words, despite the increase in price from OP to OP_1, the quantity demanded has not fallen down. Similarly, though there is a fall in the price from OP_3 to OP_2, the quantity demanded remains unchanged.

Figure : Perfectly Inelastic Demand

The concepts of perfectly elastic and perfectly inelastic demand do not manifest in real life.

c) Relatively Elastic Demand

The demand is said to be relatively elastic when the change in demand is more than the change in price. Figure below reveals that the quantity demanded increases from OQ_1 to OQ_2 because of a decrease in price from OP_1 to OP_2. The extent of increase in the quantity demanded is greater than the extent of fall in the price.

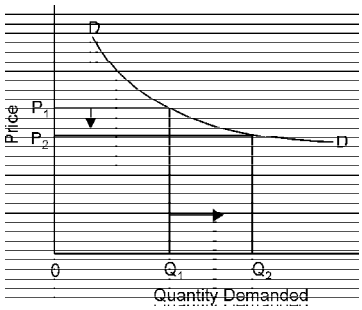


Figure : Relatively Elastic Demand

d) Relatively Inelastic Demand

The demand is said to be relatively inelastic when the change in demand is less than the change in the price. This is illustrated in fig. below.

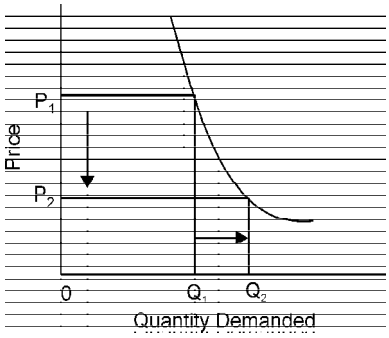


Figure : Relatively Inelastic Demand

Figure above reveals that the quantity demanded increases from OQ1 to OQ2 because of a degree in price from OP1 to OP2. The extent of increase in the quantity demanded is lesser than the extent of fall in the price.

e) Unity Elasticity Demand

The elasticity in demand is said to be unity when the change in demand is equal to the change in price. This is illustrated in fig. below.

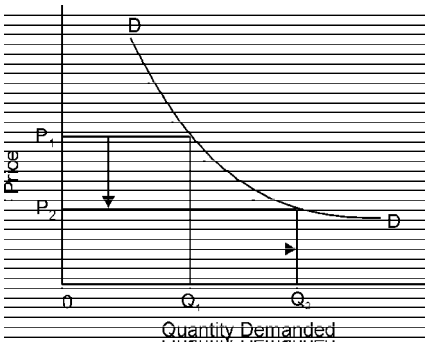


Fig.: Unity Elasticity

Figure above reveals that the quantity demanded increases from OQ_1 to OQ_2 because of a decrease in price from OP_1 to OP_2. The extent of increase in the quantity demanded is equal to the extent of fall in the price.

Q16. Discuss the role of price elasticity of demand in managerial decision.

Ans :

The concept of price elasticity of demand has important practical applications in managerial decision-making. A business man has often to consider whether a lowering of price will lead to an increase in the demand for his product, and if so, to what extent and whether his profits would increase as a result thereof. Here the concept of elasticity of demand becomes crucial.

Knowledge of the nature of the elasticity of demand for his products will help a business to decide whether he should cut his price in a particular case. Such knowledge would also help a businessman to determine whether and to what extent the increase in costs could be passed on to the consumer. In general for items those whose demand is elastic it will pay him to charge relatively low prices, while on those whose demand is elastic, it would be better off with a higher price. A monopolist would not be able to increase his price if the demand for his product is elastic.

In practice, an accurate estimate of the probable response of volume of sales to price changes is extremely difficult. Moreover, the cost of the statistical analysis required may in some cases, exceed the benefit especially when uncertainty is great or when the volume is too small to provide a reason also return on the amount spend on research. The subjective judgment of certain managers, beyond on years of experience, sometimes exceeds in accuracy the best of the present statistical techniques. Uses of price elasticity can be point out as below:

1. Price distribution

A monopolist adopts a price discrimination policy only when the elasticity of demand of different consumers or sub-markets is different. Consumers whose demand is inelastic can be charged a higher price than those with more elastic demand.

2. Public utility pricing

In case of public utilities which are run as monopoly undertakings e.g. elasticity of water supply railways postal services, price discrimination is generally practiced, charging higher prices from consumers or users with inelastic demand and lower prices in case of elastic demand.

3. Joint supply

Certain goods, being products of the same process are jointly supplied, e.g. wool and mutton. Here if the demand for wool is inelastic compared to the demand for mutton, a higher price for wool can be charged with advantage.

4. Super Markets

Super-markets are a combined set of shops run by a single organization selling a wide range of goods. They are supposed to sell commodities at lower prices than charged by shopkeepers in the bazaar. Hence, price policy adopted is to charge slightly lower price for goods with elastic demand.

5. Use of machine

Workers often oppose use of machines out of fear of unemployment. Machines need not always reduce demand for labor as this depends on price elasticity of demand for the commodity produced. When machines reduce costs and hence price of products, if the products demand is elastic, the demand will go up, production will have to be increased and more workers may be employed for the product is inelastic, machines will lead to unemployment as lower prices will not increase the demand.

6. Factor pricing

The factors having price inelastic demand can obtain a higher price than those with elastic demand. Workers producing products having inelastic demand can easily get their wages raised.

7. International trade

(a) A country benefits from exports of products as have price inelastic demand for a rise in price and elastic demand for a fall in price.

(b) The demand for imports should be inelastic for a fall in price and elastic for a rise in price.

(c) While deciding whether to devalue a country's currency or not, price elasticity of demand for a country's exports would be an important factor to be taken into consideration. If the demand is price elastic, it would lead to an increase in the country's exports and devaluation would fail to achieve its objective.

8. Shifting of tax burden

It is possible for a business to shift a commodity tax in case of inelastic demand to his customers. But if the demand is elastic, he will have to bear the tax burden himself, otherwise demand for his goods will go down sharply.

9. Taxation policy

Government can easily raise tax revenue by taxing commodities which are price inelastic.

Q17. What are the determinants of price elasticity of demand ?

Ans : **(Dec.-18)**

Determinants of Price Elasticity of Demand

The following are the determinants of price elasticity of demand.

(i) Nature of the Commodity

On the basis of the satisfaction provided by the goods, they are classified into two categories - Luxury goods Comfort goods and necessary goods. Usually, the demand for luxury goods and comfort goods is price elastic, whereas, the demand for necessary goods is price inelastic. For example, the demand for rice, clothes, etc., is inelastic, whereas, the demand for TV, radio, automobiles etc., is elastic.

(ii) Availability of Close Substitutes

The availability of close substitutes for a commodity is the important determinant of price elasticity of demand. If the product has large number of close substitutes under a given price, the demand for that commodity is elastic. If the price of the commodity is increased, consumers buy less of it and buy of its substitutes. Therefore the demand for that commodity tends to be elastic. If the number of substitutes increase, the demand becomes more price elastic. For example, the demand for cigarette is inelastic as there is no other close substitute for it. But the demand for a particular brand of cigarette is elastic as there are many brands available as substitutes in the same price range.

(iii) Number of Uses of the Commodity

A commodity having large number of uses has high elasticity and the commodity with single use has less elasticity. For example, a commodity like coal having a composite demand, has high elasticity.

(iv) Consumer's Income Level

Larger the income level of the consumer, the demand for overall commodities tends to be relatively inelastic. The demand of a millionaire is less-affected even by significant price changes. Similarly, an increase/decrease in the income level of a low-income consumer may tend to make the demand for commodities relatively elastic.

(v) Durables/Durable Goods and Perishables

The demand for durable goods tends to be inelastic. Examples are furniture, bicycle, radio etc., whereas the demand of perishable goods is relatively elastic. Examples are milk, vegetables, fish etc.

(vi) Habits, Traditions and Customs

Some commodities are demanded due to individual habits, traditions and customs. For such commodities, the demand is less elastic. Examples are cigarettes, alcohol etc.

(vii) Complementary Goods

Commodities that are jointly demand or the complementary goods have less elasticity of demand. Examples are petrol, ink etc.

(viii) Share of the Commodity in Consumer's Income

If a less proportion of consumer's income is spent on the commodity, then the demand tends to be inelastic. The examples of such commodities are salt, match boxes, ink etc. There is no appreciable impact of income variations on these products because the household usually spends an insignificant amount of them.

(ix) Time Distribution

Usually the quantity demanded of a commodity is referred to a specific period. Example is the amount of rice demanded in a week, a month and a year. Longer the time period, greater will be the possibility of substituting the commodity under consideration with a cheaper commodity.

PROBLEMS ON PRICE ELASTICITY OF DEMAND

1. Determine the price elasticity of demand given that,

i) **The quantity demanded for product S is 10,000 units at a price of ` 1000.**

ii) **The price declines to ` 900 and the quantity demanded increases to 15,000 units.**

Sol :

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

For identifying the variables such as,

Q_1 = 10,000 units (quantity before change).

Q_2 = 15,000 units (quantity after change).

= ` 1000 (price before change).

P_2 = ` 900 (price after change).

$$Edp = \frac{\frac{(15,000 - 10,000)}{10,000}}{\frac{(900 - 1000)}{1000}}$$

Edp = -5

As the Edp is –5, it means that for a 10% change in price, there is a change in demand by 50%. Where the numerical value of elasticity is more than one, the demand is elastic. In other words, the percentage of increase in quantity demanded is more than the percentage of decrease in price.

2. Determine the price elasticity of demand given that,

i) The quantity demanded for product S is 10,000 units at a price of ` 1000.

ii) The price declines to ` 700 and the quantity demanded increases to 11,000 units.

Sol :

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

For indentifying the variables such as,

Q_1 = 10,000 units (quantity before change).

Q_2 = ` 11,000 units (quantity after change).

P_1 = 1000 (price before change).

P_2 = ` 700 (price after change).

$$Edp = \frac{\frac{(11,000 - 10,000)}{10,000}}{\frac{(700 - 1000)}{1000}}$$

$Edp = -0.33$

As the Edp is -0.33, it means that for a 10% fall in price, there is a change in demand by 3.3%. Where the numerical value of elasticity is less than one, the price demand is inelastic. In other words, the percentage of increase in quantity demanded is less than the percentage of decrease in price.

3. Determine the price elasticity of demand given that,

i) The quantity demanded for product S is 10,000 units at a price of ` 1,000.

ii) The price declines to ` 500 and the quantity demanded increases to 15,000 units.

Sol :

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

For indentifying the variables such as,

Q_1 = 10,000 units (quantity before change).

Q_2 = 15,000 units (quantity after change).

P_1 = ` 1,000 (price before change).

P_2 = ` 500 (price after change).

$$Edp = \frac{\frac{(15,000 - 10,000)}{10,000}}{\frac{(500 - 1,000)}{1,000}} = -1.0$$

As the Edp is -1.0, it means that for a 50% fall in price, there is an increase in demand by 50%. Where the numerical value of elasticity is equal to one, the price demand is unitary elasticity. In other words, the percentage of increase in quantity demanded is equal to the percentage of decrease in price.

Q18. Define Income elasticity of demand.

Ans : **(Nov.-20, July-18)**

Definition of Income Elasticity of Demand

Consumer's income is one of the important determinants of demand. Income elasticity of demand is the measure of the extent to which a consumer's demand for a commodity changes as a result of changes in his income. Income elasticity of demand is defined as the ratio of proportionate/percentage change in the quantity demanded of a commodity to the proportionate/percentage change in the consumer's income. Mathematically, it is represented as,

$$\varepsilon_1 = \frac{\text{Percentage change in the quanity demanded}}{\text{Percentage change in consumer's income}}$$

$$\varepsilon_1 = \frac{\Delta Q / Q_1}{\Delta I / I_1} = \frac{\Delta Q}{\Delta I} \cdot \frac{I_1}{Q_1}$$

Where,

ε_1 = Income elasticity of demand

Δ_Q = Percentage change in the quantity demand.

Q_1 = Initial quantity demanded of a commodity.

Δ_I = Percentage change in the consumer's income

I = Consumer's initial income.

Income elasticity of demand is also given by,

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

Where,

Q_2 – New quantity demanded

I_2 – Consumer's new income.

Consider and example as follows,

I_1 = `6,000 Q_1 = 50 units

I_2 = `7,000 Q_2 = 60 units

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

$$= \frac{Q_2 - Q_1}{I_2 - I_1} \frac{I_1}{Q_1}$$

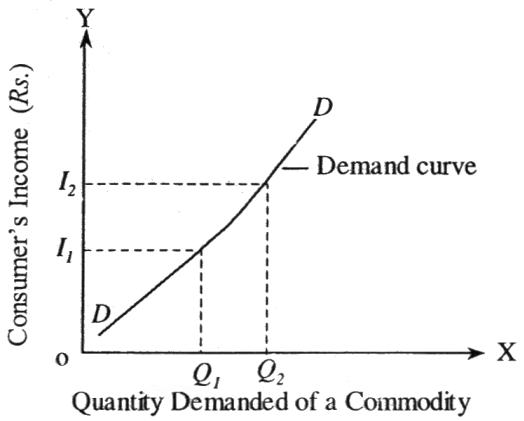
$$= \frac{60 - 50}{7,000 - 6,000} \frac{6,000}{50}$$

$$= \frac{10}{1000} \frac{6,000}{50} = 1.2$$

$\therefore$ Income elasticity ε_I = 1.2.

Income elasticity of demand for normal goods is positive, as the consumer's demand for a commodity goes in the same direction with his income. Whereas, income elasticity for inferior goods is negative as the demand for inferior goods varies inversely with consumer's income.

The demand curve for income elasticity of demand is,



Q19. Discuss various types of income elasticities of demand?

Ans :

Types of Income Elasticities of Demand

Income elasticity of demand is categorized into five types.

i) High income elasticity of demand

ii) Unitary income elasticity of demand

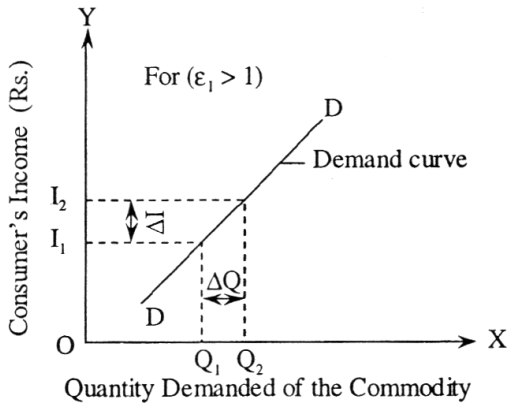
iii) Low income elasticity of demand

iv) Zero income elasticity of demand

v) Negative income elasticity of demand.

(i) High Income Elasticity of Demand

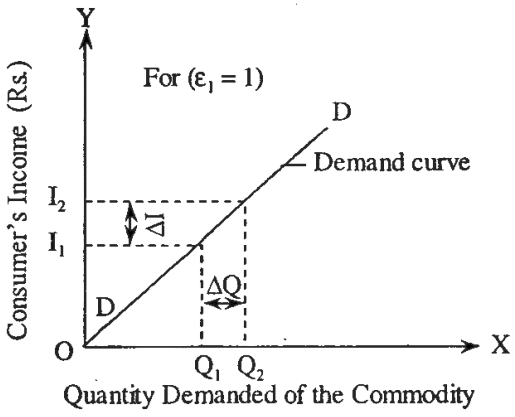
When the percentage change in the quantity demanded of a commodity is greater than the percentage change in the consumer's income, then the income elasticity of demand is high. The elasticity coefficient for high income elasticity is greater than one i.e., ($\varepsilon_1 > 1$). The demand curve is as follows,



(ii) Unitary Income Elasticity of Demand

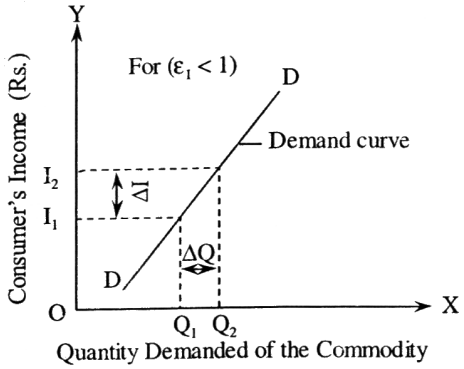
A commodity is said to possess unitary income elasticity of demand, when the percentage change in the quantity demanded of a commodity and the percentage change in the consumer's income are equal. The elasticity coefficient of unitary income elasticity is equal to one i.e.,

($\varepsilon_1 = 1$) and its demand curve is at an angle of 45° as shown below,



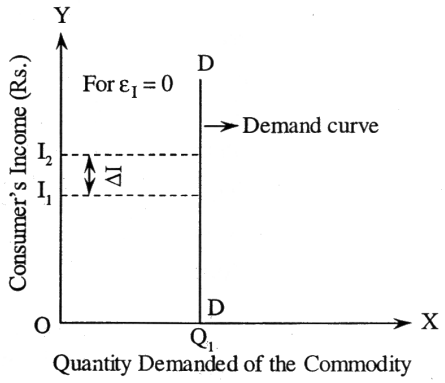
(iii) Low Income Elasticity of Demand

When the percentage change in the quantity demanded of a commodity is less then the percentage change in the consumer's income, it is called as low income elasticity of demand. The elasticity coefficient of low income elasticity is less than one ($\varepsilon_1 < 1$) and the demand curve assumes the shane as follows.



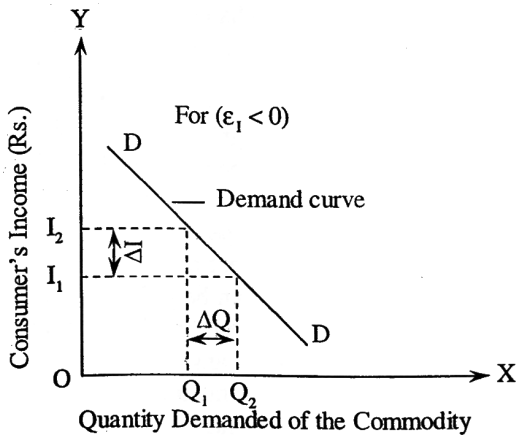
(iv) Zero Income Elasticity of Demand

A commodity is said to have zero income elasticity of demand when a change in consumer's income has no effect on the quantity demanded of a commodity. The elasticity coefficient for zero income elasticity is equal to zero ($\varepsilon_I = 0$). The demand curve is as follows.

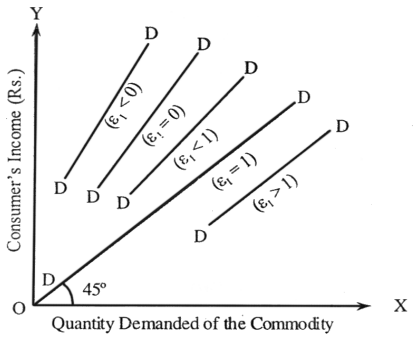


(v) Negative Income Elasticity of Demand

When an increase hi consumer's income causes a decrease in the quantity demanded of a commodity and vice- versa, then the commodity is said to have negative income elasticity of demand. Example is inferior goods have negative income elasticity with elasticity coefficient less than zero ($\varepsilon_I < 0$). The demand curve is,



The figure below depicts all the income elasticities of demand.



PROBLEM ON INCOME ELASTICITY OF DEMAND

4. Determine the income elasticity of demand given that,

i) The quantity demanded for product Q is 10000 units at a daily income of `1000.

ii) The daily income declines to ` 800 and the quantity demanded decreases to 7000 units.

Sol :

$$\text{Edi} = \frac{\frac{(Q_2 - Q_1)}{Q_1}}{\frac{(I_2 - I_1)}{I_1}}$$

For identifying the variables such as,

Q_1 = 10,000 units (quantity before change)

Q_2 = 7,000 units (quantity after change).

I_1 = ` 1,000 (Income before change).

I_2 = ` 800 (Income after change).

$$\text{Edi} = \frac{\frac{(7,000 - 10,000)}{10,000}}{\frac{(800 - 1,000)}{1000}} = 1.5$$

Edi is 1.5, which means that for a 10% fall in income, there is a decrease in demand by 15%. Where the numerical value of elasticity is more than one, the price demand is relatively elastic.

Q20. Explain briefly about cross elasticity of demand.

Ans : **(Nov.-20, July-18)**

The change (increase or decrease) in the demand for one good in response to the change (increase or decrease) in price of the related good is called the cross elasticity of demand. Cross elasticity is always negative for complementary demand.

Example ; Due to increase in price of sugar, the demand for tea and coffee is decreases.

Cross elasticity is positive for substitutes.

Example : The demand for jeans goes up if there is an increase in the price of formal parts.

$$\text{Cross elasticity of demand} = \frac{\text{Proportionate change in quantity demanded for product B}}{\text{Proportionate change in price of product A}}$$

The same is expressed as,

$$Edc = \frac{\frac{(Q_2 - Q_1)}{Q_1}}{\frac{(P_2A - P_1A)}{P_1A}}$$

Where,

Q_1 = Quantity demanded before change.

Q_2 = Quantity demanded after change.

P_2 = Price before change.

P_2 = Price after change in the case of product.

PROBLEM ON CROSS ELASTICITY OF DEMAND

5. Determine the cross elasticity of demand given that,

i) The quantity demanded for product S is 10,000 units at a price of ` 2,000.

ii) The price declines to 200 and the quantity demanded increases to 12,000 units.

Sol. :

$$Edc = \frac{\frac{(Q_2 - Q_1)}{Q_1}}{\frac{(P_2A - P_1A)}{P_1A}}$$

For identifying the variables such as,

Q_1 = 10,000 kg (quantity of coffee demanded before change).

Q_2 = 12,000 units (quantity of coffee demanded after change).

P_2 = ` 200 (price of sugar per kg. before change).

P_2 = ` 300 (price of sugar per kg. after change).

$$Edc = \frac{\frac{(12,000 - 10,000)}{10,000}}{\frac{(300 - 200)}{200}} = 0.4$$

Since Edc is 0.4, it means that for a 10% increase in the price of sugar, there is an increase in demand by 4%. Where the numerical value of elasticity is less than one, the cross demand is relatively inelastic.

Q21. Explain briefly about advertisement elasticity of demand.

Ans :

Advertising means the activity by which message are addressed to selected respondents with a view to induce them to buy the product, services or idea. Advertising elasticity is also known as promotional elasticity.

Advertising elasticity may be define as the responsiveness of demand or sales to change in advertising or other promotional expenses.

Advertising elasticity is always positive. In advertising elasticity, due to change in the expenditure it lead to increase in the sales revenue.

$$\text{Advertising elasticity of demand} = \frac{\text{(Proportionate change in the quantity demanded for product X}}{\text{Proportionate change in advertising cost}}$$

The same is expressed as,

$$Eda = \frac{\frac{(Q_2 - Q_1)}{Q_1}}{\frac{(A_2 - A_1)}{A_1}}$$

Where,

Q_x = Quantity demanded before change.

Q_2 = Quantity demanded after change.

A_1 = Amount spent on advertisement before change.

A_2 = Amount spent on advertisement after change.

Uses of advertisement elasticity of demands

1. It helps the manager to decide the advertisement expense. If the advertisement is more than one, which means incremental revenue exceeds incremental expenses, then increased expenditure on advertisement can be justified.
2. The fire should observe the saturation point, where advertisement pays nothing or does not help in increasing sales revenue.

PROBLEM ON ADVERTISEMENT ELASTICITY OF DEMAND.

6. Determine the advertising elasticity of demand given that,

i) The quantity demanded for product S is 10,000 units per day at a monthly advertising budget of ` 1,000.

ii) The monthly advertising budget is slashed to ` 500, the quantity demanded will fall down to 3000 units per day.

Solution :

$$\text{Eda} = \frac{\frac{(Q_2 - Q_1)}{Q_1}}{\frac{(A_2 - A_1)}{A_1}}$$

For identifying the variables such as,

Q_1 = 10,000 units (quantity before change).

Q_2 = 3,000 units (quantity after change).

A_1 = ` 1,000 (advertising budget before change).

A_2 = ` 500 (advertising budget after change).

$$\text{Eda} = \frac{(3000 - 10,000)/10,000}{(500 - 1000)/1000} = +1.4$$

Since Eda is +1.4, it means that for a 10% decrease in the advertising budget, there is a decrease in demand by 14%. Where the numerical value of elasticity is more than one, the advertising elasticity is relatively elastic.

Q22. What are the differences between income elasticity of demand and cross elasticity of demand ?

Ans : **(Nov.-20, Jan.-20, Dec.-18, Imp.)**

S.No.	Income Elasticity of Demand	Cross Elasticity of Demand
(1)	When the demand for a product undergoes changes i.e., increase or decrease due to change in income is called income elasticity of demand. elasticity of demand.	The change i.e., increase or decrease in the demand for one good in response to change i.e., increase or decrease in price of the related goods is called to cross
(2)	The income elasticity of demand measures the changes in the quantity of demand.	The cross elasticity of demand measures how much demand of one good may change when price of another goods hold constant.

(3)	Income elasticity is calculated as, $= \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in income}}$	Cross elasticity of demand is calculated as, $= \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in price}}$
(4)	If the income elasticity of a good is positive we call them normal goods. It can be between '0' and '1', we call it income inelastic demand for goods such goods are clothing and news paper. If it is above '1', we call it income elastic demand.	If the cross elasticity is negative, then we can call, such goods as complements. Such as, popcorn and soft drinks they are consume together.
(5)	If the income elasticity is negative, it means that the income increases, the quantity demanded for these goods as inferior goods. **Example** : Magi Noodles, Rice, Potatos etc.	If the price elasticity is positive, than we call such goods as substitutes. Ex : Pizza and burger, usually we can consume any one.

Q23. What are the differences between Price and income elasticity of demand ?

Ans :

S.No.	Price Elasticity of Demand	Income Elasticity of Demand
(1)	Price elasticity of demand is the responsiveness of quantity demanded of a commodity to a given change in price.	When the demand for a product undergo changes i.e., increase or decrease due to change in income is called income elasticity of demand.
(2)	It mainly depends upon the price of the product.	It mainly depend upon the consumers income.
(3)	It is measured when price of a commodity changes.	The income elasticity of demand is measured with the changes in the quantity of demand.
(4)	Price elasticity of demand is calculated as $= \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in price}}$	Income elasticity of demand is calculated as $= \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in income}}$
(5)	In this type, when any product price the demand of a quantity increases and if the product price increases then the demand of quantity decreases.	In this type any change product demand increases than the consumer income get change i.e., decreases and if the product demand decreases than the consumer income is change i.e., remain unuse or constant.

Q24. What are the differences between Price and Cross Elasticity of Demand ?

Ans :

S.No.	Price Elasticity of Demand	Cross Elasticity of Demand
(1)	Price elasticity of demand is the responsiveness of quantity demanded of a commodity to a given change in price.	The changes i.e., increase or decrease in the demand for one good in response to change i.e., increase or decrease in price of the related goods is called cross elasticity of demand.
(2)	It is used to calculate the proportionate change which results in price and quantity relation.	It is used to calculate the proportionate change in quantity and price relation.
(3)	Price elasticity of demand is calculated as, $= \frac{\text{Proportionate change in quantity of Product A}}{\text{Proportionate change in price of Product B}}$	'Cross elasticity of demand is calculated as, $= \frac{\text{Proportionate change in quantity of Product B}}{\text{Proportionate change in price of Product A}}$
(4)	Price elasticity of demand is basically based on price of a product.	Cross elasticity of demand is basically relay on variation in price of related goods.
(5)	The price elasticity of demand measures the price of a commodity is the rate at which quantity are bought to changes as the prices changes.	The cross elasticity of demand measures the rate of responsiveness of quantity demanded of one commodity due to change in price of another commodity.

2.2.2 Measurement of Elasticity of Demand

Q25. Explain briefly about Measurement of Elasticity of Demand.

Ans : **(Aug.-21, Nov.-20, Jan-20, Dec.-18, Imp.)**

The proportionate changes in quantity of demand and the proportionate changes prices of commodity functional relation is called price elasticity of demand. It can be derived the following equation.

$$\therefore \quad \boxed{\eta d = \frac{\Delta Q}{\Delta P}}$$

$\therefore$ ηd = Demand elasticity

AQ = Changes in quantity of demand

ΔP = Changes in prices of commodity

There are three types methods are available for estimating the elasticity of demand. They are

1) Total expenditure method
2) Point method
3) Arc method

1) Total Expenditure Method

It has been proposed by "Marshall based on price of commodity, quantity of unit and total expenditure base, he can analyse to estimated greater than 1, equal to 1, less than –1 elasticities of demand is being determined it can illustrated here under schedule.

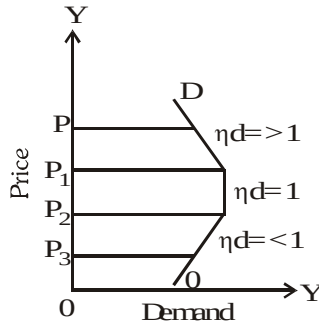
Schedule

Price	Qty	Total expenditure	Determinants of yd
10	100	1000	Relative price yd = >1%
9	120	1080	
8	140	1120	Oxitary price yd = 1
7	160	1120	
6	180	1080	Relative price in yd = <1
5	200	1000	

In the above schedule if the price at Rs.10/- the purchased units are 100/- and the incurring total expenditure is 1000 rupees, if the price is comedown at Rs. 9/- the purchased units are raised at 120 units in order to incurred the total expenditure 1080 rupees which is more than to previous expenditure. Therefore it is equalent to greater than 1 price elasticity of demand.

If the price is at Rs. 18/- the purchased units are 140 and the incurring total expenditure is 1120 rupees, if the price is comedown at Rs. 7/- the purchased units are raised at 160 units in order to incurred the total expenditure 1120 rupees which remains constant. Therefore it is equalent to price elasticity of demand.

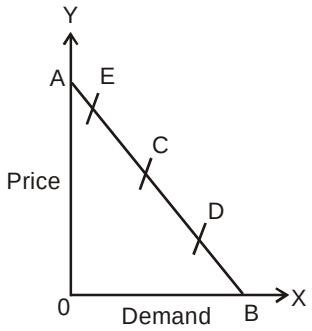
If the price is at rupees 6/- the purchased units. So units in order to incurred the total expenditure is 1080 is the price is comedown at Rs. 5/- the purchased units are raised 200 units in order to incurred. The total expenditure. Therefore it is equalent less than/price elasticity of demand. Based on the schedule we can illustrated here under diagram.



In the above diagram on y axis we are showing a price and on x-axis quantity of demand, the changes of prices OP to P_1 shows greater than 1 elasticity of demand, the changes of prices of P_1 to P_2 shows equal to 1 price elasticity of demand and the changes of price P_2 to P_3 shows less than 1 elasticity of demand.

2) Point Method

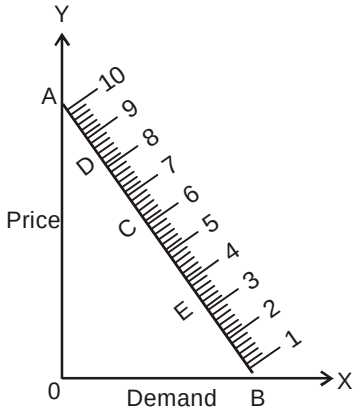
Based on this method on any point of the demand line we can traceout the nature of elasticity of demand it, can illustrated here under example :



On the above diagram the left to right downwards a and b and the demand line, and a, b demand line are plotted a, e, c, d, b points are mentioned in respective point the nature of elasticity of demand can we traceout with the help of point method.

Let we know that a, b demand line length gpr.

Example : If the a, b demand line length is above 10 centimeters. Let us assume based on it we can fixed here under a scale of demand line.



The point method of elasticity of demand the following formula.

(Lower segment of a point)

Point method of $\eta d = \frac{L}{U}$

(Upper segment of a point)

Based on above formula (or) equation, for

Example :

At the point of C yd = $\frac{L}{U} = \frac{CB}{CA} = \frac{5}{5} = 1$, so it equal to = 1 ηd

At the point of D ηd = $\frac{L}{U} = \frac{DB}{DA} = \frac{75}{75} = 3$, so it equal to = Z1 ηd

At the point of C ηd = $\frac{L}{U} = \frac{EB}{EA} = \frac{2.5}{7.5} = \frac{1}{3}$ = 0.33, so it equal to ηd

At the point of A ηd = $\frac{L}{U} = \frac{AB}{A} = \frac{10}{0} = a$ = 0.33, so it equal to ηd

At the point of B ηd = $\frac{L}{U} = \frac{B}{BA} = \frac{0}{10} = a$ = 0.33, so it equal to ηd = 0

3) Arc Method : The method is depends upon the following formula.

Arc method $\eta d = \frac{Q_1 + Q_2}{Q_1 - Q_2} - \frac{P_1 + P_2}{P_1 - P_2} \Big/ 2$

$\therefore$ Q_1 = old demand

Q_2 = new demand

P_1 = old price

P_2 = new price.

2.2.3 Significance of Elasticity of Demand

Q26. Explain Significance of Elasticity of Demand.

Ans : **(Aug.-21, Nov.-20, July-18)**

Elasticity of demand is a crucial concept in the spheres of trade, commerce and finance. The following are some of the important advantages of elasticity of demand:

1. Price Determination

The doctrine of elasticity of demand plays a vital role in price determination. The sellers increase prices if the demand is less elastic and lower prices if the demand is elastic.

2. Monopoly Market

For a monopolist to optimize his profits, he must know the elasticity of demand for his products. In other words, the degree of monopoly can be measured with the help of elasticity of demand. A monopolist can perform price discrimination only when he is aware of price elasticity for his commodities. A prudent monopolist increases prices in the inelastic market and lowers prices in the elastic market. In addition, the concept of price elasticity of demand plays a vital role in dumping practice as well.

Example

Oil producing countries tend to increase price by cutting down oil production. When the oil production is reduced, an artificial scarcity is created; consequently, the price is increased. This is possible as long as the oil products are price inelastic.

3. Pricing Public Utilities

Many of the public utilities are necessities. For instance, supply of water, electricity, transport and so on is essential for our everyday activities. Therefore, the demand for these utilities is price inelastic. The concept of elasticity of demand helps the government to rationalize prices for these important utilities. Otherwise, prices for these utilities will be very high, if they are provided by private entities.

4. Prosperity Versus Poverty

Do you agree that even an overwhelming prosperity can cause poverty? It is true in some special cases. One of such special cases is bumper crop. In agriculture when there is bumper crop, the price of the commodity falls because of excessive supply. In this case, if the demand for the commodity is inelastic, it may create disaster because, the farmers will get very low prices for their goods. Therefore, not all properties may alleviate poverty. This scenario can be studied well with the help of the concept of elasticity of demand.

5. Currency Devaluation

The application of elasticity of demand can be extended to the analysis of currency devaluation. Devaluation helps to increase exports. It is possible only when the demand for exported goods is highly elastic. If the demand is inelastic, there will not be any use in currency devaluation.

6. Taxation

Suppose you are the finance minister of your country. On which commodities you levy taxes – the one that is price elastic or the one that is price inelastic? Obviously, you have to choose the commodities that are price inelastic. The reason is that if the commodities are price elastic, the demand will come down drastically when their prices increase. Taxes increase the price of the commodities. If the demand falls, revenue also will fall. Because of this reason, you have to choose those commodities that are price inelastic.

7. Wage Determination

The idea of elasticity of demand helps to wage determination. You know that wages of laborers are closely associated with the price of products they produce. What is the way to determine the right price that gives maximum profits? The concept of elasticity of demand answers this question. Once the right price is determined, the profit will be maximized. Subsequently, wages of laborers can also be determined.

Q27. Explain Factors affecting Elasticity of Demand.

Ans :

Elasticity is governed by a number of factors. Change in any one of these factors is likely to affect the elasticity of demand. The factors are:

(a) Nature of Product

Based on their nature, the products and services are classified into necessities, comforts and luxuries. Necessaries imply the absolute or basic necessities such as food, clothing, housing. Comforts refer to TV, refrigerator and so on. By luxuries, we mean sofa sets, marble flooring in a house and such others. The meaning and definition of these necessaries, luxuries and comforts change from person

to person, time to time and place to place. For example, a scooter may be a comfort or luxury for a student but when he does a part-time job, it may be a necessity for him.

The nature of product has a significant impact on the elasticity of demand. For instance, if there is an increase in the price of rice, we still buy it because it is a necessity for us. This means that the demand is inelastic to price. Though there is an increase in price, we tend to buy the necessaries such as petrol, diesel and so on. In other words, the demand does not fall because of increase in price. From this, we can say that the necessaries have inelastic demand. For comforts and luxuries, the demand is relatively elastic. It means that any increase in the price of comforts or luxuries will lead to moderate to significant fall in their demand.

(b) Time Frame

The more the time available for the customer, the demand for a particular product am be elastic and vice versa. Take the case of vegetables. When you do not have time, you go to a nearby shop and buy whatever you want at the given price. Had you had little free time, you would have preferred to get: the same from a vegetable market at lesser price.

(c) Degree of Postponement

Where the product consumption can be postponed, the product is said to have elastic demand and where it cannot be postponed, it is said to have inelastic demand. The consumption of necessaries cannot be postponed and hence they have inelastic demand.

(d) Number of Alternative uses

If the number of alternative uses are more, the demand is said to be highly inelastic and vice versa. Take the case of power or electricity. It is used for a number of alternative uses such as running of machines in industries, offices, households, trains, and so on.

(e) Tastes and Preferences of the Consumer

Where the customer is particular about his taste and preferences, the product is said to be inelastic. For the customers who are particular or loyal to certain brands such as Colgate, Tata Tea, Annapurna Atta, and so on, price increases do not matter. They tend to buy that brand inspite of the price changes.

(f) Availability of Close Substitutes

Where there are a good number of close substitutes, the demand is said to be elastic and vice versa. For gold, there is no close and literal substitute and hence the demand for gold is inelastic. If coffee and tea are equally good for me, if there is an increase in price of coffee, I may tend to switch over to tea. But this may not hold good when I am particular about coffee only. I may be prepared to pay higher price for coffee.

(g) In case of Complementaries or Joint Goods

In case of complementaries or goods having joint demand, the elasticity is comparatively low.

(h) Level of Prices

If the price is very expensive (such as diamonds) or very cheap (such as salt), then the product is likely to have an inelastic demand. If the price is too high, a fall in it will not increase the demand much. Similarly, if the price is too low, a further fall in its price is not likely to result in more demand. The demand of the relatively poor people is more sensitive to price changes. In order to derive maximum satisfaction from their limited income, they try to plan their purchases in response to changes in prices. The rich may not bother about price changes.

(i) Availability of Subsidies

Subsidy refers to money paid by a government or other public authority in order to help a company financially or to make something cheaper for the public. There is need for subsidies in case of goods with inelastic demand such as LPG, sugar, wheat and so on.

(j) Expectation of Prices

Where people expect a fall in the price, the demand for the product is likely to be inelastic.

(k) Durability of the Product

Where the product is durable in case of consumer durables such as TV, the demand is elastic. In the case of perishable goods such as milk, the demand is inelastic.

(l) Government Policy

Where the government policy is liberal, the product is likely to have elastic demand and vice versa. Government, in the interest of the lower income group consumers, closely monitors the prices of certain products (such as, ration goods as sold in fair price shops are likely to have inelastic demand). Also, another example could be taxes. Government can raise tax collections with a little reduction in the tax rates.

Q28. Explain the managerial applications of elasticity of demand.

Ans :

1. Price Discrimination

A monopolist adopts a price discrimination policy only when the elasticity of demand of different consumers or sub-markets is different. Consumers whose demand in inelastic can be charged a higher price than those with more elastic demand.

2. Public Utility Pricing

In case of public utilities which are run as monopoly undertakings, e.g., electricity, water supply, railways, postal services, price discrimination is generally practiced, charging higher prices from consumers, or users with inelastic demand and lower prices in case of elastic demand.

3. Joint Supply

Certain goods, being products of the same process, are jointly supplied, e.g., wool and mutton. Here if the demand for wool in inelastic compared to the demand for mutton, a higher price for wool can be charged with advantage.

4. Super Markets

Super-markets are a combined set of shops run by a single organization selling a wide range of goods. They are supposed to sell commodities at lower prices than charged by shopkeepers in the bazaar. Hence, price adopted is to charge slightly lower price for goods with elastic demand.

5. Use of Machines

Workers often oppose use of machines out of fear of unemployment. Machines need not always reduce demand for labor as this depends on price elasticity of demand for the commodity produced.

When machines reduce costs and hence price of products, if the product's demand in elastic, the demand will go up, production will have to be increased and more workers maybe employed.

On the contrary, if demand for the product is inelastic, machines will lead to unemployment as lower prices (due to lesser costs) will not increase the demand.

6. Factor Pricing

The factors having price-inelastic demand can obtain a higher price than those with elastic demand. Workers producing products having inelastic demand can easily get their wages raised.

7. International Trade

i) A country benefits from exports of products as have price-inelastic demand for a rise in price and elastic demand for a fall in price.

ii) The demand for imports should be inelastic for a fall in price and elastic for a rise in price.

iii) While deciding whether the devalue a country's currency or not, price elasticity of demand for a country's exports would be an important factor to be taken into consideration.

If the demand is price-elastic, it would lead to an increase in the country' exports and

devaluation would be worthwhile. If the demands is price inelastic, devaluation would fail to achieve its objective.

For example, the demand for agricultural products is rather price inelastic and devaluation of a country's products is rather price inelastic and devaluation of a country's currency would not lead to any significant increase in their exports.

8. Shifting of Tax Burden

It is possible for a business to shift a commodity tax in case of inelastic demand to his customers. But if the demand in elastic, he will haves to bear the tax burden himself otherwise demand for his goods will go down sharply.

9. Taxation Policy

Government can easily raise tax revenue by taxing commodities which are price-inelastic.

PROBLEM ON ELASTICITY OF DEMAND

7. Suppose that the demand curve for video rentals has been estimated to be Q = 2500 – 250P. Further your average costs of supplying videos is equal to 2 AC = 8 – 006 Q + 00000Q . Calculate your optimal price, quantity and profits.

Sol :

Calculation of Optimal Price and Quantity

Given,

$Q = 2500 - 250\ P$

Dividing the equation with 250

$$\frac{Q}{250} = \frac{2500}{250} = \frac{250P}{250}$$

$0.004\ Q = 10 - P$

$P = 10 - 0.004Q$

$TR = PQ = (10 - 0.004\ Q)\ Q$

$= (10Q - 0.004Q)\ Q$

$= 10 - 0.004\ Q^2$

$$MR = \frac{d}{dQ}(PQ)$$

$= 10 - (0.004 \times 2)\ Q$

$= 10 - 0.008\ Q$

Calculation of Total Cost (TC)

Multiplying average cost (AC) with quantity (Q)

$AC = 8 - 0.006Q + 0.000002Q$

$= 8 - 0.006002Q$

$TC = 8Q - 0.006002Q \times Q$

$= 8Q - 0.006002Q^2$

Applying $\frac{d}{dx}(x^n) = n.x^{n-1}$ to get MC

$MC = 8 - (0.006002 \times 2)Q$

$MC = 8 - 0.012\ Q$

Now, setting (Marginal Revenue) MR = MC (Marginal Cost)

$MR = MC$

$10 - 0.008\ Q = 8 - 0.012Q + 0.008Q$

$10 = 8 - 0.012Q + 0.008Q$

$10 = 8 - 0.004Q$

$10 - 8 = -0.004Q$

$2 = -0.004Q$

$\frac{2}{-0.004} = Q$

$Q = -500$

Substituting 'Q'value in equation $P = 10 - 0.004Q$

$P = 10 - 0.004\ (-500)$

$P = 12$

Calculation of Profit/Loss

Profit/loss = Total revenue – Total cost

$TR = PQ$

$= 12 \times (-500) = -6000$

$TC = 8Q - 0.006002(-500)^2$

$= -2499.50$

Profit/Loss = – 6000 – (– 2499.50)

Profit/Loss = – 3500.50

8. Suppose that you are a monopoly faced with a demand curve given by Q = 100 – 2P. You have a constant marginal cost equal to $10. Calculate your optimal price and quantity. Show that your price adheres to the optimal markup rule based on demand elasticity.

Sol :

Calculation of Optimal Price and Quantity

Given that,

$Q = 100 - 2P$, MC = $ 10

Dividing equation by 2

$$\frac{Q}{2} = \frac{100}{2} - \frac{2P}{2} \text{ (or) } Q\frac{1}{2} = \frac{100}{2} - \frac{2P}{2}$$

$$Q\frac{1}{2} = 50 - P$$

$$P = 50 - 0.5\,Q$$

$$TR = PQ$$

$$= (50 - 0.5\,Q)Q$$

$$= 50Q - 0.5Q^2$$

$$MR = \frac{d}{dQ}(PQ)$$

$$= 50 - (0.5 \times 2)\,Q$$

$$= 50 - Q = MC = 10$$

$$Q = 50 - 10$$

$$Q = 40$$

$$= 50 - 0.5\,(40)$$

$$= 50 - 20$$

$$P = 30$$

Calculating of Elasticity

$$\varepsilon = \frac{dQ}{DP}\frac{P}{Q}$$

$$= 2\left(\frac{30}{40}\right)$$

$$= 1.5$$

Optimal Markup rule

$$P = \frac{MC}{1+\frac{1}{\varepsilon}}$$

$$= \frac{10}{1+\frac{1}{1.5}} = \$\,60$$

2.3 Demand Forecasting

Q29. Define Demand Forecasting. What are the factors determining Demand Forecasting?

Ans : **(Aug.-21)**

Meaning and Definition of Demand Forecasting

Demand forecasting refers to an estimation of future demand for the product under given conditions.

Demand forecasting is predicting future demand for the product. It is the estimation of the value of a variable (or set of variables) to some future point in time.

Demand forecasting is the estimation of level of demand (amount or quantity) to be expected for goods or services for some period of time in future.

According to **Evan J Donglas,** "Demand forecasting may be defined as the process of finding values for demand in future time period".

Thus, demand forecasting means, when, how, where and how much will be the demand for a product or service in the near future.

Factors Govering Demand Forecasting

The following are the factors determining demand forecasting,

1) Period of Forecasting

Demand forecasting may be short-term or long-term,

i) **Short-Run :** A short-term demand may cover a period of three months, six months or one year but not exceeding one year.

ii) **Long-Run** : Long-term forecasting covers a period exceeding 5 years.

A business should forecast short-term as well as long-term sales/demand for its products to have a clear view of business activities. An alternative method may be to associate the long-term and short-term forecasting with certain types of decisions.

2) Demand Forecasting Level

Demand forecasting may be undertaken at three different levels,

i) **Industry Level** : This includes the preparation of sales forecasts by different trade association.

ii) **Firm Level** : This includes the estimation of demand for the products which was offered by a individual firm. Individual firms forecasts their sales.

iii) **Macro-Level** : It is concerned with business conditions over the whole economy measured by an approximate index of industrial production, national income or expenditure. This kind of external data cover the basic assumptions on which the business must have a base for its forecasts.

3) Products are to be Classified

Products are classified into capital goods and consumer durable or non-durable goods and services. There are distinctive patterns of. demand for different categories of the products.

4) Forecasts of Established Products or New Products

As for as the new products are concerned, methods and problems for forecasting are quite different from products already established in the market as sales trends are know better and the competitive nature is well known. Thus, the methods and problems should be studied accordingly.

5) Degree of Orientation

Demand forecasts has break down into two forecasts they are,

i) **General Forecast** : General forecasts are resulted with the total sales in the given period of time.

ii) **Specific Forecast** : Specific forecasts are those which resulted will be product/ service-wise or region or customer segment-wise forecasting sales within a given period of time.

6) Other Factors

There are other factors which influence the demand forecasting are,

i) Political developments.

ii) Technology changes.

iii) Price level or inflation changes)

Q30. What are the characteristics of good Demand Forecasting ?

Ans :

According to **Joel Dean** following are the suggested criteria characteristics for selecting a suitable method of forecasting,

1) **Accuracy**

It is important to check the past forecast against the present performance and of present forecast against future. The accuracy of the forecast is considered good if the forecasting result gives appropriate output.

2) **Simplicity**

Every forecasting method should be simple, reliable and consistent with the existing knowledge. A simple method is more understandable than the complicated one.

3) **Economy**

It should involve lesser costs as far as possible. Its costs must be compared against the benefits of forecasts.

4) **Availability**

Immediate availability of required data is of vital importance to business. The technique which is used should give quick results and useful information.

5) **Plausibility**

The techniques which are used and the assumptions made should be intelligible to the management. It is essential for a correct interpretation of the results.

6) **Effective**

It is quite easy to judge the trends. But for a forecasting it is necessary to predict deviation and turning for an effective forecasting.

7) **Durability**

Durability of forecast depends upon the responsiveness and simplicity of the functional filled.

8) **Quickness**

It should yield quick results. If it is time consuming, it may delay the decision-making process.

2.3.1 Need for Demand Forecasting

Q31. What is the need for Demand Forecasting?

Ans : **(Nov.-21,Jan.-20, July-18, Jan.-18, Imp.)**

Forecasting the demand for its product or products is the essential function for an organization irrespective of its nature. Many organizations follow it as a custom to completely and accurately forecast the demand of its products regularly. The need or the necessity for demand forecasting arises due to the following purposes served by it.

i) It serves as a road map for production plans.

ii) It plays a significant role in situations of uncertain production or demand.

iii) The outcomes of demand forecasting facilitate the managers to line up their business activities.

iv) The demand forecasting results from a basis for (EXIM) export and import policy and fiscal policy.

v) In situations of competition, it can help a manager/businessman to take decisions regarding inputs of production process such as labour, capital etc.

Q32. Explain the steps involved in Demand Forecasting ?

Ans :

While undertaking demand forecasting, following steps are involved,

1) **Identification of Objectives**

The first step is to identify the objectives for forecasting. These objective may be estimated based on many aspects such as quality, composition, price, sales planning etc.

2) **Determining the Nature of Goods Under Consideration**

The next step is important because different pattern are involved for different category of goods, consumer durable goods and consumer non-durable goods. This step helps to identify the approach of forecasting and determine the variable to be considered for forecasting.

3) **Proper Method to be Selection**

The next part of process is to select a proper method for forecast. The issue is concern with the objectives of forecasting, type of data available, period for which forecast is to be made, level of forecast etc.

4) **Interpretation of Results**

The final decision on demand forecasting objective is done on the basis of interpretation of the forecast. Efficiency of forecast mostly depends on efficiency of interpretation of results. Most of the time, the forecast result is based on the factors like business environment, international economic, political conditions, government policy etc. Again their is a need required to revise the forecast in the changing nature of circumstances.

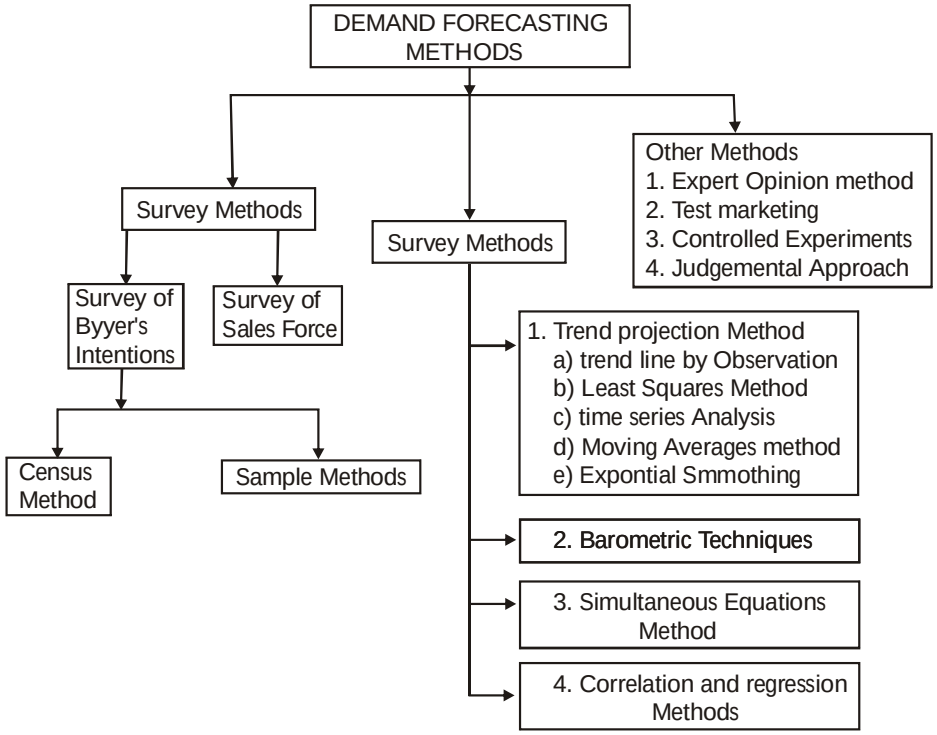
2.3.2 Methods of Demand Forecasting

Q33. Explain various methods of Demand Forecasting.

Ans : **(Nov.-21, Jan.-20)**

Forecasting demand is not an easy exercise. It may be easy only in the case of a very few products or services, where the demand for the product does not change from time to time or competition is not significant, it may be relatively easy to forecast demand for a particular product or service. In a majority of the cases, market demand in general and company demand in particular change from year to year. In such a case, the determining factor for marketing success is only a good forecasting technique. The more the demand is sensitive, the more important it is to forecast it accurately. This calls for an elaborate forecasting process.

There are many methods of forecasting demand. To forecast demand, we need to build a certain base of information. To build such an information base, we need to consider what the customers say, what the customers do, and how the customers behaved in a given marketing situation.



2.3.3 Survey Method

Q34. Explain briefly about Survey Method.

(or)

Elucidate the Survey Method of Demand Forecasting ?

Ans : **(Aug.-21, Nov.-21, July.-18, Jan-20)**

a) Survey of Buyers' Intentions

To anticipate what buyers are likely to do under a given set of circumstances, a most useful source of information would be the buyers themselves. It is better to draw a list of all potential buyers, approach each buyer to ask how much does he plans to buy of the given product at a given point of time under particular conditions. This is the most effective method because the buyer is the ultimate decision-maker and we are collecting the information directly from him.

The survey of buyers can be conducted either by covering the whole population* or by selecting a sample group of buyers. Suppose there are 10,000 buyers for a particular product. If the company wishes to elicit the opinion of all the buyers, this method is called *census method* or *total enumeration method.* This method is not only time-consuming, but also costly. On the other hand, the firm can select a group of buyers who can represent the whole population. This method is called the *sample method.* A survey of buyers based on sample basis can be completed faster with relatively lower costs.

The survey method is considered more *advantageous* in the following situations.

i) where the product is new on the market for which no data previously exists

ii) when the buyers are few and they are accessible

iii) when the cost of reaching them is not significant

iv) when the consumers stick to their intentions

v) when they are willing to disclose what they intend to do.

This method has certain *disadvantages* also. They are:

i) Surveys may be expensive.

Quite often the value of information supplied by the customer is not worth the cost of gathering it.

ii) Sample size and timing of survey.

Sample size should be large enough to yield meaningful results on the desired aspects of study. Also the sample should be selected in such a way that it represent the whole population under the study. This increases the cost and also the time needed to undertake the analysis.

The forecast results can deeply be influenced by the timing of the survey. For ex-ample, the number of residents preferring to stay in multi-storied apartments soon after the news about an earthquake may drastically come down when compared to the normal times.

Where the surveys are conducted by a group of firms, these costs can be shared.

iii) Methods of sampling.

The survey should be based on appropriate method of sampling. The method so selected should be capable of providing results with no bias. For instance, the surveys conducted on the internet will have an built-in bias towards those in the higher socio-economic groups who have access to internet.

iv) Inconsistent buying behaviour.

The buyers also may not express their intentions freely. Even the buyers do not act upon the way they express. Most of the buyers are susceptible to the advertisement strategies and are emotional when it really comes to the question of buying the product or service

b) Sales Force Opinions

Another source of getting reliable information about the possible level of sales or demand for a given product or service is the group of people who sell the same. Thus, we can control the limitations of cost and delays in contacting the customers.

The sales people are those who are in constant touch with the main and large buyers of a particular market, and hence they constitute another valid source of information about the likely sales of a product. The sales force is capable of assessing the likely reactions of the customers of their territories quickly, given the company's marketing strategy. It is less costly as the survey can be conducted instantaneously through telephone, fax or video-conferencing, and so on. The data, thus collected, forms another valid source of reliable information.

Here also, there is a danger that salesmen may sometimes become biased in their views. The sales people are paid based on their results. Where the targets are set based on the results of the survey of the sales force, and the payment is linked to achievement of these targets, incentive is paid to those who achieve more than their targets. To prevent the company from fixing higher targets, it is quite likely that they understate or overstate the demand to eventually get low or high sales quota set for them.

This method is appropriate when

- sales persons are likely to be most knowledgeable sources of information
- the salesmen are cooperative
- bias factor can be corrected by means of growth factor. Where the company finds that the sales position is forecast lower, it may correct it by adding to it the estimated difference.

2.3.4 Statistical Methods

Q35. "Statistical and mathematical techniques complicate the process of demand forecasting". Do you agree? Support your answer.

Ans : **(Nov.-21, Jan.-20, Imp.)**

For forecasting the demand for goods and services in the long-run, statistical and mathematical methods are used considering the past data.

a) Trend Projection Methods

These are generally based on analysis of past sales patterns. These methods dispense with the need for costly market research because the necessary information is often already available in company files interms of different time periods, that is, a time series data. There are five main techniques of mechanical extrapolation. In extrapolation, it is assumed that existing trend will maintain all through.

i) Trend line by observation

This method of forecasting trend is elementary, easy and quick as it involves merely the plotting the actual sales data on a chart and then estimating just by observation where the trend line lies. The line can be extended towards a future period and corresponding sales forecast read from the graph.

ii) Least Squares Method

Certain statistical formulae are used here to find the trend line which 'best fits' the available data. The trend line is the basis to extrapolate the line for future demand for the given product or service on graph. Here it is assumed that there is a proportional (linear) change in sales over a period of time. In such a case, the trend line equation is in linear form. Where this assumption does not hold good, the equation can be in non-linear form.

The estimating linear trend equation of sales is written as :

$$\text{or} \quad S = x + y(T)$$

Where x and v have been calculated from past data S is sales and T is the year number for which the forecast is made. To find the values of x and y, the following normal equations have to be stated and solved :

$$\Sigma S = Nx + y\,\Sigma T$$

$$\Sigma ST = x\Sigma T + y\Sigma T^2$$

Where S is the sales; T is the year number, n = number of years.

iii) Time series analysis

Where the surveys or market tests are costly and time-consuming, statistical and mathematical analysis of past sales data offers another method to prepare the forecasts, that is, time series analysis. One major requirement to administer this technique is that the product should have actively been traded in the market for quite sometime in the past. In other words, considerable data on the performance of the product or service over significantly large period should be available for better results under this method. Time series emerge from such a data when arranged chronologically. Given significantly large data, the cause and effect relationships can be discovered through quantitative analysis.

The following are the four major components analysed from time series while forecasting the demand:

(i) Trend (T)

Also called the long-term trend, is the result of basic developments in the population, capital formation and technology. These developments relate to over a period of long time say five to ten years, not definitely overnight.

The trend is considered statistically significant when it has reasonable degree of consistency. A significant trend is central and decisive factor considered while preparing a long-range forecast.

(ii) Cyclic Trend (C)

Is seen in the wave like movement of sales. The sales data is quite often affected by swings in the levels of general economic activity, which tend to be somewhat periodic. These could be related to the business cycles in the economy such as inflation or recession. For instance, during the period of inflation, prices of the products go up and hence the demand slows down.

(iii) Seasonal Trend (S)

Refers to a consistent pattern of sales movements within the year. More goods are sold during the festival seasons. The seasonal component may be related to weather factors, holidays, and so on.

(iv) Erratic Trend (E)

Results from the sporadic occurrence of strikes, riots, and so on. These erratic components can even damage the impact of more systematic components, and thus make the forecasting process much more complex.

Classical time series analysis involves procedures for decomposing the original sales series (Y) into the components T, C, S, I. There are different models in the time series analysis. While one model states that these components interact linearly, that is, Y = T + C + S + E, another model states that Y is the product of all these components that is,

$$Y = T \times C \times S \times E$$

v) Moving average method

This method considers that the average of past events determine the future events. In other words, this method provides consistent results when the past events arc consistent and unaffected by wide changes. As the name itself suggests, under this method, the average keeps on moving depending up on the number of years selected. Selection of the number of years is the decisive factor in this method. Moving averages get updated as new information flows in.

This method is easy to compute. One major advantage with this method is that the old data can be dispensed with, once the averages are computed. These averages, not the original data, are further used as the forecast for next period.

The main shortcoming of this method is that it gives equal weightage to data both in the recent past and the earlier one.

vi) Exponential smoothing

This is a more popular technique used for short run forecasts. This method is an improvement over moving averages method. Unlike in moving averages method, all time periods (ranging from the immediate past to distant past) here are given varying weights, that is, the values of the given variable in the recent times are given higher weights and the values of the given variable in the distant past are given relatively lower weights for further processing. The reason is obvious: it is assumed that the nearest future is more or less based on the recent past. This method proves more realistic when the data is consistent all through the year, unaffected by wide seasonal fluctuations.

The formula used for exponential smoothing is :

$$S_t + 1 = cS_t + (1-c)\, Sm_t$$

Where

S_{t+1} = Exponentially smoothed average for new year

S_t = actual data in the most recent past

Sm_t = most recent smoothed forecast

c = smoothing constant.

If the smoothing constant 'c' is higher, higher weight is given to the most recent information. The value of 'c' varies between 0 and 1 inclusive and the exact value of c is determined by the magnitude of random

variations. If the magnitude of random variations is large, lower value to c is assigned and vice versa. However, it is considered that a value between 0.1 and 0.2 is more appropriate in most of the cases.

b) Barometric Techniques

Where forecasting based on time series analysis or extrapolation may not yield significant results, barometric techniques can be made use of. Under the barometric technique, one set of data is used to predict another set. In other words, to forecast demand for a particular product or service, use some other relevant indicator (which is known as a barometer) of future demand.

c) Simultaneous Equation Method

In this method, all variables are simultaneously considered, with the conviction that every variable influences the other variables in an economic environment. Hence, the set of equations equal the number of dependent (controllable) variable which is also called endogenous variables. In other words, it is a system of 'n' equations with 'n' unknowns. It can be solved, the moment the model is specified because it covers all the unknown variables, it is also called complete systems approach to demand forecasting.

Like two least squares, where regression of investment (I) is found on all the predetermined variables such as government policy, competition, level of technology and so on, which are beyond the control of the management. These include the exogeneous variables such as government policy and logged endogenous variables such as S_{t-1}.

This method is more practical in the sense that it requires to estimate the future values of only predetermined variables. It is an improvement over regression method whereas in regression equation, the value of both exogenous and endogenous variables have to be predicted. It is no better than regression method. It inherits all the limitations of regression method.

It is difficult to compute where the number of equations is larger.

d) Correlation and Regression Methods

Correlation and regression methods are statistical techniques. Correlation describes the degree of association between two variables such as sales and advertisement expenditure. When the two variables tend to change together, then they are said to be correlated. The extent to which they are correlated is measured by correlation coefficient. Of these two variables, one is a dependent variable and the other is an independent. If the high values of one variable are associated with the high values of another, they are said to be positively correlated.

For example, if the sales have gone up as a result of increase in advertisement expenditure, we can say that the sales and advertisement are positively correlated. Similarly, if the high values of one variable are associated with the low values of another, then they are said to be negatively correlated. For example, if the price of a product has come down; and as a result, there is increase in its demand, the demand and the price are negatively correlated. In other words, where the functional relationship is analysed with the independent variable, it is simple correlation. It is likely that there could be several independent variables, and in such a case, it is called multiple correlation. Correlation coefficient ranges between +1 and —1. It does not exceed this range. Where the correlation coefficient is zero, it indicates that the variables under study are not related at all.

In *regression* analysis, an equation is estimated which best fits in the sets of observations of dependent variables and independent variables. The best estimate of the true underlying relationship between these variables is thus generated. The dependent (unknown) variable is then forecast based on this estimated equation, for a given value of the independent (known) variable. The method of least squares is applied in most regressions. As the regression coefficients estimated from the sample observations are merely the best estimate of true population

parameters, the regression equation cannot exactly predict the dependent variable for a given value of the independent variable. In cases of more than one independent variable having significant effect upon the dependent variable, multiple linear regression is employed.

2.3.5 Other Methods

Q36. Define :

(a) Expert opinion

(b) Test marketing

(c) Control experiments

(d) Judgemental approach

Ans : **(Nov.-21)**

a) Expert Opinion

Well-informed persons are called experts. Experts constitute yet another source of information. These persons are generally the outside experts and they do not have any vested interests in the results of a particular survey.

An expert is good at forecasting and analyzing the future trends in a given product or service at a given level of technology. The services of an expert could be advantageously used when a firm uses general economic forecasts or special industry forecasts prepared outside the firm. It may be easy to administer this method where there are parameters clearly defined to make forecasts. These act as guidelines.

This method also has certain advantages and disadvantages.

The main advantages of this method are :

- results of this method would be more reliable as the expert is unbiased, has no direct commercial involvement in its primary activities
- independent demand forecasts can be made relatively quickly and cheaply
- where there are different points of view among different experts, consensus can be arrived through an objective analysis. The experts can be asked to explain the reasons why the forecasts are out of line with the consensus. These can be taken into account before taking the final decisions. Sorting out the differences in the estimates in this way is called Delphi Technique.
- this method constitutes a valid strategy particularly in the case of new products, in respect of which there is no other alternative or source of information.

The main disadvantage is that an expert cannot be held accountable if his estimates are found incorrect.

b) Test Marketing

It is likely that opinions given by buyers, salesmen or other experts may be, at times, misleading. This is the reason why most of the manufacturers favour to test their product or service in a limited market as test-run before they launch their products nationwide. Based on the results of test marketing, valuable lessons can be learn on how consumers react to the given product and necessary changes can be introduced to gain wider acceptability. To forecast the sales of a new product or the likely sales of an established product in a new channel of distribution or territory, it is customary to find test marketing in practice.

Automobile companies maintain a panel of consumers who give feedback on the style and design and specifications of the new models. Accordingly these companies make necessary changes, if any, and launch the product in the wider markets.

In test marketing, the entire product and marketing programme is tried out for the first time in a small number of well-chosen and authentic sales environment. The primary objective, here, is to know whether the customer will accept the product in the present form or not.

The advantages of test marketing are:

a) the acceptability of the product can be judged in a limited market

b) before it is too late, the corrections can be made to the product design, if necessary. Thus, major catastrophy, in terms of failure, can be avoided.

c) the customer psychology is more focussed in this method and the product and services are aligned or redesigned accordingly to gain more customer acceptance.

The following are the disadvantages of this method:

- It reveals the quality of the product to the competitors before it is launched in the wider market. The competitors may bring about a similar product or often misuse the results of the test marketing against the given company.
- It is not always easy to select a representative audience or market.
- It may also be difficult to extrapolate the feedback received from such a test market, particularly where the chosen market is not fully representative.

c) Controlled Experiments

Controlled experiments refer to such exercises where some of the major determinants of demand are manipulated to suit to the customers with different tastes and preferences, income groups, and such others. It is further assumed that all other factors remain the same. In this method, the product is introduced with different packages, different prices in different markets or same markets to assess which combination appeals to the customer most. Regression equation can be built upon these price-quantity relationships of different markets. This method can not provide better results, unless these markets are homogeneous in terms of, tastes and preferences of the customers, their income and so on.

This method is used to gauge the effect of a change in some demand determinant like price, product design, advertisement, packaging, and so on.

This method is still in the infancy stage and not much tried because of the following reasons:

- It is costly and time consuming
- It involves elaborate process of studying different markets and different permutations and combinations that can push the product aggressively
- If it fails in one market, it may affect other markets also

d) Judgemental Approach

When none of the above methods are directly related to the given product or service, the management has no alternative other than using its own judgement. Even when the above methods are used, the forecasting process is supplemented with the factor of judgement for the following reasons :

- Historical data for significantly long period is not available
- Turning points in terms of policies or procedures or causal factors cannot be precisely determined
- Sales fluctuations are wide and significant
- The sophisticated statistical techniques such as regression and so on. may not cover all the significant factors such as new technologies and so on, affecting demand
- The results of statistical methods are more reliable at the national level rather than firm or industry level. In such a case, the management has to rely more on its judgement to assess the validity of such results.

PROBLEMS ON DEMAND FORECASTING

9. An economic research centre published data on GDP and demand for refrigerators as given below.

Year	1990	1991	1992	1993	1994	1995	1996
GDP (Billion `)	20	22	25	27	30	33	35
Refrigerators (Million Units)	5	6	8	8	9	10	12

(a) Estimate regression equation R = a + bY

Where R = Refrigerator and Y = GDP

(b) Forecast demand for refrigerators for the years 1997 and 1998. The research centre has projected GDP for 1997 and 1998 at ` 38 billion and ` 40 respectively.

Sol :

(a) Given regression equation is Y = a + bY

Where,

Y = GDP

a, b = Coefficients to be estimated.

Parameters 'a' and 'b' can be estimated by solving the two linear equations as follows,

$\Sigma R_t = na + b\Sigma Y$

$\Sigma Y_t.R_t = a\Sigma Y_t + bY_t^2$

Year	GDP (Y) (Million `)	Refrigerators (R) (Million Units)	Y^2	RY
1900	20	5	400	100
1991	22	6	484	132
1992	25	8	625	200
1993	27	8	729	216
1994	30	9	900	270
1995	33	10	1089	330
1996	35	12	1225	420
$\Sigma n = 7$	$\Sigma Y_t = 192$	$\Sigma R_t = 58$	$Y_t^2 = 5452$	$\Sigma R_t Y_t = 1668$

Substitute the values from the above table into the equations (1) and (2),

$\Sigma R_t = na + b\Sigma Y_t$

58 = 7a + b 192

$\Sigma Y_t.R_t = a\Sigma Y_t + bY_t^2$

1668 = a (192) + b (5452)

Solving the equations (3) and (4), we get the values of a and b

$$27.43\ (7a + 192b = 58)$$
$$1591 = 192a + 5267b$$
$$1668 = 192a + 5452b$$
$$- \quad - \quad -$$
$$-77 = -185b$$

$$b = \frac{-77}{-185} = 0.4162 \cong 0.41$$

$$58 = 7a + 192\ (0.41)$$

$$58 = 7a + 78.72$$

$$7a = -78.72 + 58$$

$$7a = -20.72$$

$$a = \frac{-20.72}{7} = -2.96 \cong -3$$

$$R = a + bY$$

$$= -3 + 0.41\ Y$$

(b) When GDP is Rs. 38 billion, the demand for refrigerators would be,

$$R = -3 + 0.4\ Y$$

$$= 3 + 0.41(38)$$

$$= -3 + 15.58$$

$$R_{1997} = 12.58$$

When GDP is Rs. 40 billion, the demand for refrigerators would be,

$$R = -3 + 0.41\ Y$$

$$= -3 + 0.41(40)$$

$$= -3 + 16.4$$

$$R_{1998} = 13.4$$

2.4 SUPPLY

Q37. What do you understand by supply.

Ans :

Supply of a commodity is the amount of its which the sellers are able and willing to offer for sale at a price during a certain period of time. Supply is a relative term - related to price and time. Market supply means the total quantity of a commodity that all the firms are willing to sell at a given during a given time period. It is found by adding the supply of the firms selling the commodity.

Supply analysis can be used to determine the impact of changes in product and factor prices, in technology, and in access on factor demands (including labor), production, marketed output, aggregate supply, and incomes. Generally, it can be used to analyze the impact on production of the removal of barriers to access or other changes in markets. Supply analysis, in the employment context, deals with key staffing questions related to current staffing levels in an organization.

Definitions of Supply

a) Supply of goods is the quantity offered for sale in a given market at a given time at various prices.

– Thomas

b) Supply refers to the amounts of a good that producer in a given market in a given market desired to sell, during a given time period at various prices, Ceteris Paribus.

– Samuelson

According to Meyers, "supply means the amount offered for sale at a given price. We may define supply as a schedule of the amount of a good that would be offered for sale at all possible prices at any one instant of time or during any one period of time, example, a day, a week and so on, in which the conditions of supply remain the same.

2.4.1 Supply Function

Q38. State the supply function.

Ans :

Following are the determinants (factors) influencing elasticity of supply,

1) Time Period

Time has a great influence on elasticity of supply than demand. Generally supply tends to be inelastic in the short run because time available to organize and adjust supply to demand is insufficient supply will be more elastic in the long-run.

2) **Price of Related Goods**

A firm can charge a higher price for its products, if prices of other products are higher and vice-versa.

3) **Political Conditions**

Political conditions may disrupt production of a product. In that case, supply tends to become inelastic. ,

4) **Kinds and Nature of Markets**

If the seller is selling his product in different markets. Supply tends to be elastic in any one of the market because, a fall in the price in one market will induce him to sell in another market.

5) **Technological Improvements**

Modern method of production expand output and hence supply tends to elastic. Old method reduce output and supply tends to be inelastic.

2.4.2 Determinants of Supply

Q39. What are the determinants of supply ?

Ans : **(Nov.-21, Dec.-18)**

Supply function is an algebraic expression that exhibits the functional relationship between the amount of an commodity supplied by a seller/a producer and the determinants or the factors influencing the supply of that commodity. The supply functions is given by,

$S_x = f(P_x, P_y, P_2, P_f, O, T)$

Where,

S_x = Amount supplied of commodity x.

f = Function of.

P_x = Price of the commodity itself.

P_y, P_z = Prices of other related goods available in the market.

P_f = Prices of the production factors required to produce the commodity.

O = Producer's objectives.

T = Technology used for producing the commodity.

2.4.3 Law of Supply

Q40. What do you understand by law of supply? Explain the assumptions and exceptions of law of supply.

Ans : **(Nov.-21, Aug.-21, Jan.-20, Dec.-18)**

The direct relationship between the price of a commodity and its supply is stated in the form of a law called Law of Supply. The law of supply states that "Other things remaining unchanged, the supply of a commodity expands with a rise in price and contracts with a fall in price." The market supply curve is a diagrammatic representation of the law of supply. Law of supply states the relationship between the price and the supply of a commodity. Price of the commodity affects its supply.

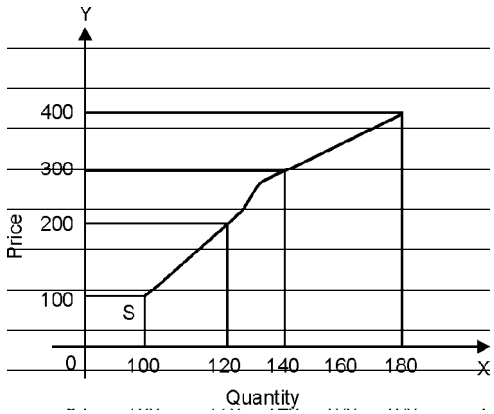


Figure: Market Supply Curve

Assumptions underlying Law of Supply

The law of supply is conditional, as it is defined under the assumption, "other things being constant". The law of supply depends on the following ceteris paribus assumptions,

1. Cost of Production is Constant

Law of supply assumes that the price of the product varies even though there is no change in the cost of production. If the cost of production increases with an increase in the price of the product then it is not beneficial for the sellers to produce more and supply

more. Hence, the law of supply is valid only if there is no change in the cost of production. It signifies that, the factors like prices, wages, interest, rent, etc., remains constant.

2. Technique of Production is Unchanged

Law of supply assumes that, there is no change in the technique of production. It is necessary for the cost to remain constant. If the improvement in the, techniques reduces the cost of production, then the seller will supply more even if the price falls.

3. Fixed Scale of Production

During a specified period of time, the scale production is assumed to be constant. If the scale of production changes then the level of supply automatically changes regardless of changes in the price of the product.

4. Government Policies are Constant

It is assumed that government policies such as, taxation policy, trade policy, etc., remains constant. For example, if there is an increase in the excise duty or if quotas are fixed on raw materials then it is not appropriate to expand the supply with an increase in prices.

5. Transport Costs remain Unchanged

Transport facilities and transport costs are assumed to remain constant. If the reduction in transportation cost reduces the cost of production then more commodities can be supplied even at a lower price.

6. No Speculation

Law of supply assumes that the sellers will not speculate the changes in the price of the product in future. But, if the prices are expected to increase further in future then the seller would not expand the supply with a present increase in the price.

7. The Prices of other Goods are Constant

It is assumed in the law of supply that the prices of other goods are constant. If the price of other products increases more rapidly than the product in consideration, then the producers may shift their resources to those products which generate profits due to rise in prices. In this situation, the product in consideration will not be supplied inspite of increase in prices.

Expectations to Law of Supply

a) Supply of Labour

If we take the supply of labour at very high wage, we may find that the supply of labour had decreased instead of increasing.

b) Agricultural Products

Since the production of agricultural products cannot be increased beyond a certain limit, the supply cannot be increased beyond this limit even on an increase in their prices.

c) Artistic Goods

Supply of artistic goods cannot be increased or decreased easily.

d) Goods of Auction

Supply of goods of auction is limited as such cannot neither be increased not decreased.

e) Hope of Change in the Prices of Commodities in Near Future

If the price of commodity is on rising pace, then the supply of such commodity decreases as producers and sellers will like to store this commodity and vice-versa.

Q41. What do you understand by supply schedule.

Ans :

Supply schedule is the tabular relationship between the supply of a commodity at different prices over a given period of time. Supply schedule is a series of quantities which producer would like to sell per unit of time at different prices. Two aspects of Supply Schedule.

a) Individual Supply Schedule

b) Market Supply Schedule

a) Individual Supply Schedule

Individual Supply Schedule is defined as a table which shows quantities of a given commodity which an individual producer will sell at all possible prices at a given time.

Price (Rs.) (per Kg)	Quantity Supplied (Kg)
1	10
2	30
3	50
4	70
5	80

b) Market Supply Schedule

Market demand schedule is defined as the quantities of a given commodity which all producers will sell at all possible prices at a given moment of time. In market there are many producers of a single commodity. By aggregating the individual supply, the market supply schedule is constructed.

Price of Commodity 'X' (in Rs.)	Supply by		Market Supply (Units)
	A	B	
100	40	50	40 + 50 = 90
200	60	70	60 +70 = 120
300	65	80	65 + 80 = 145
400	80	100	80 + 100 = 180

The above table include indicates that when price of X is Rs. 100 per unit, A's supply is of 40 unit and that of B is of 50 units. Thus the market supply is 90 units. As the price increases, quantity supplied increases.

2.4.4 Elasticity of Supply

Q42. Explain elasticity of supply?

(OR)

Explain elasticity of supply. Write about the types of elasticity of supply.

Ans : **(Nov.-21, Aug.-21, Dec.-18)**

Elasticity of Supply

The degree to which the supply of the product increases (or) decreases due to the change in the product price is termed as the elasticity of supply. Elasticity of supply is considered as the responsiveness of the sellers to a change in the price of the product.

The following formula can be used for measuring the elasticity of supply,

$$E_S = \frac{\text{Percentage change in quality supplied}}{\text{Percentage change in price}}$$

$$E_s = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q_s}$$

Where,

E_s = Elasticity of supply

AQ_s = The change in quantity supplied

AP = The change in price

Q_s = The original quantity supplied

P = The original price.

The elasticity of supply is depicted in the figure given below,

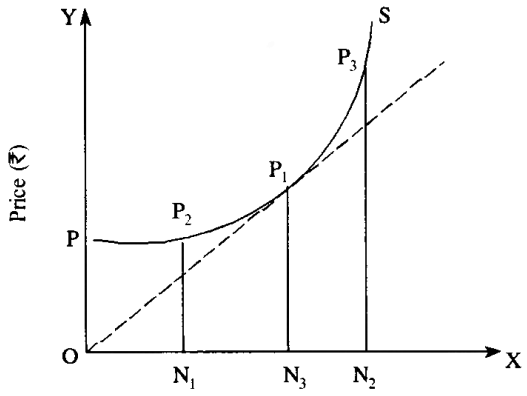


Fig.: Quantity Supplied (Units)

Figure represents the following,

(a) P and P_2 = perfectly elastic supply

(b) P_3 and S = perfectly inelastic supply

(c) P_2 and P_1 = Elastic supply

(d) P_1 and P_3 = Inelastic supply.

The time element basically has significant impact on the elasticity of supply. There is more elasticity of supply in the long-period of time, while the supply curve in a short period of time is perfectly inelastic.

Types of Elasticity of Supply

The elasticity of supply is broadly classified into five types, which are as follows,

1. Perfectly elastic supply
2. Perfectly inelastic supply
3. Relatively elastic supply
4. Relatively inelastic supply
5. Unitary elastic supply.

1. Perfectly Elastic Supply

The situation in which there is a change in the supply (or) sales of a product, inspire of no change in the price level is known as perfectly elastic supply. In such case, the elasticity is infinite.

$(E = \infty)$

2. Perfectly Inelastic Supply

The situation in which there is no change in the supply (or) sales of a product inspite of a drastic change in the price level is termed as perfectly inelastic supply. Here, the elasticity is equal to zero.

$(E = 0)$

3. Relatively Elastic Supply

Under relatively elastic supply, the rate of change of supply (or) sales is greater than the rate of change of price. Here, the elasticity of supply is greater than one.

$(E > 1)$

4. Relatively Inelastic Supply

The situation in which the rate of change of supply (or) sales is less than the rate of change of price is termed as relatively inelastic supply. The elasticity of supply here is less than one.

$(E > 1)$

5. Unitary Elastic Supply

In unitary elastic supply, the rate of change of supply (or) sales is perfectly equal to the rate of change of price. Here, the elasticity is equal to one.

$(E = 1)$

Q43. Explain the measurement of elasticity of supply.

Ans :

There are two methods of measuring elasticity of supply:

(i) The ratio method

(ii) The point method.

i) The Ratio Method

The numerical co-efficient of the degree of elasticity of supply is obtained by using the ratio method. The co-efficient of elasticity of supply may vary between zero and infinity.

ii) The Point Method

On a given supply curve, the elasticity of supply at a point P is measured by the ratio of the distance along the tangent from the point P on the supply curve to the point where it intersects the horizontal axis and the distance along the tangent from the point P on the supply curve to the point where it intersects the vertical axis.

Elasticity of supply is defined as the responsiveness of the quantity supplied of a good to change in its price. It is denoted as E_s.

$$E_S = \frac{\% \text{ Change in Quantity Supplied}}{\% \text{ Change in Price}}$$

$$= \frac{\% \text{ Change in Quantity Supplied}}{\text{Change in Price}} \times \frac{\text{Original Price}}{\text{Quantity Supplied}}$$

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

where

E_S = Price Elasticity of Supply

Δ_Q = Change in Quantity Supplied

Q = Original Quantity Supplied

ΔP = Change in Price

P = Original Price.

Q44. Explain the factors influencing determining of supply.

Ans :

The following are the determinants of elasticity of supply,

1. Time

The time period is broadly divided into three types which are as follows.

(i) Market Period

In market period, the supply is set in such a manner that no factor of production can be changed.

(ii) Short Period

It is the time period in which the supply is adjusted by changing the valuable factors such as raw materials, labor and so on.

(iii) Long Period

In long period, the supply can be changed willfully as all the factors can be changed.

The elasticity of supply of the commodity will be zero, specifically in the market period in which the supply is fixed. The elasticity will be higher in the long run when compared to the short ran as the. chances of changing the output is less in the short run instead of long run.

2. The Relationship between Minimum Supply Prices of Different Firms

In case if all the firms 'Which are selling a specific commodity provides their supply to the market at more (or) less the same minimum price, then, in such case the supply of these commodities will prefer to be elastic at that price. In the same way, if the minium price of the commodity increases, then greater number,' of Terms are engaged and the elasticity of supply will also he greater.

3. The Cost of Attracting Factors of Production

A wide range of factors are required to expand the output. If output of an industry increases then higher amount of factor prices must be-paid.

4. Barriers to Entry

Some industries does not allow the new firms to enter into the market which in turn affects the responsiveness of supply to changes in the price.

5. The Behavior of Costs as the Output Changes

In case if the costs increases rapidly with an increase in output then higher amount if costs are involved in purchasing the additional factors of production and there is a possibility of decreasing the elasticity of supply of commodity.

The nature of 'factors affects the elasticity of supply of a factor' to it Specific industry in two major ways which are as follows,

(a) The degree of possibility and usefulness to substitute other factors.

(b) The elasticity. of demand for substitute goods for which the factor under analysis offers.

Short Question & Answers

1. Define demand.

Ans :

In economic science, the term "demand" refers to the desire, backed by the necessary ability to pay. The demand for a good at a given price is the quantity of it that can be bought per unit of time at the price. There are three important things about the demand :

1. It is the quantity desired at a given price.
2. It is the demand at a price during a given time.
3. It is the quantity demanded per unit of time.

Meaning of Demand

Demand is the amount of particular economic goods or services that a consumer or group of consumers will want to purchase at a given price at a particular time.

Therefore, demand means desire backed up by adequate purchasing power to pay for the product when demanded and willingness to spend the money for the satisfaction of that desire.

Demand = Desire to buy + Ability to pay + Willingness to pay.

Definition of Demand

According to Benham, "The demand for anything, at a given price, is amount of it, which will be bought per unit of time, at that price".

According to Bobber, "By demand we mean the various quantities of a given commodity or service which consumers would buy in one market in a given period of time at various prices".

According to G.L. Thiekettle, "The demand for any commodity or service is amount that will be bought at any given price per unit of time".

2. Explain the features of demand.

Ans :

Features of demand

The various features of demand are:

a) Difference between Desire and Demand

Demand is the amount of commodity for which a consumer has the willingness and the ability to buy .These is difference between need and demand .Demand is not only the need, it also implies that the consumer has the money to purchase it.

b) Relationship between Demand and price

Demand is always at a price .unless price is stated, the amount demanded has no meaning. the consumer must know both the price and the commodity and he will tell his amount demanded.

c) Demanded at a point of time

The amount demanded must refer to some period of time such as 10 quintals of wheat per year or six shirts per year of five kilos of sugar per month .not only this, the amount demanded and the price must refer to a particular data.

3. Define demand schedule.

Ans :

A demand schedule is a tabular repre- sentation of the relationship between the amount demanded of a commodity and different price levels of that commodity. In other words, a demand schedule is a tabular statement of price and quantity relationship. It relates to the amount of the commodity the consumer is willing to purchase corresponding to the given price of that commodity per unit of time.

Example

The table below is an example of a demand schedule of product x.

Price of the Commodity x (`)	Quantity Demanded of Commodity x (kg)
5	15
8	14
10	12
12	10
15	8
20	5

Characteristics of Demand Schedule

The following are the characteristics of a demand schedule,

- A demand schedule shows variation in demand of a commodity at its varying prices.
- It indicates the behaviour of an individual consume in purchasing the commodity at a ernative prices.
- It shows the inverse relation between the quantity demanded and the price of the commodity.

4. Assumptions to Law of Demand.

Ans :

The statement of the law of demand, demonstrates that this law operates only when all other things remain constant. These are then the assumptions of the law of demand. We can state the assumptions of the law of demand as follows:

1. Income level should remain constant

The law of demand operates only when the income level of the buyer remains constant. If the income rises while the price of the commodity does not fall, it is quite likely that the demand may increase. Therefore, stability in income is an essential condition for the operation of the law of demand.

2. Tastes of the buyer should not alter

Any alteration that takes place in the taste of the consumers will in all probability thwart the working of the law of demand. It often happens that when tastes or fashions change people revise their preferences. As a consequence, the demand for the commodity which goes down the preference scale of the consumers declines even though its price does not change.

3. Prices of other goods should remain constant

Changes in the prices of other goods often impinge on the demand for a particular commodity. If prices of commodities for which demand is inelastic rise, the demand for a commodity other than these in all probability will decline even though there may not be any change in its price. Therefore, for the law of demand to operate it is imperative that prices of other goods do not change.

4. No new substitutes for the commodity

If some new substitutes for a commodity appear in the market, its demand generally declines. This is quite natural, because with the availability of new substitutes some buyers will be attracted towards new products and the demand for the older product will fall even though price remains unchanged. Hence, the law of demand operates only when the market for a commodity is not threatened by new substitutes.

5. Price rise in future should not be expected

If the buyers of a commodity expect that its price will rise in future they raise its demand in response to an initial price rise. This behavior of buyers violates the law of demand. Therefore, for the operation of the law of demand it is necessary that there must not be any expectations of price rise in the future.

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5. Exceptions of law of demand.

Ans :

The law of demand does not apply in every case and situation. The circumstances when the law of demand becomes ineffective are known as exceptions of the law. Some of these important exceptions are as under.

1. Giffen Goods

Some special varieties of inferior goods are termed as Giffen goods. Cheaper varieties of this category like bajra, cheaper vegetable like potato come under this category. Sir Robert Giffen or Ireland first observed that people used to spend more their income on inferior goods like potato and less of their income on meat. But potatoes constitute their staple food. When the price of potato increased, after purchasing potato they did not have so many surpluses to buy meat. So the rise in price of potato compelled people to buy more potato and thus raised the demand for potato. This is against the law of demand. This is also known as Giffen paradox.

2. Conspicuous Consumption

This exception to the law of demand is associated with the doctrine propounded by Thorsten Veblen. A few goods like diamonds etc., are purchased by the rich and wealthy sections of the society. The prices of these goods are so high that they are beyond the reach of the common man. The higher the price of the diamond the higher the prestige value of it. So when price of these goods falls, the consumers think that the prestige value of these goods comes down. So quantity demanded of these goods falls with fall in their price. So the law of demand does not hold good here.

3. Conspicuous Necessities

Certain things become the necessities of modern life. So we have to purchase them despite their high price. The demand for T.V. Sets, automobiles and refrigerators etc. has not gone down in spite of the increase in their price. These things have become the symbol of status. So they are purchased despite their rising price. These can be termed as "U" sector goods.

4. Ignorance

A consumer's ignorance is another factor that at times induces him to purchase more of the commodity at a higher price. This is especially so when the consumer is haunted by the phobia that a high-priced commodity is better in quality than a low-priced one.

6. Differentiate between individual demand and market demand.

Ans :

Difference between individual demand and market demand are as follows,

	Area	Individual Demand	Market Demand
1.	Definition	When the demand for a product arises from an individual consumer, then it is known as individual demand	When the demand of all the individuals and households arises for a product in a given market then it is known as market then it is known as market demand.
2.	Nature	It is the demand of a individual	It is the demand of number of individuals
3.	Individual demand curve V/s Market demand curve	Individual demand curve shows the maximum price which an individual consumer is willing to pay for the different amounts of the commodity under given conditions of demand.	Market demand curve shows the maximum amount of the commodity which all the consumers in a given market are willing to buy at each possible price of the commodity under given conditions of demand.
4.	Individual demand schedule V/s market demand schedule	Individual demand schedule shows the list of quantities of a commodity which was demanded by an individual at various prices.	Market demand schedule shows the list of quantities demanded by all the individuals at various prices in the market
5.	Individual and market demand function	Individual demand function is a mathematical relationship between the demand by an individual consumer and the determinants of individual demand.	Market demand function shows the functional relationship between the market demand for a commodity and the determinants of market demand.

7. Elasticity of demand.

Ans :

The law of demand simply explains the inverse relationship between price and quantity demanded. It doesn't specify how much more is purchased when price falls and how much less is purchased when price rises. In order to understand the rate of change in price and consequent changes in demand, elasticity of demand concept is used.

Elasticity is one of the most important concepts in necoclassical economic theory. It is useful in understanding the incidence of indirect taxation, marginal concepts as they relate to the theory of the firm and distribution of wealth and different types of goods. Elasticity is also crucially important in any discussion of welfare distribution, in particular consumer surplus, producer surplus or government surplus.

Meaning of Elasticity of Demand

Elasticity of demand is the responsiveness of demand for a commodity to changes in its determinants.

$$\text{Elasticity of Demand} = \frac{\text{Percentage change in quantity demanded of commodity}}{\text{Percentage change in its price}}$$

Definition of Elasticity of Demand

In the words of Dr. Marshall, "Elasticity of Demand may be defined as the percentage change in the quantity demanded divided by the percentage change in the price."

According to Building, "Price elasticity of demand measures the responsiveness of the quantity demanded to the change in price."

In the words of Dooley, "The price elasticity of demand measures the responsiveness of the quantity demanded to a change in its price."

According to Antol Murad, "Elasticity of demand is the ratio of relative change in quantity to relative change in price."

Thus, price elasticity of demand is a device to measure the rate of change in the quantity of a product demanded in response to a small change in its price.

8. Define income elasticity of demand.

Ans :

Consumer's income is one of the important determinants of demand. Income elasticity of demand is the measure of the extent to which a consumer's demand for a commodity changes as a result of changes in his income. Income elasticity of demand is defined as the ratio of proportionate/percentage change in the quantity demanded of a commodity to the proportionate/percentage change in the consumer's income. Mathematically, it is represented as,

$$\varepsilon_1 = \frac{\text{Percentage change in the quanity demanded}}{\text{Percentage change in consumer's income}}$$

$$\varepsilon_1 = \frac{\Delta Q / Q_1}{\Delta I / I_1} = \frac{\Delta Q}{\Delta I} \cdot \frac{I_1}{Q_1}$$

Where,

ε_1 = Income elasticity of demand

Δ_Q = Percentage change in the quantity demand.

Q_1 = Initial quantity demanded of a commodity.

Δ_I = Percentage change in the consumer's income

I = Consumer's initial income.

Income elasticity of demand is also given by,

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

Where,

Q_2 – New quantity demanded

I_2 – Consumer's new income.

9. Cross elasticity of demand.

Ans :

The change (increase or decrease) in the demand for one good in response to the change (increase or decrease) in price of the related good is called the cross elasticity of demand. Cross elasticity is always negative for complementary demand.

Example ; Due to increase in price of sugar, the demand for tea and coffee is decreases.

Cross elasticity is positive for substitutes.

Example : The demand for jeans goes up if there is an increase in the price of formal parts.

$$\text{Cross elasticity of demand} = \frac{\text{Proportionate change in quantity demanded for product B}}{\text{Proportionate change in price of product A}}$$

The same is expressed as,

$$Edc = \frac{\frac{(Q_2 - Q_1)}{Q_1}}{\frac{(P_2A - P_1A)}{P_1A}}$$

Where,

Q_1 = Quantity demanded before change.

Q_2 = Quantity demanded after change.

P_2 = Price before change.

P_2 = Price after change in the case of product.

10. Advertisement elasticity of demand.

Ans :

Advertising means the activity by which message are addressed to selected respondents with a view to induce them to buy the product, services or idea. Advertising elasticity is also known as promotional elasticity.

Advertising elasticity may be define as the responsiveness of demand or sales to change in advertising or other promotional expenses.

Advertising elasticity is always positive. In advertising elasticity, due to change in the expenditure it lead to increase in the sales revenue.

$$\text{Advertising elasticity of demand} = \frac{\text{(Proportionate change in the quantity demanded for product X}}{\text{Proportionate change in advertising cost}}$$

The same is expressed as,

$$Eda = \frac{\frac{(Q_2 - Q_1)}{Q_1}}{\frac{(A_2 - A_1)}{A_1}}$$

Where,

Q_x = Quantity demanded before change.

Q_2 = Quantity demanded after change.

A_1 = Amount spent on advertisement before change.

A_2 = Amount spent on advertisement after change.

11. What are the differences between Price and income elasticity of demand ?

Ans :

S.No.	Price Elasticity of Demand	Income Elasticity of Demand
(1)	Price elasticity of demand is the responsiveness of quantity demanded of a commodity to a given change in price.	When the demand for a product undergo changes i.e., increase or decrease due to change in income is called income elasticity of demand.
(2)	It mainly depends upon the price of the product.	It mainly depend upon the consumers income.
(3)	It is measured when price of a commodity changes.	The income elasticity of demand is measured with the changes in the quantity of demand.
(4)	Price elasticity of demand is calculated as $= \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in price}}$	Income elasticity of demand is calculated as $= \frac{\text{Proportionate change in quantity}}{\text{Proportionate change in income}}$
(5)	In this type, when any product price the demand of a quantity increases and if the product price increases then the demand of quantity decreases.	In this type any change product de-decreases then mand increases than the consumer income get change i.e., decreases and if the product demand decreases than the consumer income is change i.e., remain unuse or constant.

12. Factors affecting elasticity of demand.

Ans :

Elasticity is governed by a number of factors. Change in any one of these factors is likely to affect the elasticity of demand. The factors are:

(a) Nature of Product

Based on their nature, the products and services are classified into necessities, comforts and luxuries. Necessaries imply the absolute or basic necessities such as food, clothing, housing. Comforts refer to TV, refrigerator and so on. By luxuries, we mean sofa sets, marble flooring in a house and such others. The meaning and definition of these necessaries, luxuries and comforts change from person to person, time to time and place to place. For example, a scooter may be a comfort or luxury for a student but when he does a part-time job, it may be a necessity for him.

The nature of product has a significant impact on the elasticity of demand. For instance, if there is an increase in the price of rice, we still buy it because it is a necessity for us. This means that the demand is inelastic to price. Though there is an increase in price, we tend to buy the necessaries such as petrol, diesel and so on. In other words, the demand does not fall because of increase in price. From this, we can say that the necessaries have inelastic demand. For comforts and luxuries, the demand is relatively elastic. It means that any increase in the price of comforts or luxuries will lead to moderate to significant fall in their demand.

(b) Time Frame

The more the time available for the customer, the demand for a particular product am be elastic and vice versa. Take the case of vegetables. When you do not have time, you go to a nearby shop and buy whatever you want at the given price. Had you had little free time, you would have preferred to get: the same from a vegetable market at lesser price.

(c) Degree of Postponement

Where the product consumption can be postponed, the product is said to have elastic demand and where it cannot be postponed, it is said to have inelastic demand. The consumption of necessaries cannot be postponed and hence they have inelastic demand.

13. Demand Forecasting.

Ans :

Demand forecasting refers to an estimation of future demand for the product under given conditions.

Demand forecasting is predicting future demand for the product. It is the estimation of the value of a variable (or set of variables) to some future point in time.

Demand forecasting is the estimation of level of demand (amount or quantity) to be expected for goods or services for some period of time in future.

According to **Evan J Donglas,** "Demand forecasting may be defined as the process of finding values for demand in future time period".

Thus, demand forecasting means, when, how, where and how much will be the demand for a product or service in the near future.

14. Need for Demand Forecasting.

Ans :

Forecasting the demand for its product or products is the essential function for an organization irrespective of its nature. Many organizations follow it as a custom to completely and accurately forecast the demand of its products regularly. The need or the necessity for demand forecasting arises due to the following purposes served by it.

i) It serves as a road map for production plans.

ii) It plays a significant role in situations of uncertain production or demand.

iii) The outcomes of demand forecasting facilitate the managers to line up their business activities.

iv) The demand forecasting results from a basis for (EXIM) export and import policy and fiscal policy.

v) In situations of competition, it can help a manager/businessman to take decisions regarding inputs of production process such as labour, capital etc.

15. What do you understand by supply.

Ans :

Supply of a commodity is the amount of its which the sellers are able and willing to offer for sale at a price during a certain period of time. Supply is a relative term - related to price and time. Market supply means the total quantity of a commodity that all the firms are willing to sell at a given during a given time period. It is found by adding the supply of the firms selling the commodity.

Supply analysis can be used to determine the impact of changes in product and factor prices, in technology, and in access on factor demands (including labor), production, marketed output, aggregate supply, and incomes. Generally, it can be used to analyze the impact on production of the removal of barriers to access or other changes in markets. Supply analysis, in the employment context, deals with key staffing questions related to current staffing levels in an organization.

Definitions of Supply

a) Supply of goods is the quantity offered for sale in a given market at a given time at various prices.

– Thomas

b) Supply refers to the amounts of a good that producer in a given market in a given market desired to sell, during a given time period at various prices, Ceteris Paribus.

– **Samuelson**

According to Meyers, "supply means the amount offered for sale at a given price. We may define supply as a schedule of the amount of a good that would be offered for sale at all possible prices at any one instant of time or during any one period of time, example, a day, a week and so on, in which the conditions of supply remain the same.

16. State the supply function.

Ans :

Following are the determinants (factors) influencing elasticity of supply,

1) **Time Period** : Time has a great influence on elasticity of supply than demand. Generally supply tends to be inelastic in the short run because time available to organize and adjust supply to demand is insufficient supply will be more elastic in the long-run.

2) **Price of Related Goods** : A firm can charge a higher price for its products, if prices of other products are higher and vice-versa.

3) **Political Conditions** : Political conditions may disrupt production of a product. In that case, supply tends to become inelastic. ,

4) **Kinds and Nature of Markets** : If the seller is selling his product in different markets. Supply tends to be elastic in any one of the market because, a fall in the price in one market will induce him to sell in another market.

5) **Technological Improvements** : Modern method of production expand output and hence supply tends to elastic. Old method reduce output and supply tends to be inelastic.

UNIT III

Production and Cost Analysis: Production function, Production function with one, two variables, Cobb-Douglas Production Function, Marginal Rate of Technical Substitution, Isoquants and Isocosts, Returns to Scale, Economies of scale - Innovations and global competitiveness. Cost concepts, determinants of cost, cost-output relationship in the short run and long run, short run vs. long run costs, average cost curves, Break Even Analysis.

3.1 PRODUCTION

Q1. What do you understand by production? What are the factors of production?

Ans :

Production

Production is an activity of transforming the inputs into output. It involves step-by-step conversion of one form of materials into another form through chemical or mechanical processing in order to create or enhance the utility or usability of the products or services.

Economics view production is as an activity through which utility for a product is created or enhanced.

According to E.S. Buffa, "Production is an process by which goods and services are created". In economics, the term production means a process in which the resources are transformed or converted into a different and more useful commodity or service. In general production means transforming inputs into an outputs. The term production is however limited to "manufacturing organizations" only.

Production i.e., transformation of inputs into output can be any of the three forms change in form, change in phase and change in time. The output produced can be either the final product (like a PC) or an intermediate product (like a semiconductor used in manufacturing a PC). The output goods or services may be either tangible or intangible. Production of a chair from wood is a tangible output whereas medical service by a doctor is an intangible output. The figure indicates the production process.

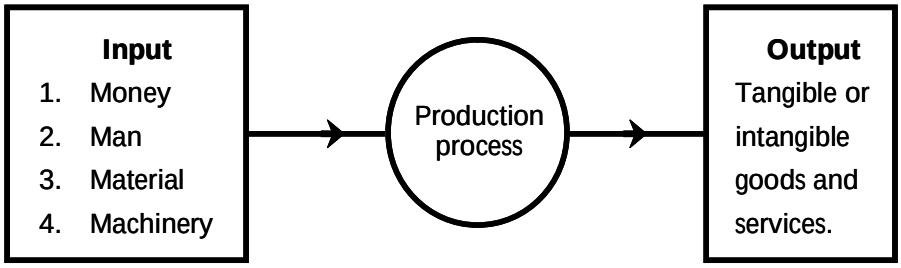


Fig.: Production Process

Factors of Production

Factors of production are the inputs available to supply goods and services in an economy.

Factors of production are the inputs available to supply goods and services in an economy are shown in Figure.

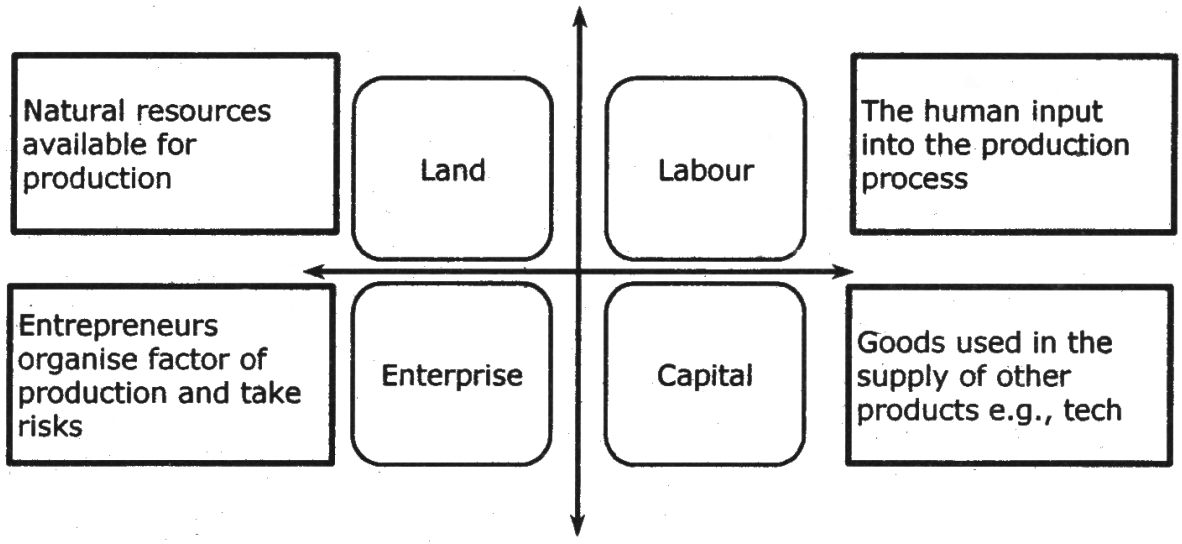


Fig.: Factors of Production (Factor Inputs)

1. Land

(i) Land includes all natural physical resources e.g., fertile farm land, the benefits from a temperate climate or the harnessing of wind power and solar power and other forms of renewable energy.

(ii) Some nations are richly endowed with natural resources and then specialise in the their extraction and production.

Example: The high productivity of the vast expanse of farm land in the United States and the oil sands in Alberta, Canada. Other countries Such as Japan are heavily reliant on importing these resources.

2. Labour

(i) Labour is the human input into production e.g., the supply of workers available and their productivity.

(ii) An increase in the size and the quality of the labour force is vital if a country wants to achieve growth. In recent years the issue of the migration of labour has become important. Can migrant workers help to solve labour shortages? What are the long-term effects on the countries who suffer a drain or loss of workers through migration?

3. Capital

(i) Capital goods are used to produce other consumer goods and services in the future.

(ii) Fixed capital includes machinery, equipment, new technology, factories and Other buildings.

(iii) Working capital means stocks of finished and semi-finished goods or components that will be either consumed in the near future or will be made into consumer goods.

(iv) New items of capital machinery, buildings or technology are used to boost the productivity of labour.

Example: Improved technology in farming has vastly increased productivity and allowed millions of people to move from working on the land into more valuable jobs in other industries.

4. Entrepreneurship

(i) Regarded by some as a specialised form of labour input.

(ii) An entrepreneur is an individual who supplies products to a market to make a profit.

(iii) Entrepreneurs will usually invest their own financial capital in a business and take on the risks. Their main reward is the profit made from running the business.

Q2. Explain the concept of theory of production?

Ans :

In economics, production theory explains the principles in which the business has to take decisions on how much of each commodity it sells and how much it produces and also how much of raw material ie., fixed capital and labor it employs and how much it will use. It defines the relationships between the prices of the commodities and productive factors on one hand and the quantities of these commodities and productive factors that are produced on the other hand.

Concept

Production is a process of combining various inputs to produce an output for consumption. It is the act of creating output in the form of a commodity or a service which contributes to the utility of individuals.

In other words, it is a process in which the inputs are converted into outputs.

Function

The Production function signifies a technical relationship between the physical inputs and physical outputs of the firm, for a given state of the technology.

$$Q = f(a, b, c, \ldots\ldots z)$$

Where a,b,c ....z are various inputs such as land, labor ,capital etc. Q is the level of the output for a firm.

If labor (L) and capital (K) are only the input factors, the production function reduces to

$$Q = f(L, K)$$

Production Function describes the technological relationship between inputs and outputs. It is a tool that analysis the qualitative input – output relationship and also represents the technology of a firm or the economy as a whole.

Production Analysis

Production analysis basically is concerned with the analysis in which the resources such as land, labor, and capital are employed to produce a firm's final product. To produce these goods the basic inputs are classified into two divisions "

Variable Inputs

Inputs those change or are variable in the short run or long run are variable inputs.

Fixed Inputs

Inputs that remain constant in the short term are fixed inputs.

Cost Function

Cost function is defined as the relationship between the cost of the product and the output. Following is the formula for the same –

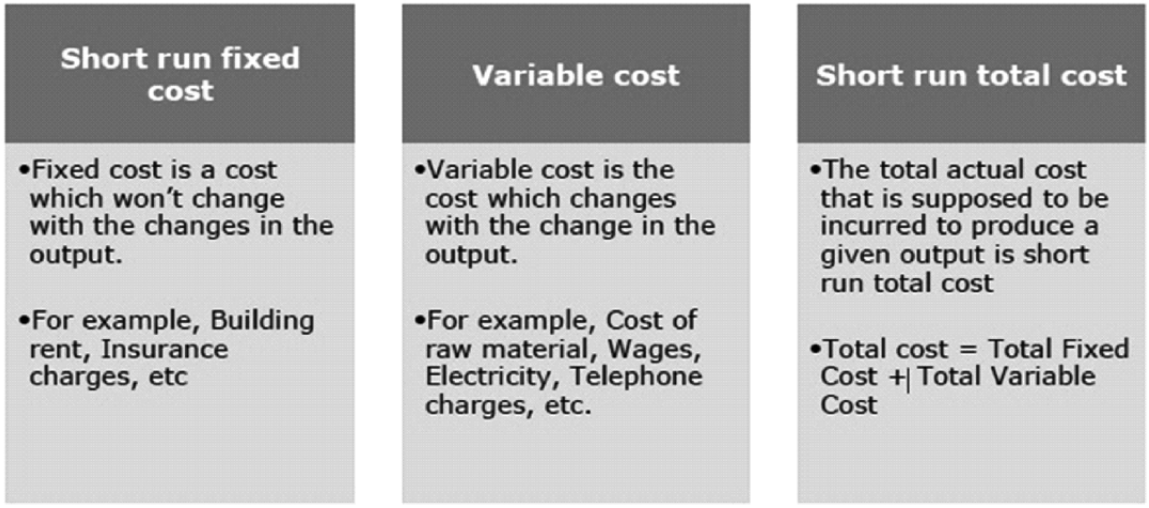
$$C = F [Q]$$

Cost function is divided into namely two types

Short Run Cost

Short run cost is an analysis in which few factors are constant which won't change during the period of analysis. The output can be changed ie., increased or decreased in the short run by changing the variable factors.

Following are the basic three types of short run cost



Long Run Cost

Long-run cost is variable and a firm adjusts all its inputs to make sure that its cost of production is as low as possible.

Long run cost = Long run variable cost

In the long run, firms don't have the liberty to reach equilibrium between supply and demand by altering the levels of production. They can only expand or reduce the production capacity as per the profits. In the long run, a firm can choose any amount of fixed costs it wants to make short run decisions.

3.2 PRODUCTION FUNCTION

Q3. Define production function?

Ans : **(July-18)**

The production function is purely a relationship between the quantity of output obtained or given out by a production process and the quantities of different inputs used in the process. Production function can take many forms such as linear function or cubic function etc.

Definition of Production Function

"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

From the above definitions, it can be concluded that the production functions is more concerned with physical aspects of production, which is an engineering relation that expresses the maximum amount of output that can be produced with a given set of inputs.

Production function enables production manager to understand how better he can make use of technology to its greatest potential.

Mathematically, a production function is represented as,

Q = f(L, C, M,)

Where,

Q = Quantity of the output produced

f = Function of L, C, M

L = Labour units

C = Capital employed

M = Machinery raw materials.

In the above production function, the inputs considered are labour, capital and raw materials. But an empirical production function is very complex with a wide range of inputs like land, labour, capital, materials time and technology. With these inputs, the production function is expressed as,

$Q = f\{L_d, L, C, M, T, t)$

Where,

Q = Quantity of the output produced

L_d = Land and buildings

L = Labour units

C = Capital employed

M = Materials

T = Technology

t = Time period of production

f = Function of L,, L, C, M, T, t

In order to reduce the complexity, economists have considered the three main inputs - labour, capital and machinery for indicating a production function. Therefore, with these inputs the production function can be expressed as,

Q = f(L, C, M).

Q4. Explain the significance of production function.

Ans :

1. Production function shows the maximum output that can be produced by a specific set of combination of input factors.
2. There are two types of production function, one is short-run production function and the other is long-run production function. The short-run production explains how output change is relation to input when there are some fixed factors. Similarly, long run production function explains the behaviors of output in relation to input when all inputs are variable.

3. The production function explains how a firm reaches the most optimum combination of factors so that the unit costs are the lowest.

4. Production function explains how a producer combines various inputs in order to produce a given output in an economically efficient manner.

5. The production function helps us to estimate the quantity in which the various factors of production are combined.

Q5. Explain the managerial Use of production function.

Ans :

The production function is of great help to a manager or business economist. The managerial uses of production function are outlined as below :

1. It helps to Determine Least Cost Factor Combination

The production function is a guide to the entrepreneur to determine the least cost factor combination. Profit can be maximized only by minimizing the cost of production. In order to minimize the cost of production, inputs are to be substituted. The production function helps in substituting the inputs.

2. It Helps to Determine Optimum Level of Output

The production function helps to determine the optimum level of output from a given quantity of input. In other words, it helps to arrive at the producer's equilibrium.

3. It Enables to Plan the Production

The production function helps the entrepreneur (or management) to plan the production.

4. It Helps in Decision-making

Production function is very useful to the management to take decisions regarding cost and output. It also helps in cost control and cost reduction.

In short, production function helps both in the short run and long run decision-making process.

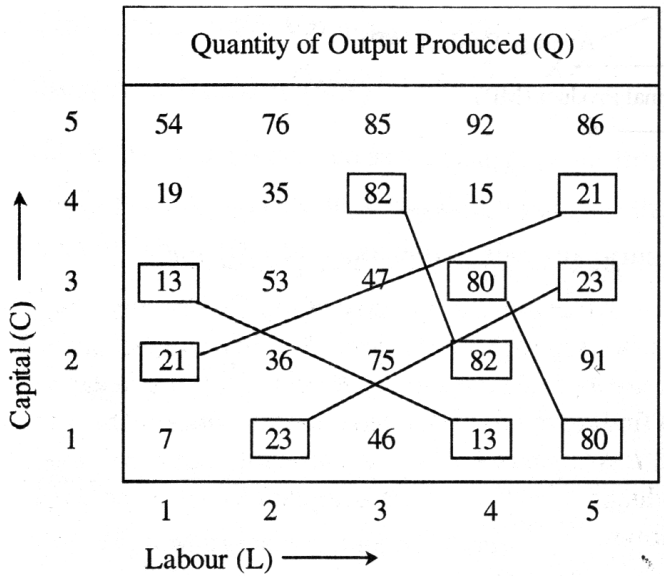
3.2.1 Production Function with One, Two Variables

Q6. Explain production function with two variable inputs with an illustration.

Ans :

Production function with two variable inputs is a more general case where the firm increases its output by using more of two inputs that are substitutes to each other. The two-variable input case may be taken either as a short-run or a long-run analysis of production process on the basis of the assumptions made about the nature of inputs used. If the firm utilizes only two inputs and both of them are variables, it is long-run analysis. If the firm uses more than two inputs and if only two of them are variable and others are fixed, it is the case of short-run analysis.

Production function with two-variable-inputs is illustrated as follows,



From the above table, if the firm wants to produce an output of 80 units, the input combinations (labour, capital) it can use are (3, 4) and (1,5).

Output	Combinations
82 units	(4, 3), (2, 4)
13 units	(3, 1), (1, 4)
23 units	(1. 2), (3, 5)
21 units	(2, 1), (4, 5)

If a graph is drawn by representing the different combinations of inputs used to produce the same amount of output, it is known as an 'isoquant'. A production function with two variable inputs can be represented by a family of isoquants or isoproduct curves or product indifference curves.

The production function with two variable inputs can be represented as,

$Q = f(L, C)$

Where,

Q = Quantity of output produced

L = Labour units

C = Capital employed.

Assumptions upon which the production function with two variable inputs is based are as follows.

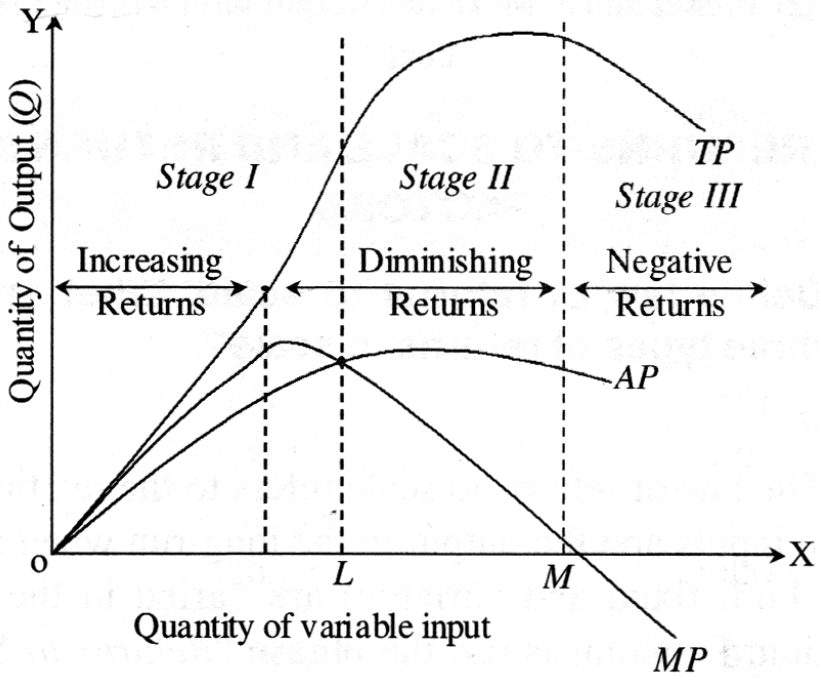
(i) Two factors can be substituted for each other.

(ii) No change in the technology used for the production process.

Q7. What are the three different stages of law of variable proportions?

Ans : **(Jna.-20)**

The behaviour of output when the varying quantity of one input is combined with a fixed quantity of the other can be categorized into three different stages.



TP = Total product

MP = Marginal product

AP = Average product

B = Point of inflection

Variable Product (VP)	Total Product (TP)	Marginal Product (MP)	Average Product (AP)
0	0	–	–
1	4	4	4
2	15	11	7.50
3	37	22	12.33
4	48	11	2.75
5	45	–3	9

In the above graph, quantity of variable input is taken on x-axis and quantity of output is taken on y-axis and the Total Product (TP) Average Product (AP) and Marginal Product (MP) are measured. The behaviour of these three curves is as follows,

TP = Goes on increasing to a point and after that it starts declining.

AP = Increases initially and later it declines.

MP = Increases initially and then decreases up to a negative value.

The behaviour of these curves is generally divided into three stages.

(i) Stage I : Increasing returns.

(ii) Stage II : Decreasing returns.

(iii) Stage III: Negative returns.

(i) Stage I: Increasing Returns

In this stage, the Total Product curve (TP) increases at an increasing rate upto point B indicating that the marginal product of the variable input (say labour (L)) is rising. From point B the total product curve rises but at a diminishing rate indicating the fall of marginal product but positively. The reason for the increase of total product curve both at an increasing rate and at a decreasing rate during stage I because the slope of TP upto B increases and after B it declines. The shape of TP upto B is concave upwards and after B it is concave downwards. The point B where TP stops increasing at an increasing rate and starts increasing at a decreasing rate is called 'point of inflation'. At the point of inflation, the Marginal Product curve (MP) is maximum and after that it starts decreasing. When the marginal product curve decreases, it exceeds the average product curve causing the average product curve to increase. Stage I ends where the average product curve reaches its maximum value. Stage I is known as the stage of increasing returns because average product of a variable input increases throughout the stage.

(ii) Stage II: Decreasing Returns

In stage II, the total product continues to increase at a diminishing rate until it reaches a maximum value and marginal product and average product of the variable input decrease but positively. At the end of second stage, the marginal product of the variable input is zero and the total product is maximum. Stage II is very important because in this stage the firm will seek to produce in its range. Stage II is known as the stage of diminishing returns because both the average product and the marginal product of the variable inputs fall continuously during this stage.

(iii) Stage III: Negative Returns

In stage III, the Total Product curve (TP) declines with an increase in the quantity of variable input. As a result, the marginal product of the variable input is negative and the Marginal Product curve (MP) falls below x-axis. Stage III is called as the stage of negative returns because all the three curves TP, MP and AP decline and MP declines to a negative value.

The below table gives a clear understanding of three stages of law of variable proportions.

Production	I	II	III
Total Product (TP)	Initially increases at an increasing rate and later increases at a decreasing rate.	Increases at a decreasing rate and becomes maximum	Decreases
Average Product (AP)	Increases and reaches maximum.	Decreases	Continues to decrease
Marginal Product (MP)	Increases and reaches a maximum and starts falling.	Continues to fall and become zero	Becomes negative

3.2.2 Cobb-Douglas Production Function

Q8. What do you understand by Cobb Douglas production function.

Ans : **(Nov.-21, Jan.-20, Dec.-18)**

Cobb and Douglas put forth a production function relating output in American manufacturing industries from 1899 to 1922 to labour and capital inputs. They used the following formula:

$$P = bL^{a} C^{1-a}$$

Where P is total output,

L = The index of employment of labour in manufacturing

C = Index of fixed capital in manufac-turing

The exponents a and 1-a are the elasticities of production. These measure the percentage response of output to percentage changes in labour and capital respectively.

The function estimated for the USA by Cobb and Douglas is

$$P = 1.01L^{0.75} C^{0.25}$$

$$R^2 = 0.9409$$

The production function shows that one percent change in labour input, capital remaining the same, is associated with a 0.75 percent change in output. Similarly, one percent change in capital, labour remaining the same, is associated with a 0.25 percent change in output. The coefficient of determination (R^2) means that 94 percent of the variations on the dependent variable (P) were accounted for by the variations in the independent variables (L and C). It indicates constant returns to scale which means that there are no economies or diseconomies of large scale of production. On an average, large or small scale plants are considered equally profitable in the US manufacturing industry, on the assumption that the average and marginal production costs were constant.

Though Cobb-Douglas production function was based on macro-level study, it has been very useful for interpreting economic results. Later investigations revealed that the sum of the exponents might be very slightly larger than unity, which implies decreasing costs. But the difference was so marginal that constant costs would seem to be a safe assumption for all practical purposes.

Q9. Explain the importance of Cobb-Douglas production function.

Ans :

Cobb-Douglas production function is most popular in empirical research. The reasons for this are many :

1. The Cobb-Douglas function is convenient for international and inter-industry comparisons. Since a and P (which are partial elasticity coefficients) are pure numbers (i.e., independent of units of measurement) they can be easily used for comparing results of different samples having varied units of measurement.
2. Another advantage is that this function captures the essential non-linearities of production process and also has the benefit of the simplification of calculations by transforming the function into a linear form with the help of logarithms. The log-linear function becomes linear in its parameters, which is quite useful to a managerial economist for his analysis.
3. In addition to being elasticities, the parameters of Cobb-Douglas function also possess other attributes.

   For example, the sum of (a + P) shows the returns to scale in the production process; a and (3 represent the labour share and capital share of output respectively, and so on.
4. This function can be used to investigate the nature of long-run production function, viz., increasing, constant and decreasing returns to scale.
5. Although in its original form, Cobb-Douglas production function limits itself to handling just two inputs (e.g., L and K), it can be easily generalised for more that two inputs, like

$$Q = AX_1^a . X_2^b . X_3^c ..... X_n^p$$

Where, Q = Output

$X_1, X_2, ... X_n$ = Different inputs.

Q10. What are the criticisms of Cobb-Douglas production function.

Ans :

1. The function includes only two factors and neglects other inputs.
2. The function assumes constant returns to scale.
3. There is the problem of measurement of capital which takes only the quantity of capital available for production.
4. The function assumes perfect competition in the factor market which is unrealistic.
5. It does not fit to all industries.
6. It is based on the substitutability of factors and neglects complementarily of factors.
7. The parameters cannot give proper and correct economic implication.

3.3 MARGINAL RATE OF TECHNICAL SUBSTITUTION

Q11. What do you understand by Marginal Rate of Technical Substitution (MRTS).

Ans : **(Aug.-21, Jan.-20, Dec.-18, July-18)**

Marginal Rate of Technical Substitution (MRTS)

Marginal Rate of Technical Substitution (MRTS) evaluates the decrease in per unit of one input leading to increase in the other input which is adequate for maintaining the same level of output. Hence, for having the same quantity of output, the marginal rate of technical substitution of labour (L) for capital (K) ($MRTS_{LK}$) will be the amount of capital which the firm desires to give up for an additional unit of labour. In the same way, the marginal rate of technical substitution of capital for labour ($MRTS_{KL}$) will be the amount of labour which the firm desires to give up for an additional unit of capital.

MRTS can be expressed as the ratio between the rates of change in L and K, down the isoquant.

$$MRTS_{LK} = -\frac{\Delta K}{\Delta L}$$

MRTS of labour for capital is equal to both the slope of the isoquant and the ratio of the marginal product of one input to the marginal product of other input. As output along an isoquant is constant, if ΔL units of labour are substituted for ΔK units of capital, then an increase in output due to increase in ΔL ($\Delta L \times MP_L$) must coordinate with the decrease in output due to decrease in ΔK ($-\Delta K \times MP_K$). It is also expressed as,

$$\Delta L \times MP_L = \Delta K \times MP_k$$

OR

$$\frac{MP_L}{MP_K} = -\frac{\Delta K}{\Delta L}$$

A change in the level of output can be written as the change in total output (ΔQ) equals to the sum of change in labour input (ΔL) times MP of labour and change in capital input (ΔK) times. MP of capital. It can also be expressed as,

$$\Delta Q = MP_L \times \Delta_L + MP_k \times \Delta K$$

It output remains constant in isoquant i.e., $\Delta Q = 0$, then we have,

$$MP_L DL + MP_K \Delta K = 0$$

$$\frac{MP_L}{MP_k} = \frac{-\Delta K}{\Delta L} \Rightarrow MRTS_{LK} = \frac{MP_L}{MP_K}$$

Hence, the MRTS between two inputs is similar to the ratio of the marginal physical products of the inputs.

Example

Combination	Capital	Labour	Output (units)
A	1	15	10,000
B	2	10	10,000
C	3	6	10,000
D	4	3	10,000

It is assumed in the above table that an output of 10,000 units can be obtained either by applying 1 unit of capital and 15 units of labour or by employing 2 units of capital and 10 units of labour. This means in different combinations of inputs, the capital can be substituted for labour and yet the same output can be obtained.

3.4 ISOQUANTS AND ISOCOSTS

Q12. Define isoquant. Explain how isoquants are used to represent a production function with two variable inputs.

Ans :

The term isoquant has its origin from two words 'iso' and 'quantus'. 'iso' is a Greek word meaning 'equal' and 'quantus' is a Latin word meaning 'quantity'. An isoquant curve is therefore called as 'iso-product curve' or 'equal-product curve' or 'production indifference curve'.

Definition

According to Peterson "An Iso-quant curve may be defined as a curve showing the possible combinations of two variable factors that can be used to produce the same total product."

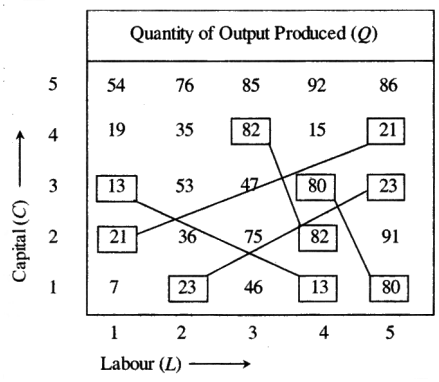
According to Ferguson "An Iso-quant is a curve showing all possible combinations of inputs physically capable of producing a given level of output."

An isoquant is defined as the curve or locus of points representing various combinations of two inputs [say Labour (L) and Capital (C)] that yield the same level of output.

In other words, an isoquant is a line joining different combinations of two inputs (L and C) which result in the same quantity of output.

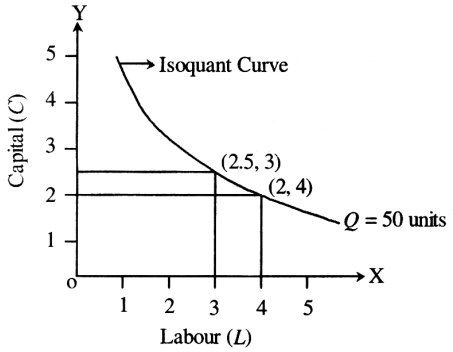
Isoquants are used to represent a production function with two variable inputs.

For example, let us consider a production function with the quantities of output produced by using different combinations of two inputs Labour (L) and Capital (C).



In the above table there are different quantities of outputs that are produced by various combinations of inputs labour and capital. For example the output '21' is produced by two combinations (2, 1) and (4, 5). The line joining these two outputs of same level produced by different (two) combinations of two inputs is called an 'isoquant'. Thus, the definition of isoquant holds.

Graphically an isoquant curve pan be constructed conveniently for two inputs of production. The below graph gives a clear idea.



The above graph reveals that an output of Q-50 units is produced by two different combinations of capital and labour respectively i.e., (2.5, 3) and (2,4) and the curve joining these two combinations is an isoquant curve.

An isoquant curve is similar to an indifference curve with two distinctions.

(i) An isoquant curve is constructed by two producer goods (labour and capital) whereas an indifference curve is made of two consumer goods.

(ii) An isoquant curve measures 'output', an indifference curve measures 'utility'.

Q13. List down the assumptions of Isoquant curves.

Ans :

Assumptions

An isoquant curve is generally drawn on the basis of the following assumptions.

(a) An isoquant curve has only two inputs say labour (L) and capital (C) to produce an output (Q).

(b) The two inputs are perfectly substitutable to each other but at a diminishing rate i.e., L is perfectly substitutable to C and vice-versa.

(c) The technology applied in the production process is given or constant.

(d) The substitution of one input for the other leaves the output unaffected.

Q14. Explain the characteristics of an isoquants.

Ans :

1. Downward sloping

Isoquants are downward sloping curves because, if one input increases, the other one reduces. There is no question of increase in both the inputs to yield a given output. A degree of substitution is assumed between the factors of production. In other words, an isoquant cannot be increasing, as increase in both the inputs does not yield same level of output. If it is constant, it means that the output remains constant though the use of one of the factors is increas-ing, which is not true. Isoquants slope from left to right.

2. Convex to origin

Isoquants are convex to the origin. It is because the input factors are not perfect substitutes. One input factor can be substituted by other input factor in a 'diminishing marginal rate'. If the input factors were perfect substitutes, the isoquant would be a falling straight line. When the inputs are used in fixed proportion, and substitution of one

C input for the other cannot take place, the isoquant will be L shaped.

3. Do Not Intersect

Two isoproducts do not intersect with each other. It is because, each of these denote a particular level of output. If the manu-facturer wants to operate at a higher level of output, he has to switch over to another isoquant with a higher level of output and vice versa.

4. Do not touch axes

The isoquant touches neither X-axis nor Y-axis, as both inputs are required to produce a given product.

Q15. Discuss about the various types of isoquants.

Ans :

From the properties of isoquants it is clear that the shape of an isoquant is convex to the origin. The shape of an isoquant however depends upon the degree of substitutability between the inputs in a production function. Economists observed that the convex shape of an isoquant is due to continuous substitutability between labour and capital but at the diminishing rate and said that the degree of substitutability between L and C gave rise to other three types of isoquants.

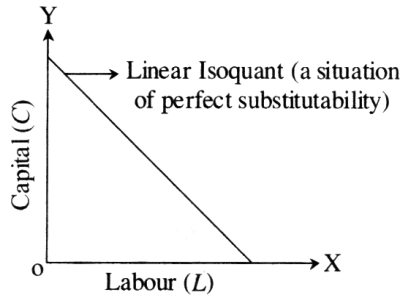
(i) Linear isoquant.

(ii) Fixed input-proportion/L-shaped/Input-output/ Leontief isoquant.

(iii) Kinked/Linear programming isoquant.

(i) Linear Isoquant

An isoquant is said to be a linear isoquant when there exists prefect substitutability between two inputs Labour (L) and Capital (C). This case of an isoquant indicates that a given quantity of output is produced by using capital only or only labour or by using a larger number of combinations of both labour and capital. A linear isoquant also implies that the Marginal Rate of Technical Substitution (MRTS) between L and C is constant. The following figure (1) gives the shape of a linear isoquant.



Figure

The mathematical form of a production function exhibiting perfect substitutability is as follows.

The production function,

Q = f(L, C)

Where,

Q = Quantity of output produced

L = Labour units

C = Capital employed.

Then production function exhibiting perfect substitutability is,

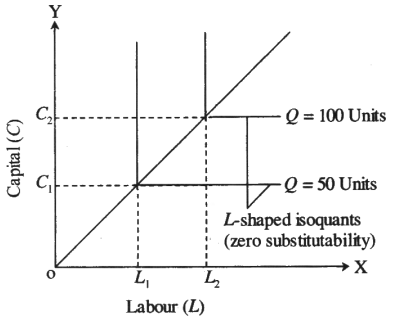
Q = aC + bL

Where,

a, b = Attributes The slope of isoquant from this production function is (– b/a).

(ii) Fixed input-proportion/L-shaped/Input-output/ Leontief isoquant.

When there is a fixed proportion between the inputs labour (L) and capital (C) then the production function takes 'L' shape. Such an isoquant implies zero substitutability between the inputs or perfect complementarily between the inputs. The state of perfect complementary/zero substitutability means that a given quantity of output can be produced by one and only one combination of labour and capital and that the proportion of input is fixed. This also mean that if the quantity of one inputs is increased and the quantity of the other input is kept constant, there is no change in the output. The output can be increased by increasing both the inputs proportionately. The figure shows a L-shaped isoquant.



Figure

A L-shaped isoquant is also called as a Leontief function which is given by,

$Q = \min (aC, bL)$

Where,

Q = Quantity of the output produced

a,b = Attributes

C = Capital employed

L = Labour units

min = Refers that output (Q) equals the least value of the two terms aC and bL.

Note

(a) If $aC > bL$, $Q = bL$ and if $bL > aC$ then $Q = aC$.

(b) If $aC = bL$, it means that both the inputs L and C are fully utilised.

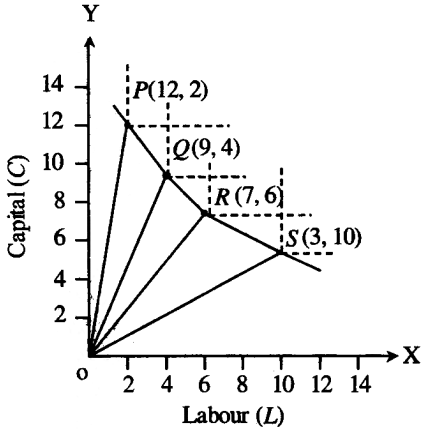
(c) Fixed capital total ratio $K/L = b/a$.

(iii) Kinked/Linear programming isoquant.

An isoquant is said to be a kinked isoquant when there is a limited substitutability between the inputs, labour (L) and capital (C). As there are only few production techniques for producing a commodity or a product, substitutability of inputs is possible at only kinks. For example, let us consider four different production techniques for producing an output (Q). Each techniques uses a fixed- input proportion as shown below.

S.No.	Production Technique	Capital (C)	Labour (L)	Capital/Labour ratio (C/L)
1.	OP	12	2	2:2
2.	OQ	9	4	9:4
3.	OR	7	6	7:6
4.	OS	3	10	3 : 10

The above four production techniques (OP, OQ, OR and OS) are represented graphically as,



Figure

In the figure the ray 'OP' represents the production technique with input proportion 12C: 2L. Similarly the other three techniques (OQ, PR, OSh have the input proportion as 9C:4L, 1C:6L and 3C:10L respectively. By joining the points P, Q, R, S we get a kinked isoquant, PQRS. Each point on the kinked isoquant represents a combination of Capital (C) and Labour (L) required to produce an output (Q).

The kinked isoquant is basically used in linear programming and therefore, it is also called as 'linear programming isoquant' or 'activity analysis isoquant'.

Q16. Define isocost curve.

Ans :

Isocost refers to that cost curve which will show the various combinations of two inputs which can be purchased with a given amount of total money.

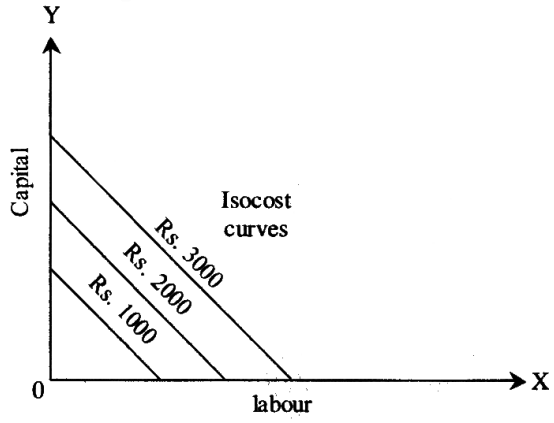


Figure (1): Isocosts Each Showing Different Level of Total Cost

In the above figure (1) it can be seen that as the level of production changes. The total cost will change and automatically the isocost curve moves upward.

We can easily superimpose the isocost diagram on the isoquant diagram (as the axes in both the cases represent the same variable) with the help of the following figure (2).

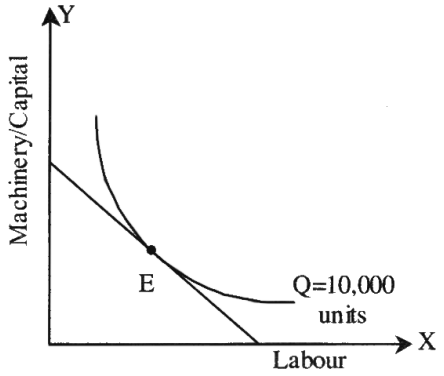


Figure (2): Super imposition of Isocost and Isoquant Curve

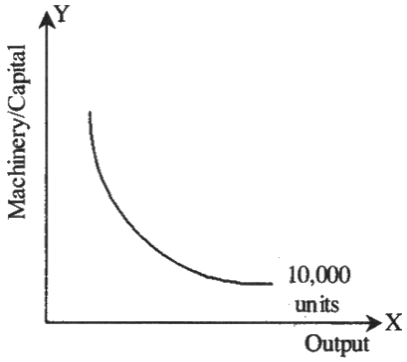


Figure (3): Isoquant Showing 10,000 Units of Production

We can ascertain the maximum output for a given outlay, say 1000. This maximum output which is possible with this outlay cost, is represented by the isoquant tangent to the isocost curve. The optimum combination of inputs is represented by the point of intersection E.

The point of tangency E on the isoquant curve represents the least-cost combination of inputs, yielding maximum level of output.

3.5 RETURNS TO SCALE

Q17. Define the law of returns to scale and explain its relevance in production management.

(OR)

Discuss the law of returns to scale with the help of a suitable example.

Ans : **(Nov.-20, Jan.-20)**

Law of Returns to Scale

The law of returns to scale refers to the relationship between inputs and the output in the long-run when all the inputs (both fixed and variable) are varied in the same proportion. Economists use the phrase "Returns to Scale" to describe the behaviour in the long-run in relation to the variations in inputs.

The law of returns to scale can be defined as the per-centage 'increase in the output where all the inputs vary in the same proportion.

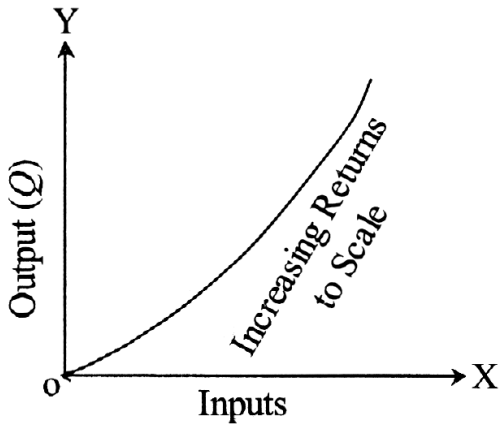
Types of Returns to Scale

Returns to scale are of three types. They are as follows,

1. Increasing Returns to Scale

If a proportionate increase in the output is larger than the proportionate increase in inputs, then a situation of increasing returns to scale occurs. In other words, increasing returns to scale occurs when a percentage increase in inputs lead to a greater percentage increase in the output. For example if a 5% increase in inputs result in 10% increase in the output, an organization is said to attain increased returns.

The below graph depicts a clear understanding about the behaviour of increasing returns to scale.



Generally, increasing returns to scale occur due to following reasons.

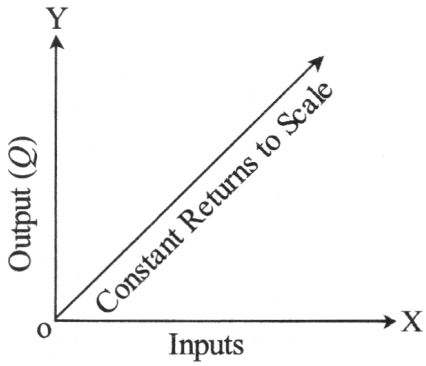
(i) In industries where the possibility to undertake production at a small scale, their a situation of increasing returns occur.

(ii) In cases where the increased size of operation gives a chance of some dimensional advantages. This is important in chemical industries and dairies where storage is an important activity.

(iii) In case of large scale industries where work is divided into fragments and as a result each individual attains specialization.

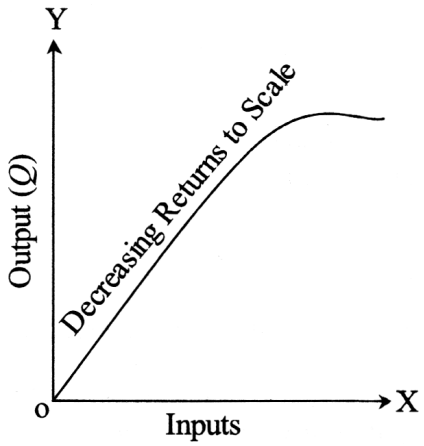
2. Constant Returns to Scale

If the proportionate increase in all the inputs is equal to the proportionate increase in output, then a situation of constant returns to scale occurs. In other words constant returns to scale occurs when the percentage increase in out-put is equal to the percentage increase in input. According to Marshall, the law of constant returns operates when the advantages and disadvantages of large scale production are exactly balanced over a range of output. For example if the inputs are increased at 10% and if the resultant output also increases at 10% then the organization is said to achieve constant returns to scale.



3. Decreasing Returns to Scale

If the proportionate increase in output is less than the proportionate increase in input, then a situation of decreasing returns to scale occurs. For example if the inputs increase by 10% and the resultant output increase by only 5% then the organization is said to achieve decreasing returns to scale. The graph below depicts decreasing returns to scale.



Decreasing returns to scale occur due to the following reasons,

(i) When a firm continues to expand its size beyond a particular point.

(ii) Increasing inefficiency in production.

(iii) After the maximum capacity of the indivisible input has reached the limit to specialization.

Relevance of Law of Returns to Scale in Production Management

The law of returns to scale is very important in production management.

The law of returns to scale plays a key role in production management decisions. The production management decisions of law of returns to scale includes,

(a) Factor product decisions

(b) Factor factor decisions and

(c) Product product decisions

The factor-product type of decisions deal with determination of optimum input level for producing a product. The factor-factor type of decisions deals with the determination of suitable input-mix and its effects in order to produce a given level of output.

In product-product type of decisions, the managers focus on for determining the optimal product-mix within the available resources. The law of returns to scale in production management focuses on the level of output in order to maximize the level of profit margins in the long-run by considering the average and marginal cost of production.

Production theory is more suitable to "Micro Theory of Distribution", so it analyses the key enables of marginal productivity for factors of production which in turn leads to demand analysis for 'factor of production'.

Production theory is also applicable to "Macro Theory of Distribution". This implies that the total share for different factors of production rests on "elasticity of substitution".

Elasticity of substitution is given by the formula,

$$= \frac{\text{\% Change in capital - Labour ratio}}{\text{\% Change in factor - Prices ratio}}$$

Percentage change in factor-price ratio is also called as "Marginal Rate of Substitution (MRS)".

Thus, law of returns to scale in production management helps in determining the relationship existing between costs and output and also in the determination of firm's demand pertaining to factor inputs.

The following table shows the combined Marginal Revenue Product (MRP) with Marginal Labour Cost (MLC) of a firm operating in a perfectly competitive market for both input and output during production process

Working Notes

Assumed values:

Taken P = Product price = ` 3

= Cost per unit of labour

= ` 5000

MRP = MP × P

TLC = (X) × (L)

MLC = Δ TLC /ΔX

For total product the values are assumed

average product = $\frac{TP}{X}$

Marginal product = Value of TP (2) is deducted from value of TP (1) and so on for all other values.

Combining Marginal Revenue Product (MRP) with Marginal Labour Cost (MLC)

Labour Unit (X)	Total Product (TP)	Average Product (AP)	Marginal Product (MP)	Total Revenue Product (TRP)	Marginal Revenue Product (MRP)	Total Labour Cost (TLC)	Marginal Labour Cost (MLC)	TRP –TLC	MRP-MLC
0	0		0	0		0		0	0
1	5,000	5,000	5,000	15,000	15,000	5,000	5,000	10,000	10,000
2	15,000	7,500	10,000	45,000	30,000	10,000	5,000	35,000	25,000
3	35,000	11,667	20,000	1,05,000	60,000	15,000	5,000	90,000	55,000
4	45,000	11,250	10,000	1,35,000	30,000	20,000	5,000	1,15,000	25,000
5	55,000	11,000	10,000	1,65,000	30,000	25,000	5,000	1,40,000	25,000
6	58,000	9,667	3,000	1,74,000	9,000	30,000	5,000	1,44,000	4,000
7	60,000	8,571	2,000	1,80,000	6,000	35,000	5,000	1,45,000	1,000
8	61,000	7,625	1,000	1,83,000	3,000	40,000	5,000	1,43,000	-2,000

The above table indicates that till point '7', the firm can hire labour because marginal labour cost is Marginal Revenue Product (MRP). But beyond that point MLC > MRP and the firm cannot hire labour which involves huge loss to the firm.

Q18. Distinguish between Law of variable proportions and returns to scale.

Ans :

S.No.	Particulars	Law of Variable Proportions	Returns to Scale
1	**Nature of inputs**	It studies the effect of change in one input on output i.e., the quantities of some inputs are fixed while other quantities vary.	Returns so scale studies the effect of change in all inputs on outputs i.e., all the inputs are variable.
2	**Time element**	Considered as short-run production function	Considered as long - run production function
3	**Homogenity**	Non-homogenous production function	Homogeneous production function.
4	**Relationship**	It is related "returns to a factor". Returns to a factor refers to a condition where there is a change in physical output due to the variations in one input.	It is related to "scale of production".It refers to a conditions where there is a change in physical output when the quantity of all factors is increased simultaneously in the same proportions.
5	**Factor proportions**	Change with the level of inputs	Remains constant
6	**Law of diminishing returns**	Non -linear non - homogeneous production function	Non - linear homogeneous production function
7	**Law of constant returns**	Linear non-homogeneous production function	Linear homogeneous production function
8	**Example**	In case of law of variable proportions, say if we increased the labour hours (only one factor) the increase in production is dependent on the working hours of labour only hence, it is unifactorial.	Linear homogeneous production function. Whereas in returns to scale, all the factors (land, labour, capital, raw material) must undergo changes in order to bring changes in the level of output, hence it is multifactorial.

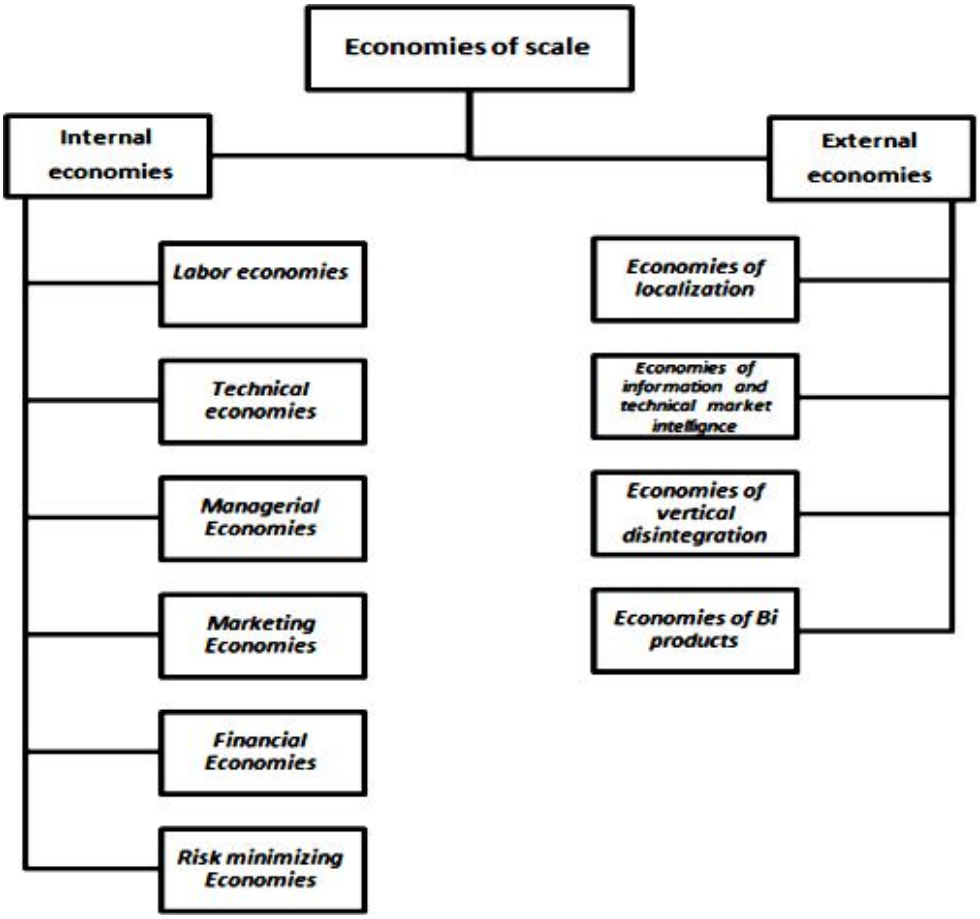
3.6 ECONOMIES OF SCALE

Q19. Explain briefly about Economies and Dis-economies of Scale

Ans : **(Nov.-21, Aug.-21, Dec.-18, July-18)**

Economies of scale arise when the cost per unit falls as output increases. Economies of scale are the main advantage of increasing the scale of production and becoming 'big'.

When we produce in large quantities generally the production cost reduces. It is the general principle everybody knows. Reduction in the cost of production, when output (production) is increased is called as economies of scale. Large scale of production is economical than small scale of production. Increase in returns to scale (reduction of cost by producing more goods) are caused by real economies, which are classified under



A) Economies of scale is classified as

I) Internal Economies

This happens when better use is made in factors of production within the firm and by increasing output the factors in the internal economies are as follows.

1. Labour Economies

Increase in the scale of production of a firm results into many economies of labour, like specialization. Enlarged scale of production allows division of labour and specialization with the result of an improvement in the skills. Specialisation means to perform just one task repeatedly which makes the labour highly efficient in its performance. This adds to the productivity and efficiency of the labour. Adam Smith illustrated this point with an example. A labourer, all alone can make just 20 pins in a day.

But when he divides the work of pin-making into different parts and each part is entrusted to a different labourer then 2400 pins are made in a day. This is the marvel of division of labour which apart from increasing the skills of labour force, results in (i) Time Saving which is lost in shifting the worker from one job to another (ii) Promotion of New Inventions and (iii) Automation of Production Process. All these increase the productivity of labour and reduces costs.

2. Technical Economies

(a) Economies of superior technique:

If firm is big it can use high technology (automated machinery) and it can produce high quality goods and cost can be also reduced. Normally small firm cannot use high technology.

(b) Economies of increased dimensions:

This is purely mechanical advantage. A big ship is more economical then small ship for transportation Double Decker is more economical than single Decker for traveling. A big or small lorry needs single driver, it better to choose big lorry transportation to reduce cost rather than choosing two small Lorries With two drivers.

(c) Economies of linked process:

Arranging production process in a correct sequence/order can lead to make Production continuous. Complete production process should be at one place only.

(d) Economies of Power

Uses of Large Machines are more economical than using small machines. Eg: 10 small machines produce 10,000 units. Whereas one big machinery produces 10,000 units. Here choosing one big machinery is economical than choosing 10 small machines, because power consumed by 10 small machines is more than one big machinery.

(e) Economies of continuation:

Production process should be continuous so that the usage of Raw material and other input can be utilized in properly and in efficient manner. Wastage can be reduced.

3. Managerial Economies

As a firm grows, there is greater potential for managers to specialise in particular tasks (e.g. marketing, human resource management, finance). Specialist managers are likely to be more efficient as they possess a high level of expertise, experience and qualifications compared to one person in a smaller firm trying to perform all of these roles.

4. Marketing Economies

If a firm purchase high volume of raw material from the suppliers it cost less, than purchasing small volumes. Employing purchasing expert in the firm to purchase required raw material for the production prevents wastage of excess raw material and it also reduces cost.

5. Financial Economies

Many small businesses find it hard to obtain finance and when they do obtain it, the cost of the finance is often quite high. This is because small businesses are perceived as being riskier than larger businesses that have developed a good track record. Larger firms therefore find it easier to find potential lenders and to raise money at lower interest rates.

Big firm has good advantage in financial matters like

- Money borrowing (Recognized firms can get money easily from money lenders)
- Low rate of interest
- Can easily raise capital (by issuing shares)

6. Risk minimizing Economies

Producing different types of products by one company has good scope in market rather than producing single variety. Eg: HLL Company produces different types of soaps.

II) External Economies

Definition

In the words of Cairn cross, "External economies are those which are shared in by a number of firms or industries when the scale of production in any industry or group of industries increases. They are not monopolised by a single firm when it grows in size, but are conferred on it when some other firms grow larger.'

External economies of scale occur when a firm benefits from lower unit costs as a result of the whole industry growing in size. The main types are:

These Economies related to external factors

1. **Economies of localization** : All firms should be localized to have economies. Different production department should be located at one place. This gives advantage in transportation and in timely labour utilization in production.
2. **Economies of information and technical market intelligence** : Industry enjoys research advantage, when Management can get whatever the information they want with in short time when firms allocated at one place.
3. **Economies of vertical integration:** Some industries rather than producing spare parts by themselves, they are purchasing from outside companies. This happens when company feels that buying of parts is cheaper than they produce by themselves. (Make or Buy decision)

E.g.: TATA Company purchased gear box for cars from kinetic Company

E.g.: Mahindra cars purchasing engine from Renault Company.

4. **Economies of Bi products**: The firm using one raw material for manufacturing different other products can give more returns (profits) to the firm.

Eg: Amul India , Company producing different food products from milk.

B) Dis-Economies of Scale

Increasing the size of a business or production does not always result in lower costs per unit. Sometimes a business can get increase in cost of production or loss to the organisation, it is called as diseconomies of scale.

Diseconomies of scale occur when a business grows so large that the costs per unit increase.

Diseconomies of scale occur because of several reasons; this situation is the result of the difficulties of managing a larger Workforce.

(i) Internal Diseconomies of Scale

Internal diseconomies occur as the output of the firm is rising.

- **Interdependency**:
  - Large firms with many and different departments have the problem with interdependency with each other. A machine failure in the packaging department may result in stopping the whole production line.
- **Coordination and Communication**
  - As the business expands communicating between different departments and along the chain of command becomes more difficult. There are more layers in the hierarchy that can distort a message and wider spans of control for managers. This may result in workers having less clear instructions from management about what they are supposed to do when.

- **Mismanagement**
  - One of the main causes of diseconomies of scale or internal diseconomies is the difficulties of large-scale management. As a firm expands, difficulties of management go on multiplying. In a big firm, it becomes pretty difficult to co-ordinate the work of different sections. It becomes a tough problem to supervise the work spread all over. It adversely affects operational efficiency of the firm. In the words of Mc Connell, "The main factors causing diseconomies of scale have to do with certain management problems which physically arise as a firm becomes a large-scale producer."
- **Industrial relations**:
  - Because of the lack of contact between senior management and the work force, the workers may not feel commitment to work. Industrial disputes may arise and production may suffer.
- **Lack of motivation**:
  - Workers can often feel more isolated and less appreciated in a larger business and so their loyalty and motivation may decrease. It is harder for managers to stay in day-to-day contact with workers and build up a good team environment and sense of belonging. The main result of poor employee motivation is fall in productivity levels and an increase in average labour costs per unit.
- **Lack of control:**
  - When there is a large number of workers it is easier to escape with not working very hard because it is more difficult for managers to notice shirking.

(ii) External diseconomies of scale

External factors beyond the control of a company increases its total costs, as output in the rest of the industry increases. The increase in costs can be associated with market prices increasing for some or all of the factors of production.

For example, as a business increases its output, more pressure might be put on its labor supplies, which would then raise the price of additional output. The availability of raw materials also might cause the cost of production to rise. A mining firm, for example, might first extract minerals that are easy to access. After it is necessary to mine deeper seams to produce more ore, the cost of additional output will rise.

As output increases in an industry, each of the factors of production, land, labour, capital and enterprise, become scarcer. As they become scarce (unavailability), their prices increase.

Q20. Distinguish between internal and external economies of scale.

Ans :

Sl.No.	Criteria	Internal Economies	External Economies
1	**Alternative name**	Internal economies are also known as 'Real Economies'	External economies are also known as 'Pecuniary Economies'.
2	**Origin**	Internal economies are internal to a firm. i.e., they originate inside the firm.	External economies originated out side the firm.

3	**Marshall's view**	According to 'Marshall' Internal economies of scale relies upon the internal resources are organized and managed.	According to 'Marshall'- External economies of scale relies upon the overall development of an industry where in firms are operating.
4	**Suitability**	Internal economies of scale is available to individual firm.	External economies of scale is available to each and every firm operating in an industry.
5	**Availability**	Internal economies are exclusively available to the expanding firms	External economies are more advantageous to large size firms when compared to small size firms.
6	**Occurrence**	Internal economies of scale arieses when cost per unit relies upon the size of any one firm rather than the size of an industry.	External economies of scale arises when cost per unit relies upon the size of the industry rather than the size of an individual firm
7	**Prerequisite**	Internal economies of scale is an essential prerequisite for external economies of scale.	External economies of scale is not a prerequisite for internal economies of scale.
8	**Type of competition**	Internal economies of scale give rise to imperfect competition.	External economies of scale give rise to perfectly competitive market structure.

3.7 INNOVATIONS AND GLOBAL COMPETITIVENESS

Q21. Explain briefly about Innovations and Global Competitiveness.

Ans : **(July-18)**

The innovations as well as new computer aided production revolution plays an important role in the global competitiveness among the American, European, Japanese and other Asian firms. Basically these were not many technological developments in the past four decades by an American firm (or) laboratory. The product cycle model in this regard states that any firm that introduces an innovation loses their export market as well as their domestic market to foreign imitators who usually pay less amount of wages and faces lower costs. However, in the meanwhile the technologically leading firms launched highly advanced products and technologies.

The major issue here is that the period in which the firms can take the advantage of the benefits of innovations is gradually becoming shorter before the market is taken away by the foreign imitators. In few cases, American discoveries like fax machine and the flat video screen were launched and exploited commercially by other foreign firms. Eventhough several U.S firms are the world leaders in many high tech industries, they have lost competitiveness to foreign competitors. The main reason behind this is that many U.S based firms in such mature industries focused on the product innovation, whereas other foreign country competitors focused on process innovations.

During 1970s and 1980s several Japanese firms emerged as technological leaders in several fields and launched several successful products and process innovations. Toyota, for example introduced the Just-in- Time production system which assumes that each and every part (or) component must be available

when required. This technique increases the efficiency and prevents from carrying out costly inventories and double-handling of parts. Japanese firms believes in continuous improvement of product quality and production technology.

Sometimes Japanese firms also experience greater domestic rivalries and geographical concentration when compared to American and European competitors. Hence, they experience higher degree of motivation to innovate. Because of Japanese competitive threat many American firms mainly high-tech firms considered fundamental and difficult restructuring in 1980s which made them leaders in their industries in 1990s.

A veritable revolution, from early 1990s, in the production field has been occurring in the United States(U.S), on the basis of computer aided design and computer-aided manufacturing which significantly increased the productivity and international competitiveness of U.S firms. Computer- aided design helps the research and development engineers to design a product (or) component on computer screen, conduct quick experiments with alternative designs and test their strength and reliability, on the single screen. Computer Aided Manufacturing (CAM) gives instructions to a network of integrated machine tools for creating a prototype of the product. All these developments helps the firms to address several production issues, reduces the time needed for creating and launching products and decrease the optimal lot size (or) production runs, in order to attain maximum production efficiency.

The revolution later resulted in the existence of the digital factory. The restructuring and introduction of these designs and production technologies were substantially motivated in European industries, with the introduction of common currency, the Euro in January 1990. But, several industries in developed countries have been losing international competitiveness to Chinese firms.

Q22. Write about the meaning and importance of innovations. Explain in brief the open innovation model.

Ans :

The long-term competitiveness of a firm either at home (or) abroad mainly relies on innovations. Innovations are of two types namely-product innovation and process innovation. Innovations are considered as incremental and deals with continuous small enhancements in products (or) processes instead of a major technological development. Isoquants are used for evaluating the innovations. Any new (or) improved product generally needs a new isoquant map which shows different combinations of inputs for creating each level of output of the new (or) improved product. An innovation process can be represented by a shift towards the origin of product isoquants, representing that after innovation each and every level of output can be produced with less amount of inputs.

A firm should continuously improve the product (or) the production process as it can be overtaken by other more innovative firms. In the present era, a firm for becoming successful should use a global competitive strategy. A firm must establish its presence in the crucial markets through exports as well as through local production. The strong domestic rivalry and geographic orientation encourages the introduction of innovations. The strong domestic rivalry is the initial reason behind the introduction of innovations as it encourages the firms to constantly innovate (or) lose market share, the second reason is the geographic orientation as it generates new ideas and leads to the development of specialised machinery and other inputs for the industry. The risk involved in the introduction of innovations is high.

The Open Innovation Model

In the present environment, many companies are rethinking about the different ways in which they acquire new technology and get products into the market. Traditionally, the companies under the closed innovation model generated, developed and commercialised on their own ideas, innovations (or) technological developments. Presently, several top companies are focusing on open innovation model which deals with the commercialisation of own ideas, innovations of the company, innovations of other firms and deploying external and internal (or) in-house pathways to market. The firms are now finding ways to adopt external technologies to fill the gaps in its businesses and to motivate other firms to use its own technology by licensing agreements, joint

ventures and other arrangements. A firm by doing so, is not restricted by the technologies which it develops through its R & D, instead it can adopt any available technology which helps in developing and introducing new and innovative products in the market. In the same way, the firm can take the advantage by licensing its own technology to others.

For instance, recently Procter and Gamble has changed its approach from closed model and adopted open model. It has become the aggressive adopter of the former with the slogan "Connect and Develop". The initial step taken by P & G was to develop the position of director of external innovation with the goal of sourcing 50 percent of its innovations from outside the company by 2007, which was substantially high from an expected 10 percent in 2002. Spin brush was recently launched by P & G. It is an electric tooth-brush which works on batteries and is priced at $ 5. In the United States, this tooth brush became the best selling toothbrush. This toothbrush was created by four Cleveland Entrepreneurs instead of P & G's labs. P & G also motivates other firms to adopt its own innovations by introducing the policy that states that any new idea (or) innovation which is not adopted by the firm within three years can be given to other firms and to competitors by a licensing agreements, joint ventures (or) for a fee so that a promising project can be used and benefits can be obtained.

Presently, the leading companies are moving from a closed to an open innovation model. The two major reasons behind this are as follows,

1. The problems which the companies are facing in regulating their proprietary ideas and expertise because of the rapid increase in the mobility of knowledge workers.
2. The increasing competition which they are experiencing from new start-up companies financed by the increased availability of venture capital.

Thus, the closed innovation model is not completely ignored by the firms, instead it is being integrated into the open model by redirecting the scope of the in-house lab R & D towards adopting external technologies and determining different ways through which firms in other sectors can use the own technological developments more effectively.

3.8 Cost Concepts

Q23. Define :

(a) Cost

(b) Cost Analysis

Ans :

(a) Meaning of Cost

Economist define cost in terms of opportunities that are sacrifice when choice is made.

Cost is analyzed from the producer point of view. Cost estimates are made in terms of money cost calculations are indispensable for management decisions.

Cost of production refers to the total money expenses (both explicit and implicit) incurred by the producer in the process of transforming inputs into outputs.

Thus, it refers total money expenses incurred to produce a particular quantity of output by the produce.

(b) Meaning of Cost Analysis

Cost analysis is also known as economic evaluation, cost allocation, efficiency assessment, cost-benefit analysis, cost effective analysis.

Cost analysis is a method used to determine how well or how poorly a planned action will turn out. The cost analysis refers to the study of behaviour of cost in relation to one or more production criteria such as size of the output, scale of operations, prices of factors of production and other relevant economic variables.

Q24. Explain different types of costs.

(OR)

Elucidate the different types of costs.

Ans :

There are several costs that a firm should consider under relevant circumstances. It is-quite essential for a firm to understand the difference between various cost concepts for the purpose of production/business decision-making.

The following are the various cost concepts/ types of colts,

(1) Opportunity and Actual Costs

(i) Opportunity Cost :

Opportunity cost is concerned with the cost of forgone opportunity/alternatives. In other words, it is the return from the second-best use of the firms resources which the firm forgoes in order to avail of the return from the best use of the resources. It can also be said as the comparison between the policy that was chosen and the policy that was rejected. The concept of opportunity cost focuses on the net revenue that could be generated in the next best use of a scarce input. Opportunity cost is also called as "alternative cost".

Example : If a firm owns a land, there is no cost of using the land (i.e., the rent) in the firm's account. But, the firm has an opportunity cost of using this land, which is equal to the rent forgone by not letting the land out on rent.

(ii) Actual Cost :

Actual cost is defined as the cost or expenditure which a firm incurs for producing or acquiring a good or service. The actual costs or expenditures are recorded in the books of accounts of a business unit. Actual costs are also called as "outlay costs" or "absolute costs" or "acquisition costs",

Example : Cost of raw material, rent, interest, wage bill, etc.

(2) Fixed and Variable Costs

(i) Fixed Cost: Fixed costs are the costs that do not vary with the changes in output. In other words, fixed costs are those which are fixed in volume though there are variations in the output level. If the time period under consideration is long enough to make the adjustments in the capacity of the firm, the fixed costs also vary. For an economist fixed costs are overhead costs and for an accountant they are indirect costs.

Example : Expenditures on depreciation (decrease) costs of administrative or managerial staff, rent on land and buildings, property taxes, etc.

(ii) Variable Cost :

Variable costs are those that are directly dependent on the output i.e., they vary with the variation in the volume/level of output. Variable costs increase with an increase in output level but not necessarily in the same proportion. The proportionality between the variable cost and output depends upon the utilization of fixed facilities and resources during the production process.

Example: Cost of raw materials, expenditures on labour, running cost or maintenance costs of fixed assets such as fuel, repairs, routine maintenance expenditure, etc.

(3) Explicit Costs and Implicit Costs

(i) Explicit Cost : Explicit costs are those expenses/expenditures that are actually paid by the firm. These costs are recorded in books of accounts. Explicit costs are important for calculating the profit and loss accounts and guide in economic decision-making. Explicit costs are also called as "paid-out costs".

Example : Interest payment on borrowed funds, rent payment, wages, utility expenses, etc.

(ii) Implicit Cost/Imputed Costs: Implicit costs are a part of opportunity cost. They are the theoretical costs i.e., they are not recognized by the accounting system and are not recorded in the books of accounts but are very important in certain decisions. They are also called as the earnings of those employed resources which belong to the owner himself. Implicit costs are also called as "Imputed costs".

Example : Rent on idle land, depreciation on fully depreciated property still in use, interest on equity capital, etc.

(4) Out-of-Pocket Costs and Imputed Cost

(i) Out-of-Pocket Cost : Out-of-pocket costs are those costs or expenses which are current

payments to the outsiders of the firm. All the explicit costs fall into the category of out-of-pocket costs.

Example : Rent paid, wages, salaries, interest, transport charges, etc.

(ii) Imputed/Book Cost : Sometimes book costs is also known as imputed cost. Book costs are those business costs which don't involve any cash payments but a provision is made in the books of accounts. Book costs are imputed costs or the payments made by the firm itself.

Example : Cost of using owners money, depreciation of fully-written-off-property, the firm own capital equipment etc.

(5) Sunk and Incremental Costs

(i) Sunk Cost : Sunk costs are those costs that have spent in the past. Sunk costs are those do not alter by varying the nature or level of business activity. Sunk costs are generally not taken into consideration in decision-making as they do not vary with the changes in the future. Sunk costs are a part of the outlay/ actual costs. Sunk costs are also called as "non-avoidable costs" or "non- escapable costs".

Example : Amortization of past expenses, like depreciation.

(ii) Incremental Cost: Incremental costs are additions to costs resulting from a change in the nature or level of a business activity. As these costs can be avoided by not bringing any variation in the activity, they are also called as "avoidable costs" or "escapable costs".

Moreover, incremental costs can be considered as the difference in the total costs resulting from a contemplated change in the future, they are also called as "differential costs".

Example : Change in distribution channels adding or deleting a product in the product line, replacing a machine, etc.

(6) Direct Vs Indirect Costs

(i) Direct Cost : Direct costs are also called as, "traceable" or "assignable costs". Direct costs are those which have direct relationship with a unit of operation like manufacturing a product organizing a process or an activity, etc. In other words, direct costs are those which are directly and definitely identifiable. The nature of the direct cost depends upon the costing under consideration. As the direct costs are related with a particular product/ process, they vary with variations in them. Therefore, all direct costs are variable in nature.

Example : In operating railway services, the costs of wagons, coaches and engines are direct costs.

(ii) Indirect Cost : Indirect costs are also called as "non-traceable costs" or "non- avoidable costs". Indirect costs are those which cannot be easily and definitely identifiable in relation to a plant, a product, a process or a department. Indirect costs do not vary i.e., they may or may not be variable in nature. However, the nature of indirect costs depend upon the costing under consideration. Indirect costs are both the fixed and the variable type as they may or may not vary as a result of the proposed changes in the production process etc.

Example : The cost of factory building, the track of a railway system, etc., are 'fixed indirect costs' and the cost of machinery, labour, etc., are 'variable indirect inputs'.

(7) Controllable Vs Non-Controllable Costs

(i) Controllable Cost : Controllable costs are those which can be controlled or regulated through observation by an executive and therefore they can be used for assessing the efficiency of the executive. Most of the costs are controllable.

Example : Inventory costs can be controlled at the shop level etc.

(ii) Non-Controllable Cost : The costs which cannot be subjected to administrative control and supervision are called non-controllable costs. Non-controllable costs are those costs which are beyond regulation.

Example : Costs due obselence and depreciation, capital costs, etc.

(8) Historical Cost and Replacement Cost

(i) Historical Cost : Historical cost (original cost) of an asset refers to the original price paid by the management to purchase it in the past.

Example : Financial statements or balance sheet of a firm.

(ii) Replacement Cost: Replacement cost are those costs that are to be paid currently if the asset were to be replaced.

Example : If a firm acquires a machine for ` 20,000 in the year 1990 and the same machine costs ` 40,000 now. The amount ` 20,000 is the historical cost and the amount ` 40,000 is the replacement cost.

(9) Shutdown and Abandonment Costs

(i) Shutdown Cost: The costs of a firm incurs when it temporarily stops its operations are called "shutdown costs". These costs can be saved when the firm again starts its operations. Shutdown costs include fixed costs, maintenance cost, lay-off expenses etc.

Example : Cost of sheltering the plant and equipment and construction of sheds for storing exposed property.

(ii) Abandonment Cost : Abandonment costs are those costs which are incurred for the complete removal of the fixed asset from use. These may occur due to obselence or due to improvisation of the firm. Thus, abandonment costs involve problem of disposal of the asset.

Example : The plant installed during war time may be so improvised that it may not be required during peace time.

(10) Business Cost and Full Cost

(i) Business Cost : Business costs include all the expenses incurred by the firm to carry out business activities. According to Watson and Donald.S, business costs include all the payments and contractual obligations made by the firm together with the book cost of depreciation on plant and equipment. The concept of business cost facilitate in calculating the profit and loss account and for filing returns for income tax and also for other legal purposes.

(ii) Full Cost : Full costs are the sum of opportunity costs and normal profit. Opportunity cost is the expected return/ earnings from the next best use of the firm's resources like capital, land and building, entrepreneurs/owners efforts and time. Normal profit is the necessary minimum earning in addition to the opportunity cost, which a firm must receive to remain in its present occupation.

(11) Short-Run Cost and Long-Run Cost : Both short-run and long-run costs are related fixed and variable costs and are often used in economic analysis.

(i) Short-Run Cost : Short-run costs are which vary with the variations in the output with size of the firm as same. Short-run costs are same as variable costs. Broadly, short-run costs are associated with variable inputs in the utilization of fixed plant or other requirements.

Example : Cost for utilization of fixed plant.

(ii) Long-Run Cost : Long-run costs are which incurred on the fixed assets like land and building, plant and machinery etc. Long-run costs are same as fixed costs. Usually, long-run costs are associated with the variations in size and kind of plant.

Example : Cost of changes in the size and types of plant.

(12) Urgent Costs and Postponable Costs

(i) Urgent Cost: Urgent costs are those costs that are necessary for the continuation of the firm's activities.

Example : The cost of raw materials, labour, fuel, etc., which have to be incurred if production is to take place.

(ii) Postponable Cost : The costs which can be postponed for some time, i.e., whose postponement does not affect the operational efficiency of the firm are called postponable costs.

Example : Maintenance costs which can be postponed for the time-being. This distinction of cost is very useful during war or inflation.

(13) Private and Social Costs

(i) Private Cost: Private costs are costs incurred by a firm in producing a commodity or service. It is a cost incurred in the production process by the producer including profit margins that are anticipated. Private costs for a producer of a good, service or activity includes the costs the firm pays to purchase capital equipment, hire labour and buy materials or other inputs. Private costs are paid by the firm of consumer and must be included in production and consumption decisions.

(ii) Social Cost : Social costs are implicated on the society at the time of production in forestry sector. The social costs take the form of pollution, damage to the resilience of forest ecosystems itself and other ecosystems, deforestation, natural resource depletion, etc. The value of these social costs can be estimated with the help of contingent valuation method and other methods used for valuing non-market goods and services.

(14) Accounting Cost and Economic Cost

(i) Accounting Cost : Accounting costs relate to those costs only which involve cash payments by the entrepreneur of the firm. Accounting costs are also called explicit costs. The accounting costs are useful for managing taxation needs as well as to calculate profit or loss of the firm.

(ii) Economic Cost : Economic costs includes not only the explicit cost but also the implicit cost. The money rewards for the own services of the entrepreneur and the factors owned by himself and employed by him/his own business is considered a part of economic costs.

(15) Total Cost : Average Cost and Marginal Cost

(i) Total Cost (TC) : Total Cost (TC) refers to the money value of the total resources/ inputs required for the production of goods and services by the firm. In other words, it refers to the total outlays of money expenditure, both explicit and implicit, on the resources used to produce a given level output. Total cost includes both fixed and variable costs and is given by.

$$TC = VC + FC$$

Where,

TC = Total cost.

VC = Variable cost.

FC = Fixed cost.

(ii) Average Cost (AC) : Average cost refers to the cost per unit of output assuming that production of each unit of output incurs in the same cost. It is statistical In nature and is not an actual cost. It is obtained by dividing Total Cost (TC) by total Output (Q).

Average cost,

$$AC = \frac{TC}{Q}$$

Where,

TC = Total cost incurred in production process.

Q = Output level.

Also

$$AC = AFC + A\,VC$$

Where,

AFC = Average fixed cost.

AVC = Average variable cost.

(iii) Marginal Cost (MC) : Marginal cost refers to the incremental or additional costs that are incurred when there is an addition to the existing output level of goods and services. In other words, it is the addition to the Total Cost (TC) on account of producing additional units of the output. Marginal cost is given by,

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

Where,

ΔTC = Partial differentiation of total cost.

ΔQ = Total output

Q25. What are the differences between fixed cost and variable cost.

Ans :

Basis	Fixed cost	Variable Cost
Meaning	Fixed cost are those cost which are fixed in volume, even though if any variation exist in the output level.	Variable cost are those cost which are not constant and are directly depends on the output i.e., they vary in their variation at the level/ volume of output.
Time period	Fixed cost relate to short-period only. The firm will not stop production if these costs remain uncovered.	Variable cost relate to both short and long period. The firm will stop production if these cost are not covered.
Factor of production	Fixed costs are those cost in curred on fixed factors of production like land, building, machines etc.	Variable cost are incurred on the employment of variable factors, such as labour, raw materials, transportation etc.
Relation of output with input	Fixed cost remains fixed at all level of output. These cost have to be in-curred even when output is zero.	Variable cost go on rising the higher level of output. First, they rise at the dimishing rate and than at a constant rate and finally they increase at an increasing rate.
Example	Rent, wages of permanent staff, license fee, cost of plant and machinery etc.	Cost of raw materials, wages of casual labour, expenses on electricity etc.

Q26. What are the differences between production function and cost function.

Ans :

The differences between production function and cost functions are as follows.

Production Function	Cost Function
1. A production function represents the quantitative	1. A cost function shows the functional relationship between cost and its determinants
2. The determinants of production function are capital (K), labour (L), time (t) etc.	2. Cost, output, size of plant, technology and managerial efficiency determines the cost function.
3. Production function expresses the relation - ship between inputs and outputs in physical terms.	3. Cost function is actually the monetary representation of production function.
4. Under short-run production function, Q = f(L) or Q = f(K) or Q = f(m)	4. Under short -run cost function, TC = TFC + TVC Where, TC = Total cost TFC = Total fixed cost TVC = Total variable cost
5. Under long-run production function, Q = f(K, L)	5. Under long -run cost function, the factors fluctuate. So that, the managers can take appropriate decisions and plan accordingly depending upon the level of output.

3.8.1 Determinants of Cost

Q27. Explain various Determinants of Cost.

Ans : **(Dec.-18, July-18)**

The main determinants of Cost are the following :

(a) Size of Output

(b) Output Level

(c) Price of Inputs

(d) Technology

(e) Managerial Efficiency.

(a) Size of Output

- Plant size is an important variable influencing cost.
- The relation between scale of operations or size of plant to the unit cost is negative in the sense that, as the former increases, per unit cost decreases and vice versa.

(b) Output Level

- Level of output and total cost are obviously related.
- Total cost increasing with increase in output. But average and marginal costs first decline and then increase with the increase in the output.
- The average total cost or marginal costs function are derived by relating the relevant costs with the level of capacity utilization of given sized plant.
- Since such as cost function forms a U-shaped curve, a quadratic or cubic function is more appropriate to use.

(c) Price of Inputs

- Changes in input prices influence costs, depending on the selective usage of the inputs and relative changes in their prices.
- When a factor, which is a major component in production, becomes relatively costly it rises the cost significantly.

(d) Technology

- Technology is often qualified as capital- output ratio. Modern and efficient technology is certainly cost saving and is, therefore, generally found to have higher capital output ratio.

(e) Managerial Efficiency

- Though cost is influenced a great deal by managerial efficiency, it is difficult to quantity it.
- However, a change in cost at two points of time may explain how organizational or marginal changes within the firm have bought labour cost efficiency, provided it is possible to exclude the effect of other factors.

3.8.2 Cost-output Relationship in the Short Run and Long Run

Q28. Explain Cost-Output Relationship in the Short-Run.

Ans : **(Nov.-21, Jan.-20, Dec.-18, July-18)**

The cost concepts made use of in the cost behavior are Total cost, Average cost, and Marginal cost.

Total cost is the actual money spent to produce a particular quantity of output. Total Cost is the summation of Fixed Costs and Variable Costs.

$$TC = TFC + TVC$$

Up to a certain level of production Total Fixed Cost i.e., the cost of plant, building, equipment etc, remains fixed. But the Total Variable Cost i.e., the cost of labor, raw materials etc., vary with the variation in output. Average cost is the total cost per unit. It can be found out as follows:

$$AC = TC/Q$$

The total of Average Fixed Cost (TFC/Q) keep coming down as the production is increased and Average Variable Cost (TVC/Q) will remain constant at any level of output.

Marginal Cost is the addition to the total cost due to the production of an additional unit of product. It can be arrived at by dividing the change in total cost by the change in total output.

In the short-run there will not be any change in Total Fixed Cost. Hence change in total cost implies change in Total Variable Cost only.

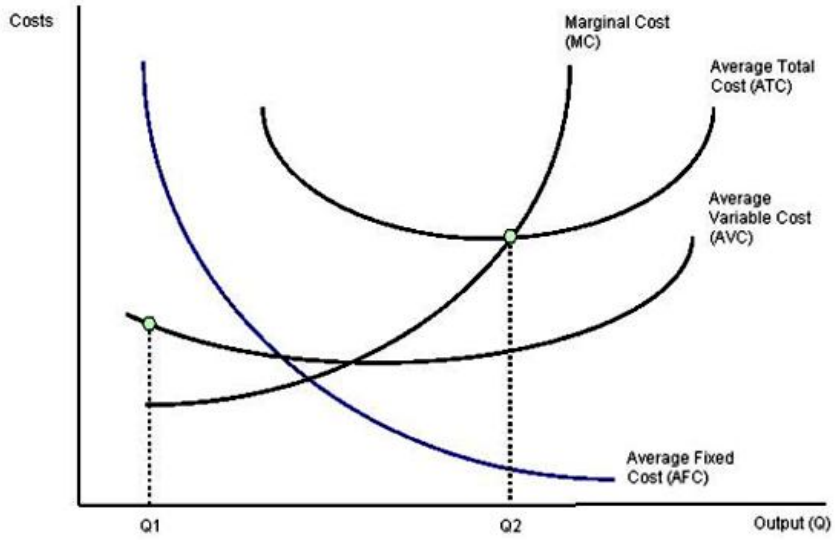
Units of Output	Total fixed cost TFC	Total variable cost TVC	Total cost (TFC + TVC) TC	Average variable cost (TVC/Q) AVC	Average fixed cost (TFC/Q) AFC	Average cost (TC/Q) AC	Marginal cost MC
0	-	-	60	-	-	-	-
1	60	20	80	20	60	80	20
2	60	36	96	18	30	48	16
3	60	48	108	16	20	36	12
4	60	64	124	16	15	31	16
5	60	90	150	18	12	30	26
6	60	132	192	22	10	32	42

The above table represents the cost-output relationship. The table is prepared on the basis of the law of diminishing marginal returns. The fixed cost Rs. 60 May include rent of factory building, interest on capital, salaries of permanently employed staff, insurance etc. The table shows that fixed cost is same at all levels of output but the average fixed cost, i.e., the fixed cost per unit, falls continuously as the output increases. The expenditure on the variable factors (TVC) is at different rate. If more and more units are produced with a given physical capacity the AVC will fall initially, as per the table declining up to 3rd unit, and being constant up to 4th unit and then rising. It implies that variable factors produce more efficiently near a firm's optimum capacity than at any other levels of output and later rises.

But the rise in AC is felt only after the start rising. In the table 'AVC' starts rising from the 5th unit onwards whereas the 'AC' starts rising from the 6th unit only so long as 'AVC' declines 'AC' also will decline. 'AFC' continues to fall with an increase in Output. When the rise in 'AVC' is more than the decline in 'AFC', the total cost again begin to rise. Thus there will be a stage where the 'AVC', the total cost again begin to rise thus there will be a stage where the 'AVC' may have started rising, yet the 'AC' is still declining because the rise in 'AVC' is less than the drop in 'AFC'.

Thus the table shows an increasing returns or diminishing cost in the first stage and diminishing returns or diminishing cost in the second stage and followed by diminishing returns or increasing cost in the third stage.

The short-run cost-output relationship can be shown graphically as follows.



In the above graph the "AFC' curve continues to fall as output rises an account of its spread over more and more units Output. But AVC curve (i.e. variable cost per unit) first falls and then rises due to the operation of the law of variable proportions. The behaviour of "ATC' curve depends upon the behaviour of 'AVC' curve and 'AFC' curve. In the initial stage of production both 'AVC' and 'AFC' decline and hence 'ATC' also decline. But after a certain point 'AVC' starts rising. If the rise in variable cost is less than the decline in fixed cost, ATC will still continue to decline otherwise AC begins to rise. Thus the lower end of 'ATC' curve thus turns up and gives it a U-shape. That is why 'ATC' curve are U-shaped. The lowest point in 'ATC' curve indicates the least-cost combination of inputs. Where the total average cost is the minimum and where the "MC' curve intersects 'AC' curve, It is not be the maximum output level rather it is the point where per unit cost of production will be at its lowest.

The relationship between 'AVC', 'AFC' and 'ATC' can be summarized up as follows:

If both AFC and 'AVC' fall, 'ATC' will also fall.

When 'AFC' falls and 'AVC' rises

'ATC' will fall where the drop in 'AFC' is more than the raise in 'AVC'.

'ATC' remains constant is the drop in 'AFC' = rise in 'AVC'

'ATC' will rise where the drop in 'AFC' is less than the rise in 'AVC'

Q29. Explain Cost-Output Relationship in the Long-Run.

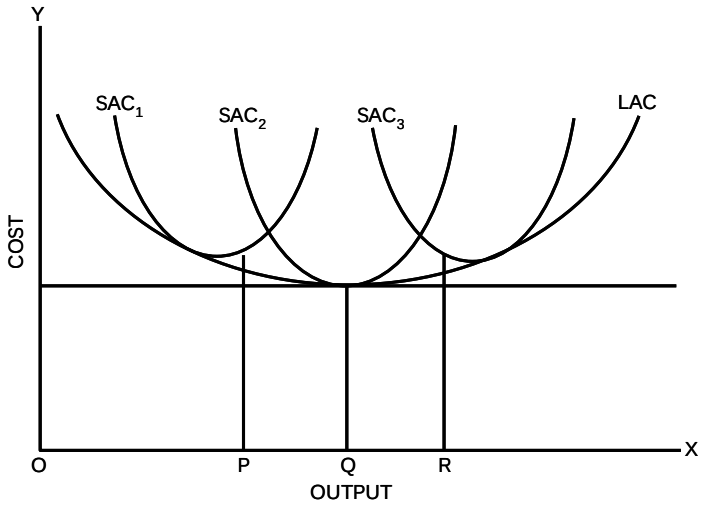
Ans : **(Nov.-21, Jan.-20, Dec.-18, Jan.-18)**

Long run is a period, during which all inputs are variable including the one, which are fixes in the short-run. In the long run a firm can change its output according to its demand. Over a long period, the size of the plant can be changed, unwanted buildings can be sold staff can be increased or reduced. The long run enables the firms to expand and scale of their operation by bringing or purchasing larger quantities of all the inputs. Thus in the long run all factors become variable.

The long-run cost-output relations therefore imply the relationship between the total cost and the total output. In the long-run cost-output relationship is influenced by the law of returns to scale.

In the long run a firm has a number of alternatives in regards to the scale of operations. For each scale of production or plant size, the firm has an appropriate short-run average cost curves. The short-run average cost (SAC) curve applies to only one plant whereas the long-run average cost (LAC) curve takes in to consideration many plants.

The long-run cost-output relationship is shown graphically with the help of "LCA' curve.



To draw on 'LAC' curve we have to start with a number of 'SAC' curves. In the above figure it is assumed that technologically there are only three sizes of plants – small, medium and large, 'SAC', for the small size, 'SAC2' for the medium size plant and 'SAC3' for the large size plant. If the firm wants to produce 'OP' units of output, it will choose the smallest plant. For an output beyond 'OQ' the firm wills optimum for medium size plant. It does not mean that the OQ production is not possible with small plant. Rather it implies that cost of production will be more with small plant compared to the medium plant.

For an output 'OR' the firm will choose the largest plant as the cost of production will be more with medium plant. Thus the firm has a series of 'SAC' curves. The 'LCA' curve drawn will be tangential to the entire family of 'SAC' curves i.e. the 'LAC' curve touches each 'SAC' curve at one point, and thus it is known as envelope curve. It is also known as planning curve as it serves as guide to the entrepreneur in his planning to expand the production in future. With the help of 'LAC' the firm determines the size of plant which yields the lowest average cost of producing a given volume of output it anticipates.

3.8.2.1 Short Run Vs. Long Run Costs

Q30. What are the differences between short run and long run cost.

(OR)

Distinguish between short-run cost and long-run costs.

Ans : **(Jan.-18)**

Basis of Difference	Short Run Costs	Long Run Costs
(i) Time Period	The short-run is a period of time in which output can be increased or decreased by changing only variable factors.	The long run is defined as a period in which quantities of all factors are variable. No factor is fixed.
(ii) Expansion	No increase in short-run output can be made by expanding the existing plants and equipments.	In the long run output can be expanded not only by increasing labour and raw-materials but also by expanding the size of plants and equipments.
(iii) Produce Output	In short run a firm produces output at a higher point on its short-run marginal cost curve.	The firms, under long run produce at another cost curve called long period curve. In long period a firm is at will to produce or to leave the industry.
(iv) Technology	In short run costs production technology is given.	Long run can adapt production technology in market.

3.8.3 Average Cost Curves

Q31. What do you understand by average cost curves ?

Ans :

Average cost is equal to total cost divided by the number of goods produced (the output quantity, Q). It is also equal to the sum of average variable costs (total variable costs divided by Q) plus average fixed costs (total fixed costs divided by Q). Average costs may be dependent on the time period considered (increasing production may be expensive or impossible in the short term, for example). Average costs affect the supply curve and are a fundamental component of supply and demand.

$$\text{Average Cost} = \text{Total Cost / Output Quantity}$$

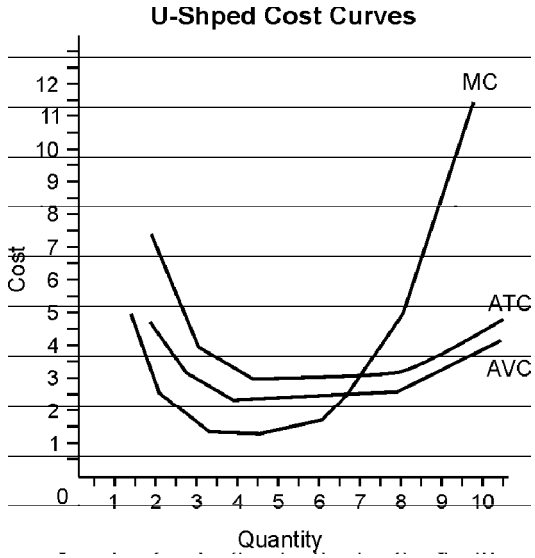
$$AC = TC / Q$$

Average cost will vary in relation to the quantity produced unless fixed costs are zero and variable costs constant. A cost curve can be plotted, with cost on the y-axis and quantity on the x-axis. Marginal costs are often shown on these graphs, with marginal cost representing the cost of the last unit produced at each point; marginal costs are the first derivative of average costs.

U - Shape of Average Cost Curves

A typical average cost curve will have a U-shape, because fixed costs are all incurred before any production takes place and marginal costs are typically increasing, because of diminishing marginal productivity.

In this "typical" case, for low levels of production there are economies of scale: marginal costs are below average costs, so average costs are decreasing as quantity increases.



Each is U-shaped because it begins with relatively high but falling cost for small quantities of output, reaches a minimum value, then has rising cost at large quantities of output. Although the average fixed cost curve is not U-shaped, it is occasionally included with the other three just for sake of completeness.

3.9 BREAK EVEN ANALYSIS

Q32. Explain briefly about Break Even Analysis.

Ans : **(Aug.-21, Nov.-20, Dec.-18)**

Break-even Analysis

The Break - Even Point (BEP) can be defined as that level of sales at which total revenue equals total costs and the net income is equal to zero. This is also known as no - profit and no-loss point.

Formula to Calculate Break-even Point in Quantity

Break - even Point (in units)

$$= \frac{\text{Fixed Costs}}{\text{Contribution on Margin Per Unit}}$$

Break - Even Analysis is the study of revenues and costs of a firm in relation to its volume of sales. It is mainly concerned with the determination of that particular volume at which firm's costs and revenues (profits) will be equal. It is also called C-V-P Analysis or cost volume iso-profit analysis.

The main objective of the Break-Even Analysis is not only to spot the BEP, but to develop an understanding of the relationships of cost, volume and price within a company's practical range of operations.

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The following Break-Even Chart helps us to understand this concept more clearly.

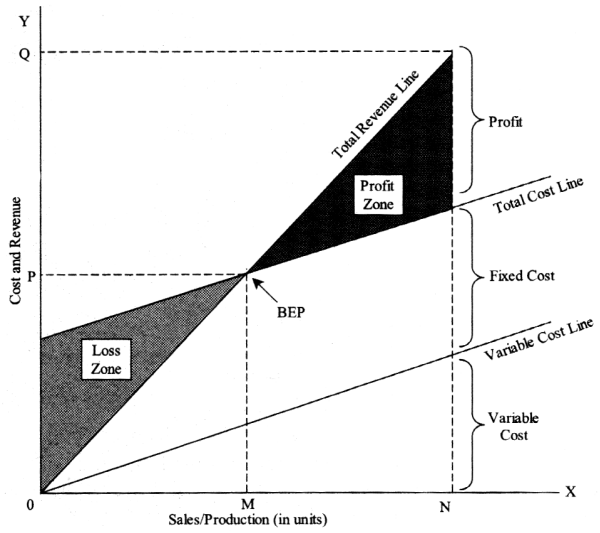


Fig. : Break-even Chart

In from the figure, units of product/sales are shown on the horizontal axis OX and costs and revenues are shown on vertical axis OY. The variable cost line is drawn first. It increases along with volume of production and sales. The total cost line is parallel to variable cost line. It is derived by adding total fixed costs line to the total variable cost line. The Total Revenue (TR) line starts from point (0,0) and increases along with volume of production or sales intersecting total cost line at point BEP.

To the right of the BEP is profit zone and to the left of the BEP is the loss zone.

A perpendicular from the BEP to the horizontal axis at point 'AT shows 'OM' is the quantity produced at 'OP' the cost at BEP.

The angle formed by the point of inter-section of total revenue and total cost lines at BEP is called angle of incidence. The greater the angle of incidence, the higher is the magnitude of profit once the fixed costs are absorbed.

Margin of safety refers to the excess of production or sales over and above the BEP. The margin of safety 'MN' is the difference between ON and OM (ON – OM = MN). The sales value at ON is OQ.

Q33. Explain the key terms used in Break Even Analysis.

Ans :

(a) **Fixed cost** Fixed costs remain fixed in the short-run. Examples are rent, insurance, depreciation, factory supervisor's salaries, directors' salaries, and so on.

(b) **Variable costs** The variable cost per unit vary with the volume of production. The variable costs include cost of direct materials, direct labour, direct expenses, operating supplies such as lubricat-ing oil, and so on.

(c) **Total cost** The total of fixed and variable costs

(d) **Total revenue** The sales proceeds (selling price per unit x number of units sold)

(e) **Contribution margin** The contribution margin is the difference between the selling price per unit and the variable cost per unit. It is also determined as (fixed cost per unit + profit per unit)

(f) **Profit** = Contribution - Fixed cost

(g) **Contribution margin ratio** It is the ratio between contribution per unit and the selling price per unit.

(h) **Margin of safety in units** The excess of actual sales (in units) minus the break-even point (in units)

(i) **Margin of safety in sales volume** The excess of actual sales (in rupees) minus the break-even point (in rupees)

(j) **Angle of incidence** The angle formed where total cost curve cuts the total revenue curve.

(k) **P/V ratio** The ratio between the contribution and sales

Q34. What are the assumptions of Break Even Analysis.

Ans : **(Aug.-21)**

The following are the assumptions underlying break-even analysis :

(a) Costs can perfectly be classified into fixed and variable costs.

(b) Selling price does not change with volume changes. It remains fixed. It does not consider the price discounts or cash discounts.

(c) All the goods produced are sold. There is no closing stock.

(d) There is only one product available for sal. In case of multi-product firms, the product mix does not change.

Q35. Explain the utility of break-even analysis in managerial decision making ?

Ans : **(Aug.-21)**

Break-even analysis is a valuable tool

- To ascertain the profit on a particular level of sales volume or a given capacity of production
- To calculate sales required to earn a particular desired level of profit
- To compare the product lines, sales area, methods of sale for individual company
- To compare the efficiency of the different firms
- To decide whether to add a particular product to the existing product line or drop one from it
- To decide to 'make or buy' a given component or spare part
- To decide what promotion mix will yield optimum sales
- To assess the impact of changes in fixed cost, variable cost or selling price on BEP and profits during a given period.

Q36. Explain the limitations of Break Even Analysis.

Ans : **(Aug.-21, Dec.-18)**

Break-even analysis has certain underlying assumptions which form its limitations.

1. Break-even point is based on fixed cost, variable cost and total revenue. A change in one variable is going to affect the BEP.
2. All costs cannot be classified into fixed and variable costs. We have semi-variable costs also.
3. In case of multi-product firm, a single chart cannot be of any use. Series of charts have to be made use of.
4. It is based on fixed cost concept and hence holds good only in the short-run.
5. Total cost and total revenue lines are not always straight as shown in the figure. The quantity and price discounts are the usual phenomena affecting the total revenue line.
6. Where the business conditions are volatile, BEP cannot give stable results.

Q37. Define contribution. Explain the advantages of contribution.

Ans :

Contribution is the difference between sales and variable cost or marginal cost of sales. It may also be defines as the excess of selling price over variable cost per unit. Contribution is also known as Contribution Margin or Gross Margin. Contribution being the excess of sales over variable cost is the amount that is contributed towards fixed expenses and profit.

Contribution = Sales - Variable (Marginal) Cost or Contribution (per unit) = Selling Price-Variable (or marginal) cost per unit or Contribution = Fixed Costs + Profit (—Loss))

Advantages of Contribution

The concept of contribution is a valuable aid to management in making managerial decisions. A few benefits resulting from the concept of contribution margin are given below :

1. It helps the management in the fixation of selling prices.
2. It assists in determining the break-even point.
3. It helps management in the selection of a suitable product mix for profit maximisation.
4. It helps in choosing from among alternative methods of production ; the method which gives highest contribution per limiting factor is adopted.
5. It helps the management in deciding whether to purchase or manufacture a product or a component.
6. It helps in taking a decision as regards to adding a new product in the market.

Marginal Cost Equation

For the sake of convenience, a marginal cost equation can be derived as follows :

Sales - Variable cost = Contribution or, Sales = Variable cost + Contribution

or, Sales = Variable cost + Fixed Cost ± Profit/Loss

or, Sales-Variable cost = Fixed cost ± Profit/Loss

or, S - V = F ± P

where

'S' stands for Sales

'V' stands for Variable cost

'F' stands for Fixed cost

'P' stands for Profit/Loss.

Q38. Explain profit volume ratio.

Ans :

'The Profit/volume ratio, which is also called the *'contribution ratio'* or *'marginal ratio',* expresses the relation of contribution to sales and can be expressed as under :

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}}$$

Since Contribution = Sales – Variable Cost = Fixed Cost + Profit, P/V ratio can also be expressed as :

$$\text{P/V Ratio} = \frac{\text{Sales} - \text{Variable cost}}{\text{Sales}} \text{ i.e. } \frac{S - V}{S}$$

$$\text{or, P/V Ratio} = \frac{\text{Fixed cost + profit}}{\text{sales}} \text{ i.e. } \frac{F + P}{S}$$

$$\text{or, P/V Ratio} = \frac{\text{Change in profit or Contribution}}{\text{Change in Sales}}.$$

Q39. Define margin of safety ? Explain angle of incidence in Margin of Safety.

Ans :

Margin of Safety Definition

Margin of safety is an important concept in marginal costing approach. The excess of actual sales over the sales at break-even point is known as margin of safety. It is the difference between actual sales and the sales at break-even point.

Margin of safety indicates the business strength and soundness of business. If the margin of safety is large, it is the sign of soundness of the business and vice-versa. Even with a substantial reduction in sales profit shall be maintained on the other hand, if the margin is small, a small reduction in the sales or production will be a serious matter and lead to loss. Thus, the margin of safety serves as a guide to the strength to the business.

Margin of safety is calculated by using the following formula :

Margin of safety = Actual sales – Sales at break-even point

It can also be expressed in percentage as follows :

Margin of safety (in percentage)

$$= \frac{\text{Margin of safety}}{\text{Sales}} \times 100$$

Margin of safety calculated in percentage is also known as margin of safety ratio. Margin of safety can also be calculated by the following formula :

$$\text{Margin of safety (in Rs.)} = \frac{\text{Profit}}{\text{P/V Ratio}}$$

(or)

$$\text{Margin of safety (in units)} = \frac{\text{Profit}}{\text{Contribution}}$$

Angle of Incidence

This is the angle formed at which the sales lines cuts the total cost line. The angle indicates the rate at which profits are being made at a higher rate. The small angle indicates a low rate of profit and suggests that variable costs form a major part of cost of production. A large angle of incidence with a high margin of safety indicates the most favorable position of a business and even the monopoly conditions.

PROBLEMS

1. From the following data, you are required to calculate.

(a) P/V Ratio

(b) Break – even sales with the help of P/v Ratio.

(c) Sales required to earn a profit of Rs. 4,50,000

Fixed Expenses = Rs. 90,000

Variable cost per unit

Direct material = Rs. 5

Direct Labour = Rs. 2

Direct overheads = 100% of Direct labour

Selling price per unit = Rs. 12.

Sol :

Calculation of contribution per unit

Selling price per unit		Rs. 12
Less : Variable cost per unit		
Direct material Rs.	5 = 00	
Direct Labour Rs .	2 = 00	
Direct over heads Rs. $\left(2\times\frac{100}{100}\right)$	2 = 00	Rs. 9
Contribution per unit		3

(a) Calculation of P/V Ratio

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{Sales}}\times 100 = \frac{3}{12}\times 100 = 25\%.$$

(b) Calculation of Break – even sales with the help of P/V Ratio.

$$\text{BEP (in Rs)} = \frac{\text{Fixed cost}}{\text{P/V Ratio}} = \frac{90{,}000}{25/100} = \frac{90{,}000}{0.25}$$

BEP (in Rs.) = 3,60,000

(c) Sales required to earn a profit of Rs. 4,50,000

$$\text{Required sales} = \frac{\text{Fixed cost + Desired profit}}{\text{P/V Ratio}}$$

$$= \frac{90{,}000+4{,}50{,}000}{25/100} = \frac{5{,}40{,}000}{0.25}$$

$\therefore$ Required sales = 21,60,000.

2. From the following data, calculate

a) BEP Expressed in amount of sale in rupees.

b) No. of units that must be sold to earn a profit of Rs. 60,000 per year.

Sale price	**Rs. 20 per unit**
Variable manufacturing cost	**Rs. 11 per unit**
Variable selling costs	**Rs. 3 per unit**
Fixed factory over head	**Rs. 5,40,000 per year**
Fixed selling cost	**Rs. 2,52,000 per year.**

Sol :

(a) Calculation of BEP (in Rs)

$$\text{BEP} = \frac{\text{Fixed cost}}{\text{P/V Ratio}} = \frac{7,92,000}{0.3} = 26.40,000$$

Note : Fixed cost = Fixed factory over head + fixed selling cost

= Rs. 5,40,000 + 2,52,000 = 7,92,000

$$\text{P/V Ratio} = \frac{\text{Contribution}}{\text{sales}} \times 100 = \frac{6}{20} \times 100 = 30\ \%$$

Contribution = S – V = 20 – (11 + 3) = 20 – 14 = 6

∴ Contribution = 6 per unit.

(b) No. of units to be sold to earn desired profit

$$= \frac{\text{Fixed costs} + \text{Desired profits}}{\text{contribution per unit}} = \frac{7,92,000 + 60,000}{6} = \frac{8,52,000}{6}$$

∴ No. of units sold = 1,42,000 units.

---

3. The sales turn over and profit of a company during two-years was as follows.

	Sales (in Rs.)	Profit (Rs.)
1991	**1,50,000**	**20,000**
1992	**1,70,000**	**25,000**

You are required to calculate (a) P/V Ratio (b) Break even point (c) sales required to earn a profit of Rs. 40,000 (d) the profit made when sales are Rs. 2,50,000 (e) margin of safety at a profit of Rs. 50,000 (f) variable costs of two-periods.

Sol :

i) Calculation of P/V Ratio.

$$\text{P/V Ratio} = \frac{\text{Changes in profit}}{\text{changes in sales}} \times 100$$

$$= \frac{5,000}{20,000} \times 100 = 25\ \%$$

ii) Calculation of contribution for two periods.

Contribution = sales × P/V Ratio

1991 = 1,50,000 × $\frac{25}{100}$ = 37,500

1992 = 1,70,000 × $\frac{25}{100}$ = 42,500

Calculation of fixed cost for two periods.

Contribution = Fixed cost + profit.

1991 → 37,500 = FC + 20,000

FC = 37,500 – 25,000 ∴ FC = 17,500

1992 → 42,500 = FC + 25,000

FC = 42,500 – 25,000 ∴ FC = 17,500.

iii) Calculation of Break even point for two periods.

$$\text{BEP (in Rs.)} = \frac{\text{Fixed cost}}{\text{P/V Ratio}}$$

$$1991 = \frac{17,500}{0.25} = 70,000$$

$$1992 = \frac{17,500}{0.25} = 70,000.$$

iv) Calculation of sales to earn a profit of Rs. 40,000

$$\text{Sales} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V Ratio}}$$

$$= \frac{17,500 + 40,000}{0.25} = \frac{57,500}{0.25}$$

∴ Required sales = 2,30,000

(v) Calculation of profit if sales are Rs.2,50,000

$$\text{Sales} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V Ratio}}$$

$$2,50,000 = \frac{17,500 + DP}{0.25}$$

2,50,000 × 0.25 = 17,500 + DP

62,500 = 17,500 + DP

Desired profit = 62,500 – 17,500

∴ profit = 45,000

(vi) Calculation of margin of safety at a profit of Rs. 50,000

$$\text{Margin of safety} = \frac{\text{profit}}{\text{P/V Ratio}} = \frac{50,000}{0.25}$$

∴ Margin of safety = 2,00,000

vii) Calculation of variable cost for two periods

Contribution = Sales – Variable cost

1991 = 37,500 – variable cost

variable cost = 1,50,000 – 37,500

variable cost = 1,12,500

1992 = 42,500

= 1,70,000 – variable cost

variable cost = 1,70,000 – 42,500

∴ Variable cost = 1,27,500.

4. The following figures related to a company manufacturing a varied range of products.

Year ended	Total sales	Total cost
31-Dec-1980	Rs. 2,22,300	198,360
Year ended		
31 - Dec - 1981	Rs. 2,45,100	2,14,320

Assuming stability in price, with variable costs carefully controlled to reflect pre determined relationships, and an unvarying figure for fixed costs calculate.

i) The profit volume Ratio

ii) Fixed cost

iii) Fixed cost % to sales

iv) BEP (in Rs.)

v) margin of safety for the year 1980 and year 1981.

Sol :

	Total sales	Total costs	Profit (sales-cost)
1980	2,22,300	1,98,360	23,940
1981	2,45,100	2,14,320	30,780

(i) Calculation of P/V Ratio

$$\frac{\text{Changes in profit}}{\text{Change in sales}} \times 100 \text{ (or) } \frac{\text{Difference in profits}}{\text{Difference in sales}} \times 100$$

Change in profit = 30,780 – 23,940 = 6,840

Change in sales = 2,45,100 – 2,22,300 = 22,800

$$\text{P/V Ratio} = \frac{6,840}{22,800} \times 100$$

∴ P/V Ratio = 30%

ii) Calculation of contribution

Contribution = Sales × P/V Ratio.

$$1980 = 2,22,300 \times \frac{30}{100} = 66,690$$

$$1981 = 2,45,100 \times \frac{30}{100} = 73,530$$

iii) Calculation of fixed cost

Contribution = Fixed cost + Profit

73,530 = FC + 30,780

FC = 73,530 – 30,780

$\therefore$ FC = 42,750.

iv) Calculation of fixed cost percentage to sales :

$$= \frac{\text{Fixed cost}}{\text{sales}} \times 100$$

$$1980 = \frac{42,750}{2,22,300} \times 100 = 19.23\ \%$$

$$1981 = \frac{42,750}{2,45,100} \times 100 = 17.44\ \%$$

Calculation of Break - even point

$$\text{BEP (in Rs.)} = \frac{\text{Fixed cost}}{\text{P/V Ratio}} = \frac{42,750}{0.3}$$

BEP (in Rs.) = 1,42,500

v) Calculation of margin of safety

Margin of safety = Actual sales – BEP (in Rs.)

1980 = 2,22,300 – 1,42,500 = 79,800

1981 = 2,45,100 – 1,42,500 = 1,02,600

5. From the following information you are required to calculate

i) BEP (sales)

ii) Profit when sales are Rs. 46,000.

iii) Sales when profit is Rs. 5,000.

	1990	1991
Sales	**38,000**	**65,000**
Profit	**–2,400**	**3,000**

Sol :

(i) Calculation of P/V Ratio

$$\text{P/V Ratio} = \frac{\text{Difference in profit}}{\text{Difference in sales}} \times 100$$

$$= \frac{5,400}{27,000} \times 100 = 20\%$$

Working Notes :

i) Calculation of contribution.

Contribution = Sales × P/V Ratio

1990 Contribution

$$= 38,000 \times \frac{20}{100} = 7,600$$

1991 Contribution

$$= 65,000 \times \frac{20}{100} = 13,000$$

ii) Calculation of fixed cost

Contribution = Fixed cost + profit

1990 $\rightarrow$ 13,000 = FC + 3,000

FC = 13,000 – 3,000

$\therefore$ FC = 10,000

iii) Calculation of Break even point

$$\text{BEP} = \frac{\text{Fixed cost}}{\text{P/V Ratio}}$$

$$= \frac{10,000}{20/100} = \frac{10,000}{0.2}$$

BEP = 50,000

iv) Profit when sales are 46,000

$$\text{Sales} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V Ratio}}$$

$$46,000 = \frac{10,000 + \text{Desired profit}}{0.2}$$

46,000 × 0.2 = 10,000 Desired profit

9,200 = 10,000 DP

DP = 9,200 – 10,000

$\therefore$ loss = 800

v) Sales when profit = 5,000

$$\text{Sales} = \frac{\text{Fixed cost} + \text{Desired profit}}{\text{P/V Ratio}}$$

$$\text{Sales} = \frac{10,000 + 5,000}{0.2}$$

0.2 sales = 15,000

$$\text{Sales} = \frac{15,000}{0.2}$$

Sales = 75,000.

Short Question & Answers

1. What do you understand by production?

Ans :

Production

Production is an activity of transforming the inputs into output. It involves step-by-step conversion of one form of materials into another form through chemical or mechanical processing in order to create or enhance the utility or usability of the products or services.

Economics view production is as an activity through which utility for a product is created or enhanced.

According to E.S. Buffa, "Production is an process by which goods and services are created". In economics, the term production means a process in which the resources are transformed or converted into a different and more useful commodity or service. In general production means transforming inputs into an outputs. The term production is however limited to "manufacturing organizations" only.

Production i.e., transformation of inputs into output can be any of the three forms change in form, change in phase and change in time. The output produced can be either the final product (like a PC) or an intermediate product (like a semiconductor used in manufacturing a PC). The output goods or services may be either tangible or intangible. Production of a chair from wood is a tangible output whereas medical service by a doctor is an intangible output.

2. Define production function?

Ans :

The production function is purely a relationship between the quantity of output obtained or given out by a production process and the quantities of different inputs used in the process. Production function can take many forms such as linear function or cubic function etc.

Definition of Production Function

"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

From the above definitions, it can be concluded that the production functions is more concerned with physical aspects of production, which is an engineering relation that expresses the maximum amount of output that can be produced with a given set of inputs.

Production function enables production manager to understand how better he can make use of technology to its greatest potential.

Mathematically, a production function is represented as,

$Q = f(L, C, M,)$

Where,

Q = Quantity of the output produced

f = Function of L, C, M

L = Labour units

C = Capital employed

M = Machinery raw materials.

In the above production function, the inputs considered are labour, capital and raw materials. But an empirical production function is very complex with a wide range of inputs like land, labour, capital, materials time and technology. With these inputs, the production function is expressed as,

$Q = f\{L_d, L, C, M, T, t)$

Where,

Q = Quantity of the output produced

L_d = Land and buildings

L = Labour units

C = Capital employed

M = Materials

T = Technology

t = Time period of production

f = Function of L,, L, C, M, T, t

3. Significance of production function.

Ans :

1. Production function shows the maximum output that can be produced by a specific set of combination of input factors.
2. There are two types of production function, one is short-run production function and the other is long-run production function. The short-run production explains how output change is relation to input when there are some fixed factors. Similarly, long run production function explains the behaviors of output in relation to input when all inputs are variable.
3. The production function explains how a firm reaches the most optimum combination of factors so that the unit costs are the lowest.
4. Production function explains how a producer combines various inputs in order to produce a given output in an economically efficient manner.

4. Cobb Douglas production function.

Ans :

Cobb and Douglas put forth a production function relating output in American manufacturing industries from 1899 to 1922 to labour and capital inputs. They used the following formula:

$$P = bL^a C^{1-a}$$

Where P is total output,

L = The index of employment of labour in manufacturing

C = Index of fixed capital in manufacturing

The exponents a and 1-a are the elasticities of production. These measure the percentage response of output to percentage changes in labour and capital respectively.

The function estimated for the USA by Cobb and Douglas is

$$P = 1.01L^{0.75} C^{0.25}$$

$R^2 = 0.9409$

The production function shows that one percent change in labour input, capital remaining the same, is associated with a 0.75 percent change in output. Similarly, one percent change in capital, labour remaining the same, is associated with a 0.25 percent change in output. The coefficient of determination (R^2) means that 94 percent of the variations on the dependent variable (P) were accounted for by the variations in the independent variables (L and C). It indicates constant returns to scale which means that there are no economies or diseconomies of large scale of production. On an average, large or small scale plants are considered equally profitable in the US manufacturing industry, on the assumption that the average and marginal production costs were constant.

Though Cobb-Douglas production function was based on macro-level study, it has been very useful for interpreting economic results. Later investigations revealed that the sum of the exponents might be very slightly larger than unity, which implies decreasing costs. But the difference was so marginal that constant costs would seem to be a safe assumption for all practical purposes.

5. criticisms of Cobb-Douglas production function.

Ans :

1. The function includes only two factors and neglects other inputs.
2. The function assumes constant returns to scale.
3. There is the problem of measurement of capital which takes only the quantity of capital available for production.
4. The function assumes perfect competition in the factor market which is unrealistic.

5. It does not fit to all industries.
6. It is based on the substitutability of factors and neglects complementarily of factors.
7. The parameters cannot give proper and correct economic implication.

6. Define isoquant.

Ans :

The term isoquant has its origin from two words 'iso' and 'quantus'. 'iso' is a Greek word meaning 'equal' and 'quantus' is a Latin word meaning 'quantity'. An isoquant curve is therefore called as 'iso-product curve' or 'equal-product curve' or 'production indifference curve'.

Definition

According to Peterson "An Iso-quant curve may be defined as a curve showing the possible combinations of two variable factors that can be used to produce the same total product."

According to Ferguson "An Iso-quant is a curve showing all possible combinations of inputs physically capable of producing a given level of output."

An isoquant is defined as the curve or locus of points representing various combinations of two inputs [say Labour (L) and Capital (C)] that yield the same level of output.

In other words, an isoquant is a line joining different combinations of two inputs (L and C) which result in the same quantity of output.

Isoquants are used to represent a production function with two variable inputs.

7. assumptions of Isoquant curves.

Ans :

Assumptions

An isoquant curve is generally drawn on the basis of the following assumptions.

(a) An isoquant curve has only two inputs say labour (L) and capital (C) to produce an output (Q).

(b) The two inputs are perfectly substitutable to each other but at a diminishing rate i.e., L is perfectly substitutable to C and vice-versa.

(c) The technology applied in the production process is given or constant.

(d) The substitution of one input for the other leaves the output unaffected.

8. Define isocost curve.

Ans :

Isocost refers to that cost curve which will show the various combinations of two inputs which can be purchased with a given amount of total money.

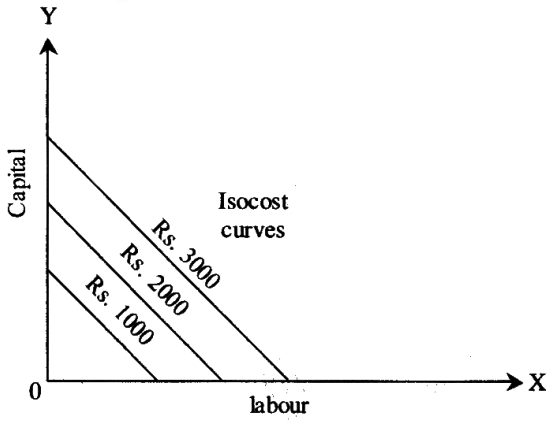


Figure (1): Isocosts Each Showing Different Level of Total Cost

In the above figure (1) it can be seen that as the level of production changes. The total cost will change and automatically the isocost curve moves upward.

9. Define.

(a) Cost (b) Cost Analysis

Ans :

(a) Meaning of Cost

Economist define cost in terms of opportunities that are sacrifice when choice is made.

Cost is analyzed from the producer point of view. Cost estimates are made in terms of money cost calculations are indispensable for management decisions.

Cost of production refers to the total money expenses (both explicit and implicit) incurred by the producer in the process of transforming inputs into outputs.

Thus, it refers total money expenses incurred to produce a particular quantity of output by the produce.

(b) Meaning of Cost Analysis

Cost analysis is also known as economic evaluation, cost allocation, efficiency assessment, cost-benefit analysis, cost effective analysis.

Cost analysis is a method used to determine how well or how poorly a planned action will turn out. The cost analysis refers to the study of behaviour of cost in relation to one or more production criteria such as size of the output, scale of operations, prices of factors of production and other relevant economic variables.

10. Break Even Analysis.

Ans :

The Break - Even Point (BEP) can be defined as that level of sales at which total revenue equals total costs and the net income is equal to zero. This is also known as no - profit and no-loss point.

Formula to Calculate Break-even Point in Quantity

Break - even Point (in units)

$$= \frac{\text{Fixed Costs}}{\text{Contribution on Margin Per Unit}}$$

Break - Even Analysis is the study of revenues and costs of a firm in relation to its volume of sales. It is mainly concerned with the determination of that particular volume at which firm's costs and revenues (profits) will be equal. It is also called C-V-P Analysis or cost volume iso-profit analysis.

The main objective of the Break-Even Analysis is not only to spot the BEP, but to develop an understanding of the relationships of cost, volume and price within a company's practical range of operations.

Break - Even Analysis is the study of revenues and costs of a firm in relation to its volume of sales. It is mainly concerned with the determination of that particular volume at which firm's costs and revenues (profits) will be equal. It is also called C - V - P Analysis or cost volume iso-profit analysis.

The Break - Even Point (BEP) can be defined as that level of sales at which total revenue equals total costs and the net income is equal to zero. This is also known as no-profit and no-loss point.

11. Assumptions of Break Even Analysis.

Ans :

The following are the assumptions underlying break-even analysis :

(a) Costs can perfectly be classified into fixed and variable costs.

(b) Selling price does not change with volume changes. It remains fixed. It does not consider the price discounts or cash discounts.

(c) All the goods produced are sold. There is no closing stock.

(d) There is only one product available for sal. In case of multi-product firms, the product mix does not change.

12. Define contribution.

Ans :

Contribution is the difference between sales and variable cost or marginal cost of sales. It may also be defines as the excess of selling price over variable cost per unit. Contribution is also known as Contribution Margin or Gross Margin.

Contribution being the excess of sales over variable cost is the amount that is contributed towards fixed expenses and profit.

Contribution = Sales - Variable (Marginal) Cost or Contribution (per unit) = Selling Price-Variable (or marginal) cost per unit or Contribution = Fixed Costs + Profit (—Loss))

Advantages of Contribution

The concept of contribution is a valuable aid to management in making managerial decisions. A few benefits resulting from the concept of contribution margin are given below :

1. It helps the management in the fixation of selling prices.
2. It assists in determining the break-even point.
3. It helps management in the selection of a suitable product mix for profit maximisation.
4. It helps in choosing from among alternative methods of production ; the method which gives highest contribution per limiting factor is adopted.

UNIT IV

Market Structures- Pricing and Output decisions: Classification of Market Structures - Features - competitive situations - Price-Output determination under Perfect competition, Monopoly, Monopolistic competition and Oligopoly - both the long run and short run.

4.1 Market Structures

4.1.1 Meaning of Market

Q1. Define market ? Explain the features of market.

Ans :

The term "market" refers to a particular place where goods are purchased and sold. But, in economics, market is used in a wide perspective. In economics, the term "market" does not mean a particular place but the whole area where the buyers and sellers of a product are spread.

Definition of Market

According to Prof. R. Chapman, "The term market refers not necessarily to a place but always to a commodity and the buyers and sellers who are in direct competition with one another".

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

According to Benham, "Any area over which buyers and sellers are in such close touch with one another, either directly or through dealers, that the prices obtainable in one part of the market affect the prices paid on other parts".

Features of Market

The essential features of a market are as follows:

1. Area

In economics, a market does not mean a particular place but the whole region where sellers and buyers of a product are spread. Modern modes of communication and transport have made the market area for a product very wide.

2. One Commodity

In economics, a market is not related to a place but to a particular product. Hence, there are separate markets for various commodities. For example, there are separate markets for clothes, grains, jewellery, etc.

3. Buyers and Sellers

The presence of buyers and sellers is necessary for the sale and purchase of a product in the market. In the modern age, the presence of buyers and sellers is not necessary in the market because they can do transactions of goods through letters, telephones, business representatives, internet, etc.

4. Free Competition

There should be free competition among buyers and sellers in the market. This competition is in relation to the price determination of a product among buyers and sellers.

5. One Price

The price of a product is the same in the market because of free competition among buyers and sellers.

Q2. What do you understand by market structure ?

Ans :

Market structure is a set of market characteristics that determine the nature of market in which a firm operates. It refers to economically significant features of a market, which affects the behaviour and working of firm in the industry.

According to Pappas and Hirschey, "Market structure refers to the number and size distribution of buyers and sellers in the market for a goods or services".

Thus, market structure deals with the selected number of the characteristics through buyers and sellers.

1. Degree of Seller Concentration

One of the most important criteria to identify the market structure is the degree of seller concentration. The degree of seller concentration refers to the number of firms producing a particular type of product and their market share for that particular product in the market.

2. Extent of Product Differentiation

The extent of product differentiation is also an important criterian to identify the market structure. Product differentiation refers to the extent by which the product of one trader is differentiated from that of the other.

3. Nature of Entry Conditions

The nature for entry of new firms in the market or industry also determines the market structure. In a perfectly competitive market structure, it is assumed that there are no barriers on the entry of new firms. In a monopolistic competition, the entry of new firms in the market is accompanied by new brands of the product. It is the barriers on entry that reduces the number of firms in the market thereby causing imperfection in the competitive market structure.

4. Degree of Buyer Concentration

This refers to the number of buyers and their ability to purchase a given product in the market.

Q3. What are the different types of Market Structure ?

Ans : **(Jan.-20)**

The type of market depends on the degree of competition prevailing in the market. Broadly speaking, there are four types of competition prevailing in the markets. These are:

1. Perfect Competition

Perfect competition is characterised by many sellers selling identical products to many buyers. Perfect market or competition is characterised by many sellers selling identical products to many buyers. The efficient market where goods are produced using the most efficient techniques and the least amount of factors. This market is considered to be unrealistic but it is nevertheless of special interest for hypothetical and theoretical reasons.

2. Imperfect Competition

Imperfect competition is the competitive situation in any market where the conditions necessary for perfect competition are not satisfied. It is a market structure that does not meet the conditions of perfect competition. Forms of imperfect competition include:

(a) Monopoly

Monopoly comes from the greek monos, single, and polein, to sell. This is a form of market structure of imperfect competition, mainly characterised by the existence of a sole seller and many buyers. This kind of market is normally associated with entry and exit barriers. Monopoly is a situation of a single seller producing for many buyers. Its product is necessarily extremely differentiated since there are no competing sellers producing near substitute product.

(b) Monopolistic Competition

It differs in only one respect, namely, there are many sellers offering differentiated product to many buyers.

(c) Oligopoly

In oligopoly, there are a few sellers selling competing products for many buyers. Oligopoly word comes from the Greek oligos, few, and polein, to sell. This kind of imperfect competition is characterised by having a relatively scarce amount of firms, but always more than one, which produce a homogeneous good. Due to the small number of firms in the market, the strategies between firms will be interdependent, thus implying that the profits of an oligopolistic firm will highly depend on their competitors' actions.

(d) Duopoly

Duopoly comes from the Greek *duo*, two, and *polein,* to sell. This is a type of oligopoly. This kind of imperfect competition is characterised by having only two firms in the market producing a homogeneous good. For simplicity purposes, oligopolies are normally studied by analysing duopolies. A is a market that has only two suppliers, or a market that is dominated by two suppliers to the extent that they jointly control prices.

4.1.2 Classification of Market Structures

Q4. Explain the Classification of Market Structures.

Ans :

Market structure varys in their own situations. Different market structures affects the behaviour of buyers and sellers and firms. According to modern-day economist, the following dominant classes of market structure are as follows,

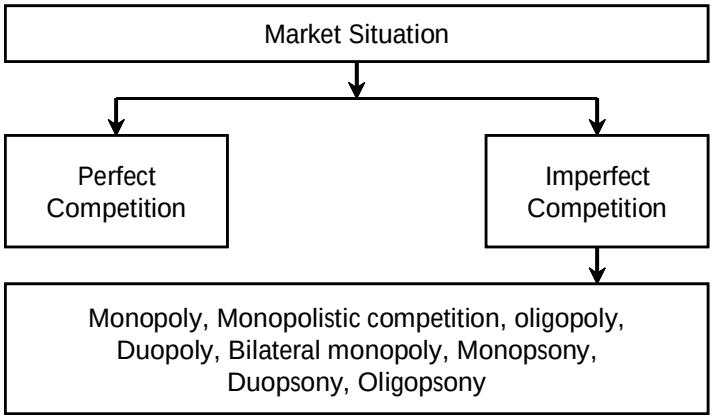


Fig. Classification of Market Structure

(1) Perfect Competition : It is a market with a very large number of buyers and sellers. Market conditions are favourable to promote competition. Such a market is called perfect competition.

(2) Imperfect Competition : It is a market with limited number of buyers and sellers. Market conditions does not exist in the market is considered as imperfect market. The imperfect market are found in the following different forms.

(i) Monopoly : A market with large buyers, where a single seller or producer control the whole market.

(ii) Monopolistic Competition : It is a market structure in which a large number of small sellers sell differentiated products which are close, but not perfect substitutes.

(iii) Oligopoly : Under oligopoly, a few producers specialized in the production of identical goods or differentiated goods competing with one another.

(iv) Duopoly : Duopoly is a market with two sellers and many buyers exercising control over the supply of commodities.

(v) Bilateral Monopoly : It is a market situation in which a single seller faces a single buyer, a monopsonist is facing a mondpolist.

(vi) Monopsony : It is a market with a single buyer who buys the entire amount produced.

(vii) Duopsony : Duopsony is an economic condition similar to a duopoly in which there are only two large buyer for a specific product or services.

(viii) Oligopsony : This is a market in which there are a few large buyer for a product or services.

4.1.3 Features of Market Structure

Q5. Explain the features of Market Structures.

Ans :

Market structure refers to the characteristics of a market that influence the behaviour and performance of firms that sell in that market.

The structure of market is based on its following features:

(a) The degree of seller concentration:

This refers to the number of sellers and their market share for a given product or service in the market.

(b) The degree of buyer concentration:

This refers to the number of buyers and their extent of pur-chases of a given product or services in the market.

(c) The degree of product differentiation:

This refers to the extent by which the product of each trader is differentiated from that of the other. Product differentiation can take several forms such as varieties, brands, all of which are sufficiently similar to distinguish them, as a group, from other products (e.g. cars).

(d) The conditions of entry into the market:

More often, there could be certain restrictions to enter into or exit from the market. The degree of ease with which one can enter the market or exit from the market - also determines the market structure. In other words, there could be large number of firms if the number of restrictions to enter the market is low and vice versa.

Any one or all of the above features determines the behaviour of a firm. The behaviour of a firm may influence the performance of other firms in the industry.

4.1.4 Competitive Situations

Q6. What is Perfect Competition Market? Explain the characteristics of Perfect Competition Market.

(OR)

What are the important characteristics of Perfect Competition?

(OR)

State the features of Perfect Competition.

Ans : **(Aug.-21, Dec.-18)**

A perfectly competitive market is one in which the number of buyers and sellers is very large, all engaged in buying and selling a homogeneous product without any artificial restrictions and possessing perfect knowledge of market at a time, e.g., fruit and vegetable market.

Definitions of Perfect Competition

According to A. Koutsoyiannis, "Perfect competition is a market structure characterised by a complete absence of rivalry among the individual firms".

According to R.G. Lipsey, "Perfect competition is a market structure in which all firms in an industry are price-takers and in which there is freedom of entry into, and exit from, industry".

Features

The following are features of perfect competition. In other words, these are the assumptions underlying perfect markets.

(a) Large number of buyers and sellers

There should be significantly large number of buyers and sellers in the market. The number should be so large that it should not make any difference in terms of price or quantity supplied even if one enters the market or one leaves the market.

(b) Homogeneous products or services

The products and services of each seller should be homogeneous. They cannot be differentiated from that of one another. It makes no difference to the buyer whether he buys from firm X or firm Z. In other words, the buyer does not have any particular preference to buy the goods from a particular trader or supplier. The price is one and the same in every firm. There are no concessions or discounts.

(c) Freedom to enter or exit the market

There should not be any restrictions on the part of the buyers and sellers to enter the market or leave the market. There should not be any barriers. The buyers can enter the market or leave the market whenever they want.

(d) Perfect information available to the buyers and sellers

Each buyer and seller has total knowledge of the prices prevailing in the market at every given point of time, quantity supplied, costs, demand, nature of product, and other relevant information. There is no need for any advertisement expenditure as the buyers and sellers are fully informed.

(e) Perfect mobility of factors of production

There should not be any restrictions on the utilisation of factors of production such as land, labour, capital and so on. In other words, the firm or buyer should have free access to the factors of production. Whenever capital or labour is required, it should instantly be made available.

(f) Each firm is a price taker

An individual firm can alter its rate of production or sales without significantly affecting the market price of the product. A firm in a perfect market cannot influence the market through its own individual actions. It has no alternative other than selling its products at the price prevailing in the market. It cannot sell as much as it wants at its own set price.

Q7. Define monopoly. What are the characteristics of monopoly ?

Ans : **(June-18)**

Introduction

A natural monopoly is defined in economics as an industry where the fixed cost of the capital goods is so high that it is not profitable for a second firm to enter and compete. There is a "natural" reason for this industry being a monopoly. It is an extreme imperfect form of market. In ancient times, common salt was responsible for natural monopolies, till the time people learned about winning sea-salt. Regions facing scarcity of transport facilities and storage were most prone to notorious acceleration of commodity prices and uneven distribution of daily-use products and services.

The characteristics of monopoly are solitary to the condition generated by intent. Monopoly symbolizes domination over a product to the extent that the enterprise or individual dictates the terms of access and the markets for availability. The term is specific to a seller's market. A similar situation in the buyer's market is referred to as monopsony. It first appeared as an economics-related term in 'Politics' by Aristotle.

Meaning of Monopoly

The term 'Monopoly' has been derived from Greek term 'Monopolies' which means a single seller. Thus, monopoly is a market condition in which there is a single seller of a particular commodity who is called monopolist and has complete control over the supply of his product.

Definition of Monopoly

According to D. Salvatore, "Monopoly is the form of market organisation in which there is a single firm selling a commodity for which there are no close substitutes."

According to Ferguson and Kreps, "A pure monopoly exists when one and only one firm produces or sells the commodity in question. In other words, a monopoly is a one-firm industry"

According to Koutsoyiannis, "Monopoly is a market situation in which there is a single seller, there are no close substitutes for commodity it produces, there are barriers to entry."

In the words of Baumol, "A pure monopoly is defined as the firm that is also an industry. It is the only supplier of some particular commodity for which there exists no close substitute."

Characteristics of Monopoly

1. Single Seller

The producer or seller of the commodity is a single person, firm or an individual and that firm has complete control on the output of the commodity.

2. No Close Substitutes

All the units of a commodity are similar and there are no substitutes to that commodity.

3. No Entry for New Firms

Monopoly situation in a market can continue only when other firms do not enter the industry. If new firms enter the industry, there will not be complete control of a firm on the supply. As such, whenever a firm enters the industry, monopoly situation comes to an end. There/art, monopoly industry is essentially one-firm industry. This signifies that under monopoly there is no difference between a firm and an industry.

4. Profit in the Long Run

A monopolist can earn abnormal profit even in the long run because he has no fear of a competitive seller. In other words, if a monopolist gets abnormal profits in the long run, he cannot be dislodged from this position. However, this is not possible under perfect competition. If abnormal profits are available to a competitive firm, other firms will enter the competition with the result abnormal profits will be eliminated.

5. Losses in the Short Period

Generally, a common man thinks that a monopoly firm cannot incur loss because it can fix any price it wants. However, this understanding is not correct. A monopoly firm can sustain losses equal to fixed cost in the short period. A monopolist means that there is only a single person or a firm to sell the commodity.

6. Nature of Demand Curve

Under monopoly the demand for the commodity of the firm is less than being perfectly elastic and, therefore, it slopes downwards to the right. The main reason of the demand curve sloping downwards to the right is the complete control of the monopolist on the supply of the commodity.

7. Price-discrimination

From the point of view of profit a monopolist can change different prices from different consumers of his commodity. This policy is known as price discrimination. He adopts the policy of price discrimination on various bases such as charging different prices from different consumers or fixing different prices at different places etc.

8. Firm is a Price-Maker

A competitive firm is a price-taker whereas a monopoly firm is a price-maker. This is

because a competitive firm is small compared to market and therefore, it does not have market power. This is not true in the case of a monopoly firm because it has market power. Hence, it is a price maker.

9. Average and Marginal Revenue Curves

Under monopoly, average revenue is greater than marginal revenue. Under monopoly, if the firm wants to increase the sale it can do so only when it reduces its price. This means AR would decline when sale increases. In that case MR would be less than AR. (ii) AR slopes downwards to the right and is greater than MR.

Q8. Explain the classification of monopoly.

Ans :

The Monopoly firms as a Price makes cam be classified into two types.

(a) Simple Monopoly: If the monopoly firm charges the same price from all its clients, it is called simple or single price monopoly.

E.g.: Tata Company charges the same price to all the Tata Indica cars of the same model.

(b) Discriminating Monopoly: If the monopoly firm charges different prices to different consumers for the same product, it is called discriminating monopoly.

E.g.: A Doctor may take Rs.100/- from a rich man and only Rs.50/- from a poor man for the same treatment.

The Monopoly on the basis of Ownership of the firm can be classified as two types:

(a) Private Monopoly: If a private firm monopolizes the market, it is called private monopoly.

E.g:-Hindustan Lever Ltd., is having monopoly power to produce LUX Soap.

(b) Public Monopoly: If the market for a product is monopolized by a government enterprise, it is called public or social monopoly.

E.g: Water, electricity etc.

Others

(a) Limited Monopoly: If the monopolist having limited power in fixing the price of his product, it is called Limited Monopoly. It may be due to the fear of distant substitutes or government intervention or the entry of rival firms.

(b) Unlimited Monopoly: If the monopolist is having unlimited power in fixing the price of his good or service, it is called Unlimited Monopoly. Ex. A Doctor in a village.

(c) Natural Monopoly: Sometimes monopoly may arise due to scarcity of natural resources. Nature provides raw materials in some places only. The owner of the place will become monopolist. For Eg.Diamond mines in South Africa.

(d) Legal Monopoly: If monopoly arises on account of legal support or as a matter of legal privilege, it is called Legal Monopoly. Ex. Patent rights, special brands, trade names, copyright etc.,

(e) Voluntary Monopoly: To get the advantages of Monopoly some private firms come together voluntarily to control the supply of commodity. These are called voluntary monopolies. Generally, these monopolies arise with industrial combinations. These voluntary monopolies are of three kinds (a) cartel (b) trust (c) holding company. It may be called artificial monopoly.

Q9. What is monopolistic competition? Explain the features of monopolistic competition.

Ans : **(Dec.-18)**

Monopolistic competition refers to a market situation where there are many firms selling a differentiated product. “There is competition which is keen, though not perfect, among many firms making very similar products”. No firm can have any perceptible influence on the price-output policies of the other sellers nor can it be influenced much by their actions. Thus, monopolistic competition

refers to competition among a large number of sellers producing close but not perfect substitutes for each other.

Definition

According to J.S. Bains, "Monopolistic competition is market structure where there is a long number of small sellers, selling differentiated but close substitute products".

According to Baumoul, "The term monopolistic competition refers to the market structure in which the sellers do have a monopoly (they are the only sellers) of their own product, but they are also subject to substantial competitive pressures from sellers of substitute product".

Monopolistic competition is the main form of imperfect competition. Thus, imperfect competition is a market situation wherein one or more conditions of perfect competition are absent.

Features of Monopolistic Competition

Monopolistic competition is a modern form of the market. A large variety of goods are sold in such a market. Its main features can be stated as follows :

i) Large Number

The number of firms operating under monopolistic competition is sufficiently large. Moreover there is freedom of entry. There are no quantitative restrictions or differences in market conditions. However, each firm differs from its rivals in some qualitative respect.

ii) Close Substitutes

In case of a monopoly there are no substitutes available. Under monopolistic competition firms produce very close substitutes. Chocolates of one company may serve a similar purpose as that of some other firm. The only difference may be of some variation in the quality of the product.

iii) Group

Firms under monopolistic competition together form a group. They cannot be called an industry. This is because their products are somewhat dissimilar and not homogenous as under competitive industry.

iv) Product Differentiation

Under monopolistic competition products are differentiated. This is the outstanding feature of this form of market. Otherwise monopolistic competition closely resembles perfect competition. The fundamental difference between the two is that products are no more homogenous. Goods produced are deliberately differentiated.

v) Selling (Advertising) Cost

Selling Cost (SC) is another outstanding feature of a monopolistic competitive market. This in the form of advertisement expenditure. Selling Cost and Product Differentiation together enable the producer to maintain some control over market conditions and influence the shape of the demand curve. Both features are interdependent.

Q10. Define oligopoly. Explain the features of oligopoly.

Ans : **(Aug.-21, July-18)**

Oligopoly is situation where a few large firms compete against each other and there is an element of interdependence in the decision-making of these firms. Each firm in the oligopoly recognises this interdependence. Any decision one firm makes (be it on price, product or promotion) will affect the trade of the competitors and so results in countermoves. As a result, one's competitor's behaviour depends on one's own behaviour, and this must be taken account of when decisions are made. A major policy change on the part of one firm will have obvious and immediate effects on its competitors.

Definitions of Oligopoly

- **According to P.C. Dooley,** "An oligopoly is a market of only a few sellers, offering either homogenous or differentiated products. There are so few sellers that they recognise their mutual dependence."

- **According to Mansfield,** "Oligopoly is a market structure characterized by a small number of firms and a great deal of interdependence."
- **According to Grinols, "**An oligopoly is a market situation in which each of a small number of interdependent, competing producers influences but does not control the market".
- **According to Mc Connell,** "Oligopoly is a market situation in which number of firms in an industry is, so small that each must consider the reactions of rivals in formulating its price policy."

Features of Oligopoly

1. Few Firms

Oligopoly is the market in which few firms compete with each other. The simplest model of oligopoly is duopoly. Duopoly is the market structure when only two firms produced and supply the product.

2. Nature of the Product

All the new firms produce an identical product. Such market is called pure or perfect oligopoly. Where product differentiation is there then it is called imperfect oligopoly.

3. Interdependence of Firms

There is interdependence among firms. Each firm threats the other firms as its rivals.

4. Indeterminateness

The oligopoly firm's demand curve for the product is in determinant because the firm cannot assume that the rival firms will not change their prices in response to change in price effected by it.

5. Complex Market Structure

The market structure of oligopoly is quite complex. On one hand there is a rival and on the other hand there may be collusion. Cartel is an example of collusive oligopoly. The non-collusive oligopoly is the other form of complex market structure.

6. Selling Costs

Each firm pursues an aggressive and defensive marketing strategy to gain a greater share in the market. Advertising is an important method used by oligopolist to gain larger share in the market. The costs incurred on advertisements are selling costs.

Q11. Explain the classification of Oligopoly.

Ans :

The oligopoly may be classified in the following categories:

1. Perfect or Imperfect Oligopoly

Perfect oligopoly is that situation in which all the firms produce homogeneous products. It is also known as pure oligopoly. On the other hand imperfect or differentiated oligopoly is that market situation in which all firms produce differentiated but close substitutes.

2. Open or Closed Oligopoly

Open oligopoly is that market situation in which there is no barrier on the entry of the firm in the industry. The entry of the firm is free. But in the situation of closed oligopoly there is barrier on the entry of the firm in the industry. The barrier may be technological, legal or of any other type.

3. Partial or Full Oligopoly

Partial oligopoly is that situation in which there is a dominant firm in the industry. This dominant firm is called the price leader. The dominant firm or the price leader fixes the price and others follow that price. Full oligopoly, on the other hand, is that situation in which there is no dominant firm or price leader.

4. Collusive or Non-collusive Oligopoly

Collusive oligopoly is that oligopoly in which the firms cooperate with each other in determining the price. They follow a common

price policy and do not compete with each other. Non-collusive oligopoly is that oligopoly in which the firms act independently. They compete with each other and determine independently the price of their products.

4.2 Price-Output Determination under Perfect Competition

Q12. How price is determined under perfect competition?

Ans : **(Nov.-20, Dec.-18)**

According to Marshall, the price of a commodity in the perfectly competitive market is determined by the demand and supply of all the firms taken together. The demand and supply forces are as much important to determine the price of a commodity as the two blades of a scissors to cut a piece of paper. But Marshall, who propounded the theory that the price is determined by the equilibrium between demand and supply, also laid emphasis on the role of time factor in determination of price. The time factor is important to adjust the supply.

The pricing of a commodity under perfect competition can be determined in three periods of time:

(a) The market-period

(b) The short-period, and

(c) The long-period.

Equilibrium Point

Equilibrium point is the state at which firm enjoys maximum profits and it has no incentive either to reduce or increase its output level. In perfect competition, the firm has to satisfy two conditions to attain equilibrium state.

(i) Marginal revenue should be equal to marginal cost (MR = MC).

(ii) Marginal Cost (MC) curve should cut the marginal revenue (MR) curve from below. In the case of monopoly, the firm attains equilibrium state if its MR = MC.

(a) Price Determination during Market Period

According to Marshall, market-period is too short period to increase the supply. The market-period is so short that supply of the commodity is limited to existing stock.

During the market period, say a single day, the supply of a commodity is perfectly inelastic. On the basis of this 'market' supply and the existing 'market' demand, a temporary equilibrium will be brought between demand and supply setting the 'market' equilibrium price. In the following figure MS is the market-period supply curve which is perfectly inelastic. D_1D_1 is the original demand curve. The supply of the commodity available in the market is OM. This supply is in fixed quantity on any particular day in the market.

The equilibrium price is OP_1. Now let us assume that the demand for the commodity increases on the day by the shift in the demand curve to D_2D_2. Since the supply of the commodity cannot be increased immediately, its price goes up to OP_2. Thus, the price of the commodity rises with the rise in demand. During the market-period the demand force is more important than the supply force to influence the equilibrium price. Due to increase in demand the original market-period equilibrium E_1 shift to new equilibrium E_2.

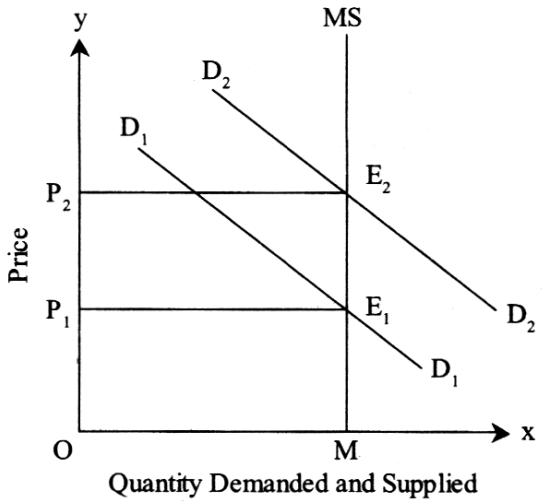


Fig : Price Determination during Market Period

(b) Price-Output Determination during Short-period

Short-period is not too long period to install new capital equipments. It is also not sufficient-period to permit the new firms to enter the industry to increase the supply of the commodity in the market. Hence, the firms can increase the supply of a commodity in the short-period, only by making intensive use of the given plants and equipments and increasing the units of variable factors.

As a result of this the short-period supply of a commodity will be relatively less elastic. In the following figure OP_1 is the original market price, and OM is the equilibrium quantity demanded and supplied. Due to increase in demand from D_1 D_1 to D_2 D_2 the price of the commodity goes up from OP_1 to OP_2 due to fixed supply. Due to increased demand and increased price from OP_1 to OP_2, the supply in the short-period is increased as signified by the short-period supply curve SS. The supply of the commodity has increased slightly from OM to OM_2. As a result of the increase in the supply, the short-period equilibrium price OP_3 is determined, which is less than the market price OP_1. However, the short-period equilibrium price OP_3 is higher than the original market price OP_1 Hence, E_3 denotes short- period equilibrium of the industry and the short-period, equilibrium price is OP_3

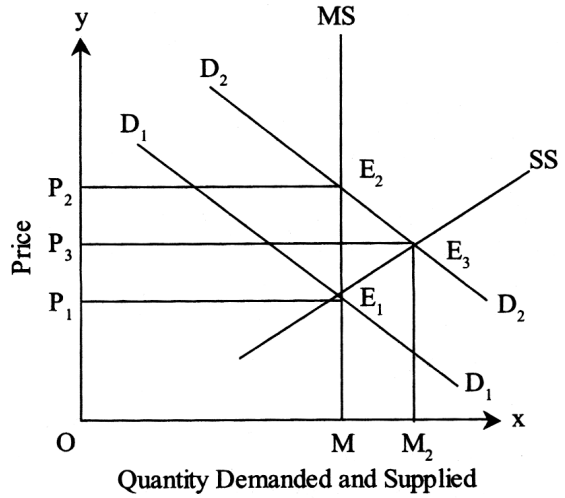


Fig : Price Determination during Short - period

(c) Price - Output Determination in the Long - period

The long-period is sufficiently long to enable the supply to be increased to meet increase in demand. In the long period, the existing firms in the industry can alter their production capacity. Even new firms may also enter the industry, thereby increasing production and supply of the commodity.

In the long-run price is relatively greater elastic. But the long-run price of the commodity may be higher than or lower than or equal to the original market price depending upon increasing costs, diminishing costs or constant costs respectively.

(i) Long-period Price in the Increasing Cost Industry

If all the firms in the industry are experiencing diminishing returns to scale, then the additional output is secured only at the increasing cost. As a result of this, the long-period supply curve of the industry will be positively sloped, indicating the long period supply curves LS.

The following figure shows that OP_1 is the original market price and OM is the original quantity demanded and supplied. An increase in the demand from D_1 to D_2 leads price to increase to OP_2 But in the long-period, the price falls to OP_4 as the supply has increased from OM to OM_3 . The long-period normal price OP_4 is higher than the original market price OP_1 because of the diminishing returns to scale. However, the long-period price OP_4 is lower than the short-period price OP_3 and the industry is said to be in equilibrium at E_4.

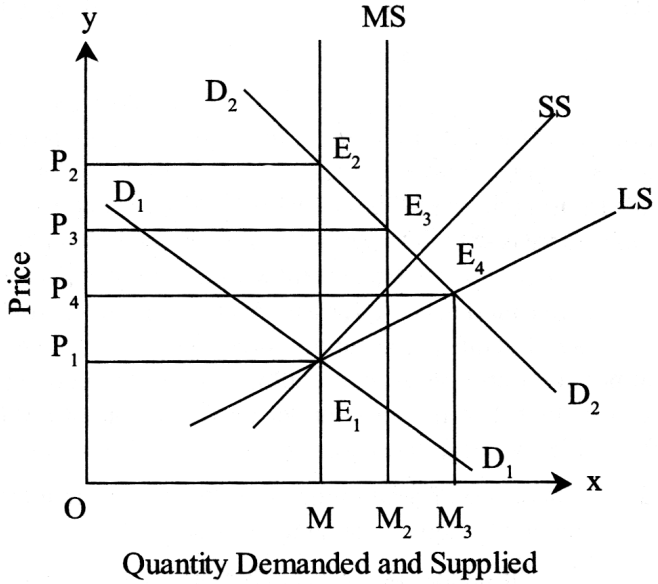


Fig : Price Determination during Long-period

(ii) Long-period Price in the Decreasing Cost Industry

The decreasing cost industry is that wherein the net external economies are so powerful that the long- period price is lower than the original market price.

The following figure shows that OP_1 is the original market price at which OM is the quantity demanded and supplied. An increase in the demand for the commodity is accompanied by the rise in the market price from OP_1 to OP_2. Due to increase in the supply, the short-period price sets in at OP_3.

But in the long-period, the price falls to OP_4. Since, the industry is subject to increasing returns to scale, the net external economies cause the cost per unit to decline. As a result of this, the long-period price OP_4 is lower than even the original market price OP_1.

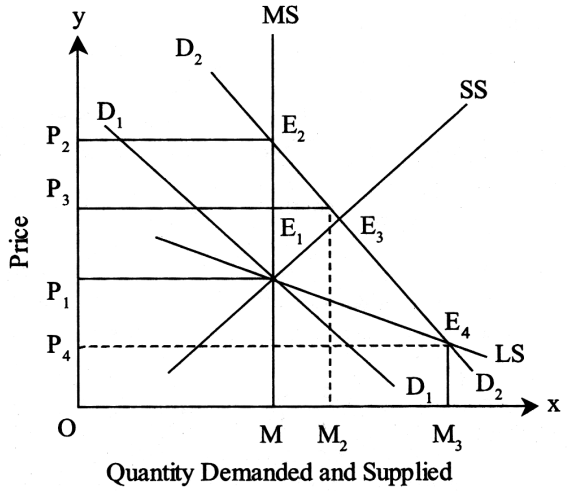


Fig : Price Determination in Decreasing Cost Industry

(iii) Long-period Price in the Constant Cost Industry

The industry which experiences constant returns to scale is called constant cost industry. The firms in the constant cost industry experience such a stage of expansion which gives rise to some external economies and external diseconomies which cancel each other. As a result, there is no shift in the cost per unit. The resultant effect is, the horizontal long- period price determination in the case of constant cost industry. In the following figure, OP_1 is the original market price, the quantity demanded and supplied is OM. The increase in demand has led the market price to go up to OP_2 as the quantity supplied remains unchanged in the market-period.

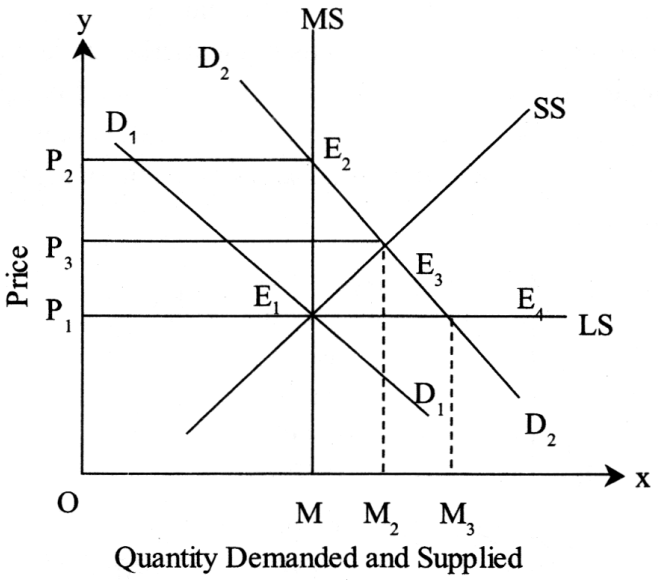


Fig : Price Determination in Constant Cost Industry

However, due to small increase in supply the short- period price sets in at OP_3 which is lower than OP_2, but higher than the original market price OP_1 . In the long- period, the quantity supplied increases to OM_3 and the price falls to OP_1 Thus, the long-period normal price coincides with the original market price OP_1 In the long-period, the constant cost industry is in equilibrium at E_4 supplying OM_3 equilibrium output.

Example for Price Determination Under Perfect Competition

Under this perfect market, prices are fixed by the market forces of total demand and total supply. Nobody is in a position to influence the market price. Everyone has to accept the existing market price. The seller and the buyer cannot bargain.

Consider the following table

Price (per kg) (Rs.)	Total Demand (in kgs)	Total supply (in kgs)	Pressure on Price
20	2000	20,000	Downward
18	4000	15,000	Downward
15	8000	11,000	Downward
14	10,000	10,000	Neutral
12	15,000	4000	Upward
10	20,000	2000	Upward

Table: Demand and Supply Schedules for Rice

If we observe the above table we find that, when the price is Rs. 20, supply of rice is 20,000 kgs but demand for rice is only 2000 kgs. Hence 18,000 kgs of rice supply remains unsold, this will bring a downward pressure on price. Similarly, when the price is Rs. 18, supply of rice is 15,000 but demand for rice is only 4000. Hence supply is in excess of demand. This process will continue till Rs. 14, where total supply and total demand are equal. Hence the equilibrium price at Rs. 14 is fixed.

Similarly if we go from the bottom when the price is Rs.10, supply of rice is 2000 kgs but the demand is 20,000 kgs. Hence, demand exceeds the supply.

This will create an upward pressure on price, hence the price tends to move up. This process will continue until total demand and total supply are equal.

This can be explained with the help of following figure.

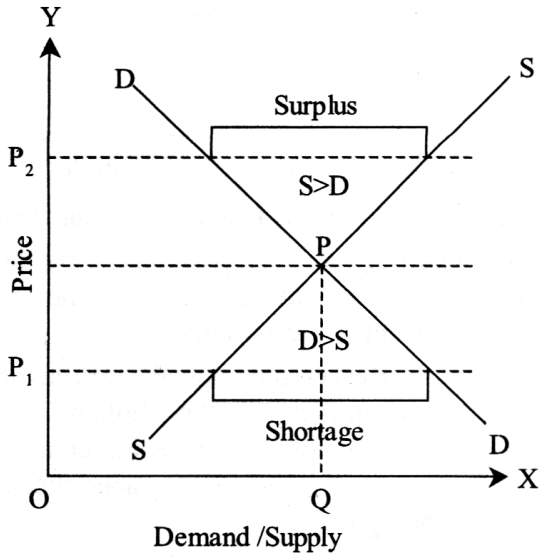


Fig : Price Determination Under Perfect Competition

OX = Quantity demand and supply is measured

OY = Price is measured.

In the above figure, PQ is the equilibrium price at which OQ is the quantity demanded as well as supplied at point P. The demand curve and supply curve intersects.

Below the equilibrium price, demand is greater than supply, hence there is a shortage. Above the equilibrium price, supply is greater than demand, hence there is a surplus.

Q13. "Under perfect competition a firm is a price taker and not a price maker". Explain.

Ans :

The individual firm under perfect competition has no control over the market price. This means there is no other way for it to accept the price as given by the market. Market forces determine the price and the individual firm has to accept it. The individual firm has absolutely no control over price determination. Thus, the individual firm has no choice other than accepting the given market price.

A good example is agricultural market, where individual farmer has no control over the market price determination and he has to accept the prevailing market price.

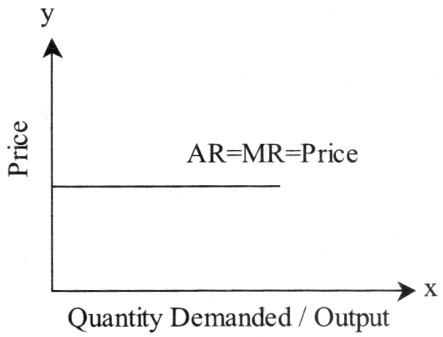


Fig : Demand Curve for the Firm Under Perfect Competition

In the figure above, it can be observed that the demand curve for the output of individual firm is a horizontal line parallel to x-axis at the given market price.

In case of perfect competition, the firm cannot change the market price even if it sells the whole of its produced output. Therefore, the price, Average Revenue (AR), and Marginal Revenue (MR) are equal to each other which are also shown in the figure.

There is only alternative available to a firm is that it can sell any quantity at the given market price. If it wants to sell at a higher price, nobody will buy from it because they can buy same from others at the given market prices, which are lower.

Firm and Industry Equilibrium Under Perfect Competition

Price is determined by the market forces under the conditions of perfect competition. Here the firms have absolutely no control over the prices. The only pricing strategy available to them in perfect competition is to charge the same price as other firms charges. In case of perfect competition, the industry demand curve is negatively sloped curve. It is because, it indicates the demand from all consumers at various prices.

The industry demand curve 'ID' can be seen in the following figure.

We can also observe the firms supply curve 'FS' which is rising upward. It indicates that the firm is more interested to sell large quantity at a higher price. It is the price that determine the quantity demanded and quantity supplied. The ultimate price that prevails in the market under perfect competition is one at which quantity demanded is equal to the quantity supplied. This price is also called equilibrium price, as it balances the influence of demand on supply and vice versa.

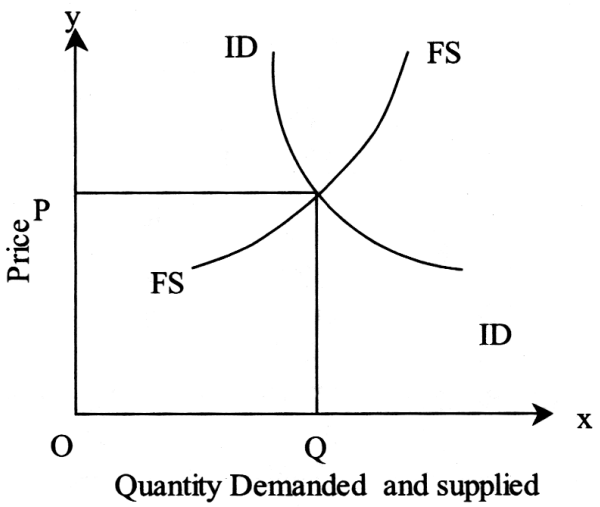


Fig : Price Determination in Case of the Firm and Industry Under Perfect Competition

The figure above, shows how the equilibrium is determined. OP is the equilibrium price at which ID and FS intersect each other. At price OP, the quantity demanded is equal to the quantity supplied. If the price is higher than equilibrium price OP, supply will be more and hence the price is likely to fall due to decrease in demand. As the price falls, demand for quantity will increase. But the quantity supply may decline.

If the price falls below OP, the demanded quantity will rise quickly and the supply is not forthcoming to meet that demand. This will push up the price in the market to OP.

Q14. What are the advantages and disadvantages of Perfect Competition?

Ans :

Advantages of Perfect Competition

Advantages of perfect competition can be explained as follows:

1. Consumer Sovereignty

There is consumer sovereignty in a perfect competitive market. The consumer is rational and he has perfect knowledge about the market conditions. Therefore, he will not purchase the products at a higher price.

2. Beneficial to Consumers

In the perfectly competitive market, the price is equal to the minimum average cost. It is beneficial to the consumer.

3. Cost-Saving

The perfectly competitive firms are price-takers and the products are homogeneous. Therefore it is not necessary for the producers to incur expenditure on advertisement to promote sales. This reduces the wastage of resources.

4. Economic Efficiency

In the long-run, the perfectly competitive firm is functioning at the optimum level. This means that maximum economic efficiency in production is achieved. As the actual output produced by the firm is equal to the optimum output, there is no idle or unused or excess capacity.

Disadvantages of Perfect Competition

Disadvantages of perfect competition can be explained as follows :

1. No Scope for Economies of Scale

This is because there are many small firms producing relatively small amounts. Industries with high fixed costs would be particularly unsuitable to perfect competition. This is one reason why perfect competition is unlikely in the real world.

2. Homogenous Products

Undifferentiated products are boring giving little choice to consumers. Differentiated products are very important in industries such as clothing and cars.

3. Insufficient Profits

Lack of supernormal profit may make investment in R & D unlikely this would be important in an industry such as pharmaceuticals which require significant investment.

4. Free flow of Technology

As there is no patent kind of thing, there is no incentive to develop new technology because it would be shared with other companies.

5. Externalities

If there are externalities in production or consumption there is likely to be market failure without government intervention.

4.3 PRICE-OUTPUT DETERMINATION UNDER MONOPOLY

Q15. Explain briefly about price-output determination under monopoly in the short-run market.

Ans : **(Nov.-21, Aug.-21, Nov.-20)**

Under monopoly, the average revenue curve for a firm is a downward sloping one. It is because, if the monopolist reduces the price of his product, the quantity demanded increases and vice versa. In monopoly, marginal revenue is less than the average revenue. In other words, the marginal revenue curve lies below the average revenue curve.

The monopolist always wants to maximize his profits. To achieve maximum his profits. To achieve maximum profits, it is necessary that the marginal revenue should be more than the marginal cost.

He can continue to sell as long as the marginal revenue exceeds marginal cost. At the point F, where MR = MC, profits will be maximized. Profits will diminish if the production is continued beyond this point.

From fig.below, it can be seen that the demand curve or average curve is represented by AR, marginal revenue curve by MR, average cost by AC, and marginal cost curve by MC. OQ is the equilibrium output, OA is the equilibrium price, QC is the average cost, and BC is the average profit (AR minus AC is the average profit).

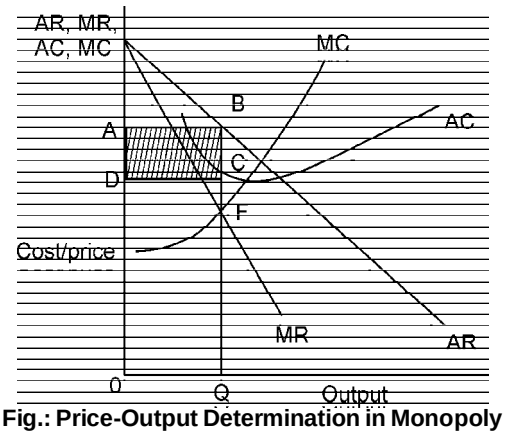


Fig.: Price-Output Determination in Monopoly

Upto OQ output, MR is greater than MC and beyond OQ, MR is less than MC. Therefore, the monopolist will be in equilibrium at output OQ where MR = MC and profits are maximum. OA is the corresponding price to the output level of OQ. The rectangle ABCD represents the profits earned by the monopolist in the equilibrium position in the short-run.

Q16. How is price determined under monopoly in the long run market ?

Ans : **(Nov.-21, Nov.-20, Jan-18)**

The long-run is sufficiently a long period for the monopolist to adjust the plant size or to use the existing plant at any level that maximises his profit. Since there is no entry of outside firms in the monopoly market, there is no competition. In the absence of competition, the monopolist can afford to produce output at sub-optimal scale. That means the monopolist need to produce output at sub-optimal sale.

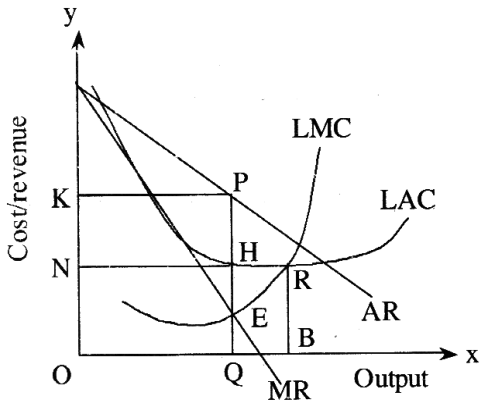


Fig.

Therefore, the monopolist need not reach the minimum point of the LAC as the market size does not permit to expand output to produce it at the minimum cost per unit (LAC). However, the monopolist would not stay in the business if he makes losses in the long-period. He will continue to secure super-normal profit even in the long- period as the entry of outside firms is blocked.

Figure explains the long-period equilibrium of a monopoly firm. The firm is in equilibrium at E where LMC = MR and LMC curve cuts MR curve from below. QP is the equilibrium price and OQ is the equilibrium output. Since the price per unit (AR)QP is greater than the cost per unit (LAC) QH, HP represents the per unit super normal profit.

The total super normal profit is equal to PKNH. It is important to point out that the equilibrium price QP is determined on the assumption of the absence of the actual entry and potential entry. If there is potential entry in the market, the monopolist will fix up the price at a level lower than QP.

In order to block the potential entry of outside firms, the monopolist may fix up price equal to BR. Since the price per unit is equal to the cost per unit at R, the monopoly firm can earn only normal profit even in the long-run if it has to prevent potential entry.

Therefore it can be said that in the absence of actual and potential entry of outside firms in the market the monopoly firm can secure super-normal profit in the long- period. But in the presence of potential entry, even in the long-period the monopoly firm can earn just normal profit to meet the threat of entry.

Q17. What are the advantages and disadvantages of Monopoly ?

Ans :

Advantages of Monopoly

"Advantages of monopoly can be explained as follows:

1. Research and Development

Supernormal Profit can be used to fund high cost capital investment spending. Successful research can be used for improved products and lower costs in the long term.

E.g.: Telecommunications and Pharmaceuticals.

2. Economies of Scale

Monopolies can produce at lower costs which makes them more efficient than smaller firms. This in turn increases output which leads to a decrease in average costs of production. These can be passed on to consumers in the form of lower prices.

3. Competition for Corporate Control

Monopolists are subject to the discipline of the financial markets. If a monopoly, with potentially low costs, fails to perform, then it may be a subject to takeover bid.

4. Stability of Prices

In a monopoly market the prices are most of the times stable. This happens because there is only one firm involved in the market that sets the prices if and when it feels like. In other types of market structures prices are not stable and tend to be elastic as a result of the competition that exists but this is not the case in a monopoly market as there is little or no competition at all.

5. Source of Revenue for the Government

The government gets revenue in form of taxation from monopoly firms.

6. Massive Profits

Due to the absence of competitors which leads to high number of sales monopoly firms tend to receive super profits from their operations. The massive profits realised may be used in such things as launching other products, carrying out research and development among many other things that may be beneficial to the firm.

Disadvantages of Monopoly

Following are the disadvantages of monopoly:

1. Exploitation of Consumers

A monopoly market is best known for consumer exploitation. There are indeed no competing products and as a result the consumer gets a raw deal in terms of quantity, quality and pricing. The firm may find it easy to produce inferior or sub-standard goods if it wishes because the end of the day they know very well that the items will be purchased as there are no competing products for the already available market.

2. Dissatisfied Consumers

Consumers get a raw deal from a monopoly market because quality will be compromised. Therefore it is not a wonder to see very dissatisfied consumers who often complain about the firm's products.

3. Higher Prices

No competition in the market means absence of such things as price wars that may have benefited the consumer and as a result of this monopoly firms tend to charge higher prices on goods and services hence inconveniencing the buyer.

4. Price Discrimination

Monopoly firms are also sometimes known for practicing price discrimination where they charge different prices on the same product for different consumers.

5. Inferior Goods and Services

Competition is minimal or totally absent and as such the monopoly firm may willingly produce inferior goods and services because after all they know the goods will not fail to sell.

6. Prices and Costs

These will be higher than under perfect competition. Under perfect competition, firms are forced to produce at the lowest cost

possible, taking into account the current state of technology and available resources, which keeps prices down while allowing them to make a reasonable profit. However, barriers to entry allow the monopolist to charge higher prices and make large profits, even if it is not producing in the most efficient way.

Q18. Distinguish between Perfect Competition and Monopoly

Ans :

S.No.	Points of comparison	Perfect competition	Monopoly
1.	**Relation between AR**	AR = MR	AR > MR
2.	**Profit in the long-run long-run**	Normal profits in the long-run also.	Supernormal profits in the
3.	**Number of sellers**	Large number of sellers	Single seller
4.	**Barriers to entry and exit**	Free entry and exit, as there are no barriers.	There are strong barriers
5.	**Control on price taker**	The seller is only the price inelastic.	Monopolist is the price maker
6.	**Nature of demand-curve**	Perfectly elastic	Inelastic
7.	**Relationship between firm and industry**	Each firm is a part of the industry.	Firm and industry are one and the same.

4.4 Price-Output Determination in Monopolistic Competition

Q19. How is price output determined under monopolistic competition ?

Ans : **(July-18)**

It is common that every firm whether operating under perfect market or imperfect market, wants to maximize the profits. It means that the firm under monopolistic competition also will reach equilibrium when its marginal cost equals its marginal revenue (MC = MR). The demand curve for the firm in case of monopolistic competition is just similar to that of monopolist.

As the products are differentiated, the demand curve has a downward slope, In other words, each firm has a limited control over price. These firms are price makers as far a given group of customers is concerned. The demand for their products and services is relatively inelastic. The degree of elasticity of demand of a firm in monopolistic competition depends upon the extent to which the firm can resort to product differentiation. The greater the ability of the firm to differentiate the product, the less elastic the demand is. The firm's influence to increase the price depends upon the extent to which it can differentiate the product. At lower prices, the firm can sell more. There is no significant variant in the cost functions also.

A) Price-Output Determination in Short-run

In the short-run, firms may experience supernormal or normal profits or even losses. When there is a fall in costs or increase in demand, the firms may enjoy supernormal profits. In other words, if the firm satisfies the following two conditions, it may take supernormal profits.

a) Where marginal cost is equal to marginal revenue (MC = MR).

b) Where a average revenue is less than average cost (AR < AC).

The firm may be in losses when the costs rise or demand decreases.

Figure below reveals that the demand curve is a downward sloping curve because of product differentiation. The cost functions of a firm are not different from those of earlier market situations. At F, marginal cost (MC) is equal to marginal revenue (MR), extend F to point B on average revenue (AR) curve and Point Q on X axis.

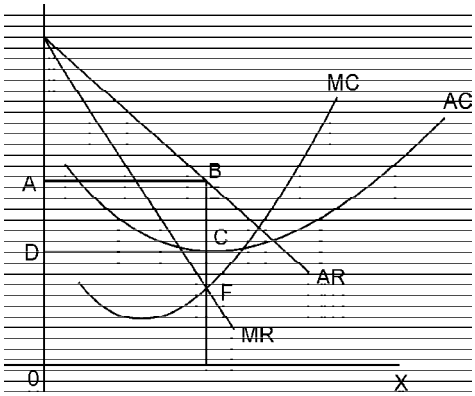


Fig.: Price-Output Determination in Monopolistic Competition in the Short-run

OQ is the equilibrium output, OA = OB = Equilibrium price and QC is the average cost. Average profit = average revenue minus average cost. BC is the average profit. Profit × Quantity = Total profit.

The area ABCD represents the supernormal profits earned by a firm under monopolistic competition in the short-run.

B) Price-Output Determination in Long-run

More and more firms will be entering the market having been attracted by supernormal profits enjoyed by the existing firms in the industry. As a result, competition becomes intensive on one hand, firms will compete with one another for acquiring scarce inputs pushing up the prices of factor inputs. On the other hand, on the entry of several firms the supply in the market will increase, pulling down the selling price of the products.

In order to cope with the competition, the firms will have to increase the budget on advertising. The entry of new firms continue till the supernormal profits of the firms completely get eroded and ultimately firms in the industry will earn only normal profits. Those firms which are not able to earn at least normal profits will get closed.

Thus in the long-run, every firm in the monopolistic competitive industry will earn only normal profits, which are just sufficient to stay in the business. It is to be noted that normal profits are part of average costs.

In the long-run, in order to achieve equilibrium position, the firm has to fulfil the following two conditions:

a) MR = MC

b) AR = AC

At the equilibrium level of output.

Thus, the firm has to fulfil dual equilibrium conditions as mentioned above. But when compared to long run equilibrium position of a perfectly competitive firm, even though AR = AC, AC will not be at its minimum point at equilibrium level of output. And also, MR is not equal to either AR or AC, MR is well below AR in the case of monopolistic competitive firm.

Why Average Cost (AC) is not Equal to Average Revenue (AR) at its Minimum Point

It is because, the average cost (AC) can be tangential to the downward slopping average revenue (AR) curve only at higher than its minimum point. The average (AC) is higher in case of monopolistic competitive firms because of excess or idle capacity and high advertising costs.

From Fig. below, it can be observed that in the long-run, the average cost (AC) curve will be tangential to the downward sloping average revenue (AR) curve at point E. It can be noted that the average cost curve is tangential to the average revenue curve at higher than its minimum point F. MR = MC at point K. OQ is the equilibrium output and OP is the equilibrium price.

Thus, in the long-run, a firm under monopolistic competition achieves equilibrium price and output level when both conditions of equilibrium are satisfied.

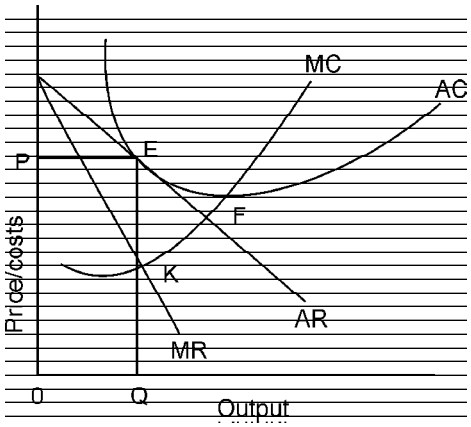


Fig.: Price-output Determination in Monopolistic Competition in the Long run

Q20. What are the advantages and disadvantages of Monopolistic Competition ?

Ans :

Advantages of Monopolistic Competition

The advantages of monopolistic competition are as follows:

1. Promotion of Competition (Lack of Barriers to Entry)

In such a market, one of its primary aspects is that there a lack of barriers to entry (factors that cause difficulty for a new firm to enter the market, e.g., intellectual property rights, advertising, large start-up costs, etc.), hence making it relatively easy for firms to enter (and exit) the market. This therefore ensures (atleast in the long run) no 'single firm' will find themselves with monopoly power (and with that - the ability to exploit consumers), due to new entering firms to the market.

2. Differentiation Brings Greater Consumer Choice and Variety

One of the main positives to come out of a monopolistically competitive market is that in order to be a competitive firm within such a marketplace, a firm's primary goal is to differentiate itself from others in order to gain greater custom than its rival competitors - essentially appealing to consumer sovereignty (where consumers determine the goods to be produced within a market). With this, is the provision of greater choice and variety of products and services for consumers to purchase from - they have a wider range of consumer choice as opposed to just a single choice (either just one product - monopoly - or all the products are generic and homogenous - perfectly competitive).

3. Product and Service Quality Development

An advantage of monopolistic competition is that it enhances a firm's ability to improve a product's quality through its brand. Economists defend branding as a way to enhance trust and reliability to the consumer. Brands strengthen the need to maintain high quality based on the business's financial stake in its reputation.

4. Consumers Become More Knowledgeable of Products

A positive externality from monopolistic competition and the intense advertising and marketing that accompanies it, is that due to firms trying to differentiate their products - consumers become more informed and aware of their options regarding such products and services. They can gain an understanding of the unique features and aspects that certain products have compared to that of others. Hence, with this comes further competition, as firms can recognise what consumers are wanting to a better degree.

Disadvantages of Monopolistic Competition

Following are the disadvantages of monopo-listic competition:

1. Liable of Excess Capacity

A negative factor of firms that are in monopolistic competition is that' they do not produce enough output to efficiently lower the average cost and benefit from economies

of scale. They are reducing their 'economic profits', as a result of the marginal revenue being less than that of the marginal cost. Moreover, the funding and expense that goes into packaging, marketing and advertising can deemed extremely wasteful on some levels.

2. Allocatively Inefficient

Compared with perfect competition, it can be shown that such firms that there is an element of allocation efficiency as the price is above that of the marginal cost curve - less so in the long- run, due to more competition. As the demand curve is one which is downward sloping this then implies the price has to be greater than the marginal cost for a monopolistically competitive firm. Hence it is allocatively inefficient as not enough of the product gets produced for society to benefit - they want more, however this would force the company to lose money.

3. Higher Prices

Another drawback of a monopolistic competition is that as a result of firms having 'some market power', they can extenuate a mark-up on the marginal cost of revenue. Compared to a perfectly competitive firm, who have their price equal to their marginal cost. This would be difficult for a governmental authority to regulate for two reasons:

(i) There are many firms; and

(ii) They would be making a loss - hence eventually forcing such firms out of business.

4. Advertising

Advertising and marketing can be beneficial to consumers on some levels such as providing information to customers and from this an increase in competition; it can also have negative impacts on consumer sovereignty. It is argued to manipulate and distort what consumers desire, as well as obviously reducing competition as consumers become captivated over the perception of differentiation.

4.5 Price and Output Determination in Oligopoly both the Long run & Short run

Q21. How price is determined under collusion oligopoly ?

Ans : **(Nov.-21, July-18)**

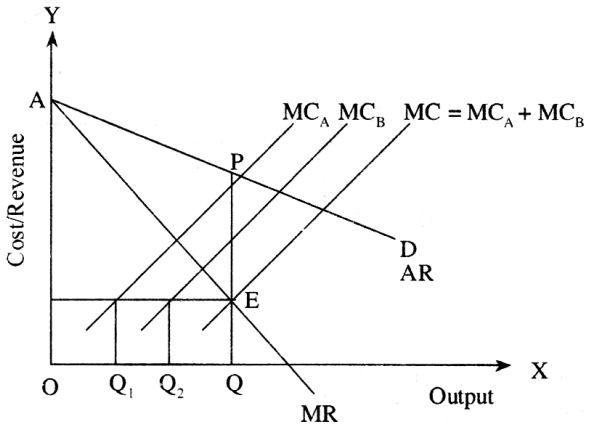
The term collusion implies to play together. The oligopolistic firms arrive at a formal agreement about price-output instead of competing with each other The competing firms form a cartel. The cartel is a common sales agency formed to eliminate competition and fix such a price and quantity of output that will maximise profits of the member firms. The cartel determine the price output for whole of the industry as well as for each member firm. In other words, the cartel administration determines the equilibrium total output as well as equilibrium quantity of output of each member firm. Assumptions of the cartel are as follows.

(i) It is assumed that there are two firms namely A and B. These firms form a cartel.

(ii) The products of firms A and B are homogeneous.

(iii) The costs of production of firms A and B are different.

(iv) The cartel determines such price-output combination which ensures maximum profits for whole of the oligopolistic industry.



Figure

The cartel estimates the total demand for the industry's product. It is signified by the curve-AD in figure. The marginal revenue curve-MR in the diagram shows cartel's revenue from the sale of the additional quantity of output. Cartel's MC curve is the horizontal summation of the marginal cost curves of the firms A and B. The equilibrium of the oligopolistic industry is denoted by E, where MC = MR. The equilibrium force is QP and the equilibrium total output is OQ. Having decided the total output to be produced equal to OQ the cartel allots the output quota to each member firm so that the marginal cost of each firm is the same. This can be determined by drawing a horizontal straight line from E towards the Y-axis. The firm A produces OQ output and the firm B produces OQ output. The total output OQ is equal to $OQ_1 + OQ_2$.

In brief OP price and OQ output ensure joining profits to the members of the cartel or industry.

Q22. Explain briefly about kinked demand curve.

Ans : **(Nov.-21, Aug.-21)**

Paul Sweezy formulated a model to explain interdependence among firms in the oligopoly market. This model also recognizes the uncertainty of rival's reaction. On the basis of interdependence among firms and uncertainty of rival firm's reaction, this model explains that the oligopoly price is insensitive to market forces. It implies stickness or rigidity of price in the oligopoly market. The explanation of rigidity of price in the oligopoly market has been given in terms of kinked demand curve.

Since an oligopolist does not know how his competitors will react, he has to make guess. That is why oligopoly has been linked to a game where various options are open to the players. An oligopolist may assume that his competitors will follow him, if he increases or decreases the price. Alternatively, he may assume that the price cut by him will be followed by a price cut by the rival firms, but the price rise by him will not be followed by a price rise by the veal firms. This alternative hypothesis is the basis of Kinked demand curve.

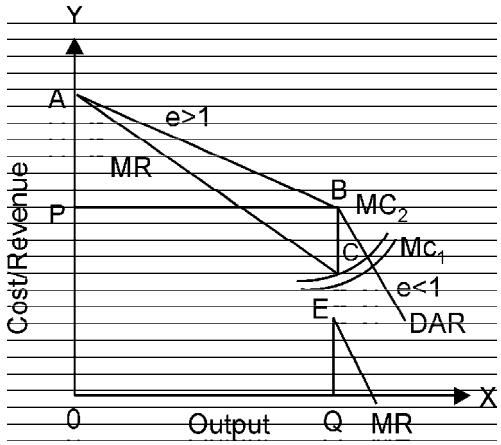
Assumptions of the Kinked Demand Curve

(i) There are two firms namely A and B.

(ii) Product of both the firms is homogeneous.

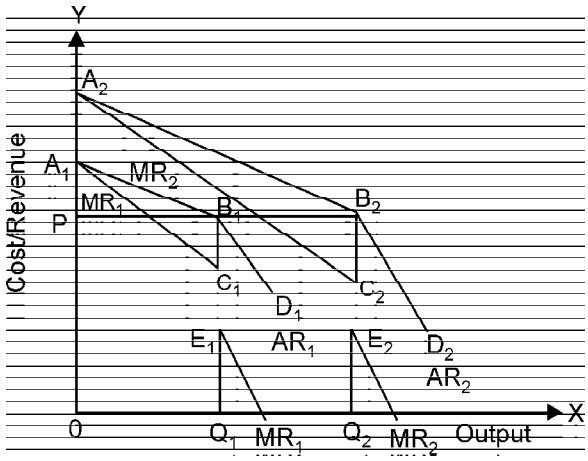
(iii) There is a particular price prevailing in the market. It is assumed to be OP as is shown in figure.

In figure the demand curve-AD is kinked at B with its two segments. The segment AB is relatively greater elastic and the other segment BD is relatively less elastic. Since the demand curve (AR) – AD is discontinuous, so the corresponding MR curve is also not continuous. The MR curve's segment AC corresponds to AR curve's segment AB. The MR curve's segment starting from E corresponds to BD segment of the AR curve.



Assume that the firm A raises the price above the prevailing price OP. Now the firm B will not raise the price. As a result the demand for A's production will decline considerably. So firm A will reduce the price. Hence, the price is rigid at the level of OP.

Assume that the firm A reduces the prices below prevailing price OP. Now firm B reacts by reducing the price so that the firm A may not take away whole of the market. As the firm A has not gained by reducing the price, so it will raise the price to the prevailing level of OP. Hence price is rigid at OP. The price rigidity or stickness is also established by the fact that any shift in the MC curve also does not affect the price. The price also remains rigid despite shift in the demand curve.



Hence, Paul Sweezay has emphasized the price rigidity as the basic feature of the non-collusive oligopoly. Kinked demand curve is the logical deduction from price rigidity.

Q23. Write about the price leadership model of oligopoly.

Ans : **(Nov.-21)**

According to price leadership model of oligopoly, the leader firm in the market determines the price of the product. The firm which acts as the leader firm is one which is either a low-cost firm, dominant firm or experienced and respected firm. Accordingly, the most common types of leadership are as follows.

(i) Price leadership by a low-cost firm

(ii) Price leadership by a large (dominant) firm

(iii) Barometric leadership (experienced and respected firm).

Kinds of Price Leadership

Three kinds of price leadership are commonly distinguished in the literature,

1. Dominant-firm price leadership
2. Collusive price leadership and
3. Barometric price leadership.

1. Dominant-firm Price Leadership

This model rests on the assumption that the oligopoly industry is composed of one large firm together with many small firms. The large firm is the dominant firm which, if it desires, can drive out its rivals by a price war. To avoid any such possibility, a tacit collusion may be arrived at between the dominant firm and the small firms. This collusion may occur in the form of price leadership by the dominant firm. The dominant firm fixes the price and the small firms act as price-takers. This type of price leadership is also called partial monopoly, as the dominant firm wields more or less monopoly power. Since the small firms can sell any amount of output at the price determined by the leader, each small firm in the industry therefore behaves like a perfectly competitive firm. The dominant firm, on the other hand, supplies the remainder of the market which is not satisfied by the small firms. Thus, although the dominant firm is a price leader, it is a quantity follower.

Determination of profit-maximizing price in this case is shown in figure where D_m is the market demand curve. Since the leader is assumed to have complete knowledge of the supply conditions of the small firms, S_{cf} is the supply curve of the small competitive firms as perceived by the leader. S_{cf} equals the sum of the individual marginal cost curves (portions of MC above the average variable cost curves) of the small firms. At price P_1, the supply of small firms (P_1N) equals the market demand. In other words, the dominant firm would sell nothing at P_1 price. At P_2 price, P_2B is supplied by small firms and BM by the dominant firm. If on the horizontal line P_2M we mark a distance P_2C equal to the share of the dominant firm (i.e., PM), we get a point C on dominant firm's demand curve. In a similar way we may mark the share of the dominant firm at each price and can get a set of points falling on the dominant firm's demand curve (e.g., Point H at price P_3). By joining points like P_1, C, H, etc., we get the dominant firm's demand curve (AR_d). We can then find the corresponding MR_d curve for the dominant firm.

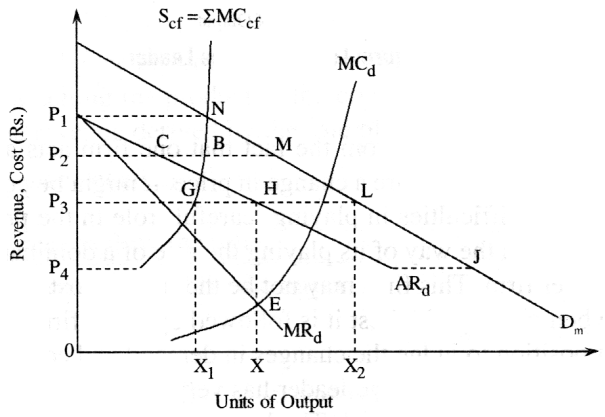


Fig. : Dominant-firm Price Leadership

Note that at price below P_4 small firms do not supply at all, as they would not be able to cover their average variable cost - JD_m portion of the market demand is therefore relevant only to the dominant firm. Thus, the dominant firm's demand curve is the line P_1 AR_d JD_m and the corresponding marginal revenue curve is MR_d.

The dominant firm will maximize its profits where its marginal cost (MC_d) equals its marginal revenue (MR_d). In figure, MC_d = MR_d at point E where equilibrium price of the dominant firm is P_3. The small firm's supply curve shows that at P_3 price they supply P_3G, leaving G_L quantity for the dominant firm to supply.

This situation is essentially one of unstable equilibrium. If the price set by the dominant firm gives profits to small firms in the industry, entry will be encouraged leading to reduction in the share of the dominant firm. If the dominant firm on the other hand, deviates from the pattern of 'leadership in price and followership in quantity' and changes its objective to long-run profits instead of short run profits, the dominant firm will then resort to price cutting which will enable it to put many a small firms out of business, thus enjoying near-monopoly share of the market.

2. Collusive Price Leadership

This is also known as price leadership by the efficient firm. Here, firms with relatively higher costs fear that the competition with the efficient firm will result in price war which may result in the erosion of their market share, and may eliminate them in the long run if the price fell lower than the average cost. In figure, A and B are two firms where firm A is more efficient because of its lower cost. The market demand curve is D. If the two firms agree to split the market equally, each firm faces demand curve d (the curve d shows one-half as much quantity as does demand curve D at each price).

The firm with the lowest cost will charge P_A price, which will be followed by B - the high-cost firm. Each of the firms sells Q_A quantity, which is together equal to Q*. Note that this price, quantity combination maximises profits for firm A but not for firm B. The profit maximising price-quantity combination for firm B would be P_B, Q_B. But firm B will have to be content with price P_A, since if it charges P_B price it would lose customers to firm A. Thus, firm A (the leader) sets the price and firm B (the follower) adopts it. But this price leadership is maintainable only if the follower supplies exactly his quota-share of output (here, half of the total output). Thus, share-of-the market agreements are an integral part of low-cost price leadership.

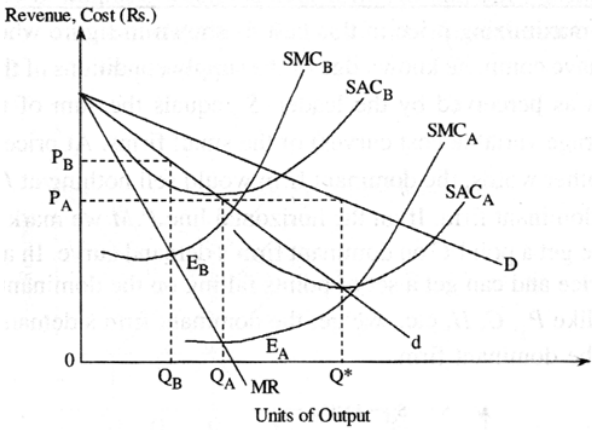


Fig. : Low cost price leader

3. Barometric Price Leadership

Barometric price leadership gets its name from the fact that one firm acts as a 'barometer', reflecting changing market conditions or costs of production that require a change in price. It might be possible that the firm with a large share of the market or a low cost firm finds difficulties in playing 'careful' role in the price maneuvers. Or, the government regulations like MRTP Act, etc., come in the way of its playing the role of a dominant firm. In such a case, the leadership role may fall to the share of a smaller firm. This firm may not be the lowest cost firm but it certainly must be an efficient firm. In spite of its market share being not the highest it is followed by other firms. Others in the industry recognize that the barometric firm is in the best position to judge the changes in demand and cost conditions and that its price change is in the best interest of the group. Since the barometric leader has very little power to impose his decisions on other firms in the industry, his leadership may thus be short lived. The barometric price leadership may, therefore, move from one firm to another, or at the worst the price parallelism may even break down.

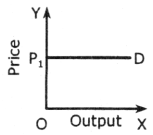
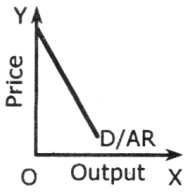
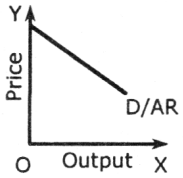
Q24. Distinguish between oligopoly and perfect competition.

Ans :

S.No.	Oligopoly	Perfect Competition
1.	Oligopoly is the market in which firms compete with each other.	1. In perfect competition type of market structure, all firms compete with each other as they act as price takers in the market.
2.	It may either produce homogenous or heterogenous products.	2. It produces only homogenous products.
3.	It consists of few number of sellers and large number of buyers.	3. It has large number of sellers catering to the needs of large number of buyers
4.	Due to wide scope of product differentiation, firms have to encounter entry barriers.	4. Free entry and exit for the firms.
5.	Price is not uniform throughout the market	5. Price remains constant throughout the market
6.	Firms are price makers.	6. Firms are price takers.
7.	Output is less	7. Output is more

Q25. Distinguish between perfect compe- titiȯn, monopoly, monopolistic compe- tition and oligopoly.

Ans :

S.No.	Basic	Perfect	Monopoly	Monopolistic	Oligopoly
(1)	**Number of sellers**	Large number of sellers	Single seller	Large number of small sellers	Small number of large sellers
(2)	**Product**	Products of all sellers are homogeneous.	Monopolist may sell homogenous or differen- tiated products.	Products are different but are close substitutes of one another	Products may or may not be different from each other.
(3)	**Demand**	A competitive firm faces perfectly elastic demand curve as under, 	Monopoly firm has a downward curve as under, 	Like monopoly the firm under monopolistic com - petition also has a negati - vely sloping demand curve (but more elastic) as under, 	Demand curve here is indeterminate
(4)	**Price**	Uniform price prevails in the entire market and every firm here is a price taker.	Monopoly firm may or may not charge uniform price from its different buyers. Firm here is a price-maker.	Since product differentiation is the chief feature of this market, different sellers charge different prices for their products.	Prices of the products are different here.An individual firm can influence the price.

Short Question and Answers

1. Define market

Ans :

The term "market" refers to a particular place where goods are purchased and sold. But, in economics, market is used in a wide perspective. In economics, the term "market" does not mean a particular place but the whole area where the buyers and sellers of a product are spread.

Definition of Market

According to Prof. R. Chapman, "The term market refers not necessarily to a place but always to a commodity and the buyers and sellers who are in direct competition with one another".

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

According to Benham, "Any area over which buyers and sellers are in such close touch with one another, either directly or through dealers, that the prices obtainable in one part of the market affect the prices paid on other parts".

2. Market structure

Ans :

Market structure is a set of market characteristics that determine the nature of market in which a firm operates. It refers to economically significant features of a market, which affects the behaviour and working of firm in the industry.

According to Pappas and Hirschey, "Market structure refers to the number and size distribution of buyers and sellers in the market for a goods or services".

Thus, market structure deals with the selected number of the characteristics through buyers and sellers.

(i) Degree of Seller Concentration

One of the most important criteria to identify the market structure is the degree of seller concentration. The degree of seller concentration refers to the number of firms producing a particular type of product and their market share for that particular product in the market.

(ii) Extent of Product Differentiation

The extent of product differentiation is also an important criterian to identify the market structure. Product differentiation refers to the extent by which the product of one trader is differentiated from that of the other.

3. State the features of Perfect Competition

Ans :

A perfectly competitive market is one in which the number of buyers and sellers is very large, all engaged in buying and selling a homogeneous product without any artificial restrictions and possessing perfect knowledge of market at a time, e.g., fruit and vegetable market.

Definition of Perfect Competition

According to A. Koutsoyiannis, "Perfect competition is a market structure characterised by a complete absence of rivalry among the individual firms".

According to R.G. Lipsey, "Perfect competition is a market structure in which all firms in an industry are price-takers and in which there is freedom of entry into, and exit from, industry".

Features

The following are features of perfect competition. In other words, these are the assumptions underlying perfect markets.

(a) Large number of buyers and sellers

There should be significantly large number of buyers and sellers in the market. The

number should be so large that it should not make any difference in terms of price or quantity supplied even if one enters the market or one leaves the market.

(b) Homogeneous products or services

The products and services of each seller should be homogeneous. They cannot be differentiated from that of one another. It makes no difference to the buyer whether he buys from firm X or firm Z. In other words, the buyer does not have any particular preference to buy the goods from a particular trader or supplier. The price is one and the same in every firm. There are no concessions or discounts.

(c) Freedom to enter or exit the market

There should not be any restrictions on the part of the buyers and sellers to enter the market or leave the market. There should not be any barriers. The buyers can enter the market or leave the market whenever they want.

4. Define monopoly.

Ans :

A natural monopoly is defined in economics as an industry where the fixed cost of the capital goods is so high that it is not profitable for a second firm to enter and compete. There is a "natural" reason for this industry being a monopoly. It is an extreme imperfect form of market. In ancient times, common salt was responsible for natural monopolies, till the time people learned about winning sea-salt. Regions facing scarcity of transport facilities and storage were most prone to notorious acceleration of commodity prices and uneven distribution of daily-use products and services.

The characteristics of monopoly are solitary to the condition generated by intent. Monopoly symbolizes domination over a product to the extent that the enterprise or individual dictates the terms of access and the markets for availability. The term is specific to a seller's market. A similar situation in the buyer's market is referred to as monopsony. It first appeared as an economics-related term in 'Politics' by Aristotle.

Meaning of Monopoly

The term 'Monopoly' has been derived from Greek term 'Monopolies' which means a single seller. Thus, monopoly is a market condition in which there is a single seller of a particular commodity who is called monopolist and has complete control over the supply of his product.

Definitions of Monopoly

According to D. Salvatore, "Monopoly is the form of market organisation in which there is a single firm selling a commodity for which there are no close substitutes."

According to Ferguson and Kreps, "A pure monopoly exists when one and only one firm produces or sells the commodity in question. In other words, a monopoly is a one-firm industry"

According to Koutsoyiannis, "Monopoly is a market situation in which there is a single seller, there are no close substitutes for commodity it produces, there are barriers to entry."

In the words of Baumol, "A pure monopoly is defined as the firm that is also an industry. It is the only supplier of some particular commodity for which there exists no close substitute."

5. Explain the classification of monopoly.

Ans :

The Monopoly firms as a Price makes cam be classified into two types.

(a) Simple Monopoly: If the monopoly firm charges the same price from all its clients, it is called simple or single price monopoly.

E.g.: Tata Company charges the same price to all the Tata Indica cars of the same model.

(b) Discriminating Monopoly: If the monopoly firm charges different prices to different consumers for the same product, it is called discriminating monopoly.

E.g.: A Doctor may take Rs.100/- from a rich man and only Rs.50/- from a poor man for the same treatment.

The Monopoly on the basis of Ownership of the firm can be classified as two types:

(a) Private Monopoly: If a private firm monopolizes the market, it is called private monopoly.

E.g:-Hindustan Lever Ltd., is having monopoly power to produce LUX Soap.

(b) Public Monopoly: If the market for a product is monopolized by a government enterprise, it is called public or social monopoly.

E.g: Water, electricity etc.

Others

(a) Limited Monopoly: If the monopolist having limited power in fixing the price of his product, it is called Limited Monopoly. It may be due to the fear of distant substitutes or government intervention or the entry of rival firms.

(b) Unlimited Monopoly: If the monopolist is having unlimited power in fixing the price of his good or service, it is called Unlimited Monopoly. Ex. A Doctor in a village.

(c) Natural Monopoly: Sometimes monopoly may arise due to scarcity of natural resources. Nature provides raw materials in some places only. The owner of the place will become monopolist. For Eg.Diamond mines in South Africa.

(d) Legal Monopoly: If monopoly arises on account of legal support or as a matter of legal privilege, it is called Legal Monopoly. Ex. Patent rights, special brands, trade names, copyright etc.,

(e) Voluntary Monopoly: To get the advantages of Monopoly some private firms come together voluntarily to control the supply of commodity. These are called voluntary monopolies. Generally, these monopolies arise with industrial combinations. These voluntary monopolies are of three kinds (a) cartel (b) trust (c) holding company. It may be called artificial monopoly.

6. Define oligopoly

Ans :

Oligopoly is situation where a few large firms compete against each other and there is an element of interdependence in the decision-making of these firms. Each firm in the oligopoly recognises this interdependence. Any decision one firm makes (be it on price, product or promotion) will affect the trade of the competitors and so results in countermoves. As a result, one's competitor's behaviour depends on one's own behaviour, and this must be taken account of when decisions are made. A major policy change on the part of one firm will have obvious and immediate effects on its competitors.

Definitions of Oligopoly

- **According to P.C. Dooley,** "An oligopoly is a market of only a feu) sellers, offering either homogenous or differentiated products. There are so few sellers that they recognise their mutual dependence."
- **According to Mansfield,** "Oligopoly is a market structure characterized by a small number of firms and a great deal of interdependence."
- **According to Grinols, "**An oligopoly is a market situation in which each of a small number of interdependent, competing producers influences but does not control the market".
- **According to Mc Connell,** "Oligopoly is a market situation in which number of firms in an industry is, so small that each must consider the reactions of rivals in formulating its price policy."

7. Explain the classification of Oligopoly.

Ans :

The oligopoly may be classified in the following categories:

(i) Perfect or Imperfect Oligopoly

Perfect oligopoly is that situation in which all the firms produce homogeneous products. It is also known as pure oligopoly. On the other hand imperfect or differentiated oligopoly is that market situation in which all firms produce differentiated but close substitutes.

(ii) Open or Closed Oligopoly

Open oligopoly is that market situation in which there is no barrier on the entry of the firm in the industry. The entry of the firm is free. But in the situation of closed oligopoly there is barrier on the entry of the firm in the industry. The barrier may be technological, legal or of any other type.

(iii) Partial or Full Oligopoly

Partial oligopoly is that situation in which there is a dominant firm in the industry. This dominant firm is called the price leader. The dominant firm or the price leader fixes the price and others follow that price. Full oligopoly, on the other hand, is that situation in which there is no dominant firm or price leader.

8. Distinguish between Perfect Competition and Monopoly

Ans :

S.No.	Points of comparison	Perfect competition	Monopoly
1.	**Relation between AR**	AR = MR	AR > MR
2.	**Profit in the long-run long-run**	Normal profits in the long-run also.	Supernormal profits in the
3.	**Number of sellers**	Large number of sellers	Single seller
4.	**Barriers to entry and exit**	Free entry and exit, as there are no barriers.	There are strong barriers
5.	**Control on price taker**	The seller is only the price inelastic.	Monopolist is the price maker
6.	**Nature of demand-curve**	Perfectly elastic	Inelastic
7.	**Relationship between firm and industry**	Each firm is a part of the industry.	Firm and industry are one and the same.

9. Advantages of Monopolistic Competition

Ans :

The advantages of monopolistic competition are as follows:

(i) Promotion of Competition (Lack of Barriers to Entry)

In such a market, one of its primary aspects is that there a lack of barriers to entry (factors that cause difficulty for a new firm to enter the market, e.g., intellectual property rights, advertising, large start-

up costs, etc.), hence making it relatively easy for firms to enter (and exit) the market. This therefore ensures (atleast in the long run) no 'single firm' will find themselves with monopoly power (and with that - the ability to exploit consumers), due to new entering firms to the market.

(ii) Differentiation Brings Greater Con-sumer Choice and Variety

One of the main positives to come out of a monopolistically competitive market is that in order to be a competitive firm within such a marketplace, a firm's primary goal is to differentiate itself from others in order to gain greater custom than its rival competitors - essentially appealing to consumer sovereignty (where consumers determine the goods to be produced within a market). With this, is the provision of greater choice and variety of products and services for consumers to purchase from - they have a wider range of consumer choice as opposed to just a single choice (either just one product - monopoly - or all the products are generic and homogenous - perfectly competitive).

(iii) Product and Service Quality Develo-pment

An advantage of monopolistic competition is that it enhances a firm's ability to improve a product's quality through its brand. Economists defend branding as a way to enhance trust and reliability to the consumer. Brands strengthen the need to maintain high quality based on the business's financial stake in its reputation.

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10. Kinked demand curve.

Ans :

Paul Sweezy formulated a model to explain interdependence among firms in the oligopoly market. This model also recognizes the uncertainty of rival's reaction. On the basis of interdependence among firms and uncertainty of rival firm's reaction, this model explains that the oligopoly price is insensitive to market forces. It implies stickness or rigidity of price in the oligopoly market. The explanation of rigidity of price in the oligopoly market has been given in terms of kinked demand curve.

Since an oligopolist does not know how his competitors will react, he has to make guess. That is why oligopoly has been linked to a game where various options are open to the players. An oligopolist may assume that his competitors will follow him, if he increases or decreases the price. Alternatively, he may assume that the price cut by him will be followed by a price cut by the rival firms, but the price rise by him will not be followed by a price rise by the veal firms. This alternative hypothesis is the basis of Kinked demand curve.

Assumptions of the Kinked Demand Curve

(i) There are two firms namely A and B.

(ii) Product of both the firms is homo-geneous.

(iii) There is a particular price prevailing in the market.

11. Distinguish between oligopoly and perfect competition.

Ans :

S.No.	Oligopoly	Perfect Competition
1.	Oligopoly is the market in which firms compete with each other.	1. In perfect competition type of market structure, all firms compete with each other as they act as price takers in the market.
2.	It may either produce homogenous or heterogenous products.	2. It produces only homogenous products.
3.	It consists of few number of sellers and large number of buyers.	3. It has large number of sellers catering to the needs of large number of buyers
4.	Due to wide scope of product differentiation, firms have to encounter entry barriers.	4. Free entry and exit for the firms.
5.	Price is not uniform throughout the market	5. Price remains constant throughout the market
6.	Firms are price makers.	6. Firms are price takers.
7.	Output is less	7. Output is more

UNIT V

Pricing Strategies: Pricing Policy, Price Discrimination, Cost Plus Pricing, Pricing of multiple products, Transfer pricing, Pricing over Product Life Cycle. Theory of Firm - Managerial Theories and Behavioral Theories of firm. International Price Discrimination: Dumping, Effects of Dumping

5.1 PRICING

Q1. What is price? Explain the importance of pricing.

Ans :

A price is a value, money paid by the buyer for exchange of goods and services, it can be understood as the amount of money received by the firm for selling the product to the consumer. For the consumer, it is the expense or monetary sacrifice and for the seller it is the revenue derived by the sale of the product.

Price can be explained using an equation,

$$\frac{\text{Quantity of money received by the seller}}{\text{Quantity of goods and services received by the buyer}}$$

Importance of Pricing

The process of charging price for a goods or a service is called pricing. Pricing is important for the firm because it is a source of revenue generation for the firm.

1. Revenue

It is the price charged by the seller or the consumer during the bargaining process and multiplied by the number of units they have sold. When revenue is deducted from the cost of goods manufactured what remains is the profit for the company.

$\therefore$ Revenue price × Sales units or Profit = Revenue - Costs

To get revenue the firm must adequately charge such price which does not instill a burden on the consumer. It should also not be too less for the producers sake. They should charge a price which brings fair profits and returns to them.

2. Perceived Value

If the consumers expect the price of the product to be very high, the value perceived by the buyer is less. Similarly if the consumers expect the price to be too low and value perceived by the consumers may be high which in turn decreases the revenue which they would have earned if the prices were high.

Thus, the price plays an important role for generating revenue to the firms. It also increases the opportunities which are favourable to the companies.

Q2. What are the objectives of pricing?

Ans :

1. Maximization of Profits

Profits are said to be achieved when the revenue exceeds the total cost incurred on producing the product. The firm often charges price depending upon the demand for the product in the market and perceived value of the product by the consumers. The firm cannot charge either very high or very low prices. Pricing the product aims at maximizing the profits or cash inflows. Mostly firms change the price of the product according to the competition faced by it in the market from the other competitors.

2. Exploit Competitive Position

The objective of pricing in the market where the firm becomes or assumes to be the leader in the market and adopts different types of pricing such as slimming, penetrating, cost plus pricing strategies.

3. Survival in the Competitive Market

Most of the companies suffer in the market due to the entry of other firms or competitors in the market which are offering similar product with good quality. As the number of sellers increases in the market the buyer has to decide from where he has to buy. Thus, all the firms compete with each other to get the consumer. Some of the firm's fail to offer good quality product, their life cycle ends at the maturity stage, where they may adopt discounting prices to sell all their products and they can conduct promotional campaigns to increase the sales of the product.

4. Product Line Pricing

A product line consists of different types of products which may be popular or unpopular product, some of them will be fast moving or slow moving products. Thus depending upon the product line, the firm prices its products.

Thus, the objective behind pricing is to increase the revenue, profit, sales, competition and service in the highly competitive market and charge a fair price which can earn enough profits to them.

5. Status Quo Pricing

In this type of pricing the firms maintain the prices and also tries to meet the competitive prices. It is a policy followed by the companies to maintain the status of the company in the market.

5.1.1 Pricing Policy

Q3. What is Pricing Policy? What are the factors involved in pricing policy?

Ans :

Pricing policies are intended to bring consistency in the pricing pattern. They define how to handle complex issues such as price discrimination and price stability.

Pricing policies play a significant role, not only in the case of single-product firms but also multi-product firms. A multi-product firm faces more challenges such as maintaining price differentials between related products, especially substitutes such as deluxe models and basic models.

The executive's issues of private pricing policy includes several factors and right guidance from the professional business economist. The factors which are essential and are specially considered for determining the pricing policy of any organisation are as follows,

1. Costs

Cost is a significant component in deciding the price. Pricing is based on cost data. Price lower than the cost of production leads to loss. Therefore cost analysis is essential. Along with the total costs, average cost and marginal cost must also be determined by the firm.

In the short-run, for taking the business decisions, variable costs are considered important. The companies mostly aim at including total allocated costs.

2. Demand and Consumer Psychology

Demand is a key factor for effective sales and for pricing. Consumers preferences determines the demand for the product. Hence, consumer psychology plays a significant role in demand. By designing, suitable advertising and sales campaign the consumers psychology can be influenced and their preferences can be changed.

Based on the elasticity of demand, a low or high price policy is determined. If the product's demand is highly inelastic, then the increasing price policy would be the only option for the businessman.

Demand is not price elastic in all the cases. In few cases, specifically, the consumer durables, such as TV set, car, etc., the demand is income elastic. Hence, the firm can sell more goods at high price when the income of the consumers increases.

If the demand for the goods is elastic then the prices should be decreased for increasing the sales. But the consumer's perception about the change in price is also important. If the consumers predict significant price reduction then the sales will be higher for short period. But if they perceive that the price cut is the final price then the sales will be for longer time.

3. Competition

Pricing policy mainly depends on the level of competition existing in the market. When there is perfect competition, a distinct ruling price is determined in the market and the firm does not have any scope for setting its own price policy. In case of monopoly, oligopoly or monopolistic competition, firm can design its own price policy.

4. Profits

Practically, the objective of profit maximization is considered very rarely. But is very important to take into account the element of profit in deciding the price policy. Generally, the pricing policy is set to attain adequate profits.

The entrepreneurs mostly maintain the same price for their products instead of increasing or decreasing the price. Hence, price rigidity can be the norm of the price policy. But it does not signify inflexibility. Price may vary according to the changes in the cost.

5. Government Policy

Pricing policy is also influenced by the government policy. If the government exercises price control then the companies have to follow the rules and should set the prices according to the government norms. For example, Indian government formulated drug price control, etc.

5.2 PRICING METHODS

5.2.1 Cost Plus Pricing

Q4. What are the various of Methods of Pricing?

Ans : **(Nov.-21, Imp.)**

The factors such as cost, customers and competive (3Cs) are important in the product pricing. The level managerial pricing decisions rely on the type of market structure experienced by the firm in a market economy. In a competitive market, the firm has to act as a price-taker and the manager has to concentrate on output policy. Cost plays an essential role in pricing. Under monopoly, the firm has the complete power to set the price and the implementation depends on the consumer factor i.e., elasticity of demand. Under monopolistic competition, the firm has to contemplate the entry or exit of the rival firms with product differentiation, during price determination. Under oligopoly, the competitor's behaviour with respect to price is essential, as that behaviour becomes the deciding factor for determining the price.

There are four significant methods of pricing which are as follows,

1. Cost plus or full cost pricing
2. Going rate policy
3. Pricing for a rate of return
4. Administered prices.

1. Cost Plus Pricing

This is the most commonly applied method by the firms. In cost plus pricing, the cost of the product is estimated and an additional profit is included. Price is determined based on this evaluation. The evidences shows that most of the business organizations set the prices of their products based on cost plus which is a fair profit percentage.

It can be expressed as,

Cost plus pricing = Cost + Fair profit

Cost

Cost means total allocated cost in cost plus pricing method. Joel Dean mentioned three different concepts of the cost element utilized in the formula of cost pricing i.e.,

(a) Actual Cost

It deals with the historical cost for the most recent available period. It includes wage bills, raw material costs and overhead costs at the current output rate.

(b) Expected Cost

It refers to the forecasting of the pricing period based on the predicted prices, output rates and productivity.

(c) Standard Cost

It involves the determination of normal cost at a normal rate of output at a provided level of capacity usage and productivity at a normal level.

Generally, the cost base is decided through engineering estimates and cost experience, historical data and projections.

Fair Profit

Fair profit is a fixed percentage of profit. It is determined by predicting arbitrarily. Usually, a 10 percent margin is fixed. But fair profit mark-up varies among industries and firms which are in the similar line of production. These differences are due to several factors like differences in turnover rate, differences in risks, differences in the level of competition and differences in traditions of profit margin in various firms.

Practically, the 'fair profit' in cost plus method is basically different from the theory of 'normal profit' in economic analysis.

Cost plus pricing is significantly mark-up pricing. It is decided by adding a percentage mark-up to the average variable cost of the product.

$P = AVC + M$

Where,

M = mark-up measured as x % (AVC). It is also known as contribution margin.

Example

A firm's AVC is `100 and contribution margin is 10%.

Therefore,

$$100 \times \frac{10}{100} = 10$$

P = 100 + 10 = ` 110

Practically, the cost plus pricing method is considered as the most appropriate technique when the producers are not certain about the market demand for their products. Therefore, they incline towards maintaining the balance when they are not aware of the competitor's price strategies.

Mark-up Price

Mark-up price is expressed in percentage. Cost - price or the sale price is considered as the basis in deciding the mark-up.

- Cost price-based mark-up = 100

$$\left[\frac{\text{Rupee mark - up}}{\text{Cost price}}\right]$$

- Sale price-based mark-up = 100

The demerits of cost plus pricing are as follows,

(a) It does not consider the preferences of consumers and their demand.

(b) It covers only cost and firm's profit margin.

(c) It does not consider the impact of competition.

(d) It neglects the response of competitors in determining a price for the firm's product.

(e) It emphasizes more on the accuracy of the allocated costs. But practically, cost allocation lacks accuracy.

(f) The concept of full cost may not be appropriate for price determination.

(g) It neglects the importance of incremental costs in price determination.

(h) It only takes into account the conventional accounting system and neglects the economic tools completely.

2. Going Rate Policy

Going rate pricing is complete opposite of the cost plus pricing. It not only exists in perfect competition but also in oligopoly and monopolistic competition. The going rate pricing policy means that the firm has the authority to set its own price for the product but it does not do that and fits its pricing policy with the general pricing structure existing in the industry or market.

The going rate pricing is used when,

(i) It is difficult to measure the costs.

(ii) The firm aims at preventing the issues of price rivalry in the market.

(iii) When the price of the leading firm in the market exists.

3. Rate of Return Pricing

In this method, the firm decides the average profit mark-up on costs which are required for producing a desired rate of return on its investment. For example, a firm can determine the price of their product so as to obtain on an average a 12 percent return on net investment.

In the rate of return pricing policy, the price is set according to a planned rate of return on investment. The rate of return is changed into a percent mark-up as profit margin on cost. The profit margin is evaluated based on the normal rate of production. The total cost of annual normal production is estimated and termed as standard cost. The capital turnover is then assessed by considering the ratio of invested capital to the annual standard cost. The mark-up percentage of profit margin is attained by multiplying capital turnover by the goal rate of return.

This method is similar to the cost plus pricing method but it is an improved method as it fixes the price on cost (which is standardised) and enhances a profit mark-up which is related to a rate or return.

Q5. What is administered price? Explain the need of administered price.

Ans :

Administered prices were initiated by Keynes for the prices charged by a monopolist. These prices are set by considerations other than marginal cost. A monopolist keenly administers the price of his product as he is a price maker. Administered prices are not fixed by the market forces.

Indian economists opined that the administered prices are determined and arbitrarily set by the government. It is not permitted bo be fixed by the market forces of demand and supply. For instance, the prices of petrol, diesel, kerosene and liquid gas are the administered prices fixed by the government in India.

The main features of administered prices are,

1. Administered prices are determined by the government.
2. They are mandatory, as they are legally binded by the government.
3. These prices are regulatory in nature.
4. They are considered as corrective measures.
5. They are the result of the government's price policy.

Need for Administered Prices

Administered prices signifies the intervention of government in the market mechanism. There are several reasons for the government intervention in the market and for the determination of prices in few areas of agricultural and non-agricultural sectors. The need for the administered prices by the government is emphasized on the following points,

(a) To rectify the imperfections of the market mechanism and unbalanced price structure of the free organisation or mixed economy. Practically, the assumptions of perfect competition do not offer optimum allocation of resources and do not assures complete application of available resources or provide equal income distribution. Hence, government involvement by administered price policy is necessary.

(b) To verify the unwanted price increase of scarce consumption of goods and raw materials, specifically when their demand overtakes their supply.

(c) To offer comparatively equal and guaranteed income to the farmers during uncertain climatic conditions.

(d) To investigate the high prices fixed by the manufacturers for maximising the profits due to the power of being in the monopolistic position or increasing market demand when there is steady market supply.

(e) To give wage goods and other significant items of mass consumption at low prices to the poor and unpreviliged individuals in the society.

Q6. Describe the objectives of administered prices.

Ans :

The objectives of the administered prices are listed below

(a) To Protect the Interest of the Weaker Sections of the Society

For providing equality to all, the administered prices are fixed by the government which proves advantageous to the poor as they have access to essential commodities, particularly food, clothing, etc. At low prices and at times also below the cost of production. The main reason is to protect the weaker sections from high price mark - ups of required consumption goods.

(b) To Discourage or Encourage the Consum- ption or Certain Commodities

The objective of the government is to modify the consumption pattern with the help of administered prices. The reason behind rising the prices of certain commodities is to verify their consumption. For instance, periodical increase in the prices of petroleum and its products control the increasing consumption. Similarly, to increase or encourage the consumption of certain commodities, their prices may be decreased for specific section of the society. The system of dual pricing is initiated in this regard. In the dual pricing system, tax is imposed on the prices for the goods such as cement, sugar, etc., which is provided to the weaker section at low price in order to encourage the consumption within that section. At the same time there is a free market price for the remaining stock, which is purchased by the wealthy people at high price. For example, in India, the prices of the fertilizers are fixed low to encourage more consumption by the farmers so as to enhance the agricultural production.

(c) To Reduce Inflation or Prevent Stagfla- tion

The government exercises price control to decrease inflation in the poor sections. Price equilibrium is the major objective of administered price policy of the government. The objective of price control policy is also to avoid stagflation in the economy.

Stagflation means the hiking prices along with the decreasing productivity and decreasing rate of industrial output (in other words recession). Hence, administered price policy can be determined to avoid recession.

(d) To Raise Public Revenue

By raising the administered prices of specific commodities under public monopolies, the government can plan to increase its revenue to ensure adequate funds for the budgetary expenditure. This serves as an aid to deficit financing. But the rise in the administered price, under public monopolies, is in the form of tax.

(e) To Ensure the Efficient Allocation of Resources

Administered prices are fixed for maintaining correct balance in the investment sector of the economy in order to assure efficient allocation and adequate utilization of the productive resources. The administered price policy directs the investments in particular areas.

(f) To Promote Egalitarian Goal

Government may set the prices of certain commodities to meet the expenses of the production so that the goods are supplied based on the policy of no-profit no-loss, to enhance economic growth of the people and to fulfil the socialist goal.

(g) To Ensure Equitable Distribution of Scarce Goods

The main aim of the administered price is to assure equal distribution of commodities to the consumers, specially to the weaker section of the society at low prices so that it fulfils the requirements of the poor.

5.2.2 Price Discrimination

Q7. Define price discrimination ? Explain the requirements of price discrimination.

Ans :

Price discrimination is a pricing strategy that charges customers different prices for the same product or service. In pure price discrimination, the seller will charge each customer the maximum price that he or she is willing to pay. In more common forms of price discrimination, the seller places customers in groups based on certain attributes and charges each group a different price.

Price discrimination allows a company to earn higher profits than standard pricing because it allows firms to capture every last dollar of revenue available from each of its customers. While perfect price discrimination is illegal, when the optimal price is set for every customer, imperfect price discrimination exists. For example, movie theaters usually charge three different prices for a show. The prices target various age groups, including youth, adults and seniors. The pieces fluctuate with the expected income of each age bracket, with the highest charge going to the adult population.

Meaning of Price Discrimination

Price discrimination is the practice of charging a different price for the same good or service. There are three of types of price discrimination first-degree, second degree and third-degree price discrimination.

Definitions of Price Discrimination

According to Krugman and Paul R., "Price discrimination is a pricing strategy where identical or largely similar goods or services are transacted at different prices by the same provider in different markets or territories".

According to Peter Belobaba and Amedeo Odoni, "Price discrimination is the distinguished from product differentiation by the more substantial difference in production cost for the differently priced products involved in the latter strategy".

Requirements of Price Discrimination

Essentially there are two main situations required for discriminatory pricing:

i) Differences in price elasticity of demand between markets

There must be a different price elasticity of demand from each group of consumers. The firm is then able to charge a higher price to

the group with a more price inelastic demand and a relatively lower price to the group with a more elastic demand. By adopting such a strategy, the firm can increase its total revenue and profits.

ii) Barriers to prevent consumers switching from one supplier to another

The firm must be able to prevent "market seepage" or "consumer switching" defined as a process whereby consumers who have purchased a good or service at a lower price are able to re-sell it to those consumers who would have normally paid the expensive price. This can be done in a number of ways and is probably easier to achieve with the provision of a unique service such as a haircut rather than with the exchange of tangible goods. Seepage might be prevented by selling a product to consumers at unique and different points in time for example with the use of time specific airline tickets that cannot be resold under any circumstances.

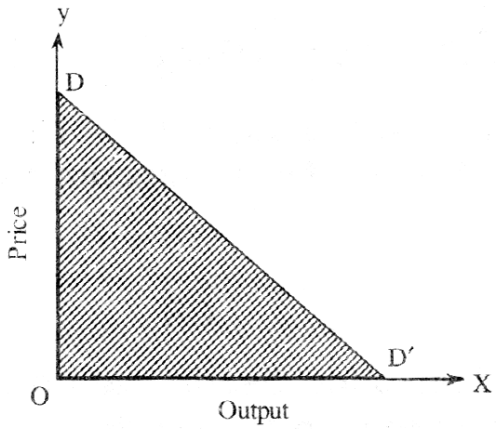
Q8. What are the various degrees of price discrimination ?

Ans : **(Jan.-20)**

The degree of price discrimination is ascertained on the basis of he magnitude of the loss of consumers surplus caused by it. The term consumer surplus denotes what the consumer saves by actually paying price less than what he is willing to pay. The loss of consumer surplus takes place because the consumer is required to pay high price now. The size of the loss of consumer surplus depends upon the degree of price discrimination.

(i) First-degree Price Discrimination

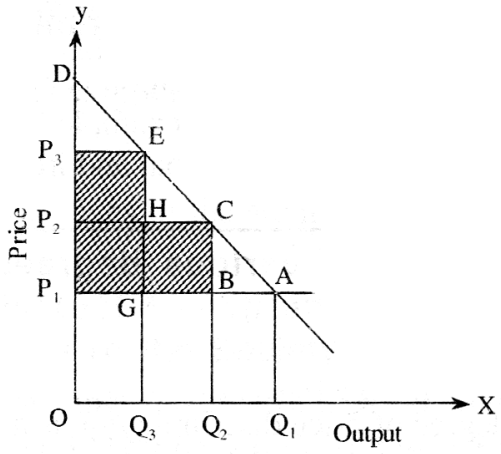
If the monopolist charges different prices from each different consumer, then it is called the first-degree discrimination. In fact, the first degree price discrimination indicates as many prices as many consumers. This type of price discrimination completely wipes out the consumer surplus. It is explained in figure.



Figure

(ii) Second-degree Price Discrimination

If the monopolist divides the total market for his product into more than two sub-markets and sells his output at more than two different prices, it is called second-degree price discrimination. The figure explains the second-degree price discrimination. If the monopolist sells his whole output OQ_1 at price P_1 he would receive total revenue $OQ_1 AP_1$ and the consumer surplus DP_1A.

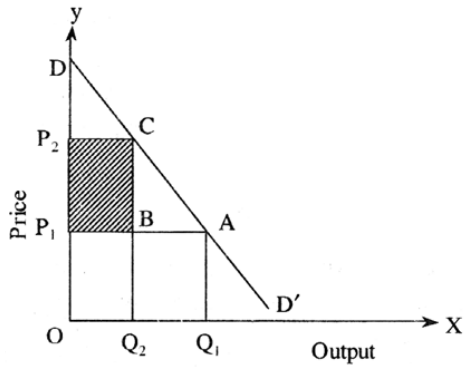


Figure

If the monopolist can sell OQ_3 at P_3 price Q_3Q_2 output at P_2 price and Q_2Q_i output at P. price and Q_2Q_1 output at P price, then his total revenue would be $OQ_3EP_3 + Q_3Q_2CH + Q_1Q_1$ AB. As a result, the loss of consumer surplus increases as denoted by the shaded areas.

(iii) Third-degree Price Discrimination

If the monopolist divides the total market for his product into two sub-markets and sells his output at two different prices, it is called third-degree of price discrimination.



Figure

The figure explains the third-degree price discrimination. If the monopolist sells the whole output OQ_1 at price P_1, he would receive total revenue $OQ_1 AP_1$ and consumer surplus is DP_1A.

Let us now assume that the monopolist sells OQ_2 output at price P_2 and the remaining quantity Q_2O_1 at price P_1 then his total revenue would be $OQ_2CP_2 + Q_2Q_1AB$. Thus, as a result of price discrimination the monopolist's total revenue has increased by P_1BCP_2 which represents the loss to consumers. Hence, due to price discrimination the loss of consumer surplus is equal to P_1BCP_2 as denoted by the shaded rectangle.

Q9. Explain the various forms of price discrimination ?

Ans :

There are several forms of price discrimi-nation. Some of the common forms of price discrimination are as follows,

1. Personal Discrimination

Based on the economic status of the buyers, different prices are charged to different buyers while providing similar services. For instance, a lawyer charges different fees to different types of clients based on their income status.

2. Age Discrimination

This discrimination is based on the age of the buyers. The buyers are mostly grouped into children and adults. For example, in a barber shop the price charged for children's hair cut will be less than the adult's hair cut.

3. Sex Discrimination

While selling some products, the producers make differences between male and female buyers by charging a low price to female buyers. For example, travel agency may give seats to ladies at concessional rates.

4. Locational or Territorial Discrimination

Locational or geographical discrimination takes place when a monopolist charges different prices in different markets which are located at different places. For example: A firm may make differences between domestic and export markets for its products.

5. Size Discrimination

In size discrimination, different prices are charged on the basis of size or quantity of the product. For example, an economy size washing powder packet is relatively cheaper than a small size packet. In the same way the producers sells the products in retail market at a higher price than in the wholesale market.

6. Quality Variation Discrimination

In this type of variation, different prices may be charged for the same product depending on some qualitative differences. Quality variation is observed in the form of material used, the nature of packing, colors, style, etc. For example, cars with metallic colours have high price than cars with ordinary colours.

7. Special Service or Comforts

Price discrimination is also subjected to the special facilities or comforts. For example, in railways, fare price is different for first class passengers and second class passengers.

8. Use Discrimination

Use discrimination takes place when the price is charged based on the usage of the product. For example, electricity distribution company charges low rates for domestic consumption of electricity whereas high rates for commercial usage of electricity.

9. Time Discrimination

The time factor is also considered in price discrimination. For example, telephone company charges less rate for calls made in night hours.

10. Nature of Commodity Discrimination

Sometimes, price discrimination is made depending on the nature of commodity. For example, freight charges by the railways are different for coal and iron for the same distance.

5.2.3 Pricing Strategies

Q10. Explain pricing strategies.

Ans : **(July-18)**

Pricing is the process of determining what a company will receive in exchange for its product or service. A business can use a variety of pricing strategies when selling a product or service. The price can be set to maximize profitability for each unit sold or from the market overall. It can be used to defend an existing market from new entrants, to increase market share within a market or to enter a new market.

There is a need to follow certain guidelines in pricing of the new product. Following are the common pricing strategies.

i) Pricing a New Product

Most companies do not consider pricing strategies in a major way, on a day-today basis. The marketing of a new product poses a problem because new products have no past information.

Fixing the first price of the product is a major decision. The future of the company depends on the soundness of the initial pricing decision of the product. In large multidivisional companies, top management needs to establish specific criteria for acceptance of new product ideas.

The price fixed for the new product must have completed the advanced research and development, satisfy public criteria such as consumer safety and earn good profits. In pricing a new product, below mentioned two types of pricing can be selected "

ii) Skimming Price

Skimming price is known as short period device for pricing. Here, companies tend to charge higher price in initial stages. Initial high helps to "Skim the Cream" of the market as the demand for new product is likely to be less price elastic in the early stages.

iii) Penetration Price

Penetration price is also referred as stay out price policy since it prevents competition to a great extent. In penetration pricing lowest price for the new product is charged. This helps in prompt sales and keeping the competitors away from the market. It is a long term pricing strategy and should be adopted with great caution.

iv) Multiple Products

As the name indicates multiple products signifies production of more than one product. The traditional theory of price determination assumes that a firm produces a single homogenous product. But firms in reality usually produce more than one product and then there exists interrelationships between those products. Such products are joint products or multi–products. In joint products the inputs are common in the production process and in multi-products the inputs are independent but have common overhead expenses. Following are the pricing methods followed.

v) Full Cost Pricing Method

Full cost plus pricing is a price-setting method under which you add together the direct material cost, direct labor cost, selling and administrative cost, and overhead costs for a product and add to it a markup percentage in order to derive the price of the product. The pricing formula is

$$\text{Pricing Formula} = \frac{\text{Total production cost} - \text{Selling and administration costs} - \text{Markup}}{\text{Number of units expected to sell}}$$

This method is most commonly used in situations where products and services are provided based on the specific requirements of the customer. Thus, there is reduced competitive pressure and no standardized product being provided. The method may also be used to set long-term prices that are sufficiently high to ensure a profit after all costs have been incurred.

vi) Marginal Cost Pricing Method

The practice of setting the price of a product to equal the extra cost of producing an extra unit of output is called marginal pricing in economics. By this policy, a producer charges for each product unit sold, only the addition to total cost resulting from materials and direct labor. Businesses often set prices close to marginal cost during periods of poor sales.

For example, an item has a marginal cost of $2.00 and a normal selling price is $3.00, the firm selling the item might wish to lower the price to $2.10 if demand has waned. The business would choose this approach because the incremental profit of 10 cents from the transaction is better than no sale at all.

vii) Transfer Pricing

Transfer Pricing relates to international transactions performed between related parties and covers all sorts of transactions.

The most common being distributorship, R&D, marketing, manufacturing, loans, management fees, and IP licensing.

All intercompany transactions must be regulated in accordance with applicable law and comply with the "arm's length" principle which requires holding an updated transfer pricing study and an intercompany agreement based upon the study.

Some corporations perform their intercompany transactions based upon previously issued studies or an ill advice they have received, to work at a "cost plus X%". This is not sufficient, such a decision has to be supported in terms of methodology and the amount of overhead by a proper transfer pricing study and it has to be updated each financial year.

viii) Dual Pricing

In simple words, different prices offered for the same product in different markets is dual pricing. Different prices for same product are basically known as dual pricing. The objective of dual pricing is to enter different markets or a new market with one product offering lower prices in foreign county.

There are industry specific laws or norms which are needed to be followed for dual pricing. Dual pricing strategy does not involve arbitrage. It is quite commonly followed in developing countries where local citizens are offered the same products at a lower price for which foreigners are paid more.

Airline Industry could be considered as a prime example of Dual Pricing. Companies offer lower prices if tickets are booked well in advance. The demand of this category of customers is elastic and varies inversely with price.

As the time passes the flight fares start increasing to get high prices from the customers whose demands are inelastic. This is how companies charge different fare for the same flight tickets. The differentiating factor here is the time of booking and not nationality.

ix) Price Effect

Price effect is the change in demand in accordance to the change in price, other things remaining constant. Other things include " Taste and preference of the consumer, income of the consumer, price of other goods which are assumed to be constant. Following is the formula for price effect

$$\text{Pricing effect} = \frac{\text{Proportionate change in quality demanded of X}}{\text{Proportionate change in price of X}}$$

Price effect is the summation of two effects, substitution effect and income effect

Price effect = Substitution effect – Income effect

x) Substitution Effect

In this effect the consumer is compelled to choose a product that is less expensive so that his satisfaction is maximized, as the normal income of the consumer is fixed. It can be explained with the below examples

Consumers will buy less expensive foods such as vegetables over meat.

Consumers could buy less amount of meat to keep expenses in control.

xi) Income Effect

Change in demand of goods based on the change in consumer's discretionary income. Income effect comprises of two types of commodities or products "

(a) Normal goods – If there is a price fall, demand increases as real income increases and vice versa.

(b) Inferior goods – In case of inferior goods, demand increases due to an increase in the real income.

5.2.4 Pricing of Multiple Products

Q11. Write in detail about pricing of multiple product.

Ans :

Multiple- product pricing is considered as a crucial phase of price policy as many firms manufacture many related products, Multiple products are manufactured mainly due to the relatedness of the demands for several products (or) because the production costs are low when products are produced jointly.

Generally, multiple products can be substitutes for each other (or) complements for each other. The key decision for the firm is to determine the price structure which would be profitable for the firm. The firms has certain amount of independence in manipulating its prices of multiple products. In this regard, Joel Dean has outlined the following cases,

(a) When the related products are utilised differently (for instance fluid milk versus cheese milk).

(b) When a product line can be seasonally differentiated (for instance morning movie specials and matinee shows).

(c) The style-cycle products like plane shirts and printed shirts.

Under all the above cases, price differentials can be adopted for obtaining its benefits. But in few cases, when a product is produced then the main aim is to price it in such a way that it "fits into the line". The cost price ratios for the existing products acts as a valuable pricing guide. The individual items in a product-line are later interrelated on the demand side which is known as cross-elasticity of demand. The relevant demand curve for a group of related products is the curve for the whole product line. The traditional price classes mostly occur for the quality range of items offered. As production costs are suitable for these situations, the producer is advised to design product in such a way that it can sell at the established prices. In all these cases, the marginal revenue is a horizontal line and the optimal price is the price which equates the given MR to the firm's MC.

I) Pricing of Substitute Goods

In order to obtain the benefit from the different preferences of the consumers in the market, a firm produces the brands of its own goods. For instance, Maruti-Suzuki produces several brands of its cars such as Maruti 800, Wagon-R, Zen and Esteem based on their prices.

There are two different methods of product line pricing for substitute goods which are as follows,

(a) A mark-up pricing method can be adopted for a wide range of products which are having the same margin of profit for all the same products in the line.

(b) The substitute products can be priced by changing the size of the margin with the level of costs.

The above two methods of product line pricing have to be strengthened by expected temporal shifts in demand and also by the competitive forces of market share and entry conditions for new firms.

II) Pricing of Complementary Products

The complementary goods are those goods which are jointly demanded (for instance cameras and films, and shirts and trousers). Under such conditions, the firms make use of three different strategies which are as follows,

(a) The Loss-Leader Case

If two goods are complementary, then among those two goods one may be sold at a loss for some time for increasing the size of the market and for making the consumers familiar about the brand name.

(b) Tie-in Sales

A firm sells several things in a product line with a 'logo'. Such type of logos help a firm to maximize its profit from the whole product line instead of individual items.

(c) Two Part Tariff

In few conditions, a firm selling a product (or) service sets two separate prices for its product (or) service.

5.3 TRANSFER PRICING

Q12. Define transfer pricing? What are the objectives of transfer pricing?

Ans : **(Aug.-21, Nov.-20, Imp.)**

Transfer pricing refers to the setting, analysis, documentation, and adjustment of charges made between related parties for good, services, or use of property (including intangible property). Transfer prices among components of an enterprise may be used to reflect allocation of resources among such components, or for other purposes.

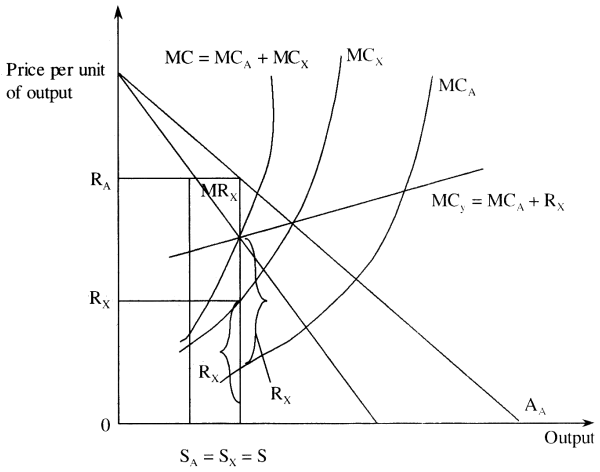
Objectives of Transfer Pricing

Companies with dispersed production facilities, usually in different countries, use transfer pricing. It involves over- or undercharging for goods sold between branches at a price determined by the company. The main objective is to take advantage of different tax rates between countries. Transfer pricing also is used to evaluate performance of divisions within a company.

1. **Tax Savings :** Imagine a company with two branches, where one makes semi-finished goods in a low-tax country and exports them to a branch in a high-tax country, where they are finished and sold. By increasing the transfer price and declaring more of its profits in the low-tax country, the company can reduce its global tax bill.
2. **Boost Profits :** By undercharging for goods crossing national borders, a company can save money on customs duties paid by the branch in the importing country. Conversely, by overcharging, a company can extract more money from a country with tighter currency outflow restrictions.
3. **Measure Performance :** Companies need to know how their individual divisions are performing. A way of measuring that is through transfer pricing. By setting a price for goods in each stage of the production process, a company can measure the profitability of each division and decide where to make organizational adjustments.
4. **Arm's Length Standard :** The basic principle of this standard used by most developed countries is that for transactions between branches a company should use market prices. However, enforcement of this rule is complicated, especially when a company has branches in numerous countries.

Determination of Transfer Price when External Market for Transferred Good is Not Given

The transfer price set by the managers is paid by the downstream division to the upstream division for its upstream product. The chief of upstream division will be receiving the price R for the units produced by him. For maximizing the profit, the chief of the profit maximizing chief sets $R_X = MC_X$. The managers should select price R, such that it produces S_X units. This situation is depicted in the figure.



Determination of transfer price when the external market for transferred good is not given.

The price R_x selected by the managers should not cause the upstream division to have R_x S_x in revenues and the downstream division to have R_x S_x in costs. According to coglomerate's managers view point, profit is same but the profit of each division vary. The bonuses or increments in the salary of the mangers depends mainly on the profits of their divisions so the mangers are more concerned about the transfer price.

If the coglomerate's managers finds out optimal (S) and orders upstream and downstream divisions to create it then it can maximize profit without considering the transfer price. But if the managers wants to maximize the profit the firm then it is very essential for then to select right R_x. If the price (R.) selected is very high then the upstream division will produce excess of the product and if the managers of the downstream division thinks that its marginal cost for producing other unit is very high ($MC = MC_A + R_X$) then they will produce very less downstream output, Hence, it is not possible to maximize the profit.

If the price (R_X) selected is very low then the managers of the downstream division thinks that their marginal cost of producing other unit is very less and will produce more than the optimal output. This is not possible as the upstream division has produced less output.

Q13. Explain the Global Use of Transfer of Pricing.

Ans :

When products are transferred across national frontiers, however, entirely new considerations arise, both financial and strategic, which can have a major impact on total corporate profit. Global use of transfer pricing can be given as follows:

1. Financial Aspects

The transfer price between nations can be manipulated to minimize tax or import duty liability, or transfer funds. For example:

(i) Products may be transferred into high duty countries at an artificially low transfer price so that, assuming duty is charged ad valorem; the duty paid will be low.

(ii) Products may be transferred into high tax countries at high transfer prices so that profits in the high tax country are virtually eliminated and, in effect, transferred to low tax countries.

(iii) Products may be transferred at high prices into a country from which dividend repatriation is restricted or subject to Government taxes - in effect, invisible income replaces a formal dividend.

(iv) Similarly, it is possible to avoid an accumulation of fund in a country with high inflation rates, or where an early devaluation is thought to be a probability, or where expropriation is feared.

2. Strategic Aspects

Global transfer pricing can also be used as a weapon in the overall marketing strategy; profits can be concentrated, by vertically integrated corporations, at the stage of production where there is least competition. Competitors operating at other stages of production can thus be discouraged by the relatively low profits to be earned.

3. Government Attitudes

The manipulation of global transfer prices clearly offers the prospect of very significant financial gain. Such manipulations, however, whether practiced for financial reasons or for reasons of marketing strategy, have attracted the attention of Governments, e.g.:

(i) The Government of the exporting country has an interest in seeing that the transfer price is not artificially low, and it will endeavor to ensure that appropriate profits are made - and taxes paid within its jurisdiction

(ii) In the importing country, the tax authorities are usually on the look-out for unreasonably high transfer prices which will reduce local profits and, consequently liability to income-tax.

While the customs authorities will, in contrast, is watching for low transfer prices designed to minimize duty liability.

Q14. What are the benefits and limitations of transfer pricing ?

Ans :

Benefits of Transfer Pricing Policy

An ideal transfer pricing policy will benefit the organization in the following ways :

1. Divisional performance evaluation is made easier.
2. It will develop healthy inter-divisional competitive spirit.
3. Management by exception is made possible.

4. It helps in coordination of divisional objectives in achieving organizational goals.
5. It provides useful information to the top management in making policy decisions like expansion, sub-contracting, closing down of a division, make or buy decisions, etc.
6. Transfer price will act as a check on supplier's prices.
7. It fosters economic entity and free enterprise system.
8. It helps in self-advancement, generates high productivity and encouragement to meet the competitive economy.
9. It optimizes the allocation of company's financial resources based on the relative performance of various profit centers, which in turn are influenced by transfer pricing policies.

Limitations of Transfer Pricing Policy

(i) Inter-conflicts among different departments or divisions may mar (spoil) the spirit of TP.

(ii) Fixing TP by one department or division at the cost of other department or division may stand on the way of co-ordination among various departments or divisions.

(iii) Lack of work' culture may stand on the way of objective of TP.

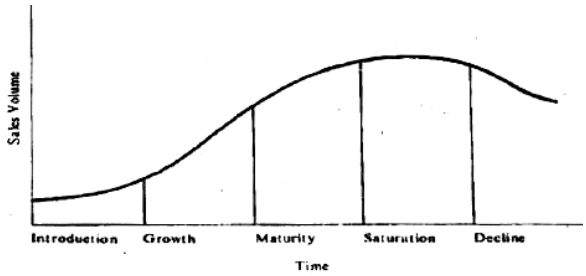
5.4 Pricing over Product Life Cycle

Q15. Explain briefly about Pricing over Product Life Cycle

Ans : **(Nov.-21,Aug.-21,Dec.18,July-18, Imp.)**

Many products generally have a characteristic known as 'perishable distinctiveness'. This means that a product which is distinct when new, degenerates over the years into a common commodity. The process by which the distinctiveness gradually disappears as the product merges with other competitive products has been rightly termed by Joel Dean as "the cycle of competitive degeneration". The cycle begins with the invention of a new product, and is often followed by patent protection, and further development to make it saleable. This is usually followed by a rapid expansion in its sales as the product gains market acceptance. Then competitors enter the field with imitation and rival products and the distinctiveness of the new product starts diminishing. The speed of degeneration differs from product to product. The innovation of a new product and its degeneration into a common product is termed as the life-cycle of a product.

There are five distinct stages in the life-cycle of a product as shown in Figure I.



1. Introduction

Research or engineering skill leads to product development. The product is put on the market; awareness and acceptance are minimal. There are high promotional costs. Volume of sales is low and there may be heavy losses.

2. Growth

The product begins to make rapid sales gains because of the cumulative effects of introductory promotion, distribution, and word-of-mouth influence. High and sharply rising profits may be witnessed. But, to sustain growth, consumer satisfaction must be ensured at this stage.

3. Maturity

Sales growth continues, but at a diminishing rate, because of the declining number of

potential customers who remain unaware of the product or who have taken no action. There is no improvement in the product but changes in selling effort are common. Profit margins slip despite rising sales.

4. Saturation

Sales reach and remain on a plateau marked by the level of replacement demand. There is little additional demand to be stimulated.

5. Decline

Sales begin to diminish absolutely as the customers begin to tire of the product and the product is gradually edged out by better products or substitutes.

It may be noted that products may begin in new-cycle or revert to an early stage as a result of

(a) the discovery of new uses,

(b) the appearance of new users, and

(c) introduction of new features.

As the distinctiveness of the products fades, the pricing discretion enjoyed by their producers gradually declines. This is what happened in the case of many products like television, laptop, mobile phones etc. Throughout the cycle, changes take place in price and promotional elasticity of demand as also in the production and distribution costs of the product. Pricing policy, therefore, must be adjusted over the various phases of the cycle. Let us know the pricing policy in the pioneering stage and the maturity stage of a product.

Q16. Explain briefly about Pricing a New Product.

Ans :

The basic question is whether to charge a high skimming (initial) price or a low penetration price.

If a skimming price is adopted, the initial price is very high. The policy may be held for varying periods of time, indefinitely if the product enjoys valid and defensible patent protection. But usually, it is not longer than the time necessary for competitors to study the product's usefulness, to decide what to do about it, and to prepare for making it, a period ranging from a few weeks to as much as two years. After this period, the price is apt to drop precipitately and over a period of a few years to approach the usual or customary margin above cost that is common in the industry.

In case of penetration pricing, the initial price of the new product is apt to be somewhere near what may be expected to be the usual or customary level once competitors enter the field, generally only slightly above the level. If the initial price is properly fixed, only minor adjustment would have to be made if and when competition develops.

A) A high initial price (skimming price), together with heavy promotional expenditure, may be used to launch a new product if conditions are appropriate.

For example:

(i) Demand is likely to be less price elastic in the early stages than later, since high prices are unlikely to deter pioneering consumers. A new product being a novelty commands a better price. Again, at least in the early stages, the product has so few close rivals that cross elasticity of demand is low.

(ii) If the life of product promises to be a short one, a high initial price helps in getting as much of it and as fast as possible.

(iii) Such a policy can provide the basis for dividing the market into segments of differing elasticities. Hard bound edition of a book is usually followed by a paperback.

(iv) A high initial price may be useful if a high degree of production skill is needed to make the product so that it is difficult and time-consuming for competitors to enter on an economical basis.

(v) It is a safe policy where elasticity is not known and the product not yet accepted. High initial price may finance the heavy costs of introducing a new product when uncertainties block the usual sources of capital. The benefits of reduction in product costs due to larger volume and technological developments, can be passed onto consumers by a gradual reduction in prices. Penicillin and streptomycin were introduced at a high initial price but are now very reasonably priced. Internationally, the first ball point pen produced in 1945 at a cost of 80 cents, sold at $ 12.50. Now they are available at less than 50 cents. So is the case with most electronic components.

B) A low penetration price: In certain conditions, it can be successful in expanding the market rapidly thereby obtaining larger sales volume and lower unit costs. It is appropriate where:

(i) Sales respond quickly and strongly to low prices;

(ii) There are substantial cost savings from volume production;

(iii) The product is acceptable to the mass of consumers;

(iv) There is no strong patent protection; and

(v) There is a threat of potential competition so that a big share of the market must be captured quickly.

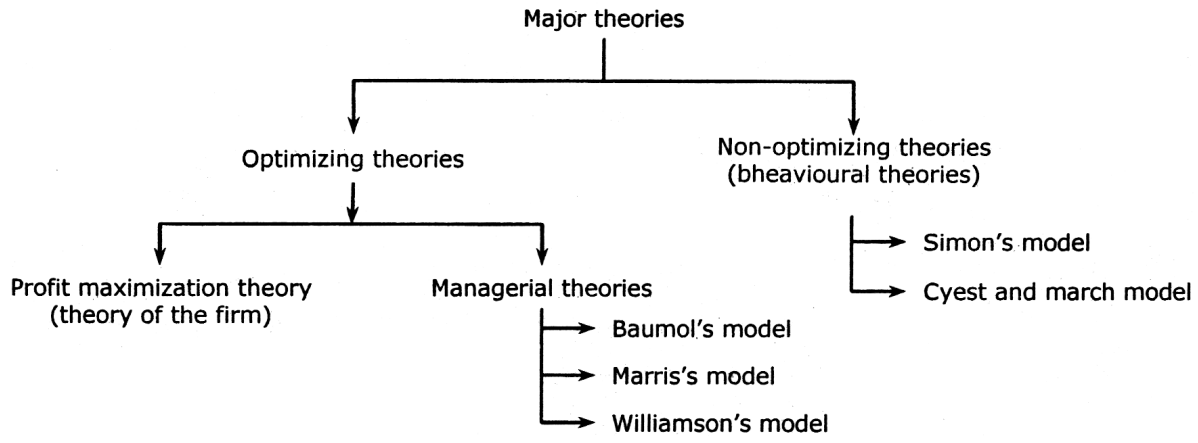
The objective of low penetration price is to raise barriers against the entry of prospective competitors.

5.5 Theory of Firm

Q17. What do you understand by theory of firm.

Ans :

To apply economics to business management, we need a theory of the firm, a theory indicating how firms behave and what goals they pursue. There are a number of theories of the objectives of the firm. Single theory applicable to all firms is not available as firms pursue more than one objective. Still, profit maximization is considered as the objective pursued by almost all business firms. Major theories of objectives of the firm discussed are shown in Fig.



Q18. Explain briefly about profit maximization theory.

Ans :

1. Optimization

Economics is both positive as well as normative social science. It helps to explain why the various economics behave the way they do. Normative economics would help in determining the appropriate consumption with the given objectives and constraints.

Optimization deal with determination of extreme values which could be maximize and minimize for the goals of the variable. So the optimization technique are used to determine the values of the variables, which are under the control of the firm.

2. Optimization Techniques

Optimization techniques are probably the most crucial to managerial decision making. Given that alternative courses of action are available, the managers attempt to produce the most optimal decision, consistent with stated managerial objectives. Thus, an optimization problem can be stated as maximizing the objectives (called the objective functions by mathematicians).

In determining the output level consistent with the maximum profit, the firm maximize profits, constraints by cost and capacity considerations.

(i) Profit Maximization Theory

Profit maximization is one of the most common and widely accepted objective of a firm. According to the profit maximization theory, the main aim of the firm is to produce large amount of profits. Profit is considered as the internal source of funds and the market value of the firm also rely mainly on the profits earned by the firm. In order to survive in the market, it is very essential for the firms to earn profits.

Profits are obtained by deducting total revenue from the total cost i.e.,

Profit = Total revenue – Total cost

The profit maximization theory is supported by Nobel Laureate Miltion Friedman. He considered it is valid for anticipating future business trends and practise.

5.5.1 Managerial Theories

Q19. Explain briefly about various Managerial Theories of firm.

Ans : **(Imp.)**

Managerial theories of the firm state that managers would seek to maximize their own utility such as salary, perks, security, power, prestige etc., and do not always work to maximize the profits. Unfortu-nately, this becomes the main focus once they attain the minimum level of sales or profit as expected by the owners or shareholders. In other words, they may not even explore further possibilities of performing better cover up once they reach minimum levels of performance reasonably marked up over last year's performance. Oliver E. Williamson and Robin Marris suggest that managers would seek to maximise their own utility (what they want from the firm in terms of salary, perks, security, power, prestige, and this is called utility function). They consider its implications for firm behavior in contrast to the profit maximising case. Traditional managerial models typically assume that managers, instead of maximising profit, maximise a simple objective utility function subject to an arbitrarily given profit constraint (i.e, managers think that they cannot earn more profits for the firm beyond a particular level, in the light of the given constraints in terms of availability of capital or managerial talents or technology etc, and this approach is called profit satisficing).

Another concept is 'principal-agent' analysis where a principal (i.e., a shareholder or firm) cannot easily infer how an agent (i.e., a manager or supplier) is behaving. This is because the agent is more knowledge-able than the principal, or because the principal cannot oversee the agent's actions

directly; and this may lead to violation of organizational ethics and code of conduct. These are the traditional managerial models that typically assume that managers, instead of maximising profit, maximise a simple objective utility function.

Let us now look in to the managerial theories as given by Robin Marris and Oliver E. Williamson in detail.

(i) Williamson's Approach

Oliver E. Williamson states that the firms exist because of certain assets they hold for production. These assets are such that their specific to each other (this is popularly called *asset specificity* in production) such that their value is much less in a second-best use. Where the ownership of these assets is distributed, the firms find it difficult to negotiate with their owners for better and optimum usage and this is one of the deciding factors for determining the gains from the trade or business.

Where the usage of the asset extends over a long period, this may lead to increase in transaction costs. Particularly where the gains from trade look attractive, renegotiation becomes necessary and this further increases the transaction costs. Depending upon the market conditions, the user of the asset may propose for take over or merger to overcome the continual conflict of interest. Asset specificity may even imply human capital also. The labour threatens to call for a strike because there is no viable human capital alternative but the firm also can resist this problem by issuing notice to fire.

While negotiating, the firms should rely more on tact and smart methods of protecting their own reputation rather than resorting to legal means including writing and enforcement of contracts. One cannot take chance about the firm's reputation particularly if the dealings with the agents end up in violation of code of business ethics. Transaction costs vary with the size of the firm.

According to Williamson, the normal tendency is that the size of the firm gets limited because of increasing costs of delegation and there will not be any incentive for the entrepreneur to increase the size of the firm beyond a particular level as the residual income decreases as the number of owners increase.

In general, most of the entrepreneurs find small is beautiful and feel expanding the size of the firm upto a particular point may be feasible and beyond that it is not. There are also entrepreneurs consider they cannot really do big business if the size of the business is kept limited. They are very passionate about spreading their business activities across the boundaries and get the work done through competent workforce at different levels of management. Here, it is not easy to say which approach is right. The deciding factor in all the cases is the competence of the entrepreneur and his ability to translate the vision into action.

(ii) Marris Growth Maximisation Theory

According to Marris, the growth rate is determined by growth rate for firm's product in terms of demand (GD) and growth rate of capital (GC) supply to the firm. These two growth rates are translated into two utility functions: (a) utility function for managers (Um) and (b) Utility function for owners (Uo) as given below:

- Um = f (S, P, JS, P, S), where S is salary, P is power, JS is Job security, P is prestige and S is status
- O Uo = f(O, Cl, MSh, P, PE), where O is output, C is capital, MS Market share, P is profit and PE is public esteem

The utility for managers (Um) is governed by salary, power, job security, prestige and status associated with their respective jobs. They want to show to the owners that they have added value at different stages of production or rendering the services and ultimately increased the revenue. The utility for the owners (Uo) is determined by the output, capital introduced, market share, profit and public esteem. In other words, they are interested to know whether their investments and value of the firm have multiplied or not.

The Um and Uo are positively correlated with size of firm i.e., as the firm's size increases, the Um and Uo also will increase and vice versa. Therefore managers seek to maximise the size of firm which is in turn depends on maximisation of its growth rate. Marris states that the managers seek to maximize a steady growth rate.

This theory fails to deal satisfactorily with oligopolistic interdependence and also ignores issues relating to price determination. There could be several constraints also in terms of managerial and financial issues. The firm may face the problem of shortage of competent managerial workforce. In the absence of qualified finance experts, balancing liquidity, solvency and profitability issues could be a major constraint.

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5.5.2 Behavioral Theories of firm

Q20. Explain briefly about Behavioral Theories of firm

Ans : **(Imp.)**

Behavioural Theories of Firm

According to the behavioural theories the firm tries attain a satisfactory behaviour instead of maximization. These are two important behavioural models,

1. Simons Model

Herbert Simon" was the first economist to propound the behavioral theory of the firm. According to him, the firm's principal objective is not maximizing profits but satisfying or satis-factory profits.

In Simon's words

"We must expect the firm's goals to be not maximizing profits but attaining a certain level or rate of profit, holding a certain share of the market or a certain level of sales." Under conditions of uncertainty, a firm cannot know whether profits are being maximized or not.

In analyzing the behavior of the firm, Simon compares the organizational behavior with indi-vidual behavior.

According to him, a firm, like an individual, has its aspiration level in keeping with its needs, drives and achievement of goals. The firm aspires to achieve a certain minimum or 'target' level of profits. Its aspiration level is based on its different goals such as production, price, sales, profits, etc., and on its past experience.

The firm may face three alternative situations:

(a) The actual achievement is less than the aspiration level when the actual achievement lags behind the aspiration level, it may be due to wide fluctuations in economic activity or on account of qualitative deterioration in the performance level of the firm.

(b) the actual achievement is greater than the aspiration level when the actual achievement is greater than the aspiration level, the firm is satisfied with its commendable performance. The firm is also satisfied in the third situation when its actual performance matches its aspiration level.

But the firm does not feel satisfied in the first situation. It may be that the firm has set its aspiration level very high. It will, therefore, revise it downwards and start a search activity to fulfill its various goals in order to achieve the aspiration level in the future. Similarly, if the firm finds that the aspiration level can be achieved, it will be revised upwards. It is through such search activity that the firm will be able to reach the aspiration level set by the decision-maker. The search process may be done through sequence of possible alternatives using past experience and rules-of-thumb as guidelines. But

the search activity is not a costless affair. "The advantage of search activity must be balanced against its cost, and once search has revealed that what appears to be a satisfactory course of action, it will be abandoned for the time being.

In this way, the firm's aspiration level is periodically adapted to circumstances and the firm's reaction to them. The firm is not maximizing, since partly on account of the cost, it limits its searching activities. The firm, while behaving rationally, is 'satisfying' rather than maximizing.

Criticisms:

This theory has certain weaknesses:

(i) The main weakness of the satisfying theory of Simon is that he has not specified the 'target' level of profits which a firm aspires to reach. Unless that is known, it is not possible to point out the precise areas of conflict between the objectives of profit maximizing and satisfying.

(ii) Baume and Quant do not agree with Simon's notion of "satisfying". According to them, it is constrained maximization "with only constraints and no maximization."

(iii) Simon does not clarify a satisfactory level of performance based on "a certain level or rate of profit". This is in no way better than the profit maximization model. The profit maximization model suggests an optimum level of profits. But in the Simon model, there may be many "satisfactory levels" depending upon the groups that operate in the firm.

It is very difficult for the firm to choose such a profit rate that satisfies all groups functioning within the firm. Thus the operational value of Simon's model is limited. Despite these weaknesses, Simon's theory was the first theory on which the latter behavioral theories have been developed.

2. Cyert and March Theory

Cyert and March have put forth a systematic behavioral theory of the firm. In a modem large multiproduct firm, ownership is separate from management. Here the firm is not considered as a single entity with a single goal of profit maximization by a single decision-maker, called the entrepreneur. Instead, Cyert and March regard the modem business firm as a group of individuals who are engaged in the decision-making process relating to its internal structure having multiple goals.

They deal not only with the internal organisation of the firm but also with the problem of uncertainty. They reject the assumption of certainty in the neo-classical theory of the firm. They emphasise that the modem busi-ness firm is so complex that individuals within it have limited information and imperfect foresight with respect to both internal and external developments. The following are the key elements of the model.

Organizational Goals

Cyert and March regard the modem business firm as a complex organization in which the deci-sion-making process should be analyzed in variables that affect organizational goals, expectations, and choices. They look at the firm as an organizational coalition of managers, workers, shareholders, suppliers, customers, and so on.

The firm can be supposed to have five different goals:

1. Production Goal

The production goal represents in large part the demand of those coalition members who are connected with production. It reflects pressures towards such things as stable employment, ease of scheduling, development of acceptable cost performance and growth. This goal is related to output decisions.

2. Inventory Goal

The inventory goal represents the demands of coalition members who are connected with inventory. It is affected by pressures on the inventory from salesmen and customers. This goal is related to decisions in output and sales areas.

3. Sales Goal

The sales goal aims at meeting the demand of coalition members connected with sales, who regard sales necessary for the stability of the organization.

4. Market-Share Goal

The market-share goal is an alternative to the sales goal. It is related to the demands of sales management of the coalition who are primarily interested in the comparative success of the organization and its growth. Like the sales goal, the market-share goal is related to sales decisions.

5. Profit Goal

The profit goal is in terms of an aspiration level with respect to the money amount of profit. It may also be in the form of profit share or return on investment. Thus the profit goal is related to pricing and resource allocation decisions.

Cyert and March limit the number of goals to five because, according to them, to expand the list rapidly meets the point of diminishing returns. According to them, all goals must be satisfied because they are relevant to price, output and sales strategy decisions of the organization.

"Although all goals must be satisfied in any organization, there is an implicit order of priority which is reflected in the way search activity takes place " If one of the goals is not met and the individual responsible for that is not satisfied, a search will be made for a means to meet that goal. The search will be quite narrow and the organization will use rules-of-thumb to set the problem right. The rules-of -thumb are based on the past experience of the firm and the people within it.

5.6 INTERNATIONAL PRICE DISCRIMINATION

5.6.1 Dumping

Q21. Define Dumping? Explain Different types of dumping.

Ans : **(Nov.-20, Jan.-20, Imp.)**

Dumping is an international price discrimination in which an exporter firm sells a portion of its output in a foreign market at a very low price and the remaining output at a high price in the home market

Definition

According to Haberler defines, "The sale of goods abroad at a price which is lower than the selling price of the same goods at the same time and in the same circumstances at home, taking account of differences in transport costs"

According to viner's defines "Dumping is price discrimination between two markets in which the monopolist sells a portion of his produced product at a low price and the remaining part at a high price in the domestic market."

Types of Dumping:

Dumping can be classified in the following three ways:

1. Sporadic or Intermittent Dumping:

It is adopted under exceptional or unforeseen circum-stances when the domestic production of the commodity is more than the target or there are unsold stocks of the commodity even after sales. In such a situation, the producer sells the unsold stocks at a low price in the foreign market without reducing the domestic price.

This is possible only if the foreign demand for his commodity is elastic and the producer is a monopolist in the domestic market. His aim may be to identify his commodity in a new market or to establish himself in a foreign market to drive out a competitor from a foreign market. In this type of dumping, the producer sells his commodity

in a foreign country at a price which covers his variable costs and some current fixed costs m order to reduce his loss.

2. Persistent Dumping:

When a monopolist continuously sells a portion of his commodity at a high price in the domestic market and the remaining output at a low price in the foreign market, it is called persistent dumping. This is possible only if the domestic demand for that commodity is less elastic and the foreign demand is highly elastic. When costs fall continuously along with increasing production, the producer does not lower the price of the product more in the domestic market because the home demand is less elastic.

However, he keeps a low price in the foreign market because the demand is highly elastic there. Thus, he earns more profit by selling more quantity of the commodity in the foreign market. As a result, the domestic consumers also benefit from it because the price they are required to pay is less than in the absence of dumping.

3. Predatory Dumping:

The predatory dumping is one in which a monopolist firm sells its commodity at a very low price or at a loss in the foreign market in order to drive out some competitors. But when the competition ends, it raises the price of the commodity m the foreign market. Thus, the firm covers loss and if the demand in the foreign market is less elastic, its profit may be more.

Q22. What are the objectives of Dumping.

Ans :

The main objectives of dumping are as follows:

1. To Find a Place in the Foreign Market:

A monopolist resorts to dumping in order to find a place or to continue himself in the foreign market. Due to perfect competition in the foreign market he lowers the price of his commodity in comparison to the other competitors so that the demand for his commonly may increase. For this, he often sells his commodity by incurring loss in the foreign market.

2. To Sell Surplus Commodity :

When there is excessive production of a monopolist's commodity and he is not able to sell in the domestic market, he wants to sell the surplus at a very low price in the foreign market. But it happens occasionally.

3. Expansion of Industry :

A monopolist also resorts to dumping for the expansion of his industry. When he expands it, he receives both internal and external economies which lead to the application of the law of increasing returns. Consequently, the cost of production of his commodity is reduced and by selling more quantity of his commodity at a lower price in the foreign market, he earns larger profit.

4. New Trade Relations :

The monopolist practices dumping in order to develop new trade relations abroad. For this, he sells his commodity at a low price in the foreign market, thereby establishing new market relations with those countries. As a result, the monopolist increases his production, lowers his costs and earns more profit.

5.6.2 Effects of Dumping

Q23. What are the Effects of Dumping.

Ans : **(Jan.-20)**

Dumping affects both the importer and exporter countries in the following ways:

1. Effects on Importing Country:

The effects of dumping on the country, in which a monopolist dumps his commodity, depend on whether dumping is for a short period or a long period and what are the nature of the product and the aim of dumping.

- If a producer dumps his commodity abroad for a short period, then the industry of the importing country is affected for a short while. Due to the low price of the dumped commodity, the industry of that country has to incur a loss for some time because less quantity of its commodity is sold.
- Dumping is harmful for the importing country if it continues for a long period. This is because it takes time for changing production in the importing country and its domestic industry is not able to bear competition. But when cheap imports stop or dumping does not exist, it becomes difficult to change the production again.
- If the dumped commodity is a consumer good, the demand of the people in the importing country will change for the cheap goods. When dumping stops, this demand will reverse, thereby changing the tastes of the people which will be harmful for the economy.
- If the dumped commodities are cheap capital goods, they will lead to the setting up of a now industry. But when the imports of such commodities stop, this industry will also be shut down. Thus ultimately, the importing country will incur a loss.
- If the monopolist dumps the commodity for removing his competitors from the foreign market, the importing country gets the benefit of cheap commodity in the beginning. But after competition ends and he sells the same commodity at a high monopoly price, the importing country incurs a loss because now it has to pay a high price.
- If a tariff duty is imposed to force the dumper to equalise prices of the domestic and imported commodity, it will not benefit the importing country.
- But a lower fixed tariff duty benefits the importing country if the dumper delivers the commodity at a lower price.

2. Effects on Exporting Country:

Dumping affects the exporting country in the following ways:

- When domestic consumers have to buy the monopolistic commodity at a high price through dumping, there is loss in their consumers' surplus. But if a monopolist produces more commodities in order to dump it in another country, consumers benefit. This is because with more production of the commodity, the marginal cost falls. As a result, the price of the commodity will be less than the monopoly price without dumping.

  But this lower price than the monopoly price depends upon the law of production under which the industry is operating. If the industry is producing under the law of diminishing returns, the price will not fall because costs will increase and so will the price increase.
- The consumers will be losers and the monopolist will profit. There will be no change in price under fixed costs. It is only when costs fall under the law of increasing returns that both the consumers and the monopolist will benefit from dumping.
- The exporting country also benefits from dumping when the monopolist produces more commodity. Consequently, the demand for the required inputs such as raw materials, etc. for the production of that commodity increases, thereby expanding the means of employment in the country.
- The exporting country earns foreign currency by selling its commodity in large quantity in the foreign market through dumping. As a result, its balance of trade improves.

Short Question & Answers

1. Importance of Pricing.

Ans ;

The process of charging price for a goods or a service is called pricing. Pricing is important for the firm because it is a source of revenue generation for the firm.

1. Revenue

It is the price charged by the seller or the consumer during the bargaining process and multiplied by the number of units they have sold. When revenue is deducted from the cost of goods manufactured what remains is the profit for the company.

$\therefore$ Revenue price × Sales units or Profit = Revenue - Costs

To get revenue the firm must adequately charge such price which does not instill a burden on the consumer. It should also not be too less for the producers sake. They should charge a price which brings fair profits and returns to them.

2. Perceived Value

If the consumers expect the price of the product to be very high, the value perceived by the buyer is less. Similarly if the consumers expect the price to be too low and value perceived by the consumers may be high which in turn decreases the revenue which they would have earned if the prices were high.

Thus, the price plays an important role for generating revenue to the firms. It also increases the opportunities which are favourable to the companies.

2. What is Pricing Policy?

Ans :

Pricing policies are intended to bring consistency in the pricing pattern. They define how to handle complex issues such as price discrimination and price stability.

Pricing policies play a significant role, not only in the case of single-product firms but also multi-product firms. A multi-product firm faces more challenges such as maintaining price differentials between related products, especially substitutes such as deluxe models and basic models.

The executive's issues of private pricing policy includes several factors and right guidance from the professional business economist.

3. Cost Plus Pricing.

Ans :

This is the most commonly applied method by the firms. In cost plus pricing, the cost of the product is estimated and an additional profit is included. Price is determined based on this evaluation. The evidences shows that most of the business organizations set the prices of their products based on cost plus which is a fair profit percentage.

It can be expressed as,

Cost plus pricing = Cost + Fair profit

Cost

Cost means total allocated cost in cost plus pricing method. Joel Dean mentioned three different concepts of the cost element utilized in the formula of cost pricing i.e.,

(a) Actual Cost

It deals with the historical cost for the most recent available period. It includes wage bills, raw material costs and overhead costs at the current output rate.

(b) Expected Cost

It refers to the forecasting of the pricing period based on the predicted prices, output rates and productivity.

(c) Standard Cost

It involves the determination of normal cost at a normal rate of output at a provided level of capacity usage and productivity at a normal level.

4. Features of administered prices are.

Ans :

1. Administered prices are determined by the government.
2. They are mandatory, as they are legally binded by the government.
3. These prices are regulatory in nature.
4. They are considered as corrective measures.
5. They are the result of the government's price policy.

5. Define price discrimination.

Ans :

Price discrimination is a pricing strategy that charges customers different prices for the same product or service. In pure price discrimination, the seller will charge each customer the maximum price that he or she is willing to pay. In more common forms of price discrimination, the seller places customers in groups based on certain attributes and charges each group a different price.

Price discrimination allows a company to earn higher profits than standard pricing because it allows firms to capture every last dollar of revenue available from each of its customers. While perfect price discrimination is illegal, when the optimal price is set for every customer, imperfect price discrimination exists. For example, movie theaters usually charge three different prices for a show. The prices target various age groups, including youth, adults and seniors. The pieces fluctuate with the expected income of each age bracket, with the highest charge going to the adult population.

Meaning of Price Discrimination

Price discrimination is the practice of charging a different price for the same good or service. There are three of types of price discrimination first-degree, second degree and third-degree price discrimination.

Definitions of Price Discrimination

According to Krugman and Paul R., "Price discrimination is a pricing strategy where identical or largely similar goods or services are transacted at different prices by the same provider in different markets or territories".

According to Peter Belobaba and Amedeo Odoni, "Price discrimination is the distinguished from product differentiation by the more substantial difference in production cost for the differently priced products involved in the latter strategy".

6. Pricing of multiple product.

Ans :

Multiple- product pricing is considered as a crucial phase of price policy as many firms manufacture many related products, Multiple products are manufactured mainly due to the relatedness of the demands for several products (or) because the production costs are low when products are produced jointly.

Generally, multiple products can be substitutes for each other (or) complements for each other. The key decision for the firm is to determine the price structure which would be profitable for the firm. The firms has certain amount of independence in manipulating its prices of multiple products. In this regard, Joel Dean has outlined the following cases,

(a) When the related products are utilised differently (for instance fluid milk versus cheese milk).

(b) When a product line can be seasonally differentiated (for instance morning movie specials and matinee shows).

(c) The style-cycle products like plane shirts and printed shirts.

Under all the above cases, price differentials can be adopted for obtaining its benefits. But in few cases, when a product is produced then the main aim is to price it in such a way that it "fits into the line". The cost price ratios for the existing products acts as a valuable pricing guide. The individual items in a product-line are later interrelated on the demand side which is known as cross-elasticity of demand. The relevant demand curve for a group of related products is the curve for the whole product line. The traditional price classes mostly occur for the quality range of items offered. As production costs are suitable for these situations, the producer is advised to design product in such a way that it can sell at the established prices. In all these cases, the marginal revenue is a horizontal line and the optimal price is the price which equates the given MR to the firm's MC.

7. Objectives of Transfer Pricing.

Ans :

Companies with dispersed production facilities, usually in different countries, use transfer pricing. It involves over- or undercharging for goods sold between branches at a price determined by the company. The main objective is to take advantage of different tax rates between countries. Transfer pricing also is used to evaluate performance of divisions within a company.

1. Tax Savings

Imagine a company with two branches, where one makes semi-finished goods in a low-tax country and exports them to a branch in a high-tax country, where they are finished and sold. By increasing the transfer price and declaring more of its profits in the low-tax country, the company can reduce its global tax bill.

2. Boost Profits

By undercharging for goods crossing national borders, a company can save money on customs duties paid by the branch in the importing country. Conversely, by overcharging, a company can extract more money from a country with tighter currency outflow restrictions.

3. Measure Performance

Companies need to know how their individual divisions are performing. A way of measuring that is through transfer pricing. By setting a price for goods in each stage of the production process, a company can measure the profitability of each division and decide where to make organizational adjustments.

8. Benefits of Transfer Pricing Policy.

Ans :

An ideal transfer pricing policy will benefit the organization in the following ways :

1. Divisional performance evaluation is made easier.
2. It will develop healthy inter-divisional competitive spirit.
3. Management by exception is made possible.
4. It helps in coordination of divisional objectives in achieving organizational goals.
5. It provides useful information to the top management in making policy decisions

like expansion, sub-contracting, closing down of a division, make or buy decisions, etc.

6. Transfer price will act as a check on supplier's prices.
7. It fosters economic entity and free enterprise system.
8. It helps in self-advancement, generates high productivity and encouragement to meet the competitive economy.
9. It optimizes the allocation of company's financial resources based on the relative performance of various profit centers, which in turn are influenced by transfer pricing policies.

9. Define Dumping.

Ans :

Dumping is an international price discrimination in which an exporter firm sells a portion of its output in a foreign market at a very low price and the remaining output at a high price in the home market

Definition

According to Haberler defines, "The sale of goods abroad at a price which is lower than the selling price of the same goods at the same time and in the same circumstances at home, taking account of differences in transport costs"

According to viner's defines "Dumping is price discrimination between two markets in which the monopolist sells a portion of his produced product at a low price and the remaining part at a high price in the domestic market."

10. Objectives of Dumping.

Ans :

The main objectives of dumping are as follows:

1. To Find a Place in the Foreign Market:

A monopolist resorts to dumping in order to find a place or to continue himself in the foreign market. Due to perfect competition in the foreign market he lowers the price of his commodity in comparison to the other competitors so that the demand for his commonly may increase. For this, he often sells his commodity by incurring loss in the foreign market.

2. To Sell Surplus Commodity :

When there is excessive production of a monopolist's commodity and he is not able to sell in the domestic market, he wants to sell the surplus at a very low price in the foreign market. But it happens occasionally.

3. Expansion of Industry :

A monopolist also resorts to dumping for the expansion of his industry. When he expands it, he receives both internal and external economies which lead to the application of the law of increasing returns. Consequently, the cost of production of his commodity is reduced and by selling more quantity of his commodity at a lower price in the foreign market, he earns larger profit.

Internal Assessment (Mid Examinations)

The pattern of Mid Exams or Continuous Internal Evaluation (CIE) prescribed by the JNTU-H as per the Regulations 2019 (R19) for all the semesters is as follows,

- There would be two Mid Exams or Continuous Internal Evaluation (CIE) for each semester,
  - The **Ist Mid Term Examinations** would be conducted during the Middle of the Semester.
  - The **IInd Mid Term Examinations** during the last week of instructions.
- The Mid Exam I and II would have the same pattern of question paper which would carry **25 Marks** each and the time duration for conducting each Mid exam would be 120 min.
- The pattern of Mid Exam Question Paper would consist of two parts i.e., **Part-A** and **Part-B.**
  - **Part-A** consist of 5 compulsory questions each carries 2 marks (i.e 5 × 2 = 10 marks).
  - **Part-B** consist of 5 questions out of which 3 questions should be answered, each question carries 5 marks (i.e 5 × 3 = 15 marks).
- The average of the two Mid exams will be added with the 75 marks of External end examination which equals to 100 marks (i.e 25 + 75 = 100).

UNIT - I

Part - A

1.	Define Business Economics.	(Refer Unit-I, SQA-1)
2.	Objectives of business economics.	(Refer Unit-I, SQA-2)
3.	How is incremental cost different from opportunity cost?	(Refer Unit-I, SQA-8)
4.	Define time perspective.	(Refer Unit-I, SQA-9)
5.	Discounting principle.	(Refer Unit-I, SQA-10)

Part - B

1.	Explain the nature of business economics.	(Refer Unit-I, Q.No. 4)
2.	Explain the scope of business economics.	(Refer Unit-I, Q.No. 5)
3.	Explain how managerial economics is link with other disciplines.	(Refer Unit-I, Q.No. 7)
4.	What is Decision Making? Explain the various steps in the process of decision making.	(Refer Unit-I, Q.No. 8)
5.	Explain the role of Managerial Economist.	(Refer Unit-I, Q.No. 10)
6.	What do you understand by marginalism?	(Refer Unit-I, Q.No. 12)
7.	Examine the concept of Equi-Marginalism.	(Refer Unit-I, Q.No. 13)

UNIT - II

Part - A

1. Explain the features of demand. (Refer Unit-II, SQA-2)
2. Define income elasticity of demand. (Refer Unit-II, SQA-8)
3. What are the differences between Price and income elasticity of demand? (Refer Unit-II, SQA-11)
4. State the supply function. (Refer Unit-II, SQA-16)
5. Elasticity of demand. (Refer Unit-II, SQA-7)

Part - B

1. Define demand. What are the objectives of demand? (Refer Unit-II, Q.No. 1)
2. Define law of Demand? What are the assumptions of law of demand. (Refer Unit-II, Q.No. 8)
3. Explain different types of demand. (Refer Unit-II, Q.No. 11)
4. Explain different types of elasticity of demand. (Refer Unit-II, Q.No. 14)
5. Discuss various types of income elasticities of demand. (Refer Unit-II, Q.No. 19)
6. Explain elasticity of supply. (Refer Unit-II, Q.No. 42)

UNIT - III

Part - A

1. Significance of production function. (Refer Unit-III, SQA-3)
2. Define contribution. (Refer Unit-III, SQA-12)
3. Define isoquant. (Refer Unit-III, SQA-6)
4. Define.
   (a) Cost
   (b) Cost Analysis (Refer Unit-III, SQA-9)
5. Assumptions of Break Even Analysis. (Refer Unit-III, SQA-11)

Part - B

1. What do you understand by production? What are the factors of production? (Refer Unit-III, Q.No. 1)
2. Explain production function with two variable inputs with an illustration. (Refer Unit-III, Q.No. 6)
3. What do you understand by Cobb Douglas production function? (Refer Unit-III, Q.No. 8)
4. Define isoquant. Explain how isoquants are used to represent a production function with two variable inputs. (Refer Unit-III, Q.No. 12)

5. Define the law of returns to scale and explain its relevance in production management. (Refer Unit-III, Q.No. 17)
6. Explain briefly about Innovations and Global Competitiveness. (Refer Unit-III, Q.No. 21)
7. Explain briefly about Break Even Analysis. (Refer Unit-III, Q.No. 32)

UNIT - IV

Part - A

1. Define market. (Refer Unit-IV, SQA-1)
2. Define oligopoly. (Refer Unit-IV, SQA-6)
3. Define monopoly. (Refer Unit-IV, SQA-4)
4. Kinked demand curve. (Refer Unit-IV, SQA-10)
5. Distinguish between oligopoly and perfect competition. (Refer Unit-IV, SQA-11)

Part - B

1. What are the different types of Market Structure ? (Refer Unit-IV, Q.No. 3)
2. What is Perfect Competition Market? Explain the characteristics of Perfect Competition Market. (Refer Unit-IV, Q.No. 6)
3. What is monopolistic competition? Explain the features of monopolistic competition. (Refer Unit-IV, Q.No. 9)
4. How price is determined under perfect competition? (Refer Unit-IV, Q.No. 12)
5. Explain briefly about price-output determination under monopoly in the short-run market. (Refer Unit-IV, Q.No. 15)
6. What are the advantages and disadvantages of Monopolistic Competition ? (Refer Unit-IV, Q.No. 20)
7. Write about the price leadership model of oligopoly. (Refer Unit-IV, Q.No. 23)

UNIT - V

Part - A

1. What is Pricing Policy? (Refer Unit-V, SQA-2)
2. Define price discrimination. (Refer Unit-V, SQA-5)
3. Objectives of Transfer Pricing. (Refer Unit-V, SQA-7)
4. Define Dumping. (Refer Unit-V, SQA-9)
5. Benefits of Transfer Pricing Policy. (Refer Unit-V, SQA-8)

Part - B

1.	What is price? Explain the importance of pricing.	(Refer Unit-V, Q.No. 1)
2.	What are the various of Methods of Pricing?	(Refer Unit-V, Q.No. 4)
3.	Define price discrimination? Explain the requirements of price discrimination.	(Refer Unit-V, Q.No. 7)
4.	Explain pricing strategies.	(Refer Unit-V, Q.No. 10)
5.	What are the benefits and limitations of transfer pricing ?	(Refer Unit-V, Q.No. 14)
6.	What do you understand by theory of firm.	(Refer Unit-V, Q.No. 17)

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination **R19**

MODEL PAPER - I

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

PART - A (5 × 5 = 25 Marks)

ANSWERS

1. (a) Define Business Economics. **(Unit-I, SQA - 1)**
   (b) Differentiate between individual demand and market demand. **(Unit-II, SQA - 6)**
   (c) What are the assumptions of Isoquant curves. **(Unit-III, SQA - 7)**
   (d) State the features of Perfect Competition **(Unit-IV, SQA - 3)**
   (e) Explain the importance of Pricing. **(Unit-V, SQA - 1)**

PART - B (5 × 10 = 50 Marks)

2. Explain the nature and scope of business economics. **(Unit-I, Q.No. 4, 5)**

OR

3. Explain the role of Managerial Economist. **(Unit-I,Q.No. 10)**
4. What is price elasticity of demand? Explain different types of price elasticity of demand. **(Unit-II, Q.No. 15)**

OR

5. (i) Determine the cross elasticity of demand given that,
   (a) The quantity demanded for product S is 10,000 units at a price of ` 2,000.
   (b) The price declines to 200 and the quantity demanded increases to 12,000 units. **(Unit-II, Prob. 5)**
   (ii) Explain different types of demand. **(Unit-II, Q.No. 11)**
6. Define isoquant. Explain how isoquants are used to represent a production function with two variable inputs. **(Unit-III, Q.No. 12)**

OR

7. Explain Cost-Output Relationship in the Short-Run . **(Unit-III, Q.No. 28)**
8. How is price output determined under monopolistic competition ? **(Unit-IV, Q.No. 19)**

OR

9. "Under perfect competition a firm is a price taker and not a price maker". Explain. **(Unit-IV, Q.No. 13)**
10. What are the various of Methods of Pricing? **(Unit-V, Q.No. 4)**

OR

11. Define transfer pricing? What are the objectives of transfer pricing? **(Unit-V, Q.No. 12)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination **R19**

MODEL PAPER - II

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

PART - A (5 × 5 = 25 Marks)

ANSWERS

1. (a) How is incremental cost different from opportunity cost ? **(Unit-I, SQA - 8)**

   (b) What are the Factors affecting Elasticity of Demand. **(Unit-II, SQA - 12)**

   (c) What are the Assumptions of Break Even Analysis. **(Unit-III, SQA - 11)**

   (d) Explain the classification of monopoly. **(Unit-IV, SQA - 5)**

   (e) What are the benefits of Transfer Pricing Policy. **(Unit-V, SQA - 8)**

PART - B (5 × 10 = 50 Marks)

2. Explain how managerial economics is link with other disciplines. **(Unit-I, Q.No. 7)**

OR

3. Examine the concept of Equi-Margina- lism. **(Unit-I,Q.No. 13)**

4. What are the factors determining demand. **(Unit-II, Q.No. 10)**

OR

5. (a) Suppose that the demand curve for video rentals has been estimated to be Q = 2500 – 250P. Further your average costs of supplying videos is equal to 2 AC = 8 – 006 Q + 00000Q. Calculate your optimal price, quantity and profits. **(Unit-II, Prob. 7)**

   (b) State the supply function. **(Unit-II, Q.No. 38)**

6. (a) What are the three different stages of law of variable proportions? **(Unit-III, Q.No. 7)**

   (b) From the following data, you are required to calculate.

   (i) P/V Ratio

   (ii) Break – even sales with the help of P/v Ratio.

   (iii) Sales required to earn a profit of Rs. 4,50,000

   Fixed Expenses = Rs. 90,000

   Variable cost per unit

   Direct material = Rs. 5

   Direct Labour = Rs. 2

   Direct overheads = 100% of Direct labour

   Selling price per unit = Rs. 12. **(Unit-II, Prob.1)**

OR

7. Explain Cost-Output Relationship in the Long-Run. **(Unit-III, Q.No. 29)**

8. How price is determined under perfect competition? **(Unit-IV, Q.No. 12)**

OR

9. Distinguish between Perfect Competition and Monopoly. **(Unit-IV, Q.No. 18)**

10. Explain briefly about Pricing over Product Life Cycle **(Unit-V, Q.No. 15)**

OR

11. Explain briefly about Behavioral Theories of firm. **(Unit-V, Q.No. 20)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination **R19**

MODEL PAPER - III

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

PART - A (5 × 5 = 25 Marks)

ANSWERS

1. (a) Define opportunity cost. **(Unit-I, SQA - 5)**
   (b) Define Cross elasticity of demand. **(Unit-II, SQA - 9)**
   (c) Explain Cobb Douglas production function. **(Unit-III, SQA - 4)**
   (d) Define Kinked demand curve. **(Unit-IV, SQA - 10)**
   (e) What are the Objectives of Dumping. **(Unit-V, SQA - 10)**

PART - B (5 × 10 = 50 Marks)

2. (a) Explain briefly about incremental principle concept. **(Unit-I, Q.No. 14)**
   (b) What are the responsibilities of business economics? **(Unit-I, Q.No. 6)**

OR

3. What is Decision Making ? Explain the various steps in the process of decision making. **(Unit-I,Q.No. 8)**
4. Define demand. What are the objectives and features of demand? **(Unit-II, Q.No. 1, 2)**

OR

5. Define demand forecasting. Explain various methods of demand forecasting. **(Unit-II, Q.No. 29, 33, 34, 35)**
6. Define the law of returns to scale and explain its relevance in production management. **(Unit-III, Q.No. 17)**

OR

7. Explain briefly about Innovations and Global Competitiveness. **(Unit-III, Q.No. 21)**
8. (a) Define monopoly. What are the characteristics of monopoly ? **(Unit-IV, Q.No. 7)**
   (b) How is price determine under monopoly market? **(Unit-IV, Q.No. 16)**

OR

9. How price is determined under collusion oligopoly ? **(Unit-IV, Q.No. 21)**
10. Define price discrimination ? Explain the requirements of price discrimination. **(Unit-V, Q.No. 7)**

OR

11. (a) What is Pricing Policy? What are the factors involved in pricing policy? **(Unit-V, Q.No. 3)**
    (b) Explain briefly about pricing over product life cycle. **(Unit-V, Q.No. 15)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination

R19

October / November - 2021

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

Note: Answer any **Five** questions

All questions carry equal marks

ANSWERS

1. Explain about the relationship of Business economics with other disciplines. **(Unit - I, Q.No.7)**
2. Write about the need for demand forecasting and methods of demand forecasting **(Unit - II, Q.No.31,33,34,35,36)**
3. Explain about the
   (a) Law of Supply with its determinants **(Unit - II, Q.No.40,39)**
   (b) Elasticity of Supply **(Unit - II, Q.No.42)**
4. (a) Write about Cobb-Douglas Product on Function. **(Unit - III, Q.No.8)**
   (b) Explain about economies of scale? **(Unit - III, Q.No.19)**
5. Write about the cost output relationship in the short run and long run. **(Unit - III, Q.No.28, 29)**
6. How the Price - Output determined in Oligopoly competition both in the long and short run? **(Unit - IV, Q.No.21,22,23)**
7. How the Price - Output determined in monopoly competition both in the long and short run ? **(Unit - IV, Q.No.15,16)**
8. Explain about
   (a) Cost plus pricing **(Unit - V, Q.No.4)**
   (b) Pricing over product life cycle **(Unit - V, Q.No.15)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination

R19

July / August - 2021

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

Note: Answer any **Five** questions

All questions carry equal marks

ANSWERS

1. (a) What is Opportunity cost? And explain the concept of incremental principle. **(Unit - I, Q.No.11,14)**
   (b) What is Time Perspective ? And explain the salient features of discounting principle. **(Unit - I, Q.No.16,17)**
2. (a) Explain the determinants and types of demand. **(Unit - II, Q.No.10,11)**
   (b) Explain the Measurement and Significance of elasticity of demand. **(Unit - II, Q.No.25,26**
3. (a) Describe the significance of Demand Forecasting and explain any one method of demand forecasting. **(Unit - II, Q.No.29,34)**
   (b) Explain the Law of Supply and elasticity of supply. **(Unit - II, Q.No.40,42)**
4. (a) What is Marginal Rate of Technical Substitution? And explain its importance. **(Unit - III, Q.No.11)**
   (b) Briefly explain the salient features of Economies of Scale. **(Unit - III, Q.No.19)**
5. Explain the importance, assumptions, uses, limitations and application value of Break-Even analysis. **(Unit - III, Q.No. 32, 34, 35,36)**
6. (a) Explain the conditions of Perfect Competition. **(Unit - IV, Q.No.6)**
   (b) Describe the price and output determination in Monopoly. **(Unit - IV, Q.No.15)**
7. (a) What is oligopoly? And explain its salient features. **(Unit - IV, Q.No.10)**
   (b) Explain Kinked demand curve and its significance. **(Unit - IV, Q.No.22)**
8. (a) What is Transfer pricing? And explain its salient features. **(Unit - V, Q.No.12)**
   (b) Describe the importance pricing over Product Life Cycle. **(Unit - V, Q.No.15)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination **R19**

October / November - 2020

BUSINESS ECONOMICS

Time : 2 Hours] [Max. Marks : 75

Note: Answer any **Five** questions

All questions carry equal marks

ANSWERS

1. Explain about the concepts opportunity cost and marginalism. **(Unit-I, Q.No.11,12)**
2. Write about
   (a) Risk and uncertainty **(Unit-I, Q.No.18)**
   (b) Discounting principle **(Unit-I, Q.No.17)**
3. Write about the types of Elasticity of Demand with its significance and measurement. **(Unit-II, Q.No.15,18,20,25,26)**
4. Explain about the various demand forecasting methods. **(Unit-II, Q.No.34,35,36)**
5. Write about
   (a) Break-even analysis **(Unit-III, Q.No.32)**
   (b) Returns to scale **(Unit-III, Q.No.17)**
6. How the Price - Output determined in Perfect competition both in the long and short run ? **(Unit-IV, Q.No.12)**
7. How the Price - Output determined in Monopoly competition both in the long and short run ? **(Unit-IV, Q.No.15,16)**
8. Explain about
   (a) Transfer pricing **(Unit-V, Q.No.12)**
   (b) International price discrimination **(Unit-V, Q.No.21)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination **R19**

January - 2020

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part - A (5 × 5 Marks = 25)

ANSWERS

1. (a) Discuss the concept of opportunity cost and its implications in decision making. **(Unit-I, SQA - 5,Q.No.8)**
   (b) Explain demand function and various determinants of demand. **(Unit-II, Q.No.3,10)**
   (c) Illustrate the concept of returns to scale. **(Unit-III, Q.No.17)**
   (d) Explain the bases of classification of market structures. **(Unit-IV, Q.No.3)**
   (e) Write a short note on dumping and effects of dumping. **(Unit-V, SQA -9, Q.No.23)**

Part - B (5 × 10 Marks = 50)

2. (a) Explain the role of managerial economist in an organization. **(Unit-I, Q.No.10)**
   (b) Discuss briefly about incremental concept of cost and revenue. **(Unit-I, Q.No.14)**

OR

3. Write a short note on
   (a) Nature and scope of business economics **(Unit-I, Q.No. 4,5)**
   (b) Equi-marginalism **(Unit-I, Q.No.13)**
   (c) Risk and uncertainty **(Unit-I, Q.No.18)**
4. Describe the need for demand forecasting and various demand forecasting methods. **(Unit-II, Q.No.31,33,34,35,36)**

OR

5. Elaborate the concepts of
   (a) Law of supply **(Unit-II, Q.No.40)**
   (b) Measurement of elasticity of demand, with suitable diagrams. **(Unit-II, Q.No.25)**
6. Discuss in detail about
   (a) Law of variable proportions **(Unit-III, Q.No.7)**
   (b) Cobb Douglas production function **(Unit-III, Q.No.8)**

OR

7. (a) Analyze the cost - output relationship in the short run and long run. **(Unit-III, Q.No.28,29)**

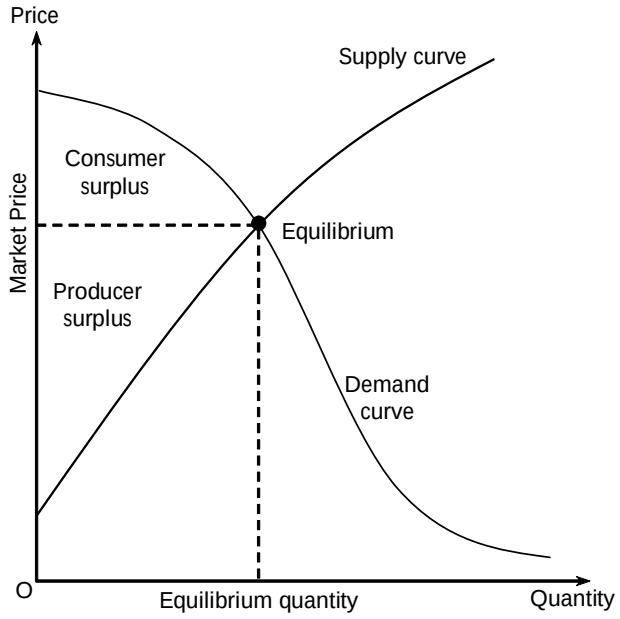
(b) Explain the concept of MRTS. **(Unit-II, Q.No.11)**

8. (a) Distinguish between oligopoly and monopoly. **(Unit-IV, Q.No.25)**

(b) Explain the concept of Equilibrium price.

Ans :

Equilibrium price is the price where the demand for a product or a service is equal to the supply of the product or service. At equilibrium, both consumers and producers are satisfied, thereby keeping the price of the product or the service stable.



Equilibrium means a state of no change. Evidently, at the equilibrium price, both buyers and sellers are in a state of no change. Technically, at this price, the quantity demanded by the buyers is equal to the quantity supplied by the sellers. Both market forces of demand and supply operate in harmony at the equilibrium price.

Graphically, this is represented by the intersection of the demand and supply curve. Further, it is also known as the market clearing price. The determination of the market price is the central theme of microeconomics. That is why the microeconomic theory is also known as price theory.

Supply and Demand Schedule

Price	Quantity Demanded	Quantity Supplied	Impact on Price
5	5	30	Downwards
4	12	25	Downwards
3	20	20	Equilibrium
2	25	15	Upwards
1	35	8	Upwards

Equilibrium Price Can Resist Change

Both consumers and sellers do not want to shift from the equilibrium price. In that case, the equilibrium price can change only when there is a change in both demand and supply. An increase in only demand or only supply is taken by horns by a self-adjusting mechanism.

When the price of commodity increases, the sellers flock to the market with their products for an opportunity to earn higher profits. This creates a condition of excess supply, ultimately leading to a surplus of the particular product in its market.

In order to sell this surplus, the sellers have to reduce the price. Effectively, the price continues to fall until it reaches the equilibrium level.

When the price of a commodity decreases, the consumers sense an opportunity to buy the product at a lower price. This creates gives birth to excess demand in the product's market.

Consequentially, there starts brewing a situation of competition among the buyers which eventually pushes up the price. Eventually, the price continues to rise until it reaches the equilibrium level.

OR

9. Analyze the condition of equilibrium of an individual firm under perfect competition both in short run and long run periods with relevant diagrams. **(Unit-IV, Q.No.12)**

10. Compare and contrast managerial and behavioural theories of the firm.

Ans :

The behavioural theory differs in almost all its aspects from the traditional theory of the firm. The firm in the behavioural theory is conceived as a coalition of groups with largely conflicting interests.

There is a dichotomy between ownership and management. There is also a dichotomy between individual members and the firm-organisation.

The consequence of these dichotomies is conflict between the different members of the coalition.

The traditional theory conceives the firm as synonymous with the entrepreneur. The owner-businessman is at the same time the manager of the firm. The 'members' of the firm are the entrepreneur and the owners of the factors of production, whose demands are satisfied via money payments. Consequently there is no conflict since the entrepreneur pays to the factors of production in his employment their market prices (opportunity cost).

The firm of the traditional theory has a single goal, that of profit maximisation. The behavioural theory recognizes that the modern corporate business has a multiplicity of goals. The goals are ultimately set by the top management through a continuous process of bargaining. These goals take the form of aspiration levels rather than strict maximising constraints. Attainment of the aspiration level 'satisfices' the firm: the con-temporary firm's behaviour is satisficing rather than maximising. The firm seeks levels of profits, sales, rate of growth (and similar magnitudes) that are 'satisfactory', not maxima. The behavioural theory is the only theory that postulates satisficing behaviour as opposed to the maximising behaviour of other theories. Satisficing is considered as rational, given the limited information, time, and computational abilities of the top management. Thus the behavioural theory redefines rationality: it introduces the concept of 'bounded' or 'limited' rationality, as opposed to the 'global' rationality of the-traditional theory of the firm.

The traditional theory of the firm initially assumed that in deciding the allocation of resources (within the firm) the entrepreneur equates marginal revenue to opportunity cost. This behaviour implicitly assumes global rationality, that is, perfect knowledge of all alternatives, examination of all possible alternatives and certainty about future returns. Later theorists recognized uncertainty as a fact of the real business world and introduced a probabilistic approach to the above decision rule for the allocation of internal resources.

OR

11. (a) Elaborate various pricing strategies of a firm. **(Unit-V, Q.No.10)**

(b) Explain objectives of pricing. **(Unit-V, Q.No.2)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination

R17

December - 2018

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

Note : This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub-questions.

ANSWERS

PART - A (5 × 5 Marks = 25)

1. (a) What are the stages in a Business decision making process ? **(Unit-I, Q.No.8)**
   (b) Explain about elasticity of demand and its types ? **(Unit-II, Q.No.14)**
   (c) Write about the Cob Douglas production function ? **(Unit-III, SQA-4)**
   (d) Write about the features of Monopolistic competition ? **(Unit-IV, Q.No.9)**
   (e) Write about the Fiscal policy of India ? **(Out of Syllabus)**

PART - B (5 × 10 Marks = 50)

2. (a) Write about the role of managerial economist ? **(Unit-I, Q.No.10)**
   (b) Explain the concept of opportunity cost ? **(Unit-I, Q.No.11)**

OR

3. Describe about incremental concept and time perceptive in business economics? **(Unit-I, Q.No.14,16)**

4. (a) What are the Determinants of supply ? **(Unit-II, Q.No.39)**
   (b) Illustrate the Law of supply ? **(Unit-II, Q.No.40)**
   (c) How can you determine “Elasticity of Supply” ? **(Unit-II, Q.No.42)**

OR

5. (a) How do you measure the elasticity of demand ? **(Unit-III, Q.No.25)**
   (b) What are the factors influencing price elasticity of demand ? **(Unit-III, Q.No.17)**

6. Write about the cost-output relationship in the short-run and long-run? Use necessary diagrams. **(Unit-III, Q.No.28,29)**

OR

7. (a) Illustrate Marginal rate of technical substitution ? **(Unit-III, Q.No.11)**
   (b) Explain about the economics of scale ? **(Unit-III, Q.No.19)**

8. (a) What are the features of Perfect competition ? **(Unit-IV, Q.No.6)**

(b) How do you determine price-output relationship under Perfect competition ? **(Unit-IV, Q.No.12)**

OR

9. (a) Explain the concept. 'Break-even analysis'? What are its limitations ? **(Unit-III, Q.No.32,36)**

(b) How do you price the products considering various stages in product life cycle ? **(Unit-V, Q.No.15)**

10. Write briefly about the Industrial policy of 1991 and its recent developments ? **(Out of Syllabus)**

OR

11. Explain about the Export-Import policies of India ? **(Out of Syllabus)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination **R17**

June/July - 2018

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part - A (5 × 5 Marks = 25)

ANSWERS

1. (a) Describe the role of a managerial economist in an industrial unit. **(Unit-I, Q.No.10)**

   (b) Explain the determinants of demand: **(Unit-II, Q.No.10)**

   (c) Describe the relationship between Isoquants and Isocosts.

Ans :

Isoquants

An isoquant is a locus of points showing all the technically efficient ways of combining factors of production to produce a fixed level of output. It is also known as the equal product curve. In case of two variable factors, labour and capital, an isoquant appears as a curve on a graph the axes of which measure quantities of the two factors.

Isocost Lines

An isoquant shows what a firm is desirous of producing. But, the desire to produce a commodity is not enough. The producer must have sufficient capacity to buy necessary factor inputs to be able to reach its desired production level. The capacity of the producer is shown by his monetary resources, i.e., his cost outlay (or how much money he is capable of spend-ing) on capital and labour, the prices of which are taken as constant, i.e.', given in the market place.

   (d) Examine the salient features of Monopoly. **(Unit-IV, Q.No.7)**

   (e) What is Fiscal Policy? And explain its significance. **(Out of Syllabus)**

Part - B (5 × 10 Marks = 50)

2. (a) Define Business Economics and explain its Nature and Scope. **(Unit-I, Q.No.1,4,5)**

   (b) Explain the salient features of 'Business Decision Making Process'. **(Unit-I, Q.No.8)**

OR

3. (a) What is Incremental Value? Explain its significance in Business Economics. **(Unit-II, Q.No.6,14)**

   (b) Define discounting principle and explain its salient features. **(Unit-II, Q.No.17)**

4. (a) What is demand? And explain the law of demand and its limitations. **(Unit-II, Q.No.1,8,9)**

   (b) Explain different types of elasticity and significance of elasticity of demand. **(Unit-II, Q.No.15,18,20,26)**

OR

5. Describe the need for demand forecasting and explain 'Opinion Survey' method of demand forecasting. **(Unit-II, Q.No.31,34)**

6. (a) What is Production function? And explain the significance of Marginal Rate of Technical Substitution. **(Unit-III, Q.No.3,11)**

   (b) Describe the salient features of 'Economics of Scale. **(Unit-III, Q.No.19)**

OR

7. (a) What is 'Long-run Average Cost Curve'? And explain its importance. **(Unit-III, Q.No.28)**

   (b) Explain the importance of cost concepts in the business economics and outline the determinants of costs. **(Unit-III, Q.No.24,27)**

8. (a) Explain the price-output determination in Monopolistic Competition. **(Unit-IV, Q.No.19)**

   (b) Why Oligopoly type of market emerged? And describe its salient features. **(Unit-IV, Q.No.21,10)**

OR

9. (a) Briefly explain any three Pricing Strategies. **(Unit-V, Q.No. 10)**

   (b) What is Product Life Cycle? And explain its significance in price fixation. **(Unit-V, Q.No. 15)**

10. (a) What are the reasons behind the 1991 industrial policy resolution? And explain its main features. **(Out of Syllabus)**

    (b) What is Monetary Policy? And explain its significance. **(Out of Syllabus)**

OR

11. (a) Why Export-Import Policy is important for a country's economic development. **(Out of Syllabus)**

    (b) What is FDI? And explain its contribution in India's economic development. **(Out of Syllabus)**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.B.A I Year I Semester Examination **R17**

January - 2018

BUSINESS ECONOMICS

Time : 3 Hours] [Max. Marks : 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Part - A (5 × 5 Marks = 25)

ANSWERS

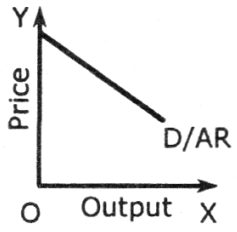
1. (a) What is the relevance of business economics to managers? **(Unit-I, Q.No.5)**

   (b) What is cross elasticity of demand? Bring out the nature of cross elasticity of demand in respect of substitutes and complementary goods. **(Unit-II, SQA-9)**

   (c) What are the charactetistics of isoquants? **(Unit-III, SQA-7)**

   (d) How does oligopoly differ from monopolistic market?

Ans :

S.No.	Monopolistic	Oligopoly
(1)	Large number of small sellers	Small number of large sellers
(2)	Products are different but are close substitutes of one another	Products may or may not be different from each other.
(3)	Like monopoly the firm under monopolistic competition also has a negatively sloping demand curve (but more elastic) as under, 	Demand curve here is indeterminate
(4)	Since product differentiation is the chief feature of this market, different sellers charge different prices for their products.	Prices of the products are different here. An individual firm can influence the price.

   (e) What is FDI? What is FII? What is the difference between them? **(Out of Syllabus)**

Part - B (5 × 10 Marks = 50)

2. (a) What is the principle of equi-marginalism? Illustrate your answer with suitable example. **(Unit-I, Q.No.13)**

(b) What is opportunity cost? What is its importance in managerial decision making? **(Unit-I, Q.No.11)**

OR

3. (a) A loan agrement specifies that payments of Rs. 133.33 are to be made each month for 5 years. The annual interest rate specified is 6 percent. What is the amount of the loan?

Ans :

Monthly payment (EMI) = 133.33

Rate of Intrest = 6%

Loan period = 5 years (Convert year to months)

= 12 months × 5

= 60 Months.

Loan amount = 133.33 × 60

= 7,999

(b) Is business economics prescriptive rather than descriptive? Elaborate.

Ans :

Managerial Economics is the integration of/ bridges the gap between economic theory with/& business practice so as to facilitate decision making" Comment/ outline the nature and scope of Managerial Economics in light of this statement.

Spencer and Siegelman have defined Managerial Economics as "the integration of economic theory with business practice for the purpose of facilitating decision-making and forward planning by management."

There are certain chief characteristics of managerial economics, which can help to understand the nature of the subject matter and help in a clear understanding of the following terms:

Managerial economics is micro-economic in character. This is because the unit of study is a firm and its problems. Managerial economics does not deal with the entire economy as a unit of study.

Managerial economics largely uses that body of economic concepts and principles, which is known as Theory of the Firm or Economics of the Firm. Managerial economics is concrete and realistic. It avoids difficult abstract issues of economic theory. But it also involves complications ignored in economic theory in order to face the overall situation in which decisions are made. Economic theory ignores the variety of backgrounds and training found in individual firms.

Managerial economics belongs to normative economics rather than positive economics. Normative economy is the branch of economics in which judgments about the desirability of various policies are made. Positive economics describes how the economy behaves and predicts how it might change. In other words, managerial economics is prescriptive rather than descriptive. It remains confined to descriptive hypothesis.

Managerial economics also simplifies the relations among different variables without judging what is desirable or undesirable. For instance, the law of demand states that as price increases, demand goes down or vice-versa but this statement does not imply if the result is desirable or not. Managerial economics,

however, is concerned with what decisions ought to be made and hence involves value judgments. This further has two aspects: first, it tells what aims and objectives a firm should pursue; and secondly, how best to achieve these aims in particular situations.

Macroeconomics is also useful to managerial economics since it provides an intelligent understanding of the business environment. This understanding enables a business executive to adjust with the external forces that are beyond the management's control but which play a crucial role in the well being of the firm.

4. (a) What are the determinants of demand? **(Unit-II, Q.No.10)**

(b) Given the demand function: Q = 15 – 1.2 P, prepare a demand schedule and draw demandcurve for 5 varyig prices.

Ans :

Deman Function (Q) = 15 – 1.2 P

Assuming varying prices (p) = 5, 4, 3, 2, 1

Substitute these assumed prices on demand function.

$Q_1 = 15 – 1.2(5) = 15 – 6 = 9$

$Q_2 = 15 – 1.2(4) = 15 – 4.8 = 10.2$

$Q_3 = 15 – 1.2(3) = 15 – 3.6 = 11.4$

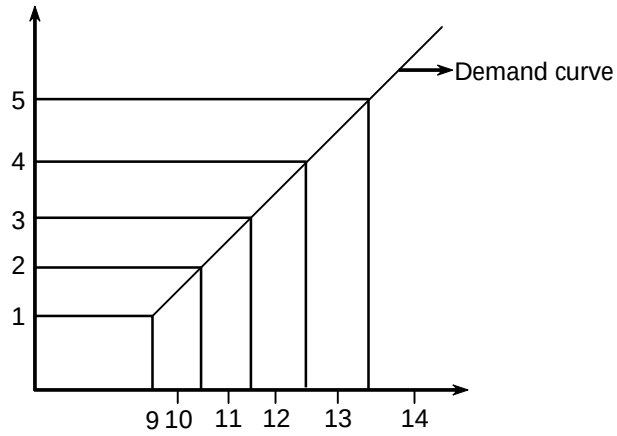
$Q_4 = 15 – 1.2(2) = 15 – 2.4 = 12.6$

$Q_5 = 15 – 1.2(1) = 15 – 1.2 = 13.8$

Demand Schedule

Quantities (Q_1 to Q_5)	Prices P_1 to P_5
9	5
10.2	4
11.4	3
12.6	2
13.8	1

Demand Curve



OR

5. (a) What are the imperatives for demand forecasting? **(Unit-II, Q.No.31)**

(b) The international price of oil is $ 30 per barrel and the price elasticity is constant and equal to -0.5. An oil embargo reduces the quantity available by 20 percent. Use the arc elasticity formula to calculate the percentage increase in the price of oil.

Ans :

Quantity (Q_1) = x barrels

Price per barrel (P_1) = 30 $

Quantity after reduced by 20% (Q_2) = $x - \frac{x \times 20}{100} = \frac{4}{5}x$

Elasticity = $-0.5 = -\frac{1}{2}$

Arc Elasticity of Demand (ε)

$$\varepsilon = \frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

$$\frac{Q_1 - Q_2}{P_1 - P_2} \times \frac{P_2 + P_2}{Q_1 + Q_2}$$

$$-\frac{1}{2} = \frac{Q_1 - Q_2}{P_1 - P_2} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

$$= \frac{x - \frac{4}{5}x}{30 - P_2} \times \frac{30 + P_2}{x + \frac{4}{5}x}$$

$$= \frac{\frac{1}{5}x}{\frac{9}{5}x} \times \frac{30 + P_2}{30 - P_2}$$

$$-\frac{1}{2} = \frac{1}{9}\left(\frac{30 + P_2}{30 - P_2}\right)$$

$-9(30 - P_2) = 2(30 + P_2)$

$-270 + 9p_2 = 60 + 2p_2$

$7p_2 = 330$

$$p_2 = \frac{330}{7} = 47.1$$

Increase in percentage of price $= \frac{p_2 - p_1}{p_1} \times 100$

$$= \frac{47.1 - 30}{30} \times 100$$

$$= \frac{17.1}{30} \times 100$$

$$= 57\%$$

6. (a) Distinguish between short run period and long run period for investors point of view. **(Unit-III, Q.No.30)**

(b) Three firms in the same industry all set their product at `20 per unit. Their total fixed cost and avera per unit are shown below.

Firms	A	B	C
Total fixed cost (`)	20,000	50,000	10,000
Average variable cost (`)	15	10	18

What is the break-even rate for each firm?

Ans :

$$\text{Break - even point (BEFP)} = \frac{\text{Fixed Cost}}{\text{Selling Price per unit – Valuable Cost Per Unit}}$$

From A $\quad BEP = \frac{20,000}{20 - 15} = 4,000$

From B $\quad BEP = \frac{5,000}{20 - 20} = 500$

From C $\quad BEP = \frac{10,000}{20 - 18} = 5,000$

OR

7. (a) What are the features of Long term Average Cost (LAC) curve? **(Unit-III, Q.No.29)**

(b) What is the importance of Cobb-Douglas Production function? **(Unit-III, Q.No.9)**

8. (a) Draw the equilibrium level of output of a firm under monopolistic competition in the long run. **(Unit-IV, Q.No.16)**

(b) The equilibrium price in a perfectly competitive market is ` 10. The marginal cost function is give MC = 4 + 0.2 Q.

The firm is presently producing 40 units of output per period. To maximize profit, should the outputs increased or decreased? Explain.

Ans :

Given

Marginal cost (MC) = 4 + 0.2 Q

Equilibrium (P) = 10

Output per period = 40 Units

In perfectly competitive market in this market firms (or) producers faces a market price equals to its marginal cost.

P = MC

MC = MR [Marginal cost equals to marginal revenue

Calculation of Total Revenue

Total Revenue (TR) = Price × Quantity

TR = 10 × 40

TR = 400

Calculation of Profit

Profit = Total Revenue – Total cost

Note : The above problem does not mentioned about "total cost", it cannot be solved further.

OR

9. What is oligopoly? Explain how price and output decisions are taken under conditions of oligopoly. **(Unit-IV, SQA-6, Q.No.21)**

10. (a) What are the factors that had enabled increased flow of foreign investments into our country? **(Out of Syllabus)**

(b) What is the effect of flow of foreign investment into our country on balance of payment and liquidity. **(Out of Syllabus)**

OR

11. (a) What are the control mechanisms in the hands of RBI for monetary policy? **(Out of Syllabus)**

(b) What are the 'tariff' and 'non tariff' approaches for import control? **(Out of Syllabus)**