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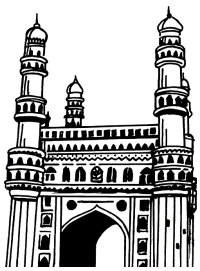

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UNIT I

INTRODUCTION:

Business Economics: Meaning - Nature – Characteristics - Importance and Role - Micro & Macro Economics - Scope - Objectives - Law of Diminishing marginal utility - Law of Equimarginal utility.

1.1 BUSINESS ECONOMICS

1.1.1 Meaning

Q1. Define Business Economics.

(OR)

What is meant by Business Economics?

Ans : **(June-18, Imp.)**

Introduction

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

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

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

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

(iii) 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."

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

(v) 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. "Business Economics is Micro in Nature". Explain.

Ans :

(i) Business economics includes various micro economic tools like economic analysis, profit management, etc.,

(ii) For fixing the price of a product, managers use various micro economic theories like pricing theory, cost and revenue theories, etc.,

(iii) Managers use cost and benefit analysis for making business decisions.

(iv) Theory of production is used in making decisions related to production and supply of a particular product.

(v) Business economics also used statistical methods for application of economic theory in making decision.

(vi) Capital budgeting and capital rationing techniques are used by managers in the preparation of budgets.

(vii) Business economics uses the theory of firm which is an important element in micro economics.

1.1.2 Nature

Q4. Explain the nature of business economics.

Ans : **(June-18, Imp.)**

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.

1.1.3 Characteristics

Q5. 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.

Q6. Explain the scope of business economics.

Ans : **(June-18, Imp.)**

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.

1.1.4 Importance and Role

Q7. Explain the Importance of business economics.

Ans :

Business economics plays an important role in decision making in an organization. Decision making is a process of selecting the best course of action from the available alternatives. In order to make sound decisions; managers must have in-depth knowledge of economic concepts, theories, and tools. The following points explain the importance of business economics.

1. Business economics covers various important concepts, such as demand and supply analysis; short and long-run costs; and marginal utility. These concepts support managers in identifying and analysing problems and finding solutions.

2. It helps managers to identify and analyse various internal and external business factors and their impact on the functioning of the organization.
3. Business economics helps managers in framing various policies, such as pricing policies and cost policies, on the basis of economic study and findings.
4. By studying various economic variables, such as cost production and business capital, organizations can predict the future.
5. Business economics helps in establishing relationships between different economic factors, such as income, profits, losses, and market structure. This helps in guiding managers in effective decision making and running the organization.

Q8. 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.

Q9. What are the various fundamental concepts in business economics?

Ans :

Fundamental Concepts are the basic economic tools or principles for the entire extent of managerial economics. Managerial Economics offers a number of principles and analytical tools which are generally used by modern business organizations in decisions making process.

The Fundamental concepts in managerial economics are given below:

1. Opportunity cost principle,
2. Increment principle,
3. Principle of time perspective,
4. Discounting principle, and

5. Equi-marginal principle.
6. Scarcity Principle
7. Marginalism
8. Risk And Uncertainty
9. Efficiency
10. Externality
11. Trade-off.

1.2 MICRO ECONOMICS

Q10. Define Micro economics. Explain the importance of Micro economics.

Ans : **(Dec.-16, Imp.)**

Meaning

The word "micro" in economics has been taken from a Latin world "mikros" which mean "small". In micro economic theory problems related to individuals industries, firms, markets and other economic units are extensively assessed and studied. In this way, under micro economics, economic problems pertaining to individual economic units are studied, such as the price determination of a commodity, equilibrium of a firm, equilibrium of an industry, etc.

In other words under this branch of economics, it is examined as to how the price of a commodity will be determined, how much quantity of a product a firm will produce, how many units of a factor a firm will employ, how many units of a commodity a consumer will demand, etc.

Importance

Micro economics is an important method of economic analysis. Hence Keynes regarded micro economics as "necessary part of one's apparatus of thought". It has both theoretical and practical significance.

1. **To understand the working of the economy :** Prof. D.S. Watson stated. "Micro Economics has many uses. The greatest of these uses is the understanding of the operation of the economy".
2. **To provide tools for the economic policies :** Micro economics provides the required tools for the formulation of economic policies.
3. **Helpful in the employment of efficient use of resources:** As the resources are scarce their efficient distribution across various uses is very much essential. Micro economic analysis helps in this direction.
4. **Helpful in International Trade :** Unless we study the relative advantages and disadvantages in the production and trade of a commodity it is not possible to formulate proper trade policy. (Export and import policy).
5. **Helpful in understanding the problems of taxation :** Though tax policy is not a micro economic issue micro economics helps to impose and collect taxes with least inconvenience.
6. **Helpful to the business executive :** The consumer behaviour, probable changes in demand, availability of resources etc. are indispensable tools to a business executive.
7. **Helpful for construction and use of models :** Economic models are a powerful instrument in the hands of economists and policy makers today. Micro economics helps in this area also.
8. **Helpful to examine the conditions of economic welfare :** The Government of India recently approved the National Urban Transport Policy (NUTP). This is the result of certain micro studies in the country only.

   Now, Economic welfare has been attracting the attention of the general public, policy makers, bureaucrats, politicians etc. than any other time in the past.
9. **Helpful to make the prediction :** By studying the behaviour of individual units microeconomics provides the basis for prediction.
10. **Helpful to achieve "maximum welfare to maximum numbers" :** This fundamental principle or basis of welfare economics is possible only with the help of micro economics.

1.2.1 Scope

Q11. Explain the scope of micro economics.

Ans :

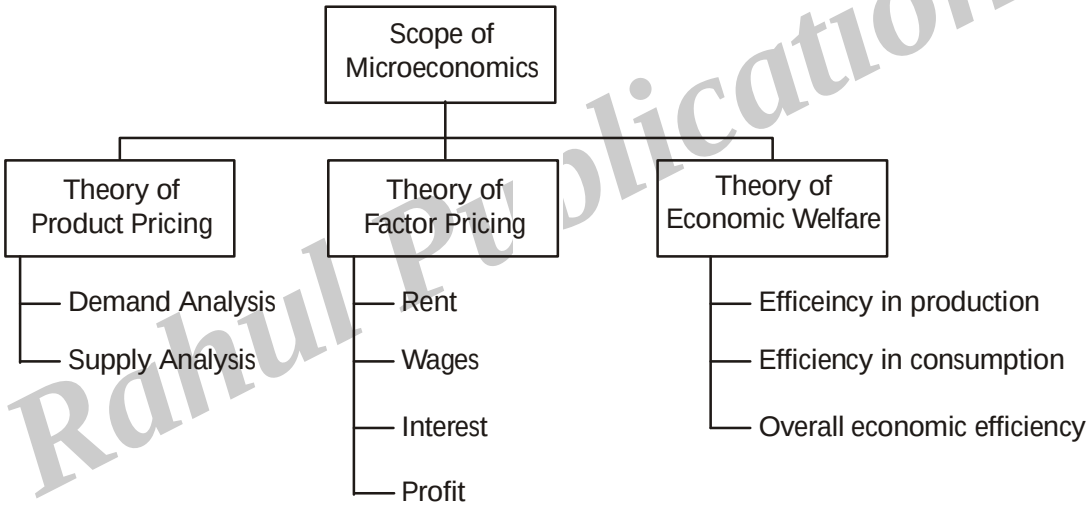
Scope

(a) Theory of Product Pricing

The price of an individual commodity is determined by the market forces of demand and supply. Microeconomics is concerned with demand analysis i.e. individual consumer behavior, and supply analysis i.e. individual producer behavior.

(b) Theory of Factor Pricing

In Microeconomics, land, labor, capital and entrepreneur are the factors that contribute to the production process. Microeconomics helps in determining the factor rewards for land, labor, capital, and entrepreneur in the form of rent, wages, interest, and profit respectively.



(c) Theory of Economic Welfare

Theory of Welfare basically deals with efficiency in the allocation of resources. Efficiency in the allocation of resources is attained when it results in the maximization of satisfaction of the people. Economic efficiency involves three efficiencies

(i) Efficiency in production: Efficiency in production means producing a maximum possible amount of goods and services from the given amount of resources.

(ii) Efficiency in consumption: Efficiency in consumption means distribution of produced goods and services among the people for consumption in such a way as to maximize total satisfaction of the society.

(iii) Overall economic efficiency: It means the production of those goods which are most desired by the people.

1.2.2 Objectives

Q12. What are the major objectives of micro economics?

Ans :

The objective of microeconomic theory is to analyze how individual decision-makers, both consumers and producers, behave in a variety of economic environments

The common goal in all of these issues is to identify the incentives of the various participating agents and the trade-offs that they face.

Microeconomics focuses on the actions of individual agents within the economy, like households, workers, and businesses.

Q13. State the advantages and limitations of micro economics.

Ans : **(Dec.-16, Imp.)**

Advantages

Following are the advantages of micro economics,

1. **Individual Behaviour Analysis:** Micro economics studies behaviour of individual consumer or producer in a particular situation.
2. **Resource Allocation:** Resources are already scare i.e less in quantity. Micro economics helps in proper allocation and utilization of resources to produce various types of goods and services.
3. **Price Mechanization:** Micro economics decides prices of various goods and services on the basis of "demand-supply analysis".
4. **Economic Policy:** Micro economics helps in formulating various economic policies and economic plans to promote all round economic development.
5. **Free Enterprise Economy:** Micro economics explain operating of a free enterprise economy where individual has freedom to take his own economic decisions.

Limitations

Prof. Richard A.Bilas stated that. While price theory is useful, one should not be blinded by the theory. Micro economics suffers from the following important limitations.

1. **Inadequate :** The study of micro economics is not adequate enough to understand the behaviour of the aggregates.
2. **Full employment :** The entire classical theory depends upon certain important assumptions. Full employment is one such major assumption. But, in reality we will come across unemployment but not full employment. Hence. Key stated. "To assume full employment is to assume all our difficulties away".
3. **Laissez Faire Policy :** The classical economists like Adamsmith and other Smithsonians and their successors advocated the policy of Laissez - faire - meaning let the state not interfere. But, in the present times it is impossible to follow this.
4. **Applicability :** To apply the conclusions arrived at with the help of micro economic analysis to the entire economy is not desirable or may not be appropriate. In this connection the words of Boulding are remarkable "Description of a large and complex universe of factors like the economic system is impossible in terms of individual item".
5. **Abstractness :** The micro economic analysis is basically abstract in its nature and hence far from the reality.
6. **Too much generalization is not good :** The study of few units and making a generalisation will never give good and reliable results.

   Ex: Saving is virtue for an individual. If all people save, cutting their consumption, expenditure may result in a business cycle.

This, however, does not mean that micro economics is not useful. It has its own role to play in the economy to make certain decisions and to formulate policies. Ex: Welfare Economics.

1.3 MACRO ECONOMICS

1.3.1 Scope

Q14. Define macro economics. State the scope and importance of macro economics.

Ans :

Meaning

The word "macro" is derived from the Greek word "macros" meaning "large" and therefore, macro economics is concerned with the economics activity at large. Also it is that part of economic theory which studies economy in its totality or as whole. According to Prof. Boulding, "macro economic is the study of overall aggregates and averages covering the whole economy and examines the interrelationship among various aggregates". In short, macro economic examines the forest, not the trees. It gives us a "bird's eye view of the economy". Since subject matter of macro economics revolves around determination of level of income and employment. Therefore it is also known as "theory of income and employment".

Scope

The scope of macro economics is really very wide. It is the study of aggregates or averages covering the whole economy such as total employment, total output, national income, aggregate consumption, total investment, the general price level etc.. The study of the "totals' or "aggregates' of the important variables in the economic system - income, consumption, saving, investment, employment is conducted independently of the behavior of economic units that constitute the economic system.

That is why Prof. Boulding commented that macro economics studies the character of the forest, independently of the trees which compose it. Macro economic is also known as the "The Theory of income and employment'". "It is concerned with the macro economic problems such as unemployment, inflation, business cycles etc. The following chart is a brief summary of the scope of macro economics.

A branch of economics theory macro-economics covers the following aspects :

1. Theory of income and employment

Macro-economics studies what factors and how these factors determine the level of income and employment the level of income and employment is determine by aggregate demand. Aggregate demand is the sum of total consumption demand and total investment demand. Hence, consumption function and investment function are the important components of macro-economics. The theory of trade cycle is also covered by macro-economics.

2. Theory of general prices level

Macro-economics is concerned with how general price level is determined. The main aspect of general prices level is inflation. These are many theories of inflation. Inflation, one of the grave problem of preset world, is also an important component of macro-economics. The theories of money, banking and finance also fall under macro-economics.

3. Theory of economic growth

Growth economics or the theory of economics growth is another important branch of macro-economics. Many theories of economics growth have been developed .These theory suggest the way to accelerate the rate of growth of the economics. It is because economic growth is a prerequisites for the improvement in the levels of living of people and alleviation of poverty.

4. Modern theory of distribution

National income is distributed among different classes of people of a country in different ways. Macro-economics studies what factors and how these factors determine the relative share of different of people national income .M. Kaleckly and Nicholas Kaldor developed the modern theory of distribution called macro-economics theory distribution. Kalecky believed that the relative share of wages and profit depends on the degree of monopoly in the economy. Similarly, Kaldor believed that the relative share of the wages and profit depend on consumption.

Importance

Since. 1936 Macro Economic analysis became very popular and today we hardly come across a text book without mentioning the macro economics. The significance of macro economics, in both theory and practice, is evident from the following.

1. To know the working of an economy

The study of macro economic parameters is a must to understand the functioning of an economy.

2. To solve employment related problems

Unemployment is a major issue across all the nations in the world today. But, the nature of unemployment differs from country to country and from time to time. To solve this problem macro economics is very much useful.

3. To formulate suitable economic policies

Macro economic comes to the rescue of the planners and economists to formulate suitable economic policies.

4. To study national income

National income estimates are taking place in all the countries today as they are very much essential to understand an economy. National income estimates are possible with the help of macro economics only.

5. To tackle the problems inflation/ deflation

Sometimes we see that the general price level is rising and sometimes it declines. Inflation or deflation is a major problem faced by the world nations. To tackle this problem macro economics is essential.

6. Business cycles/trade cycles

Business cycles became part and parcel of the economic process. They are nothing but fluctuations in the economic activity. Macro economic suggests remedial measures to business cycles.

7. Economic growth/development

Meier and Baldwin opined that achieving economic development is the objective of developing countries while retaining the economic growth achieved is the problem of the developed countries. Macro economics helps in this direction.

8. Provides solution to monetary problems

Macro economics helps in finding solutions to the money related problems in the economy.

9. Paves the way for better understanding of micro economics

Macro economics helps us to understand the behaviour of the individual units in a better way. For example : business men try to hoard certain goods like cigarettes before the release of the annual budget.

10. To rain the standard of living of people

Income, employment, general price level, availability of goods and services indicate the standard of living of a nation. Macro economics studies all these phenomena and helps to improve the standard of living.

11. To promote economic welfare

Macro economics suggests measures for economic welfare or well being of the society.

Ex: Better income and wealth distribution, protection / conservation of environment.

12. To attain the best allocation of resources : Macro economics always suggests better allocation of resources to maximise the aggregate output.

1.3.2 Objectives

Q15. What are the objectives of macro economics?

Ans :

1. Sustainability

A rate of growth which allows an increase in living standards without undue structural and environmental difficulties. 'Economic growth' will be studied later on in this book.

2. Full employment

Where those who are able and willing to have a job can get one, given that there will be a

certain amount of frictional, seasonal and structural unemployment (referred to as the natural rate of unemployment).

3. Price stability

When prices remain largely stable, and there is not rapid inflation or deflation. Price stability is not necessarily the same as zero inflation, but instead steady levels of low-moderate inflation is often regarded as ideal. It is worth noting that prices of some goods and services often fall as a result of productivity improvements during periods of inflation, as inflation is only a measure of general price levels. However, inflation is a good measure of 'price stability'. Zero inflation is often undesirable in an economy. ("Internal Balance" is used to describe a level of economic activity that results in full employment with no inflation.)

4. External Balance

Equilibrium in the Balance of payments without the use of artificial constraints. That is, the value of exports being roughly equal to the value of imports over the long run.

Q16. Explain the advantages and disadvantages of macro economics.

Ans :

Advantages

The following are the advantages of macro economics,

1. **Formulate and Execute the Government Policies:** Macro economic study is very much useful for the formulation and execution of government policies. The main objective of the government is to achieve maximum social benefit. For that is has to deal with all the citizens of the country, but not an individual. Therefore, the study of macro economics acquires more importance.
2. **Helps in Problems:** Macro economics helps in understanding the problems of unemployment, inflation etc. and provides solutions to solve them.
3. **Helps in Evaluating the Performance:** Macro economic study is very important in evaluating the overall performance of the economy in terms of national income. The national income data is very useful to understand the distribution of national income among different sections of people in the economy.
4. **Understands the Behaviour :** Macro economics is helpful in understanding the behaviour of individual units. The demand for individual products depends on the aggregate demand in the economy. Thus, the study of individual units is not possible without macro economics.
5. **Useful in International Comparisons:** Macro economic study is useful for making interna-tional comparisons in terms of average national income.

Disadvantages

The following are the disadvantages of marco economics:

1. **Too much generalisation is not good :** Too much of anything is dangerous. Similarly, excessive generalisation makes macro economics less dependable. For example, borrowing is good for the state in times of crisis. But, today we see that the developed countries are also caught up in the debt trap due to excessive borrowing and spending by the people (through credit cards etc.)
2. **All units of the aggregates may not be homogeneous :** All individual units are not homogeneous. In this context Prof. Boulding opined that it is possible to add or subtract apples or oranges but it is not a possible to add or subtract apples and buildings.
3. **Indiscriminate use of macro economics may become irrelevant :** We should take all precautions while using macro economics. For example, an economic model suitable to U.S.A or South Korea may not be suitable to India (Harrod & Domar Model and Janma Bhoomi programme in Andhra Pradesh).
4. **Statistical and conceptual difficulties :** While estimating national income like aggregates we often come across these problems.

5. **Aggregates may not be important always :** A solution found in general can not be applied to all the individual units. For example, the family welfare measures adopted in Kerala are not suitable to Bihar.

6. **Limited Applicability :** Macro economics also suffers from the problem of limited applicability. Despite the above limitations macro economic analysis has occupied a pivoted place in the realm of economic analysis.

Q17. Compare and contrast micro economics and macro economics.

Ans : **(Dec.-17, Imp.)**

S.No.	Nature	Microeconomics	Macroeconomics
1.	**Definition**	Microeconomics is the study of economic actions of individuals and small groups of individuals	Macroeconomics studies the economy as a whole and not a single unit but combination of all.
2.	**Concern with**	Particular households, firms and industries	National income, general price levels, national output, unemployment and poverty.
3.	**Objective**	On demand side is to maximize utility whereas on the supply side is to minimize profits at minimum cost	Full employment, price stability, economic growth and favourable balance of payments.
4.	**Basis**	Price mechanism which operates with the help of demand and supply forces	National income, output and employment which are determined by aggregate demand and aggregate supply.
5.	**Assumptions**	Rational behaviour of Individuals	Aggregate volume of output of an economy, the extent to which its resources are employed
6.	**Limitations**	Existence of full employment	Involvement of 'Fallacy of Composition' which doesn't prove true

1.4 Law of Diminishing Marginal Utility

Q18. Define Utility. Describe total utility and marginal utility.

Ans : **(Dec.-16, Imp.)**

Meaning

It is a measure of satisfaction an individual gets from the consumption of the commodities. In other words, it is a measurement of usefulness that a consumer obtains from any good.

The satisfaction of a consumer is the basis of the utility function. It measures how much one enjoys when he or she buys something. A utility is a measure of how much one enjoys a movie, favourite food, or other goods. It varies with the amount of desire. One can conclude the following conclusions

- A Utility of a good differs from one consumer to another.
- It keeps on changing for the same consumer due to change in the amount of desires.
- It should not be equated with its usefulness.

Total Utility

Total utility is defined as the sum of the utility derived by a consumer from the different units of a commodity or service consumed at a given period of time. Assume that an individual consumes five units of a commodity X at a given period of time and derives utility out of the consumption of each unit as U_1,U_2, U_3, U_4, and U_5. The total utility is measured as follows:

$$TU = U_1 + U_2 + U_3 + U_4 + U_5$$

If the individual consumes n number of commodities, his/her total utility, TU_n, will be the sum of the utility derived from each commodity. For example, an individual consumes commodities X, y, and Z and their respective utilities are U_x, U_y, and U_z, then total utility is expressed as follows:

$$TU_n = U_x + U_y + U_z$$

Marginal Utility

Apart from total utility, the concept of marginal utility is equally important for utility analysis. Marginal utility is defined as the utility derived from the marginal or additional unit of a commodity consumed by an individual. It can also be defined as the addition to the total utility of a commodity resulting from the consumption of an additional unit. Therefore, marginal utility, MU of a commodity X, is the change in the total utility, ΔTU, attained from the consumption of an additional unit of commodity X. Mathematically, it can be expressed as:

$$MU_x = \frac{\Delta TUx}{\Delta Qx}$$

Where TU_x = Total utility, ΔQ_x = Change in quantity consumed by one additional unit

When total number of unit consumed is n, marginal utility can also be expressed as:

MU of nth unit = $TU_n - TU_{n-1}$

Q19. State and explain the Law of Diminishing Marginal Utility.

(OR)

Explain the Law of Diminishing Marginal Utility.

Ans : **(Dec.-17, Dec.-16, Imp.)**

The law of diminishing marginal utility is one of the most important laws in economics. It states that as the quantity consumed of a commodity continues to increase, the utility obtained from each successive unit goes on diminishing, assuming that the consumption of all other commodities remains the same. To put simply, when an individual continues to consume more and more units of a commodity per unit of time, the utility that he/she obtains from each successive unit continues to diminish. For example, the utility derived from the first glass of water is high, but with successive glasses of water, the utility would keep diminishing. The law of diminishing marginal utility is applicable to all kinds of goods such as consumer goods, durable goods, and non-durable goods. Let us understand the law of diminishing marginal utility with the help of an example.

An individual consumes only one commodity X and its utility is measured quantitatively. The total utility and marginal utility schedules are as shown in Table.

Number of units of commodity consumed per unit of time

Units of commodity	Total utility (TU_x)	Marginal utility (MU_x)
1	30	30
2	50	30
3	60	20
4	65	10
5	60	5
6	45	–5

Table shows that as the number of units of commodity X consumed per unit of time increases, TU_x increases but at a diminishing rate while marginal utility MU_x decreases consistently. The rate of increase in TU_x as a result of increase in the number of units consumed has been depicted through the MU_x curve in the graph shown in fig.

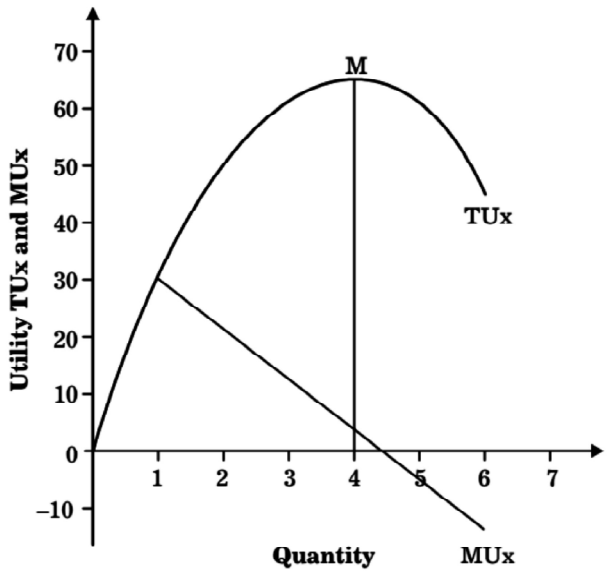


Fig.: Total and Diminishing Marginal Utility of Commodity X

In Fig. the downward sloping MU_x curve shows that the marginal utility of a commodity consistently decreases as its consumption increases. When the consumption reaches to 4 units of commodity X, TU_x reaches its maximum level (the point of saturation) marked as M. Beyond the point of saturation, MU_x becomes negative and TU_x begins to decline consistently. The downward slope of MU_x explains the law of diminishing marginal utility. Therefore, according to the law of diminishing marginal utility, the utility gained from a unit of a commodity is dependent on the consumer's desire for the commodity. When an individual continues to consume additional units of a commodity, the satisfaction that he/she derives from the consumption keeps decreasing. This is because his/ her need gets satisfied in the process of consumption. Therefore, the utility derived from successive units of the commodity decreases.

Assumptions

The law of diminishing marginal utility is based on certain assumptions, which are as follows:

1. Rationality

The law of marginal utility assumes that a consumer is a rational being who aims at maximising his/her utility at the given income level and the market price.

2. Measurement of utility

The utility of a commodity can be measured using quantifiable standards like a cup of tea, a bag of sugar, a pair of socks, etc.

3. Constant marginal utility of money

The marginal utility of consumer's income is constant.

4. Homogeneity of commodity

The successive units of a commodity consumed are homogenous or identical in shape, size, colour, taste, quality, etc.

5. Continuity

The consumption of successive units of a commodity should be continuous without intervals.

6. Ceteris paribus

Factors, such as the income, tastes and preferences of consumers; price of related goods; etc. remain unchanged.

However, the law of diminishing marginal utility does not hold true in some cases called exceptions to the law of diminishing marginal utility. For example, in cases, such as individuals accumulating wealth, pursuing hobbies (such as collection of stamps, coins, or antiques, songs, rare paintings, etc.), the marginal utility may increase initially rather than decrease. Therefore, they violate the law of diminishing marginal utility. However, eventually the marginal utility may slowly begin to decrease.

The measurement of utility has always been a controversial issue. Different economists have given different viewpoints on the measurement of utility. Neo-classical economists have given cardinal utility concept to measure the utility derived from a good. On the other hand, modern economists have given the concept of ordinal utility for measuring utility. Let us discuss these two concepts in detail in the next sections.

Q20. What are the exceptions to the Law of Diminishing Marginal Utility?

Ans :

1. Hobbies

In certain cases hobbies like stamp collections, collection of antiques, collection of old coins etc. every additional unit gives more pleasure; i.e., the marginal utility tends to increase.

2. Drunkards

This law is not applicable to a drunkard, as his, as his desire increases with every successive dose of liquid, this is true, but the rationality condition of law is violated. This introspective behaviour of a drunkard is irrational.

3. Misers

In the case of miser, it is pointed out that greed increases with every additional acquisition of money. Hence the marginal utility of money does not diminish for him with more and more money.

4. Music & Poetry

In the case of music & poetry, it is commonly experienced that a repeat hearing gives a better satisfaction than the first one. Hence, it is thought that the law of diminishing marginal utility may not be applicable here.

5. Reading

Since reading gives more knowledge, a scholar would get more and more satisfaction with every additional book.

6. Money

Ordinarily, it may felt that with the increase in money, our puschasing power increases; therefore, its utility should correspondingly increase with its stock, so that the law of diminishing marginal utility doesnot applicable.

1.5 Law of Equimarginal Utility

Q21. State the explain Law of Equimarginal Utility.

Ans : **(June-18, Imp.)**

Meaning

The idea of equi-marginal principle was first mentioned by H.H.Gossen (1810-1858) of Germany. Hence it is called Gossen's second Law. Alfred Marshall made significant refinements of this law in his 'Principles of Economics'.

The law of equi-marginal utility explains the behaviour of a consumer when he consumers more than one commodity. Wants are unlimited but the income which is available to the consumers to satisfy all his wants is limited. This law explains how the consumer spends his limited income on various commodities to get maximum satisfaction. The law of equi-marginal utility is also known as the law of substitution or the law of maximum satisfaction or the principle of proportionality between prices and marginal utility.

Definition

According to In the words of Prof. Marshall, 'If a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility in all'.

Assumptions

1. The consumer is rational so he wants to get maximum satisfaction.
2. The utility of each commodity is measurable.
3. The marginal utility of money remains constant.
4. The income of the consumer is given.
5. The prices of the commodities are given.
6. The law is based on the law of diminishing marginal utility.

Suppose there are two goods X and Y an which a consumer has to spend a given income. The consumer being rational, he will try to spend his limited income on goods X and Y to maximise his total utility or satisfaction. Only at that point the consumer will be in equilibrium.

According to the law of equimarginal utility; the consumer will be in equilibrium at the point where the utility derived from the last rupee spent on each is equal.

Symbolically the consumer will be in equilibrium when

$$\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU_m$$

Where MU_x = Marginal utility of commodity X

MU_y = Marginal utility of commodity Y

P_x = Price of commodity X

P_y = Price of commodity Y

MUm = Marginal utility of money.

$\frac{MU_x}{P_x}$ = and $\frac{MU_y}{P_y}$ are known as marginal utility of money expenditure.

They explain the marginal utility of one rupee spent on commodity X and the marginal utility of one rupee spent on commodity Y

Let us illustrate the law of equi marginal utility with the help of the following table:

Marginal utility of Goods X and Y

Units	MU_x(units)	MU_y(units)
1	50	36
2	45	32
3	40	28
4	35	24
5	30	20
6	25	16
7	20	12
8	15	8

Marginal utility of money expenditure

Units	$\frac{MU_x}{P_x}$ (units)	$\frac{MU_y}{P_y}$ (units)
1	10	9
2	9	8
3	8	7
4	7	6
5	6	5
6	5	4
7	4	3
8	3	2

Suppose the marginal utility of money is constant at Re 1 = 5 units, the consumer will buy 6 units of commodity 'x' and 5 units of commodity 'y'. His total expenditure will be (Rs 5 × 6) + (Rs 4 × 5) = Rs 50/- on both commodities. At this point of expenditure his satisfaction is maximised and therefore tie wilt be in equilibrium.

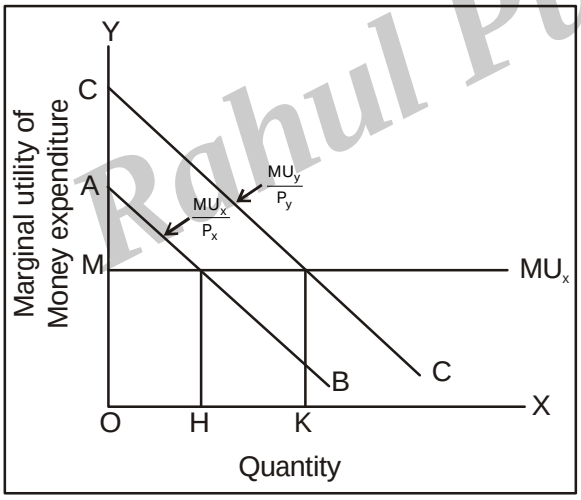


Fig.: Consumer's Equilibrium

Consumers equilibrium is graphically portrayed in above Fig. Since marginal utility curves of goods slope downward, curves depicting $\frac{MU_x}{P_x}$ and $\frac{MU_y}{P_y}$ will also slope downward. Taking the income of a consumer as given, let his mill utility of money be constant at OM utility in Figure. $\frac{MU_x}{P_x}$ is equal to OM (the marginal utility of money) when OH amount of good x is purchased $\frac{MU_x}{P_x}$ is equal to OM when OK quantity of good Y is purchased. Thus, when the consumer is buying OH of X and OK of Y, then $\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU_m$.

Limitations

1. Indivisibility of Goods

The theory is weakened by the fact that many commodities like a car, a house etc. are indivisible. In the case of indivisible goods, the law is not applicable.

2. The Marginal Utility of Money is Not Constant

The theory is based on the assumption that the marginal utility of money is constant. But that is not really so.

3. The Measurement of Utility is not Possible

Marshall states that the price a consumer is willing to pay for a commodity is equal to its marginal utility. But modern economists argue that, if two persons are paying an equal price for given commodity, it does not mean that both are getting the same level of utility. Thus utility is a subjective concept, which cannot be measured, in quantitative terms.

4. Utilities are Interdependent

This law assumes that commodities are independent and therefore their marginal utilities are also independent. But in real life commodities are either substitutes or complements. Their utilities are therefore interdependent.

5. Indefinite Budget Period

According to Prof. K.E. Boulding, indefinite budget period is another difficulty in the law.

Normally the budget period is assumed to be a year. But there are certain commodities which are available in several succeeding accounting periods. It is difficult to calculate marginal utility for such commodities.

Q22. What are the exceptions of Law of Equimarginal Utility.

Ans :

1. For applying this law of equimarginal utility in the real life, consumer must weigh in ind the marginal utilities of different commodities. For this he has to calculate and compare the marginal utilities obtained from different commodities. But it has been pointed out that the ordinary consumers are not so rational and calculating. Consumers are generally governed by habits and customs. Because of their habits and customs they purchase particular amounts of different commodities, regardless of whether the particular allocation maximizes their satisfaction or not.

2. For applying this law in actual life and equate the marginal utility of last rupee spent on different commodities, the consumers must be able to measure the marginal utilities of different commodities in cardinal terms. However, this is easier said than done. It has been said that it is not possible for the consumer to measure the utility cardinally. Being a state of feeling and also there being no objective units with which to measure utility, it is cardinally immeasurable. It is because the immeasurability of utility in cardinal terms that consumer's behaviour has been explained with the help of ordinal utility by J.R. Hicks and R.G.D. Allen. Ordinal utility analysis involves the use of indifference curves which we shall explain in the next chapter.

3. Another limitation of the law of equimarginal utility is found in case of indivisibility of certain goods. Goods are often available in large indivisible units. Because the goods are indivisible, it is not possible to equate the marginal utility of money spent on them. For instance, in allocating money between the purchase of car and foodgrains, marginal utilities cannot be equated. Car costs about Rs. 20,000 and is indivisible, whereas foodgrains are divisible and money spent on them can be easily varied. Therefore, the marginal utility of rupee obtained from car cannot be equalised with that obtained from foodgrains. Thus, indivisibility of certain goods is a great obstacle in the way of equalisation of marginal utility of a rupee from different commodities.

Short Question and Answers

1. Define Business Economics.

Ans :

Introduction

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

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

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

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

2. 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.

3. Explain the nature of business economics.

Ans :

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.

4. 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.

5. Importance of business economics.

Ans :

Business economics plays an important role in decision making in an organization. Decision making is a process of selecting the best course of action from the available alternatives. In order to make sound decisions; managers must have in-depth knowledge of economic concepts, theories, and tools. The following points explain the importance of business economics.

1. Business economics covers various important concepts, such as demand and supply analysis; short and long-run costs; and marginal utility. These concepts support managers in identifying and analysing problems and finding solutions.
2. It helps managers to identify and analyse various internal and external business factors and their impact on the functioning of the organization.
3. Business economics helps managers in framing various policies, such as pricing policies and cost policies, on the basis of economic study and findings.
4. By studying various economic variables, such as cost production and business capital, organizations can predict the future.

6. Define Micro economics.

Ans :

Meaning

The word "micro" in economics has been taken from a Latin world "mikros" which mean "small". In micro economic theory problems related to individuals industries, firms, markets and other economic units are extensively assessed and studied. In this way, under micro economics, economic problems pertaining to individual economic units are studied, such as the price determination of a commodity, equilibrium of a firm, equilibrium of an industry, etc.

In other words under this branch of economics, it is examined as to how the price of a commodity will be determined, how much quantity of a product a firm will produce, how many units of a factor a firm will employ, how many units of a commodity a consumer will demand, etc.

7. Define macro economics.

Ans :

Meaning

The word "macro" is derived from the Greek word "macros" meaning "large" and therefore, macro economics is concerned with the economics activity at large. Also it is that part of economic theory which studies economy in its totality or as whole. According to Prof. Boulding, "macro economic is the study of overall aggregates and averages covering the whole economy and examines the interrelationship among various aggregates". In short, macro economic examines the forest, not the trees. It gives us a "bird's eye view of the economy". Since subject matter of macro economics revolves around determination of level of income and employment. Therefore it is also known as "theory of income and employment".

8. Define Utility.

Ans :

Meaning

It is a measure of satisfaction an individual gets from the consumption of the commodities. In other words, it is a measurement of usefulness that a consumer obtains from any good.

The satisfaction of a consumer is the basis of the utility function. It measures how much one enjoys when he or she buys something. A utility is a measure of how much one enjoys a movie, favourite food, or other goods. It varies with the amount of desire. One can conclude the following conclusions

- A Utility of a good differs from one consumer to another.
- It keeps on changing for the same consumer due to change in the amount of desires.
- It should not be equated with its usefulness.

9. Total Utility.

Ans :

Total utility is defined as the sum of the utility derived by a consumer from the different units of a commodity or service consumed at a given period of time. Assume that an individual consumes five units of a commodity X at a given period of time and derives utility out of the consumption of each unit as U_1,U_2, U_3, U_4, and U_5. The total utility is measured as follows:

$$TU = U_1 + U_2 + U_3 + U_4 + U_5$$

If the individual consumes n number of commodities, his/her total utility, TU_n, will be the sum of the utility derived from each commodity. For example, an individual consumes commodities X, y, and Z and their respective utilities are U_x, U_y, and U_z, then total utility is expressed as follows:

$$TU_n = U_x + U_y + U_z$$

10. Marginal Utility.

Ans :

Apart from total utility, the concept of marginal utility is equally important for utility analysis. Marginal utility is defined as the utility derived from the marginal or additional unit of a commodity consumed by an individual. It can also be defined as the addition to the total utility of a commodity resulting from the consumption of an additional unit. Therefore, marginal utility, MU of a commodity X, is the change in the total utility, ΔTU, attained from the consumption of an additional unit of commodity X. Mathematically, it can be expressed as:

$$MU_x = \frac{\Delta TUx}{\Delta Qx}$$

Where TU_x = Total utility, ΔQ_x = Change in quantity consumed by one additional unit

When total number of unit consumed is n, marginal utility can also be expressed as:

$$MU \text{ of nth unit} = TU_n - TU_{n-1}$$

11. State the explain Law of Equimarginal Utility.

Ans :

Meaning

The idea of equi-marginal principle was first mentioned by H.H.Gossen (1810-1858) of Germany. Hence it is called Gossen's second Law. Alfred Marshall made significant refinements of this law in his 'Principles of Economics'.

The law of equi-marginal utility explains the behaviour of a consumer when he consumers more than one commodity. Wants are unlimited but the income which is available to the consumers to satisfy all his wants is limited. This law explains how the consumer spends his limited income on various commodities to get maximum satisfaction. The law of equi-marginal utility is also known as the law of substitution or the law of maximum satisfaction or the principle of proportionality between prices and marginal utility.

Definition

According to In the words of Prof. Marshall, 'If a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility in all'.

12. Limitations of law equi marginal utility.

Ans :

1. Indivisibility of Goods

The theory is weakened by the fact that many commodities like a car, a house etc. are indivisible. In the case of indivisible goods, the law is not applicable.

2. The Marginal Utility of Money is Not Constant

The theory is based on the assumption that the marginal utility of money is constant. But that is not really so.

3. The Measurement of Utility is not Possible

Marshall states that the price a consumer is willing to pay for a commodity is equal to its marginal utility. But modern economists argue that, if two persons are paying an equal price for given commodity, it does not mean that both are getting the same level of utility. Thus

utility is a subjective concept, which cannot be measured, in quantitative terms.

4. Utilities are Interdependent

This law assumes that commodities are independent and therefore their marginal utilities are also independent. But in real life commodities are either substitutes or complements. Their utilities are therefore interdependent.

5. Indefinite Budget Period

According to Prof. K.E. Boulding, indefinite budget period is another difficulty in the law. Normally the budget period is assumed to be a year. But there are certain commodities which are available in several succeeding accounting periods. It is difficult to calculate marginal utility for such commodities.

13. What are the exceptions of Law of Equimarginal Utility.

Ans :

(i) For applying this law of equimarginal utility in the real life, consumer must weigh in ind the marginal utilities of different commodities. For this he has to calculate and compare the marginal utilities obtained from different commodities. But it has been pointed out that the ordinary consumers are not so rational and calculating. Consumers are generally governed by habits and customs. Because of their habits and customs they purchase particular amounts of different commodities, regardless of whether the particular allocation maximizes their satisfaction or not.

(ii) For applying this law in actual life and equate the marginal utility of last rupee spent on different commodities, the consumers must be able to measure the marginal utilities of different commodities in cardinal terms. However, this is easier said than done. It has been said that it is not possible for the consumer to measure the utility cardinally. Being a state of feeling and also there being no objective units with which to measure utility, it is cardinally immeasurable. It is because the immeasurability of utility in cardinal terms that consumer's behaviour has been explained with the help of ordinal utility by J.R. Hicks and R.G.D. Allen. Ordinal utility analysis involves the use of indifference curves which we shall explain in the next chapter.

(iii) Another limitation of the law of equimarginal utility is found in case of indivisibility of certain goods. Goods are often available in large indivisible units. Because the goods are indivisible, it is not possible to equate the marginal utility of money spent on them. For instance, in allocating money between the purchase of car and foodgrains, marginal utilities cannot be equated. Car costs about Rs. 20,000 and is indivisible, whereas foodgrains are divisible and money spent on them can be easily varied. Therefore, the marginal utility of rupee obtained from car cannot be equalised with that obtained from foodgrains. Thus, indivisibility of certain goods is a great obstacle in the way of equalisation of marginal utility of a rupee from different commodities.

14. Law of Equimarginal Utility.

Ans :

Meaning

The idea of equi-marginal principle was first mentioned by H.H.Gossen (1810-1858) of Germany. Hence it is called Gossen's second Law. Alfred Marshall made significant refinements of this law in his 'Principles of Economics'.

The law of equi-marginal utility explains the behaviour of a consumer when he consumers more than one commodity. Wants are unlimited but the income which is available to the consumers to satisfy all his wants is limited. This law explains how the consumer spends his limited income on various commodities to get maximum satisfaction. The law of equi-marginal utility is also known as the law of substitution or the law of maximum satisfaction or the principle of proportionality between prices and marginal utility.

Definition

According to In the words of Prof. Marshall, 'If a person has a thing which can be put to several uses, he will distribute it among these uses in such a way that it has the same marginal utility in all'.

15. Non Economic Activity

Ans :

Activities which are undertaken to satisfy social, religious cultural and sentimental requirements are called non-economic activities. The object of these activities is not to earn monetary gain or reward.

People engage in non-economic activities for reasons of love, sympathy, religion, patriotism, etc. For example, a mother looks after her children, a student donates blood, an old man goes to temple daily, a rich man donates money to Prime Minister Relief Fund; a young man helps a blind girl cross the road, etc.

16. Economic Activity.

Ans :

An economic activity takes place when resources such as capital goods, labour, manufacturing techniques or intermediary products are combined to produce specific goods or services. Thus, an economic activity is characterised by an input of resources, a production process and an output of products (goods or services).

An activity as defined here may consist of one simple process (for example weaving), but may also cover a whole range of sub-processes, each mentioned in different categories of the classification (for example, the manufacturing of a car consists of specific activities such as casting, forging, welding, assembling or painting). If the production process is organised as an integrated series of elementary activities within the same statistical unit, the whole combination is regarded as one activity.

17. Advantages of micro economics.

Ans :

(i) Individual Behaviour Analysis: Micro economics studies behaviour of individual consumer or producer in a particular situation.

(ii) Resource Allocation: Resources are already scare i.e less in quantity. Micro economics helps in proper allocation and utilization of resources to produce various types of goods and services.

(iii) Price Mechanization: Micro economics decides prices of various goods and services on the basis of "demand-supply analysis".

(iv) Economic Policy: Micro economics helps in formulating various economic policies and economic plans to promote all round economic development.

(v) Free Enterprise Economy: Micro economics explain operating of a free enterprise economy where individual has freedom to take his own economic decisions.

18. Advantages of macro economics.

Ans :

(i) Formulate and Execute the Government Policies: Macro economic study is very much useful for the formulation and execution of government policies. The main objective of the government is to achieve maximum social benefit. For that is has to deal with all the citizens of the country, but not an individual. Therefore, the study of macro economics acquires more importance.

(ii) Helps in Problems: Macro economics helps in understanding the problems of unemployment, inflation etc. and provides solutions to solve them.

(iii) Helps in Evaluating the Performance: Macro economic study is very important in evaluating the overall performance of the economy in terms of national income. The national income data is very useful to understand the distribution of national income among different sections of people in the economy.

(iv) Understands the Behaviour : Macro economics is helpful in understanding the behaviour of individual units. The demand for individual products depends on the aggregate demand in the economy. Thus, the study of individual units is not possible without macro economics.

(v) Useful in International Comparisons: Macro economic study is useful for making international comparisons in terms of average national income.

19. What are the objectives of macro economics?

Ans :

1. Sustainability

A rate of growth which allows an increase in living standards without undue structural and environmental difficulties. 'Economic growth' will be studied later on in this book.

2. Full employment

Where those who are able and willing to have a job can get one, given that there will be a certain amount of frictional, seasonal and structural unemployment (referred to as the natural rate of unemployment).

3. Price stability

When prices remain largely stable, and there is not rapid inflation or deflation. Price stability is not necessarily the same as zero inflation, but instead steady levels of low-moderate inflation is often regarded as ideal. It is worth noting that prices of some goods and services often fall as a result of productivity improvements during periods of inflation, as inflation is only a measure of general price levels. However, inflation is a good measure of 'price stability'. Zero inflation is often undesirable in an economy. ("Internal Balance" is used to describe a level of economic activity that results in full employment with no inflation.)

4. External Balance

Equilibrium in the Balance of payments without the use of artificial constraints. That is, the value of exports being roughly equal to the value of imports over the long run.

Choose the Correct Answers

1. The statements that contain the word 'ought to' are called [b]
   (a) Prescriptive (b) Normative
   (c) Assertive (d) Negative
2. Managerial economics is close to [a]
   (a) Micro economics (b) Macro economics
   (c) Theory of Income and Employment (d) Theory of Wages and Employment
3. Integration of economic theory with business practice is called [a]
   (a) Managerial economics (b) Economics
   (c) Macro economics (d) Micro economics
4. "Economics is the study of scarce resources and unlimited wants". Who said this ? [b]
   (a) Paul A. Samuelson (b) Prof. Lionel Robbins
   (c) Adam Smith (d) Alfred Marshal
5. Which of the following cannot be verified by looking at the facts ? [c]
   (a) Positive statement (b) Prescriptive actions
   (c) Normative statement (d) Welfare statement
6. Which of the following is not covered by Managerial Economics? [d]
   (a) Price-output decision (b) Profit related decision
   (c) Investment decision (d) Foreign direct investment (FDI) decision
7. Economic goods are scarce resources because they [a]
   (a) Are limited in supply to satisfy society requirements
   (b) Are limited to man made goods
   (c) Cannot be increased in terms of supply
   (d) Are important to satisfy human needs
8. Other things remaining the same, which of the following is correct ? [b]
   (a) marginal utility derived on the consumption of every additional unit goes on increasing.
   (b) Marginal utility derived on the consumption of every additional unit goes on diminishing.
   (c) Marginal utility derived on the consumption of every additional unit goes on changing either upwards or donwards.
   (d) Marginal utility derived on the consumption of every additional unit never changes.

9. What is the position of budget line with respect to indifference curve? [c]

(a) Below (b) Above

(c) Tangential (d) Intersecting

10. Consumption of additional apples after reaching the saturation point leads to [c]

(a) Fall in total utility and increase in marginal utility

(b) Increase in total utility and marginal utility

(c) Fall in total utility leading marginal utility to become negative

(d) Total utility to become negative and marginal utility tending to fall

Fill in the Blanks

1. _____ is the application of economic theory and quantitative methods.
2. "Micro Economics" and "Macro Economics" were coined by _____.
3. _____ deals with economic affairs in the large.
4. Economists make a wide use of the _____.
5. The _____ lies at the centre of the cardinal approach.
6. The term _____ refers to the capacity of a commodity to satisfy a human want.
7. _____ implies comparison and ranking without quantification of the magnitude.
8. The idea of equi-marginal principle was first mentioned by _____.
9. An _____ is the locus of points representing all the different combinations of two goods.
10. Micro Economics is also known as _____.

ANSWERS

1. Managerial economics
2. Prof. Ragnar Frisch
3. Macro economics
4. Incremental principle
5. Law of diminishing marginal utility
6. "Utility"
7. Ordinal measurement
8. H. Gossen
9. Indifference curve
10. Price Theory

UNIT II

DEMAND ANALYSIS:

Meaning – Function - Factors influencing Demand -Types of Demand -Demand Curve - Law of Demand–Exceptions to the law of demand-Elasticity of Demand: Concept - Types of elasticity of demand-price, income and cross Elasticity of Demand –measurement of elasticity—arc and point methods—Importance of various Elasticity of Demand

2.1 Demand Analysis

2.1.1 Meaning

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

Ans : **(June-18, Imp.)**

Introduction

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

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.

Definitions of Demand

(i) 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".

(ii) 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".

(iii) 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

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 :

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.

2.1.2 Function

Q3. What is demand function? How do you determine it.

Ans :

Demand function is a function which describes a relationship between one variable and its determinants, it describes how much quantity of goods is bought at alternative prices of good and related goods, alternative income levels, and alternative values of other variables affecting demand. Thus, the demand function for a good relates the quantity of a good which consumers demand during a given period to the factors which influence the demand. The above factors can be built up into a demand function.

Mathematically, the demand function for a product A can be expressed as follows:

$Qd = f(P, I, T, P_R, E_P, E_I, S_P, D_c, A, O)$

Where

Qd refers to quantity of demand and it is a function of the following variables:

P refers to price of the product;

- I → refers to Income level of the consumer;
- T → refers to tastes and preferences of the consumer;
- P_R → refers to prices of related goods (substitutes/complementary);
- E_P → refers to expectations about the prices in future;
- E_1 → refers to expectations about the incomes in future,
- S_P → refers to size of population;
- D_c → refers to distribution of consumers over different regions;
- A → refers to advertising efforts and
- O → refers to any other factors capable of affecting the demand.

The impact of some of these determinants on demand can be described as follows:

(a) Price of the product

Demand for a product is inversely related to its price. In other words, if price rises, the demand falls and vice versa. This is the price demand function showing the price effect on demand.

(b) Income of the consumer

As the income of the consumer or the household increases, there is tendency to buy more and more upto a particular limit. The demand for product X is directly related to the income of the consumer.

(c) Prices of substitutes or complementaries

The demand for product X is determined by the prices of its related products: substitutes or complementaries. If there is an increase in the price of a substitute, the demand for product X will go up and vice versa. Similarly, if the price of complementary goods (to product X) goes up, the demand for product X will fall.

(d) Tastes and preferences

If the tastes and preferences of the consumers change, then there is change in the product demanded also. Most of the companies keep changing their products and services, as and when the customer's tastes and preferences change. In some cases, the companies take advantage of technological changes and upgrade their products and services. Such changes in the technology can be advantageously used to meet the specific requirements of the customers. Thus, they try to change the tastes and preferences of the consumers through public awareness campaigns, advertisements in the media.

2.1.3 Factors influencing Demand

Q4. What are the Factors influencing Demand?

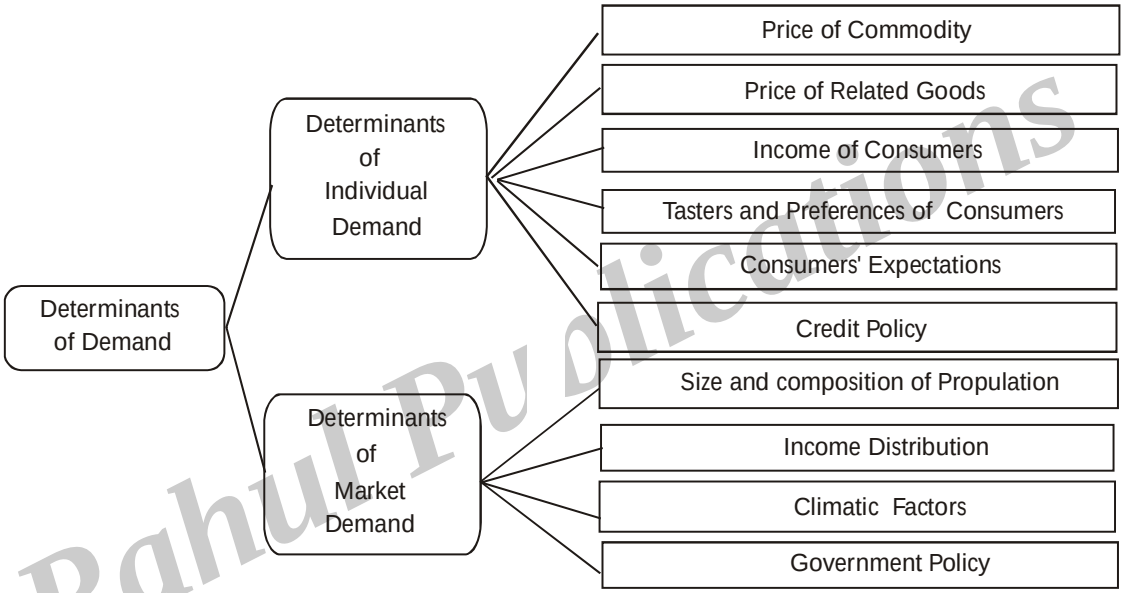
(OR)

Explain the factors determining demand?

Ans :

I. Factors Influencing Individual Demand

When an individual intends to purchase a particular product, he/she may take into consideration various factors, such as the price of the product, the price of substitutes, level of income, tastes and preferences, and the features of the product. These considerations determine the individual demand of the product. Let us now discuss the factors that influence individual demand as follows:



1. Price of a commodity

The price of a commodity or service is generally inversely proportional to the quantity demanded while other factors are constant. This implies that when the price of the commodity or service rises, its demand falls and vice versa.

2. Price of related goods

The demand for a good or service not only depends on its own price but also on the price of related goods. Two items are said to be related to each other if the change in price of one item affects the demand for the other item. Related goods can be categorized as follows:

- **Substitute or competitive goods**

These goods can be used interchangeably as they serve the same purpose; thus, are the competitors of each other. For example, tea and coffee, cold drink and juice, etc. The demand for a good or service is directly proportional to the price of its substitute. Consider the two brands of biscuits; Britannia's Good Day and Sunfeast's Cookies. If the price of Good Day increases, consumers will tend to switch to Sunfeast's Cookies. Therefore, the demand for Sunfeast's Cookies is influenced by the rise in the price of Britannia's Good Day. Therefore,

these are substitutes or competitors of each other. Complementary goods: Complementary goods are used jointly; for example, car and petrol. There is an inverse relationship between the demand and price of complementary goods. This implies that an increase in the price of one good will result in fall in the demand of the other good. For example, an increase in the price of mobile phones not only would lead to fall in the quantity demanded but also lower the demand for mobile cover or scratch guards. The use of SIM cards might confuse students as even if the new mobile is purchased the old SIM card can be inserted and that does not lead to any change in demand.

- **Complementary goods**

Complementary goods are used jointly; for example, car and petrol. There is an inverse relationship between the demand and price of complementary goods. This implies that an increase in the price of one good will result in fall in the demand of the other good. For example, an increase in the price of mobile phones not only would lead to fall in the quantity demanded but also lower the demand for mobile cover or scratch guards. The use of SIM cards might confuse students as even if the new mobile is purchased the old SIM card can be inserted and that does not lead to any change in demand.

- **Income of consumers**

The level of income of individuals determines their purchasing power. Generally, income and demand are directly proportional to each other. This implies that rise in the consumers' income results in rise in the demand for a commodity.

Let us discuss different types of commodities in detail.

- **Normal goods**

These are goods whose demand rises with an increase in the level of income of consumers. For example, the demand for clothes, furniture, cars, mobiles, etc. rises with an increase in individuals' income.

- **Inferior goods**

These are goods whose demand falls with an increase in consumers' income. For example, the demand for cheaper grains, such as maize and barley, falls when individuals' income increases as they prefer to purchase higher quality grains. These goods are known as Giffen goods in economic parlance.

- **Inexpensive goods or necessities of life**

These are basic necessities in an individual's life, such as salt, matchbox, soap, and detergent. The demand for inexpensive goods rises with increase in consumers' income until a certain level after that it becomes constant.

3. Tastes and preferences of consumers

The demand for a commodity changes with changes in the tastes and preferences of consumers (which depend on customers' customs, traditions, beliefs, habits, and lifestyles). For example, the demand for burqas is high in gulf countries. In such countries, there may be less or no demand for short skirts.

4. Consumers' expectations

Demand for commodities also depends on the consumers' expectations regarding the future price of a commodity, availability of the commodity, changes in income, etc. Such expectations usually cause rise in demand for a product. For example, if a consumer expects a rise in the price of a commodity in the future, he/she may purchase larger quantities of the commodity in order to stock it. Similarly, if a consumer expects a rise in his/her income, he/she may purchase a commodity that was relatively unaffordable earlier.

5. Credit policy

It refers to terms and conditions for supplying various commodities on credit. The credit policy of suppliers or banks also affects the demand for a commodity. This is because favourable credit policies generally result in the purchase of commodities that consumers may not have purchased otherwise. Favourable credit policies generally increase the demand for expensive durable goods such as cars and houses. For example, easy home and car loans offered by banks have led to a steep rise in the demand for homes and cars respectively.

II. Factors Influencing Market Demand

Market demand is the sum total of all household (individual) demands. Therefore, all the factors that affect the individual demand also affect the market demand as well. However, there are certain other factors that affect the market demand, which are as follows:

1. Size and composition of population

Population size refers to the actual number of individuals in a population. An increase in the size of a population increases the demand for commodities as the number of consumers would increase. Population composition refers to the structure of the population based on characteristics, such as age, sex, and race. The composition of a population affects the demand for commodities as different individuals would have different demands. For example, a population with more youngsters will have higher demand for commodities like t-shirts, jeans, guitars, bikes, etc. compared to the population with more elderly people.

2. Income distribution

Income distribution shows how the national income is divided among groups of individuals, households, social classes, or factors of production. Unequal distribution of income results in differences in the income status of different individuals in a nation. Rich people would have higher purchasing power resulting in a higher demand for commodities required by rich classes. For example, luxury goods will have higher demand. On the other hand, nations having evenly distributed income would have higher demand for essential goods.

3. Climatic factors

The demand for commodities depends on the climatic conditions of a region such as cold, hot, humid, and dry. For example, the demand for air coolers and air conditioners is higher during summer while the demand for umbrellas tends to rise during monsoon.

4. Government policy

This includes the actions taken by the government to determine the fiscal policy and monetary policy such as taxation levels, budgets, money supply, and interest rates. Government policies have direct impact on the demand for various commodities. For example, if the government imposes high taxes (sales tax, VAT, etc.) on commodities, their prices would increase, which would lead to a fall in their demand. On the contrary, if the government invests in building of roads, bridges, schools, and hospitals, the demand for bricks, cement, labour, etc., would rise.

2.2 Types of Demand

Q5. Explain different types demand.

Ans :

Demand is generally classified based on various factors, such as the number of consumers for a given product, the nature of products, utility of products, and interdependence of different demands. The demand for a particular product can be different under different situations.

Let us discuss these different types of demand in detail:

1. Price demand

It is a demand for different quantities of a commodity or service that consumers intend to purchase at a given price and time period assuming other factors, such as prices of the related goods, level of income of consumers, and consumer preferences, remain unchanged. Price demand is inversely proportional to the price of a commodity or service. As the price of a commodity or service rises, its demand falls and vice versa. Therefore, price demand indicates the functional relationship between the price of a commodity or service and the quantity demanded. It can be mathematically expressed as follows:

$D_A = f(P_A)$ where,

D_A = Demand for commodity A

f = Function

P_A = Price of commodity A

2. Income demand

It is a demand for different quantities of a commodity or service that consumers intend to purchase at different levels of income assuming other factors remain the same. Generally, the demand for a commodity or service increases with increase in the level of income of individuals except for inferior goods. Therefore, demand and income are directly proportional to normal goods whereas the demand and income are inversely proportional to inferior goods. The relationship between demand and income can be mathematically expressed as follows:

$D_A = f(Y_A)$, where,

D_A = Demand for commodity A

f = Function

Y_A = Income of consumer A

3. Cross demand

It refers to the demand for different quantities of a commodity or service whose demand depends not only on its own price but also the price of other related commodities or services. For example, tea and coffee are considered to be the substitutes of each other. Thus, when the price of coffee increases, people switch to tea. Consequently, the demand for tea increases. Thus, it can be said that tea and coffee have cross demand. Mathematically, this can be expressed as follows:

$D_A = f(P_B)$, where,

D_A = Demand for commodity A

f = Function

P_B = Price of commodity B

4. Individual demand and market demand

This is the classification of demand based on the number of consumers in the market. In dividual demand refers to the quantity of a commodity or service demanded by an individual consumer at a given price at a given time period. For example, the quantity of sugar that an individual or household purchases in a month is the individual or household demand. The individual demand of a product is influenced by the price of a product, income of customers, and their tastes and preferences. On the other hand, market demand is the aggregate of individual demands of all the consumers of a product over a period of time at a specific price while other factors are constant. For example, there are four consumers of sugar (having a certain price). These four consumers consume 30 kilograms, 40 kilograms, 50 kilograms, and 60 kilograms of sugar respectively in a month. Thus, the market demand for sugar is 180 kilograms in a month.

5. Joint demand

It is the quantity demanded for two or more commodities or services that are used jointly and are, thus demanded together. For example, car and petrol, bread and butter, pen and refill, etc. are commodities that are used jointly and are demanded together. The demand for such commodities changes proportionately. For example, rise in the

demand for cars results in a proportionate rise in the demand for petrol. However, in the case of joint demand, rise in the price of one commodity results in the fall of demand for the other commodity. In the above example, an increase in the price of cars will cause a fall in the demand of not only of cars but also of petrol.

6. Composite demand

It is the demand for commodities or services that have multiple uses. For example, the demand for steel is a result of its use for various purposes like making utensils, car bodies, pipes, cans, etc. In the case of a commodity or service having composite demand, a change in price results in a large change in the demand. This is because the demand for the commodity or service would change across its various usages. In the above example, if the price of steel increases, the price of other products made of steel also increases. In such a case, people may restrict their consumption of products made of steel.

7. Direct and derived demand

Direct demand is the demand for commodities or services meant for final consumption. This demand arises out of the natural desire of an individual to consume a particular product. For example, the demand for food, shelter, clothes, and vehicles is direct demand as it arises out of the biological, physical, and other personal needs of consumers. On the other hand, derived demand refers to the demand for a product that arises due to the demand for other products. For example, the demand for cotton to produce cotton fabrics is derived demand. Derived demand is applicable for manufacturers' goods, such as raw materials, intermediate goods, or machines and equipment. Apart from this, the factors of production (land, labour, capital, and enterprise) also have a derived demand. For example, the demand for labour in the construction of buildings is a derived demand. The demand for the product is inelastic in the international market, the seller country will have an upper hand in exports.

2.3 Demand Curve

Q6. 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

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.

Q7. Why the demand curve slope down-wards from left to right ?

Ans : **(June-18, June-17, Imp.)**

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.

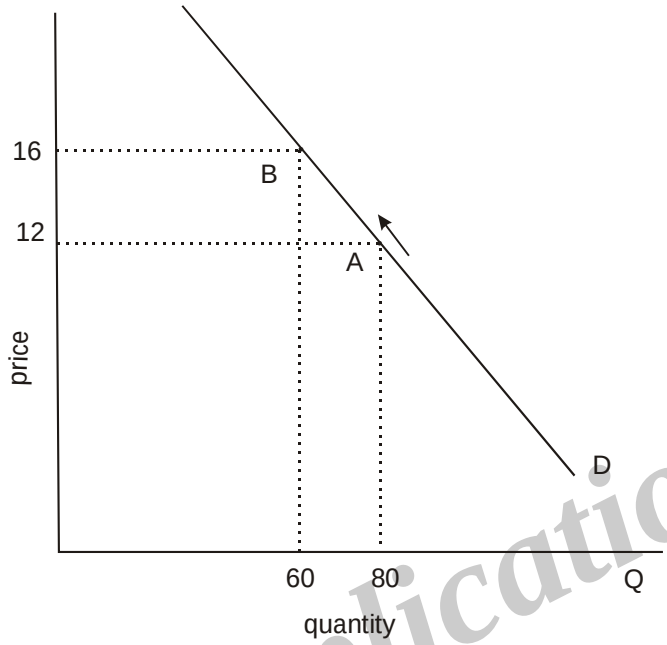
Q8. Explain the shifts in demand and movements along a demand curve.

Ans : **(Dec.-16, Imp.)**

A shift in demand means at the same price, consumers wish to buy more. A movement along the demand curve occurs following a change in price.

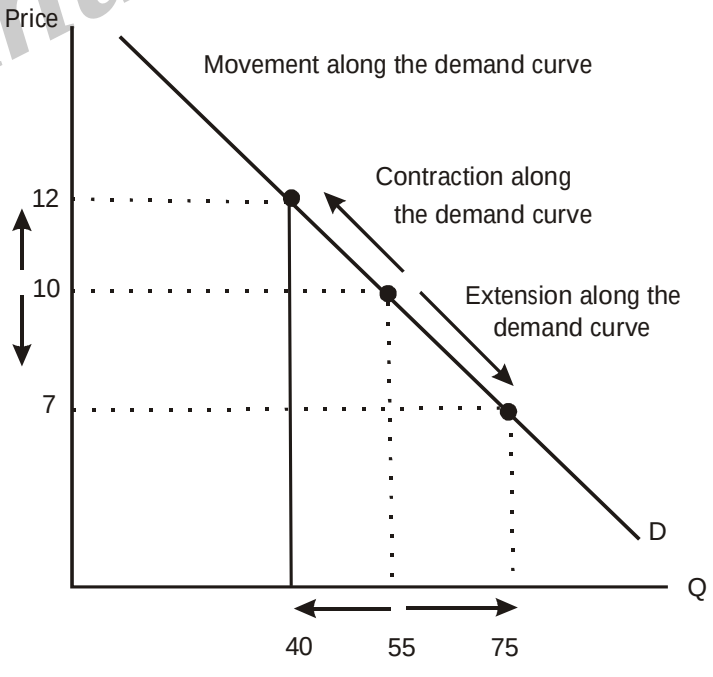
Movement along the demand curve

A change in price causes a movement along the demand curve. It can either be contraction (less demand) or expansion/extension. (more demand)



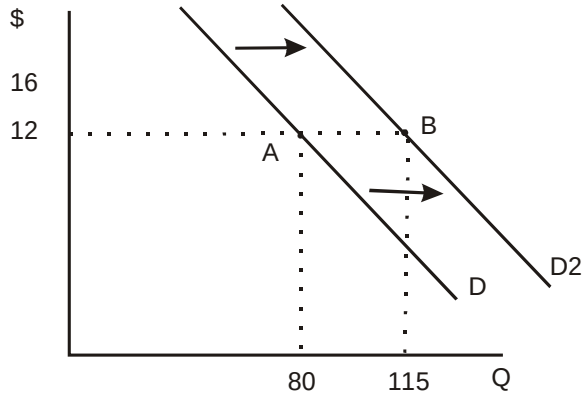
Contraction in demand. An increase in price from ` 12 to ` 16 causes a movement along the demand curve, and quantity demand falls from 80 to 60. We say this is a contraction in demand.

Expansion in demand. A fall in price from ` 16 to ` 12 leads to an expansion (increase) in demand. As price falls, there is a movement along the demand curve and more is bought.



A change in price doesn't shift the demand curve - we merely move from one point of the demand curve to another.

Shift in the Demand Curve



A shift in the demand curve occurs when the whole demand curve moves to the right or left. For example, an increase in income would mean people can afford to buy more widgets even at the same price.

The demand curve could shift to the right for the following reasons:

- The good became more popular (e.g. fashion changes or successful advertising campaign)
- The price of a substitute good increased.
- The price of a complement good decreased.
- A rise in incomes (assuming the good is a normal good, with positive YED)
- Seasonal factors.

Q9. What are the differences between movement and shift in demand curve.

Ans : **(Dec.-16, Imp.)**

S.No.	Basis For Comparison	Movement in Demand Curve	Shift in Demand Curve
1.	Meaning	Movement in the demand demand curve is when the commodity experience change in both the quantity demanded and price, causing the curve to move in a specific direction.	The shift in the demand curve is when, the price of the commodity remains constant, but there is a change in quantity demanded due to some other factors, causing the the curve to shift to a particular side
2.	Determinant	Price	Non-price
3.	Indicates	Change in Quantity Demanded	Change in Demand
4.	Result	Demand Curve will move upward or downward.	Demand Curve will shift rightward or leftward.

2.4 Law of Demand

Q10. Define Law of Demand. State the assumptions of Law of Demand Curve.

Ans : **(Dec.-17, Imp.)**

Meaning

The law of demand states a consumers behaviour, in demanding a commodity in relation to the variations in its prices. It expresses a functional relationship between two variables of demand relation i.e., the price and the quantity demanded of a commodity.

The law of demand states that other things remaining equal, the quantity demanded of a commodity increases when its price falls and decrease when its price rises.

Definition

(i) According to Marshall, "The amount demanded increases with a fall in price and diminishes when price increases, other things being equal".

(ii) According to Robertson, "Other things being equal, the lower the price at which a thing is offered, the more a man will be prepared to buy it."

(iii) According to Ferguson, "Law of Demand, the quantity demanded varies inversely with price."

Assumptions

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.

2.4.1 Exceptions to the Law of Demand

Q11. What are the exceptions to the law of demand?

Ans : **(Dec.-17, Imp.)**

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 surplus 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.

Q12. Define Demand Schedule.

Ans :

A demand schedule is a tabular representation of different quantities of commodities that consumers are willing to purchase at specific price and time while other factors are constant. It can be classified into two categories, which are:

1. Individual demand schedule

It is a tabular representation of quantities of a commodity demanded by an individual at a particular price and time, provided all other factors remain constant.

2. Market demand schedule

There is more than one consumer of a commodity in the market. Each consumer has his/her own individual demand schedule. If the quantities of all individual demand schedules are consolidated, it is called market demand schedule.

2.5 ELASTICITY OF DEMAND

2.5.1 Concept

Q13. What do you understand by elasticity of Demand?

(OR)

Define Elasticity of Demand

Ans : **(Dec.-16, Imp.)**

Meaning

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 neoclassical 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.

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

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

Definitions

(i) According to Dr. Marshall, "Elasticity of Demand may be defined as the percentage change in the quantity demanded divided by the percentage change in the price."

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

(iii) According to Dooley, "The price elasticity of demand measures the responsiveness of the quantity demanded to a change in its price."

(iv) 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.

2.5.2 Types of Elasticity of Demand

Q14. Explain different types of elasticity of demand.

Ans :

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

2.5.3 Price Elasticity of Demand

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

Ans : **(June-18, June-17, Dec.-16, Imp.)**

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.

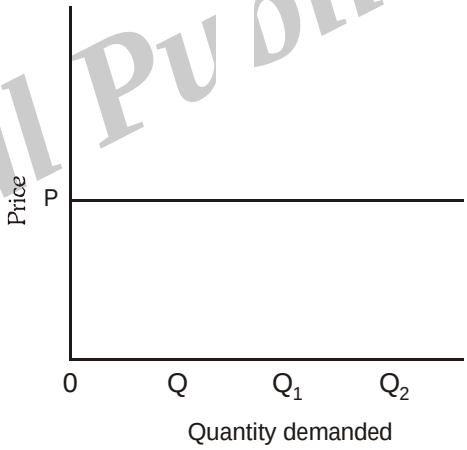


Figure : Perfectly Elastic Demand

(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.

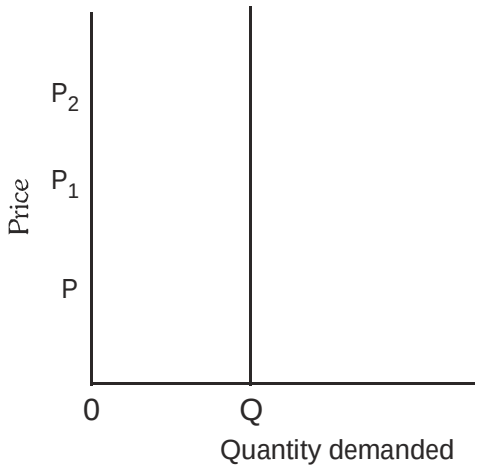


Figure : Perfectly Inelastic Demand

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.

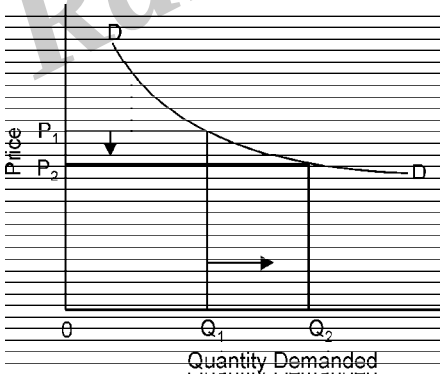


Figure : Relatively Elastic Demand

(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.

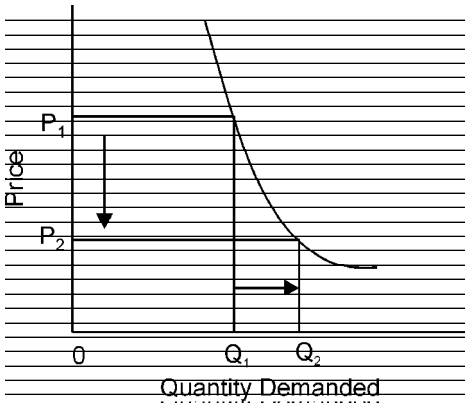


Figure : Relatively Inelastic Demand

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.

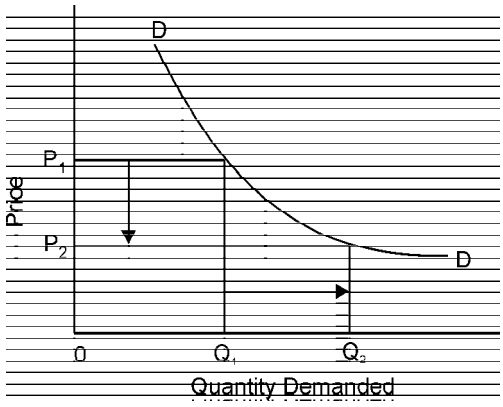


Fig.: Unity Elasticity

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 ?

(OR)

What are the factors affecting price Elasticity of Demand ?

Ans : **(June-17, Imp.)**

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.

2.5.4 Income Elasticity of Demand

Q18. Define Income elasticity of demand.

Ans :

Meaning

The price, the income of consumers is also an important determinant of the demand for the product. An increase in the income of consumers increases the demand for the product even if the price remains constant. The responsiveness of quantity demanded with respect to the income of consumers is called the income elasticity of demand. The following are some important popular definitions of income elasticity of demand:

Definition

(i) According to Watson, "Income elasticity of demand means the ratio of the percentage change in the quantity demanded to the percentage in income."

(ii) According to Richard G. Lipsey, "The responsiveness of demand to change in income is termed as income elasticity of demand."

Mathematically, the income elasticity of demand can be stated as:

$$e_y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

Where,

Percentage change in quantity demanded =

$$\frac{\text{New quantity demanded - Original Quantity demanded } (\Delta Q)}{\text{Original quantity demanded } (Q)}$$

$$\text{Percentage change in income} = \frac{\text{New income -Original income } (\Delta Y)}{\text{Original income } (Y)}$$

Thus, the formula for calculating the price elasticity of demand is as follows:

$$e_y = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$$

Where

Q is original quantity demanded

Q_1 is new quantity demanded

$$\Delta Q = Q_1 - Q$$

Y is original income

Y_1 is new income

$$\Delta Y = Y_1 - Y$$

Q19. Discuss various types of income elasticities of demand?

Ans :

On the basis of numerical value, income elasticity of demand is classified into three groups, which are explained as follows:

1. Positive income elasticity of demand

When a proportionate change in the income of a consumer increases the demand for a product and vice versa, income elasticity of demand is said to be positive. In case of normal goods, the income elasticity of demand is generally found positive, which is shown in Fig.

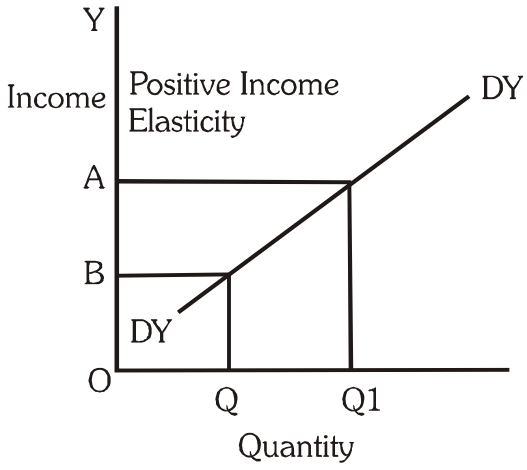


Fig. : Positive Income Elasticity of Demand

In Figure, DYDY is the curve representing positive income elasticity of demand. The curve is sloping upwards from left to the right, which shows an increase in demand (OQ to OQ_1) as a result of rise in income (OB to OA).

There are three types of positive income elasticity of demand, namely unitary income elasticity of demand, less than unitary income elasticity of demand, and more than income elasticity of demand. Let us discuss them as follows:

- **Unitary income elasticity of demand**

  The income elasticity of demand is said to be unitary when a proportionate change in a consumer's income results in an equal change in the demand (increase) for a product. For example, if there is 25% increase in the income of a consumer, the demand for milk consumption would also be increased by 25%. Thus e_y = 25/25 = 1.

- **Less than unitary income elasticity of demand**

  The income elasticity of demand is said to be less than unitary when a proportionate change in a consumer's income causes comparatively less increase in the demand for a product. For example, if there is an increase of 25% in consumer's income, the demand for milk is increased by only 10%. Thus e_y = 10/100 = 0.1 < 1

- **More than unitary income elasticity of demand**

  The income elasticity of demand is said to be more than unitary when a proportionate change in a consumer's income causes a comparatively large increase in the demand for a product. For example, if there is an increase of 25% in consumer's income, the demand for milk is increased by only 35%. Thus e_y = 35/25 = 1.4 > 1.

2. Negative income elasticity of demand

When a proportionate change in the income of a consumer results in a fall in the demand for a product and vice versa, the income elasticity of demand is said to be positive. It generally happens in case of inferior goods. For example, consumers may prefer small cars with a limited income. However, with a rise in income, they may prefer using luxury cars.

Figure shows the negative income elasticity of demand :

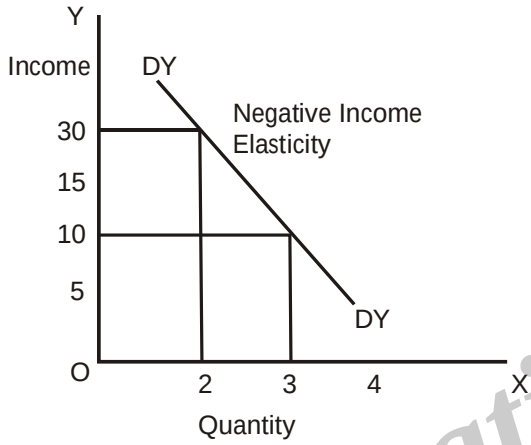


Fig. : Negative Income Elasticity of Demand

In Figure, DYDY is the curve representing negative income elasticity of demand. The curve is sloping downwards from left to the right, which shows a decrease in the demand as a result of a rise in income. As shown in Figure, with a rise of income from 10 to 30, the demand falls from 3 to 2.

3. Zero income elasticity of demand

When a proportionate change in the income of a consumer does not bring any change in the demand for a product, income elasticity of demand is said to be zero. It generally occurs for utility goods such as salt, kerosene, electricity.

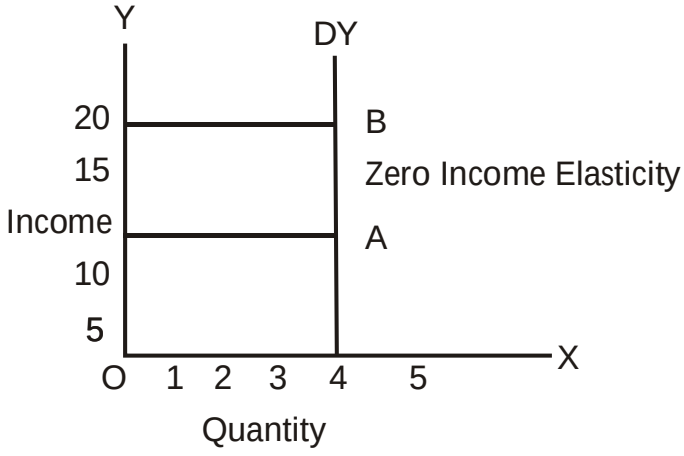


Fig.: Zero Income Elasticity

In Figure, DYDY is the curve representing zero income elasticity of demand. The curve is parallel to Y-axis that shows no change in the demand as a result of a rise in income. As shown in Figure 5.14, with a rise of income from 10 to 20, the demand remains the same i.e. 4.

2.5.5 Cross Elasticity of Demand

Q20. Explain briefly about 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.

Q21. What are the differences between income elasticity of demand and cross elasticity of demand ?

Ans :

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.

Q22. 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.

Q23. 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.

2.6 MEASUREMENT OF ELASTICITY

2.6.1 arc and point methods

Q24. Explain briefly about Measurement of Elasticity of Demand.

(OR)

What are the methods of measuring Elasticity of Demand.

Ans : **(June-18, Dec.-16, 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 analyze to estimated greater than 1, equal to 1, less than –1 elasticities of demand is being determined it can illustrated here under schedule.

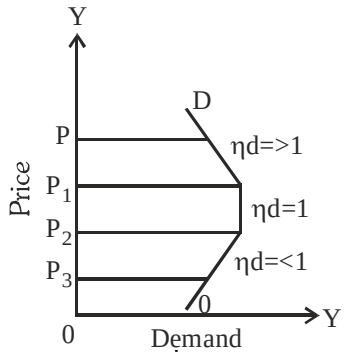
Schedule

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 equivalent 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 equivalent to price elasticity of demand.

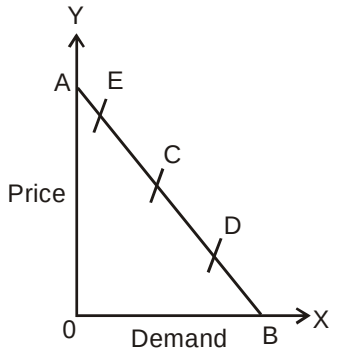
If the price is at rupees 6/- the purchased units. So units in order to incurred the total expenditure is 1080 is the price is comedown at Rs. 5/- the purchased units are raised 200 units in order to incurred. The total expenditure. Therefore it is equivalent less than/price elasticity of demand. Based 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

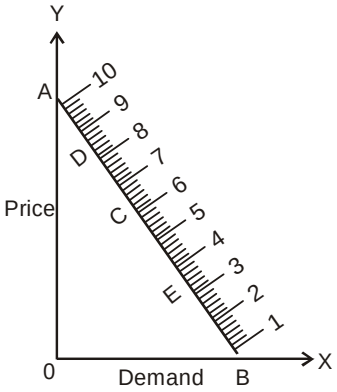
Based on this method on any point of the demand line we can traceout the nature of elasticity of demand it, can illustrated here under example :



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)

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

(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

Marshall gave a clear formulation of price elasticity as the ratio of a relative change in quantity to a relative change in price. Lets stand for price elasticity. Then

$$e_P = \frac{\text{Relative Change in Quantity}}{\text{Relative change in price}}$$

$$= \frac{\text{Proportionatechange in Quantity}}{\text{Proportionatechange in price}}$$

$$= \frac{\Delta Q}{Q} / \frac{\Delta P}{P} = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

Here Q is the quantity, P is the price and Δ (delta) is the symbol meaning "a change in". Thus, $\frac{\Delta Q}{Q}$ is relative change in quantity, and $\frac{\Delta P}{P}$ is a relative change in price.

Equivalently, elasticity is the percentage change in quantity divided by percentage change in price.

$$e_P = \frac{\%\text{ change in quantity}}{\%\text{ change in price}}$$

If percentage changes are known, the numerical value of e_P can be calculated. Suppose the percentage change in quantity is 3 and in price

1. If price falls percentage change in price is minus 1. Then

$$e_P = \frac{3\%}{-1\%} = -3$$

If price goes up, the change is quantity is minus 3 per cent. Thus e_P always becomes negative. It is common practice to ignore negative sign.

e_P is also called the coefficient of elasticity of demand. On the basis of numerical value of e_P we can classify price elasticity into five types.

i) Perfectly elastic demand

If a change in price causes an infinitely large change in quantity. ΔQ in the fraction is infinitely large. The coefficient is infinity. When the coefficient E is infinity, demand is side to be perfectly elastic or infinitely elastic. In such cases, a small rise in price reduces the demands to zero. A small fall in price increases demand infinitely. For example, the demand for paddy sold by single farmer is perfectly elastic at the ruling market price. This means that the farmer can sell all his output at that price without causing the price to change. He could sell nothing at all at any higher price.

ii) Perfectly inelastic demand

If E is zero, demand is said to be perfectly inelastic. A zero coefficient means that a change in price is accompanied by no change in the quantity bought. Hence ΔQ is zero, making E zero. The demand curve will be a vertical straight line parallel to Y-axis.

The above two are the extreme opposite and limiting cases.

iii) Unitary elastic demand

If E is 1, demand is said to be unitary elastic. The demand is neither elastic nor inelastic. Unit elasticity of demand is the dividing line between elastic demand and inelastic demand. In the case, the percentage change in quantity is equal to percentage change in price. Then E = 1. The demand curve will be rectangular hyperbola.

iv) Elastic demand

If the coefficient E is greater than 1, and less than infinite, demand is said to be elastic.

v) Inelastic demand

If E is less than 1, but more than zero, demand is inelastic. Elasticity can thus vary between zero and infinity.

2.6.2 Importance of various Elasticity of Demand

Q25. Explain the Significance of Price Elasticity of demand.

Ans :

1. Price determination

The concept of price elasticity of demand is used by organizations in determining prices under various situations. For instance, under monopolistic market conditions, an organization sets a low price per unit of the product in case of elastic demand. As a result, the demand for the product rises. On the other hand, when the demand for the product is inelastic, the price is set very high. This helps in generating large revenues for organizations due to the high price of a product while demand remains constant.

2. Price discrimination

This is another area where price elasticity of demand plays an important role. Price discrimination refers to charging different prices from various customers for the same product. The common example of price variation is petrol. Its demand is inelastic as the change in the price does not affect the consumption. Thus, the price of petrol is charged differently in different states of India.

3. Formulation of taxation policies

Government takes under consideration the price elasticity of demand before formulating taxation policies. Generally, government levies high taxes on products (for producers) whose

demand is elastic. On the contrary, it levies high taxes on products (for customers) having inelastic demand as the consumption remains unaffected.

4. International trade

The concept of price elasticity has a significant role in international trade. This is because successful trade transactions between two countries are dependent on the price elasticity of demand. This is because price elasticity of demand is used in deciding the level of imports and exports. For instance, if the demand for the product is inelastic in the international market, the seller country will have an upper hand in exports.

5. Formulation of agricultural policies

The price elasticity of demand also helps the government in formulating agricultural policies by providing insight into the paradox of poverty. The prices of farm products whose demand is inelastic fall due to large supplies as a result of bumper crops. This results in a fall in prices, which leads to low income for farmers. Consequently, poverty among farmers increases. Thus, government sets a minimum suitable price for inelastic farm products so that farmers can generate adequate revenues.

Q26. Explain the Importance of Income Elasticity of demand.

Ans :

1. Income of consumers in a country

In any country, the income level of consumers is not the same. Therefore, consumers spend on the

basis of not only on their need but also their purchasing capacity. The purchasing capacity of consumers increases with a rise in their income. For example, a consumer with a low income may prefer using public transport for commuting. However, with a rise in income, he/she may buy a two wheeler for the same purpose.

2. Nature of products

The nature of products being consumed by consumers also has an important influence on income elasticity. For example, basic goods used on a day to day basis, such as salt, sugar, and cooking oil, is elastic. Even with a rise in the income of a consumer, the demand for such products does not change and remain inelastic.

3. Consumption pattern

With a rise in income, people quickly change their consumption patterns. For example, people may start buying high priced products with an increase in their income. This leads to an increase in the demand for the products in the market. However, once the consumption pattern is established, it becomes difficult to lower the demand in case of decrease in income. For example, a consumer may buy a two wheeler that runs on petrol as a result of rise in his/her income. However, over a period of time, in case his/her income falls, it will be difficult for him to reduce the consumption of petrol.

Short Question and Answers

1. Elasticity of Demand.

Ans :

Meaning

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 neoclassical 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.

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

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

Definitions

(i) According to Dr. Marshall, "Elasticity of Demand may be defined as the percentage change in the quantity demanded divided by the percentage change in the price."

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

(iii) According to Dooley, "The price elasticity of demand measures the responsiveness of the quantity demanded to a change in its price."

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

2. Derived Demand

Ans :

Derived demand refers to the demand for a product that arises due to the demand for other products. For example, the demand for cotton to produce cotton fabrics is derived demand. Derived demand is applicable for manufacturers' goods, such as raw materials, intermediate goods, or machines and equipment. Apart from this, the factors of production (land, labour, capital, and enterprise) also have a derived demand. For example, the demand for labour in the construction of buildings is a derived demand. The demand for the product is inelastic in the international market, the seller country will have an upper hand in exports.

3. Define Demand.

Ans :

Introduction

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

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.

Definitions of Demand

(i) 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".

(ii) 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".

(iii) 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".

4. What is demand function? How do you determine it.

Ans :

Demand function is a function which describes a relationship between one variable and its determinants, it describes how much quantity of goods is bought at alternative prices of good and related goods, alternative income levels, and alternative values of other variables affecting demand. Thus, the demand function for a good relates the quantity of a good which consumers demand during a given period to the factors which influence the demand. The above factors can be built up into a demand function.

Mathematically, the demand function for a product A can be expressed as follows:

$Qd = f(P, I, T, P_R, E_P, E_I, S_P, D_c, A, O)$

Where

Qd refers to quantity of demand and it is a function of the following variables:

P refers to price of the product;

- I $\rightarrow$ refers to Income level of the consumer;
- T $\rightarrow$ refers to tastes and preferences of the consumer;
- P_R $\rightarrow$ refers to prices of related goods (substitutes/complementary);
- E_P $\rightarrow$ refers to expectations about the prices in future;
- E_1 $\rightarrow$ refers to expectations about the incomes in future,
- S_P $\rightarrow$ refers to size of population;
- D_c $\rightarrow$ refers to distribution of consumers over different regions;
- A $\rightarrow$ refers to advertising efforts and
- O $\rightarrow$ refers to any other factors capable of affecting the demand.

5. Price Demand

Ans :

It is a demand for different quantities of a commodity or service that consumers intend to purchase at a given price and time period assuming other factors, such as prices of the related goods, level of income of consumers, and consumer preferences, remain unchanged. Price demand is inversely proportional to the price of a commodity or service. As the price of a commodity or service rises, its demand falls and vice versa. Therefore, price demand indicates the functional relationship between the price of a commodity or service and the quantity demanded. It can be mathematically expressed as follows:

$D_A = f(P_A)$ where,

D_A = Demand for commodity A

f = Function

P_A = Price of commodity A

6. Cross demand

Ans :

It refers to the demand for different quantities of a commodity or service whose demand depends not only on its own price but also the price of other related commodities or services. For example, tea and coffee are considered to be the substitutes of each other. Thus, when the price of coffee increases, people switch to tea. Consequently, the demand for tea increases. Thus, it can be said that tea and coffee have cross demand. Mathematically, this can be expressed as follows:

$D_A = f(P_B)$, where,

D_A = Demand for commodity A

f = Function

P_B = Price of commodity B

7. Joint demand

It is the quantity demanded for two or more commodities or services that are used jointly and are, thus demanded together. For example, car and petrol, bread and butter, pen and refill, etc. are commodities that are used jointly and are demanded together. The demand for such commodities changes proportionately. For example, rise in the demand for cars results in a proportionate rise in the demand for petrol. However, in the case of joint demand, rise in the price of one commodity results in the fall of demand for the other commodity. In the above example, an increase in the price of cars will cause a fall in the demand of not only of cars but also of petrol.

8. Composite Demand

Ans :

It is the demand for commodities or services that have multiple uses. For example, the demand for steel is a result of its use for various purposes like making utensils, car bodies, pipes, cans, etc. In the case of a commodity or service having composite demand, a change in price results in a large change in the demand. This is because the demand for the commodity or service would change across its various usages. In the above example, if the price of steel increases, the price of other products made of steel also increases. In such a case, people may restrict their consumption of products made of steel.

9. Define 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.

10. Define Law of Demand.

Ans :

Meaning

The law of demand states a consumers behaviour, in demanding a commodity in relation to the variations in its prices. It expresses a functional relationship between two variables of demand relation i.e., the price and the quantity demanded of a commodity.

The law of demand states that other things remaining equal, the quantity demanded of a commodity increases when its price falls and decrease when its price rises.

Definitions

(i) **According to Marshall,** "The amount demanded increases with a fall in price and diminishes when price increases, other things being equal".

(ii) **According to Robertson,** "Other things being equal, the lower the price at which a thing is offered, the more a man will be prepared to buy it."

(iii) **According to Ferguson,** "Law of Demand, the quantity demanded varies inversely with price."

11. What are the exceptions to the 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 surplus 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.

12. Define Demand Schedule.

Ans :

A demand schedule is a tabular representation of different quantities of commodities that consumers are willing to purchase at specific price and time while other factors are constant. It can be classified into two categories, which are:

1. Individual demand schedule

It is a tabular representation of quantities of a commodity demanded by an individual at a particular price and time, provided all other factors remain constant.

2. Market demand schedule

There is more than one consumer of a commodity in the market. Each consumer has his/her own individual demand schedule. If the quantities of all individual demand schedules are consolidated, it is called market demand schedule.

13. Define Income elasticity of demand.

Ans :

Meaning

The price, the income of consumers is also an important determinant of the demand for the product. An increase in the income of consumers

increases the demand for the product even if the price remains constant. The responsiveness of quantity demanded with respect to the income of consumers is called the income elasticity of demand. The following are some important popular definitions of income elasticity of demand:

Definition

(i) According to Watson, "Income elasticity of demand means the ratio of the percentage change in the quantity demanded to the percentage in income."

(ii) According to Richard G. Lipsey, "The responsiveness of demand to change in income is termed as income elasticity of demand."

Mathematically, the income elasticity of demand can be stated as:

$$e_y = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

Where,

Percentage change in quantity demanded =

$$\frac{\text{New quantity demanded - Original Quantity demanded } (\Delta Q)}{\text{Original quantity demanded } (Q)}$$

$$\text{Percentage change in income} = \frac{\text{New income -Original income } (\Delta Y)}{\text{Original income } (Y)}$$

Thus, the formula for calculating the price elasticity of demand is as follows:

$$e_y = \frac{\Delta Q}{\Delta Y} \times \frac{Y}{Q}$$

Where

Q is original quantity demanded

Q_1 is new quantity demanded

$$\Delta Q = Q_1 - Q$$

Y is original income

Y_1 is new income

$$\Delta Y = Y_1 - Y$$

14. Explain the Significance of Price Elasticity of demand.

Ans :

1. Price determination

The concept of price elasticity of demand is used by organizations in determining prices under various situations. For instance, under monopolistic market conditions, an organization sets a low price per unit of the product in case of elastic demand. As a result, the demand for the product rises. On the other hand, when the demand for the product is inelastic, the price is set very high. This helps in generating large revenues for organizations due to the high price of a product while demand remains constant.

2. Price discrimination

This is another area where price elasticity of demand plays an important role. Price discrimination refers to charging different prices from various customers for the same product. The common example of price variation is petrol. Its demand is inelastic as the change in the price does not affect the consumption. Thus, the price of petrol is charged differently in different states of India.

3. Formulation of taxation policies

Government takes under consideration the price elasticity of demand before formulating taxation policies. Generally, government levies high taxes on products (for producers) whose demand is elastic. On the contrary, it levies high taxes on products (for customers) having inelastic demand as the consumption remains unaffected.

4. International trade

The concept of price elasticity has a significant role in international trade. This is because successful trade transactions between two countries are dependent on the price elasticity of demand. This is because price elasticity of demand is used in deciding the level of imports and exports. For instance, if the demand for the product is inelastic in the international market, the seller country will have an upper hand in exports.

5. Formulation of agricultural policies

The price elasticity of demand also helps the government in formulating agricultural policies by providing insight into the paradox of poverty. The prices of farm products whose demand is inelastic fall due to large supplies as a result of bumper crops. This results in a fall in prices, which leads to low income for farmers. Consequently, poverty among farmers increases. Thus, government sets a minimum suitable price for inelastic farm products so that farmers can generate adequate revenues.

15. Explain the Importance of Income Elasticity of demand.

Ans :

1. Income of consumers in a country

In any country, the income level of consumers is not the same. Therefore, consumers spend on the

basis of not only on their need but also their purchasing capacity. The purchasing capacity of consumers increases with a rise in their income. For example, a consumer with a low income may prefer using public transport for commuting. However, with a rise in income, he/she may buy a two wheeler for the same purpose.

2. Nature of products

The nature of products being consumed by consumers also has an important influence on income elasticity. For example, basic goods used on a day to day basis, such as salt, sugar, and cooking oil, is elastic. Even with a rise in the income of a consumer, the demand for such products does not change and remain inelastic.

16. Substitution Effect.

Ans

As the price of a commodity falls, it may become cheaper than its substitutes. People who were previously buying substitutes may prefer to buy the commodity in question. For example, if the price of tea goes down while other prices do not, then tea becomes relatively cheaper. It becomes a relatively cheaper source of stimulation than before, and more of it may be bought in preference to coffee or cocoa. This is what is called substitution effect. The substitution effect is always positive.

Choose the Correct Answer

1. In short run, firms can adjust their production by changing their. [b]
   (a) Fixed factors (b) Variable factors
   (c) Semi-fixed factors (d) Both (a) and (b)
2. Which of the following pairs of goods is an example of substitutes? [b]
   (a) Tea and sugar (b) Tea and coffee
   (c) Shirt and pant (d) Car and petrol
3. A contraction is the upward movement along a demand curve, indicting that lower quantity demanded for a given change in the price of the good. What is this change ? [b]
   (a) Decrease (b) Increase
   (c) Infinite change (d) Negligible change
4. Incase of Giffen's goods, the demand curve. [b]
   (a) Slopes downwards (b) Slopes upwards
   (c) Intersects supply curve (d) Meets cost curve
5. _____ is a tabular representation of relationship between the amount demanded of a commodity and different price levels of that commodity. [a]
   (a) Demand schedule (b) Law of demand
   (c) Market demand function (d) Individual demand function.
6. The demand curve slopes downwards due to [d]
   (a) Law of diminishing marginal utility (b) Income effect
   (c) Substitution effect (d) All the above.
7. _____ refers to the changes in the quantity demanded of a commodity with respect to the changes in the prices of the related goods. [b]
   (a) Price demand (b) Cross demand
   (c) Income demand (d) Market demand.
8. _____ is the ratio of proportionate change in the quantity demanded of a commodity to proportionate change in its price. [b]
   (a) Point elasticity of demand (b) Price elasticity of demand
   (c) Arc elasticity of demand (d) Gross elasticity of demand.
9. A commodity is said to have _____ demand when even a large change in the price of commodity causes no change in the quantity demanded. [c]
   (a) Perfectly elastic (b) Relatively elastic
   (c) Perfectly inelastic (d) Unitary elastic.
10. Price elasticity of demand is measured with the help of _____ [d]
   (a) Percentage method (b) Graphical method
   (c) Slope/mathematical method (d) All the above

Fill in the blanks

1. _____ means the various quantities of goods that would be purchased per time period at different prices in a given market.
2. The _____ for a commodity brings out the relationship between the factors influencing its demand and the quantity demanded.
3. The _____ represents a functional relationship between price and quantity demanded.
4. The _____ shows the various quantities of commodities purchased by a person or by a family or by a household at a different.
5. _____ shows the total quantity of a commodity purchased by all the people in the market at different prices.
6. _____ measures the responsiveness of demand to changes in price.
7. The _____ of the consumers is the total revenue or income of the sellers (firms).
8. In the case of _____ the demand generally tends to be inelastic in the short run.
9. In the short period, demand in general will be less _____.
10. The changes in quantity of demand is _____ to changes in income is called less than '1'.

ANSWERS

1. Demand
2. Demand function
3. Demand schedule
4. Individual demand schedule
5. Market demand schedule
6. Elasticity of demand
7. Total expenditure
8. Durable goods
9. Elastic
10. Less than

UNIT III

SUPPLY ANALYSIS:

Law of Supply - Factors influencing Supply - Market Equilibrium - Consumer Surplus - Theory of Consumer behavior - Utility and indifference curve analysis.

3.1 SUPPLY ANALYSIS

Q1. Discuss the concept of Supply.

(OR)

What is meant by supply?

Ans : **(Imp.)**

Meaning

In economics, supply refers to the quantity of a product available in the market for sale at a specified price and time. In other words, supply can be defined as the willingness of a seller to sell the specified quantity of a product within a particular price and time period. Here, it should be noted that demand is the willingness of a buyer, while supply is the willingness of a supplier. Different experts have defined the term supply differently. The following are some popular definitions of supply.

Definitions

(i) **According to Meyers,** "Supply may be defined as a schedule of the amount of a product that would be offered for sale at all possible prices at any one instant of time, or during any one period of time, for example, a day, a week, a month, a year and so on, in which the conditions of supply remain the same."

(ii) **According to McConnell,** "Supply may be defined as a schedule which shows the various amounts of a product which a particular seller is willing and able to produce and make available for sale in the market at each specific price in a set of possible prices during a given period."

(iii) **According Anatol Murad,** "Supply refers to the quantity of a commodity offered for sale at a given price, in a given market, at given time."

From the afore mentioned definitions, it can be said that supply has three important aspects, which are as follows:

1. **Supply is always referred in terms of price:** The price at which quantities are supplied differs from one location to the other. For example, fast moving consumer goods (FMCG) are usually supplied at different prices in different prices.

2. **Supply is referred in terms of time:** This means that supply is the amount that suppliers are willing to offer during a specific period of time (per day, per week, per month, bi-annually, etc.)

3. **Supply considers the stock and market price of the product:** The stock of a product refers to the quantity of the product available in the market for sale within a specified point of time. Both stock and market price of a product affect its supply to a greater extent. If the market price of a product is more than its cost price, the seller would increase the supply of the product in the market. However, a decrease in the market price as compared to the cost price would reduce the supply of product in the market.

3.2 Law of Supply

Q2. What do you understand by the Law of Supply?

(OR)

Define law of supply.

Ans : **(July-17, Dec.-16, Imp.)**

The law of supply explains the relationship between price and supply of a product. According to the law, the quantity supplied increases with a rise in the price of a product and vice versa while other factors are constant. The other factors may include customer preferences, size of the market, size of population, etc.

For example, in the case of rise in a product's price, sellers would prefer to increase the production of the product to earn high profits, which would automatically lead to an increase in supply. Similarly, if the price of the product decreases, the supplier would decrease the supply of the product in the market as he/she would wait for a rise in the price of the product in the future.

Thus, the law of supply states a direct relationship between the price of a product and its supply. Therefore, both price and supply moves in the same direction.

Q3. What are the assumptions in law of supply?

Ans :

The law of supply also follows the assumption of ceteris paribus, which means that 'other things remain unchanged or constant'. The supply of a commodity is dependent on many factors other than price, such as consumers' income and tastes, price of substitutes, natural factors, etc. All the factors other than the price are assumed to be constant. The law of supply works on certain assumptions which are given as follows:

- Income of buyers and sellers remains unchanged.
- The commodity is measurable and available in small units.
- The tastes and preferences of buyers remain unchanged.
- The cost of all factors of production does not change over a period of time.
- The time period under consideration is short.
- The technology used remains constant.
- The producer is rational.
- Natural factors remain stable.
- Expectations of producers and the government policy do not change over a period of time.

Q4. Explain the exceptions to the law of supply.

Ans :

1. Agricultural products

The law of exception is not applicable to agricultural products. The production of these products is dependent on so many factors which are uncontrollable, such as climate and availability of fertile land. Thus, the production of agricultural products cannot be increased beyond a limit. Therefore, even a rise in price cannot increase the supply of these products beyond a limit.

2. Goods for auction

Auctions goods are offered for sale through bidding. Auction can take place due to various reasons, for instance, a bank may auction the assets of a customer in case of his failure in paying off the debts over a period of time. Thus, supply of these goods cannot increase or decrease beyond a limit. In case of these goods, a rise or fall in price does not impact the supply.

3. Expectation of change in prices in the future

Law of supply is not applicable under the circumstances when there is an expectation of change in the prices of a product in the near future. For instance, if the price of wheat rises and is expected to increase further in the next few months, sellers may not increase supply and store huge quantities in the hope of achieving profits at the time of a price rise.

4. Supply of labour

The law of supply fails in the case of labour. After a certain point, the rise in wages does not increase the supply of labour. At higher wages, labour prefers to work for lesser hours. This happens due to change in preference of labour for leisure hours.

Q5. Define supply schedule. Explain different types of supply schedule.

Ans :

Supply schedule can be defined as a tabular representation of the law of supply. It represents the quantities of a product supplied by a supplier at different prices and time periods, keeping all other factors constant. There can be two types of supply schedules, namely individual supply schedule and market supply schedule. These two types of supply schedules are explained as follows:

1. Individual supply schedule

This schedule represents the quantities of a product supplied by an individual firm or supplier at different prices during a specific period of time, assuming other factors remain unchanged. Let us understand the individual supply schedule with the help of an example. Table. shows the supply schedule of a firm supplying commodity A:

Individual Supply Schedule for Commodity A

Price of the Product (` per Kg)	Quantity Supplied of Commodity A (Kg per Week)
5	3,000
10	8,000
15	12,000
20	15,000

From Table, it is clear that the firm is supplying 3,000 kg per week of commodity A at the price of ` 5 per kg. As the price rises from ` 5 to ` 10 per kg, the firm also increased the supply to 8,000 per kg. Therefore, the individual supply schedule shown in Table. indicates that the quantity supplied increases with a rise in price.

2. Market supply schedule

This schedule represents the quantities of a product supplied by all firms or suppliers in the market at different prices during a specific period of time, while other factors are constant. In other words, market supply schedule can be defined as the summation of all individual supply schedules. Table. shows the market supply schedule of two firms X and Y for the commodity A:

Market Supply Schedule for Commodity A

Price of Product A (` per kg)	Quantity Supplied by Firm X (1000 kg per week)	Quantity Supplied by Firm Y (1000 kg per week)	Market Supply (1000 kg per week)
5	3	7	10
10	8	12	20
15	12	15	27
20	15	17	32

In Table, market supply is calculated by combining the quantities supplied by firm X and Y. It also shows when the commodity is priced at ` 5 per kg, the market supply of commodity A is 10,000 kg per week. When the price rises to ` 10 per kg, the market supply also increases to 20,000 per kg. So it can be observed, that a rise in price of the commodity A increases the market supply.

Q6. Explain briefly about supply curve.

Ans :

The graphical representation of supply schedule is called supply curve. In a graph, the price of a product is represented on Y-axis and quantity supplied is represented on X-axis. Supply curve can be of two types, individual supply curve and market supply curve. These two types of curves are explained as follows:

1. Individual supply curve

It is the graphical representation of individual supply schedule. The individual supply schedule of commodity A represented in Table.

Individual Supply Schedule for Commodity A

Price of the Product (` per Kg)	Quantity Supplied of Commodity A (Kg per Week)
5	3,000
10	8,000
15	12,000
20	15,000

When plotted on a graph will provide the individual supply curve, which is shown in Fig.

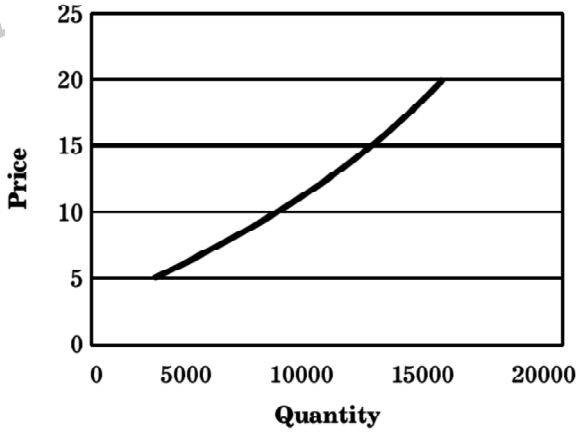


Fig. Individual Supply Curve

The slope moving upwards to the right in individual supply curve shows the direct relationship between supply and price, i.e. increase in supply along with the rise in prices.

2. Market Supply curve

It is the graphical representation of market supply schedule. The market supply schedule of commodity A (supplied by Firm X and Firm Y) represented in Table.

Market Supply Schedule for Commodity A

Price of Product A (` per kg)	Quantity Supplied by Firm X (1000 kg per week)	Quantity Supplied by Firm Y (1000 kg per week)	Market Supply (1000 kg per week)
5	3	7	10
10	8	12	20
15	12	15	27
20	15	17	32

When plotted on graph will provide the market supply curve, which is shown in Figure.

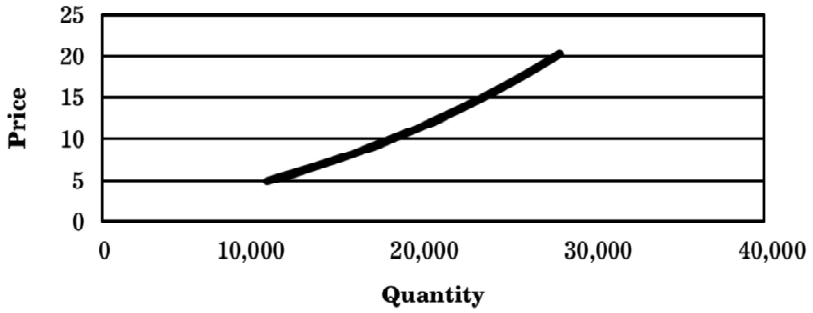


Fig.: Market Supply Curve

Q7. Define supply function.

Ans :

Supply function is the mathematical expression of law of supply. In other words, supply function quantifies the relationship between quantity supplied and price of a product, while keeping the other factors at constant. The law of supply expresses the nature of relationship between quantity supplied and price of a product, while the supply function measures that relationship. The supply function can be expressed as:

$Q_s = f(P_a, P_b, P_c, T, T_p)$

Where,

Q_s = Supply

P_a = Price of the good supplied

P_b = Price of other goods

P_c = Price of factor input

T = Technology

T_p = Time Period

According to supply function, the quantity supplied of a good (Q_s) varies with price of that good (P_a), the price of other goods (P_b), the price of factor input (P_c), technology used for production (T), and time period (T_p)

3.3 Factors Influencing Supply

Q8. What are the determinants of supply?

(OR)

What are the Factors Influencing Supply

Ans : **(Dec.-16, Imp.)**

1. Price of a product

The major determinant of the supply of a product is its price. An increase in the price of a product increases its supply and vice versa while other factors remain the same. Producers increase the supply of the product at higher prices due to the expectation of receiving increased profits. Thus, price and supply have a direct relationship.

2. Cost of production

It is the cost incurred on the manufacturing of goods that are to be offered to consumers. Cost of production and supply are inversely proportional to each other. This implies that suppliers do not supply products in the market when the cost of manufacturing is more than their market price. In this case, sellers would wait for a rise in price in the future. The cost of production increases due to several factors, such as loss of fertility of land; high wage rates of labour; and increase in the prices of raw material, transportation cost, and tax rate.

3. Natural conditions

The supply of certain products is directly influenced by climatic conditions. For instance, the supply of agricultural products increases when the monsoon comes well on time. On the contrary, the supply of these products decreases at the time of drought. Some of the crops are climate specific and their growth purely depends on climatic conditions. For example, Kharif crops are well grown at the time of summer, while Rabi crops are produced well in the winter season.

4. Transportation conditions

Better transport facilities result in an increase in the supply of goods. Transport is always a constraint to the supply of goods. This is because goods are not available on time due to poor transport facilities. Therefore, even if the price of a product increases, the supply would not increase.

5. Taxation policies

Government's tax policies also act as a regulating force in supply. If the rates of taxes levied on goods are high, the supply will decrease. This is because high tax rates increase overall productions costs, which will make it difficult for suppliers to offer products in the market. Similarly, reduction in taxes on goods will lead to an increase in their supply in the market.

6. Production techniques

The supply of goods also depends on the type of techniques used for production. Obsolete techniques result in low production, which further decreases the supply of goods. Over the years, there has been tremendous improvement in production techniques, which has led to increase in the supply of goods.

7. Factor prices and their availability

The production of goods is dependent on the factors of production, such as raw material, machines and equipment, and labour. An increase in the prices of the factors of production increases the cost of production. This will make difficult for firms to supply large quantities in the market.

8. Price of related goods

The prices of substitutes and complementary goods also influence the supply of a product to a large extent. For example, if the price of tea increases, farmers would tend to grow more tea than coffee. This would decrease the supply of tea in the market.

9. Industry structure

The supply of goods is also dependent on the structure of the industry in which a firm is operating. If there is monopoly in the industry, the manufacturer may restrict the supply of his/her goods with an aim to raise the prices of goods and increase profits. On the other hand, in case of a perfectly competitive market structure, there would be a large of number of sellers in the market. Consequently, the supply of a product would increase.

3.4 MARKET EQUILIBRIUM

Q9. What do you understand by Market Equilibrium? Describe the impact of increase in both demand and supply on Equilibrium.

Ans :

According to the economic theory, the price of a product in a market is determined at a point where the forces of supply and demand meet. The point where the forces of demand and supply meet is called equilibrium point. Conceptually, equilibrium means state of rest. It is a stage where the balance between two opposite functions, demand and supply, is achieved. Mathematically, market equilibrium is expressed as:

$$Q^d (P) = Q^s (P)$$

Where

Q^d (P) is the quantity demanded at price P

Q^s (P) is the quantity supplied at price P

Let us understand the concept of market equilibrium with the help of an example.

Table. shows the demand and supply of fans in Delhi at different price levels.

Demand and Supply of Fans in Delhi

Price (` per fan)	Supply ('000 in a month)	Demand ('000 in a month)
600	55	80
650	65	75
700	70	70
750	75	50

In Table. it can be observed that at the price of `700, the demand and supply of fans is equal i.e. 70,000 fans. Therefore, market equilibrium exists at 70,000 where demand and supply are the same. Fig. shows the market equilibrium of demand and supply of fans mentioned in Table.

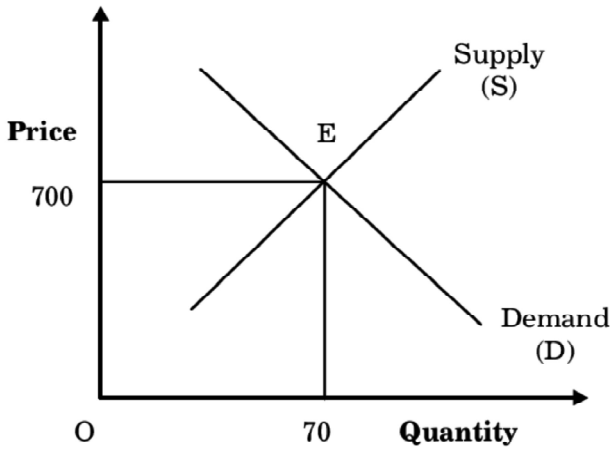


Fig.: Market Equilibrium

In Fig. E is the point where demand and supply both intersect. Thus, market equilibrium exists at the point E where demand and supply are equal.

(i) Determination of market price

As mentioned earlier, the market equilibrium price of a product is determined at the point of intersection of demand and supply. However, it is important to understand how the price is determined. Let us understand the determination market price with the help of an example.

Let us consider the example of fans (as given in Table. In Table. it is mentioned that when price is ` 600, the demand for fans is 80,000 units while supply is 55,000 units. This indicates that there is a shortage of 25,000 fans in the market. As a result of this shortage, the seller tries to increase their earnings by raising the price of fans. On the other hand, consumers would be willing to purchase at the price quoted by the seller due to the shortage of fans. This leads to an increase in the profit of the seller, which, in turn, would improve the production of fans. As a result, the supply of fans increases. The process of increase in prices goes on till the price of fans reaches to ` 700. As shown in Table at the price of ` 700, the demand is reduced to 70,000 fans, while the supply is also increased to 70,000 fans. Thus, equilibrium is reached. This will lure consumers to buy more due to reduction in the price of fans. As a result of increase in buying, the equilibrium price would be ` 300.

(ii) Shifts in market equilibrium

A shift in supply or demand curve also shifts the equilibrium point. Let us understand the mechanism of shift in market equilibrium in the case of shift of supply and demand curves respectively.

(a) Shift in demand curve : Figure shows a shift in the demand curve:

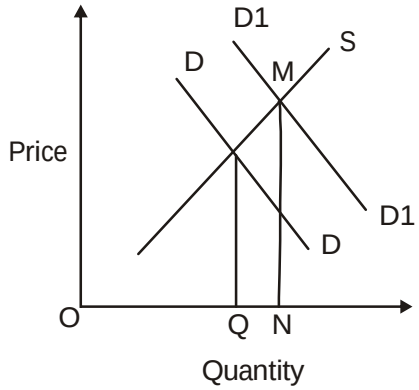


Fig.: Shift in Demand and Equilibrium

In figure the initial equilibrium price is observed at PQ and quantity at OQ. When the demand curve is shifted from initial demand curve DD to D_1D_1, there is a shift in the equilibrium from PQ to MN. Thus, the new equilibrium price is at MN and the quantity is at ON. However, supply remains the same in this case. Thus, it can be said that when the demand curve shifts, an increase in quantity leads to an increase in the equilibrium price.

(b) Shift in supply curve: Fig. shows a shift in the supply curve:

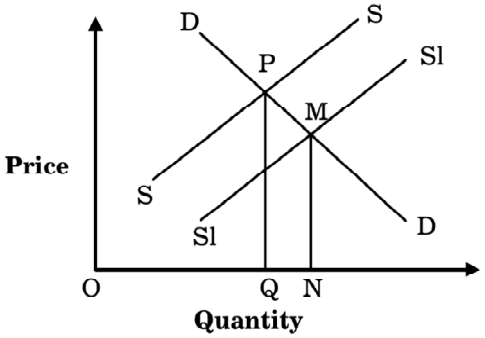


Fig.: Shift in Supply Curve and Equilibrium

In Fig. the initial equilibrium price is placed at PQ and quantity at OQ. As the supply curve shifts from SS to S_1S_1, the equilibrium point also shifts from PQ to MN. After the shift, the new equilibrium price is at MN and the quantity is at ON. However, demand remains the same in this case. Thus, it can be said that when supply curve shifts, an increase in quantity results in an increase in the equilibrium price too.

(iii) Complex cases of shift in equilibrium

The extent of shift in the demand and supply curves determines the impact on the equilibrium point. If the shift in supply curve is greater than the demand curve, equilibrium price falls and output rises. Fig. shows the impact on equilibrium point when shift in supply curve is more than the shift in demand.

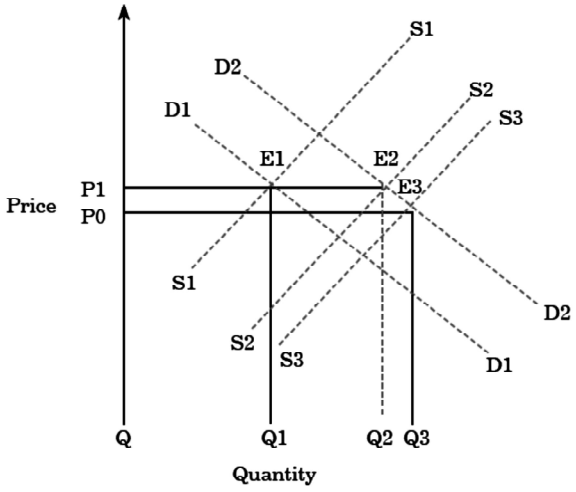


Fig.: Equilibrium Position

(when shift in supply is more than demand)

In Figure the initial equilibrium position, E1 is the point where demand curve D1D1 and supply curve S1S1 intersect. At this point, equilibrium price and quantity is P1 and OQ1 respectively. As the demand curve shifts from D1D1 to D2D2 and supply curve shifts from S1S1 to S3S3, there is a shift in equilibrium from E1 to E3. Here, the shift in supply is greater than the demand shift; therefore, equilibrium price falls down to P0 and output rises to OQ3. However, if the shift in demand and supply curve is equal that is D2D2 and S2S2 respectively, there is no change in equilibrium price while output increases to Q2. In case, shift in demand curve is greater than the shift in supply curve, both equilibrium price and quantity, increase, as shown in Fig.

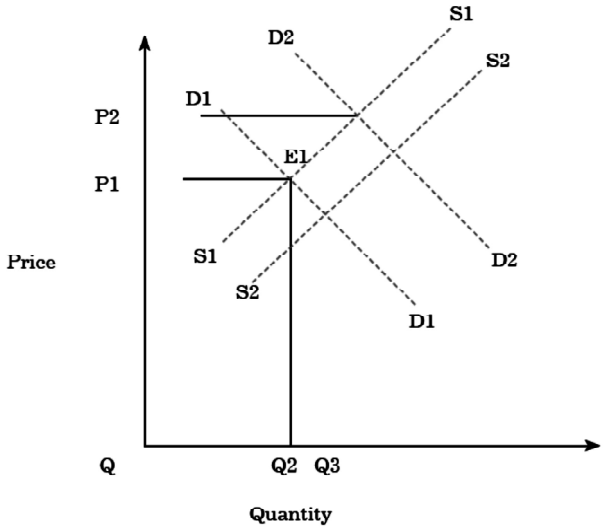


Fig.: Equilibrium Position

(when shift in demand is more than supply)

In Fig. E1 is the initially equilibrium which is obtained by balancing the demand curve, D1D1 and supply curve, S1S1. At E1, equilibrium price is P1 and quantity is OQ1. Now, when the demand curve shifts from D1D1 to D2D2 and supply curve shifts from S1S1 to S2S2, equilibrium also shifts from E1 to E2. As can be seen the Fig. demand shift is greater than the shift in supply; therefore, equilibrium price is increased to P2 and output is increased to OQ2.

3.5 CONSUMER SURPLUS

Q10. What is consumer surplus? How did marshall measure it?

Ans : **(June-18, June-17, Dec.-16, Imp.)**

Meaning

The concept of consumer's surplus was first mentioned by J.A.Dupuit, a French engineer – economist in 1844. Marshall developed the concept in his work 'Principles of Economics' (1890). Consumer's surplus is experienced in commodities which are highly useful but relatively cheap. For example, newspaper, salt, match box, postage stamp etc. For these commodities, we are ready to pay more than what we actually pay, if the alternative is to go without them. The extra satisfaction a consumer derives is called consumer's surplus.

Suppose a consumer wants to buys a shirt. He

is willing to pay Rs. 250 for it. But the actual price is only Rs 200. Thus he enjoys a surplus of Rs 50. This is called consumer's surplus.

Definition: Marshall defines Consumer's surplus as follows:

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

Assumptions

1. Cardinal utility, that is, utility of a commodity is measured in money terms.
2. Marshall assumes that there is definite relationship between expected satisfaction (utility) and realized satisfaction (actual).
3. Marginal utility of money is constant.
4. Absence of differences in income, tastes, fashion etc.
5. Independent goods and independent utilities.
6. Demand for a commodity depends on its price alone; it excludes other determinants of demand.

Measurement: Consumer's Surplus for a single commodity is measured as follows:

Consumer's surplus = Potential price – Actual price

Potential price is the price which a consumer is willing to pay for a commodity and actual price is the price which the consumer actually pays for that commodity.

Measurement of Consumer's Surplus

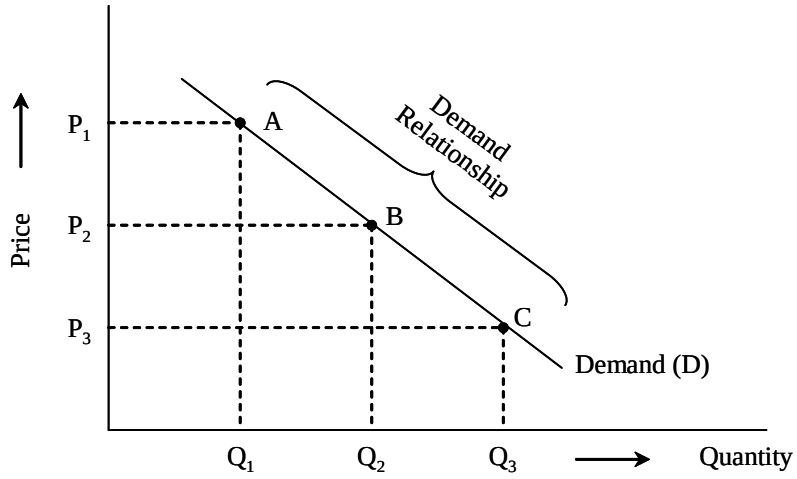
Units Marginal Price of the units(in Rs) Consumer's

Utility (1)	(2)	(3)	Surplus (4) (2-3)
1	50	1 0	40
2	40	10	30
3	30	10	20
4	20	10	10
5	10	10	0
	150	**50**	**100**

Consumer's surplus is determined by the potential price of the commodity purchased and the actual price in the market price. Thus the consumer's surplus is the difference between the sum of marginal utilities (i.e. the total utility) minus the total money spent (price multiplied by quantity purchased) on the commodity. This can be illustrated by a table.

In the above table, we have assumed that the market price of the commodity is Rs. 10/- (column 3). Column 2 gives the marginal utility. Marginal utility explains the price which a consumer is willing to pay for the unit of the commodity. As more and more units of a commodity is purchased, the marginal utility declines. Therefore the price, which the consumer is willing to pay, also decreases.

Consumer's surplus can be illustrated with a diagram by taking units of the commodity on the x-axis and the utility and price on the y-axis.



In the figure, MU is the marginal utility curve. OP is the price and OM is the quantity purchased. For OM units, the consumer is willing to pay OAEM. The actual amount he pays is OPEM. Thus consumer's surplus is OAEM – OPEM = PAE (the shaded area). A rise in the market price reduces consumer's surplus. A fall in the market price increases the consumer's surplus.

Q11. State the criticism of consumer surplus.

Ans :

The concept of consumer's surplus is criticized by several economists. The following are some points of criticism.

It cannot be measured : Consumer's surplus cannot be measured for the following reasons.

1. **Potential prices are not known:** It is not possible to know the prices that consumers would be willing to pay. A complete list of demand prices is not available. What we would have paid is something imaginary.
2. **For necessaries it is immeasurable :** People would be willing to give up entire wealth for necessaries of life, if it is a must.

   Further in the case of necessaries, consumption only re-moves pain. We do not get any pleasure or positive satisfaction and hence there cannot be excess satisfaction.
3. **Difference in consumers circumstances :** Rich man would be willing to pay much more for a commodity than a poor man. Therefore, consumer's surplus differs from person to person.
4. **Differences in sensibilities :** Tastes and sensibilities differ from person to person. Therefore, some persons may be willing to pay much more than other.
5. **Market consumer's surplus difficult to measure :** As the circumstances, sensibilities etc., differ from person to person, market consumer's surplus cannot be measured.
6. **Marginal utility of money not constant.** As we go on buying a commodity, we have less and less money with us. There-fore, the marginal utility of money increases. It does not remain constant.
7. **Utility of earlier units changes :** As we purchase more units of a commodity, the utility of the earlier units purchased will also diminish. The utility schedule will not be as before. It has to be changed every time when we make a purchase.
8. **Presence of substitutes :** Many commodities have substitutes. Tea and coffee are substitutes. When there are substitutes, there is no question of 'what the consumer is willing to pay rather than

go without it'. He can use a substitute if the commodity is not available.

9. **Goods having prestige value :** Goods like diamonds have prestige value because their prices are high. If they become cheap rich people may not buy them because they have lost the prestige value. When the satisfaction is less at a lower price, there is no consumer's surplus.

10. **Assumption of independent utilities wrong:** The utility of a commodity depends on the supply of other commodities also. But, consumer's surplus is based on independent utilities.

3.6 Theory of Consumer Behavior

Q12. Define the theory of consumer behaviour.

Ans :

The consumer has to decide how to spend her income on different goods[1]. Economists call this the problem of choice. Most naturally, any consumer will want to get a combination of goods that gives her maximum satisfaction. It depends on the likes consumer and what the consumer can afford to buy. The 'likes' of the consumer are also called 'preferences'. And what the consumer can afford to buy depends on prices of the goods and the income of the consumer. two different approaches that explain consumer behaviour

(i) Cardinal Utility Analysis and

(ii) Ordinal Utility Analysis.

Preliminary Notations and Assumptions

A consumer, in general, consumes many goods; but for simplicity, we shall consider the consumer's choice problem in a situation where there are only two goods bananas and mangoes. Any combination of the amount of the two goods will be called a consumption bundle or, in short, a bundle. In general, we shall use the variable x_1 to denote the quantity of bananas and x_2 to denote the quantity of mangoes. x_1 and x_2 can be positive or zero, (x, xj would mean the bundle consisting of $x_;$ quantity of bananas and x,, quantity of mangoes. For particular values of x_1 and x_2, (x_1, x_2, would give us a particular bundle. For example, the bundle (5,10) consists of 5 bananas and 10 mangoes; the bundle (10, 5) consists of 10 bananas and 5 mangoes.

3.6.1 Utility and Indifference Curve Analysis

Q13. Define utility. Explain different types of utility.

Ans :

A consumer usually decides his demand for a commodity on the basis of utility (or satisfaction) that he derives from it.

Utility is subjective. Different individuals can get different levels of utility from the same commodity. For example, some one who likes chocolates will get much higher utility frc m a chocolate than some one who is not so fond of chocolates, Also, utility that the individual gets from the commodity can change with change in place and line. For example, utility from the use of a room heater will depend upon whether the individual is in Ladakh or Chennai (place) or whether it is summer or winter.

1. Cardinal Utility Analysis

Cardinal utility analysis assumes that level of utility can be expressed in numbers. For example, we can measure the utility derived from a shirt and say, this shirt gives me 50 units of utility. Before disc using further, it wall be useful to have a look at two important measures of utility.

Measures of Utility

(i) Total Utility: Total utility of a fixed quantity of a commodity (TU) is the total satisfaction derived from consuming the given amount of some commodity x. More of commodity x provides more satisfaction to the consumer. TU depends on the quantity of the commodity consumed. Therefore, TU_n refers to total utility derived from consuming n units of a commodity x.

(ii) Marginal Utility: Marginal utility (MU) is the change in total utility due to consumption of one additional unit of a commodity. For example, suppose 4 bananas give us 28 units of total utility and 5 bananas give us 30 units of total utility. Clearly, consumption of the 5th banana has caused total utility to increase by 2 units (30 units minus 28 units). Therefore, marginal utility of the 5th banana is 2 units.

$$MU_5 = TU_5 - TU_4 = 30 - 28 = 2$$

In general, $MU_N = TU_N - TU_{n-1}$, where subscript n refers to the n^{th} unit of the commodity

Total utility and marginal utility can also be related in the following way.

$$TU_n = MU_1 + MU_2 + ... + MU_{n-1} + MU_n$$

This simply means that TU derived from consuming n units of bananas is the sum total of marginal utility of first banana (MU_1), marginal utility of second banana (MU_2), and so on, till the marginal utility of the n^{th} unit.

2. Ordinal Utility Analysis

The consumer does not measure utility in numbers, though she often ranks Various consumption bundles. This forms the starting point of this topic-Ordinal Utility Analysis.

Q14. Explain the concept of indifference curve.

(OR)

Define indifference curve.

(OR)

Show how a consumer attains equilibrium with the help of indifference curve.

Ans : **(June-18, June-16, Dec.-16, Imp.)**

An indifference curve can be defined as the locus of points each representing a different combination of two substitutes, which yield the same level of utility to a consumer. Therefore, the consumer is indifferent to any combination of two commodities if he/she has to make a choice between them. This is because an individual consumes a variety of goods over time and realises that one good can be substituted with another without compromising on the satisfaction level. When these combinations are plotted on the graph, the resulting curve is called indifference curve. This curve is also called the iso-utility curve or equal utility curve.

Let us learn the indifference curve through a schedule. Assume that a consumer consumes two commodities X and Y and makes five combinations for the two commodities a, b, c, d, and e, which is shown in Table.

Indifference Schedule for Substitutes X and Y

Combination	Units of Commodity Y	Units of Commodity X	Total Utility
a	25	3	U
b	15	5	U
c	8	9	U
d	4	17	U
e	2	30	U

When the indifference schedule for X and Y is plotted on a graph, a curve is obtained, which is shown in Fig.

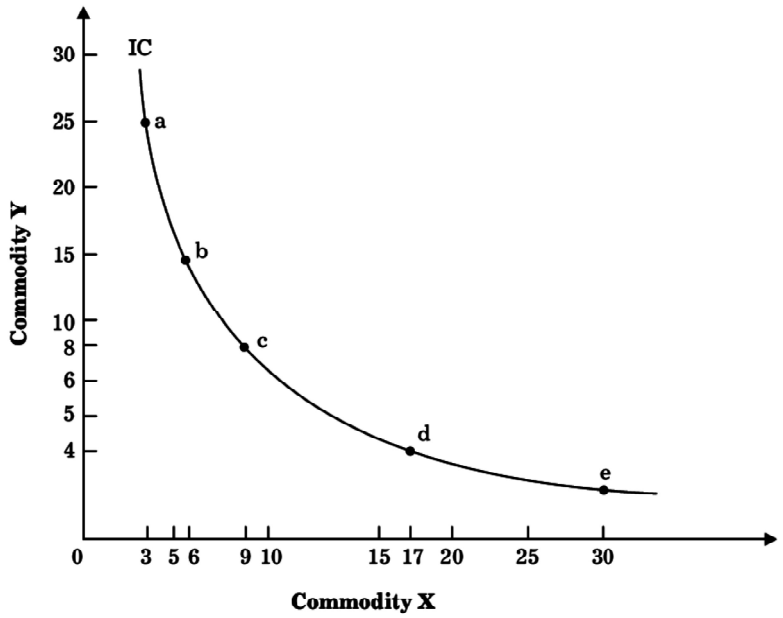


Fig.: Indifference Curve for Substitutes X and Y

On the indifference curve (IC), there can be several other points in between the points a, b, c, d, and e, which would yield the same level of satisfaction to the consumer. Therefore, the consumer remains indifferent towards any combinations of two substitutes yielding the same level of satisfaction.

Q15. What are the assumptions Indifference Curve Analysis?

Ans :

1. Rational behaviour of the consumer

It is assumed that the consumer behaves rationally which means that he tries to obtain the maximum satisfaction from his expenditure on consumer goods. As such the consumer is supposed to choose such a combination of his needed consumer goods as provides him with the maximum possible satisfaction.

2. Scale of Preference

Another assumption of the analysis is that the consumer is able to arrange the available combinations of goods according to preference or indifference for them. Between two combinations he is assumed to be either indifferent or prefer one to the other. In technical language, it is called 'Scale of Preference'. Stated simply it means that if there are a number of combinations, the consumer is able to arrange them in an ascending or descending order of his preference and is able to indicate the combinations among which he is indifferent. This assumption may be called the assumption of ordering ability.

3. Concept of ordinal utility

The indifference curve analysis is based on the concept of ordinal utility. Ordinal Utility implies that the consumer is in a position to rank the alternative combinations available to him by a simple comparison of the satisfaction obtainable from the given combinations. Ordinal utility does not require quantitative measurement of utilities of different combinations.

4. Diminishing marginal rate of substitution

Another assumption behind the indifference curve analysis is that of 'diminishing marginal rate of substitution'. This means that as the amount of a commodity with the consumer goes on increasing he is prepared to exchange lesser and lesser amounts of the other commodity for equal units of the commodity whose amount is increasing.

5. Assumption of consistency

It is assumed that the consumer is consistent in his behaviour. If he is indifferent between combination A and combination B, and is also indifferent between combinations B and C, then he must be indifferent between combinations A and C. Stated negatively, this assumption requires that if the consumer prefers A to B and B to C, then he does not prefer C to A in any circumstances.

6. Scale of preferences is independent of the market prices

It is further assumed that the consumer is not influenced in his preference or indifference between combinations by the market prices of different goods. In other words, he is supposed not to regard a higher-priced commodity as superior and lower priced commodity as inferior.

7. Weak ordering

Indifference curve analysis is based on the weak ordering form of preference hypothesis. According to J.R. Hicks, weak ordering implies that there is a possibility of the consumer being indifferent between any two combinations along with the possibility of preferring one combination to the other. The consumer may prefer A to B or B to A, or he may be indifferent between two combinations. As against weak ordering, strong ordering means that the consumer is allowed to indicate his preference only. The possibility of indifference between two combinations is ruled out in strong ordering.

8. Assumption of transitivity

Another assumption underlying indifference curve analysis is that consumer's preference or indifference relations do not contradict the consumer's position of indifference between combinations taken as whole, and taken separately. It means that if the consumer prefers A to B, B to C and C to D, then, he also prefers A to D. Likewise, if he declares his indifference between pairs of combinations separately, then he is indifferent between all of them. His indifference lies all over his choice field.

9. Assumption of continuity

The indifference curve analysis given by Hicks and Allen was based on the assumption of continuity. Continuity means that the consumer is in a position to rank all conceivable combinations of the needed goods according to his preference or indifference. This means further that the consumer is never tired of ordering the combinations available to him, howsoever small the difference in satisfactions may be between the combinations. The consumer is assumed to make minute comparisons so that different sets of indifference curves are available from him. Prof. Hicks gave up this assumption in his 'Revision of Demand Theory'.

Q16. What are the properties of Indifference Curve Analysis?

Ans : **(June-18, Dec.-16, Imp.)**

The indifference curve (IC) has certain definite properties or characteristics, which are as follows:

1. Indifference curves are negatively sloped

The indifference curves are sloped downwards to the right. The reason for the negative slope is that as a consumer increases the consumption of commodity X, he/ she sacrifices some units of commodity Y in order to maintain the same level of satisfaction.

2. Higher indifference curve represents higher satisfaction level

A higher indifference curve lying above and to the right of another indifference curve implies a higher level of satisfaction and vice versa. In simple words, the combination of commodities on the higher indifference curve is preferred by a consumer to the combination that lies on a lower indifference curve.

3. Indifference curves are convex to the origin

indifference curves are curved inwards; thus they are convex to the origin. This implies that as the consumer continues to substitute commodity X for commodity Y, MRS of X for Y diminishes along the indifference curve.

4. Indifference curves do not intersect

This can be explained by considering a hypothetical situation where two indifference curves intersect. The point of intersection would then imply that a combination of commodities on the higher curve would offer the same level of satisfaction as that on the lower indifference curve, which violates the basic assumption of indifference curves.

Q17. State the criticisms of Indifference Curve Analysis?

Ans :

Although the concept of IC is vital to explain the ordinal approach, it is criticised on various grounds.

Let us discuss these points of criticism in detail:

1. Ignorance towards market behaviour

indifference curve analysis considers only two commodities in the market. However, the market is full of a large number of commodities. Thus, it does not consider market behaviour in the analysis of consumer behaviour. For example, a change in the price of other commodities in the market may affect the purchase of the commodities being considered.

2. Two commodities model

IC analysis is based on the combinations of two commodities. Considering more than two commodities in IC analysis makes the calculations more complex. This may further make it difficult to predict consumer behaviour.

3. Ignorance towards demonstration effect

James Stemble Duesenberry (July 18, 1918-October 5, 2009), an American economist, proposed the concept of demonstration effect. The demonstration effect states that an individual's consumption pattern is affected by the level of consumption of other individuals. This is ignored by IC analysis limiting its use to understand consumer behaviour.

4. Indifference towards risks and uncertainties

Risks and uncertainties in the market and individual's life are inevitable. John Von Neumann and Oskar Morgenstern, authors of The Theory of Games and Economic Behaviour point out that IC analysis has no ability to analyse consumer behaviour in the midst of several risks and uncertainties that prevail in the market and real life.

5. Unrealistic assumptions

IC is based on an assumption that a consumer is fully aware of his/her preference for various commodities. However, this is an unrealistic assumption as humans have their limitations. A human brain cannot take quick decisions by analysing different combinations of several commodities available in the market.

Q18. Explain the concept of marginal rate of substitution.

Ans :

Marginal rate of substitution (MRS) refers to the rate at which one commodity can be substituted for another commodity maintaining the same level of satisfaction. The MRS for two substitute goods X and Y may be defined as the quantity of commodity X required to replace one unit of commodity Y (or quantity of commodity Y required to replace one

unit of X) such that the utility derived from either combinations remains the same. This implies that the utility of X (or Y) is equal to the utility of additional units of Y (or X) added to a combination. MRS of X and Y is denoted as "Y/ "X as it continues to diminish as the consumer continues to substitute X for Y or vice versa. According to the ordinal utility approach, MRSy, x (or MRSx,y) decreases which means that the quantity of a commodity an individual is willing to give up for an additional unit of the other commodity continues to decrease with each substitution. MRSy,x derived from different combinations of commodities X and Y are given in Table.

Diminishing MRS between X and Y

Indifference points	Cobinations Y + X	Change in Y(ΔY)	Change in X(ΔX)	MRS_{yx} (ΔY/ΔX)
a	25 + 3	–	–	–
b	15 + 5	–10	2	–5.00
c	8 + 9	–7	4	–1.75
d	4 + 17	–4	8	–0.50
e	2 + 30	–2	13	–0.15

As the consumer moves from combination a to b on IC, he/she sacrifices 10 units of commodity Y and gets 2 units of commodity X. Therefore,

$$MRS_{y, x} = -5$$

Similarly when the consumer moves from combination b to c, he/she sacrifices 7 units of Y and gets 4 units of X. Therefore,

$$MRS_{y, x} = -1.75$$

This shows that as the consumer moves down the IC from point a to b to c, MRS diminishes from – 5 to – 1.75.

Q19. Explain the concept of budget line.

Ans :

A budget line, also called price line, represents various combinations of two commodities, which can be purchased by a consumer at the given income level and market price. The budget line is an important element of consumer behaviour analysis. In this section, let us study about the concept and importance of the budget line in detail.

The indifference curve represents consumers' preferences for a combination of two goods that are substitutes of each other. However, actual choices made by consumers depend on their income. A budget line is the locus of all commodity combinations that a consumer can purchase by spending all his/her income. Let us assume that there are only two commodities X and Y. The price of X is Px and that of Y is Py. Let Qx be the quantity of commodity X and Qy be the quantity of commodity Y, purchased by the consumer with income M.

Then, the budget equation is represented as follows:

$$M = P_x Q_x + P_y Q_y$$

The budget equation states that the total expenditure of a consumer on various combinations of commodities X and Y cannot exceed his/ her money income M. The different quantities that the consumer can purchase using his/her income can be obtained using the following formula:

$$Q_r = \frac{M}{Px} - \left(\frac{Py}{Px}Qy\right) \text{ and}$$

$$Q_y = \frac{M}{Py} - \left(\frac{Px}{Py}Qx\right)$$

When different numerical values of Qx and Qy are plotted on a graph, a straight line with a negative slope is derived. This is called the budget line or price line, which has been depicted in Figure.

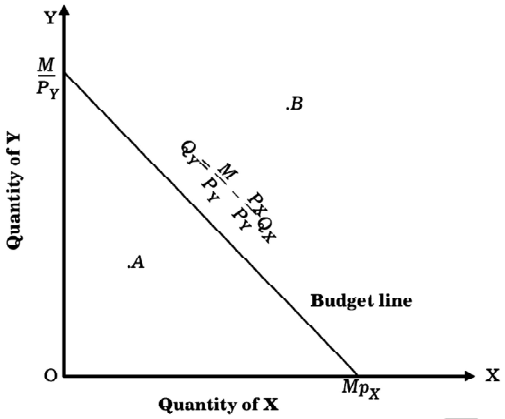


Fig.: Budget Line

The budget line that shows an individual's consumption combinations, resembles a different line that separates the combinations that are attainable from those that are not, referred to as the production-possibilities frontier. Let us understand the concept of budget line with the help of a popular example from the Second World War. During World War II, the United States concluded that it needed to produce more quantities of armaments (guns) and decided to shift butter producing factories to those producing guns. This tradeoff can be represented as a move from a point a to a point b in Figure.

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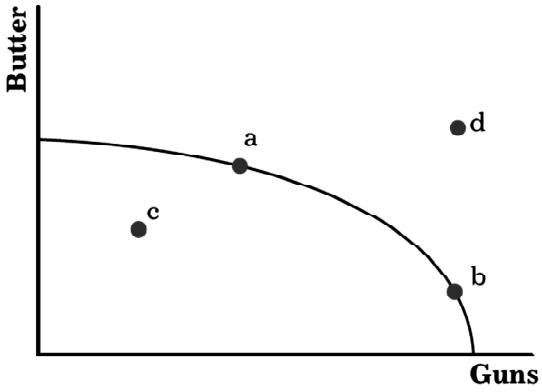

Fig.: Guns vs. Butter in World War II

(Source: http://ingrimayne.com/econ/Logic of Choice/Budget Line.)

At the beginning of the War, there was a high level of unemployment owing to the recessions of 1929-33 and 1937-38, called Great Depression. Therefore, the United States was at a point c, which indicates that more of all goods could have been produced given the amount of resources and technology. However, compared to point a or b, point d was a more desirable position although it was unattainable given the available technology and resources. During World War II, the cost of producing thousands of guns reduced the production of butter for the use of civilians. The basic idea behind a budget line is that all economic activities take place within limitations or constraints. Owing to constraints, individuals and organizations need to prioritise certain needs and sacrifice the rest.

Short Question and Answers

1. Define law of supply.

Ans :

The law of supply explains the relationship between price and supply of a product. According to the law, the quantity supplied increases with a rise in the price of a product and vice versa while other factors are constant. The other factors may include customer preferences, size of the market, size of population, etc.

For example, in the case of rise in a product's price, sellers would prefer to increase the production of the product to earn high profits, which would automatically lead to an increase in supply. Similarly, if the price of the product decreases, the supplier would decrease the supply of the product in the market as he/she would wait for a rise in the price of the product in the future.

Thus, the law of supply states a direct relationship between the price of a product and its supply. Therefore, both price and supply moves in the same direction.

2. What is consumer surplus?

Ans :

Meaning

The concept of consumer's surplus was first mentioned by J.A.Dupuit, a French engineer – economist in 1844. Marshall developed the concept in his work 'Principles of Economics' (1890). Consumer's surplus is experienced in commodities which are highly useful but relatively cheap. For example, newspaper, salt, match box, postage stamp etc. For these commodities, we are ready to pay more than what we actually pay, if the alternative is to go without them. The extra satisfaction a consumer derives is called consumer's surplus.

Suppose a consumer wants to buys a shirt. He is willing to pay Rs. 250 for it. But the actual price is only Rs 200. Thus he enjoys a surplus of Rs 50. This is called consumer's surplus.

Definition: Marshall defines Consumer's surplus as follows:

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

3. Supply

Ans :

In economics, supply refers to the quantity of a product available in the market for sale at a specified price and time. In other words, supply can be defined as the willingness of a seller to sell the specified quantity of a product within a particular price and time period. Here, it should be noted that demand is the willingness of a buyer, while supply is the willingness of a supplier. Different experts have defined the term supply differently. The following are some popular definitions of supply.

Definitions

(i) According to Meyers, "Supply may be defined as a schedule of the amount of a product that would be offered for sale at all possible prices at any one instant of time, or during any one period of time, for example, a day, a week, a month, a year and so on, in which the conditions of supply remain the same."

(ii) According to McConnell, "Supply may be defined as a schedule which shows the various amounts of a product which a particular seller is willing and able to produce and make available for sale in the market at each specific price in a set of possible prices during a given period."

(iii) According Anatol Murad, "Supply refers to the quantity of a commodity offered for sale at a given price, in a given market, at given time."

4. What are the assumptions in law of supply?

Ans :

The law of supply also follows the assumption of ceteris paribus, which means that 'other things remain unchanged or constant'. The supply of a commodity is dependent on many factors other than price, such as consumers' income and tastes, price of substitutes, natural factors, etc. All the factors other than the price are assumed to be constant. The law of supply works on certain assumptions which are given as follows:

- Income of buyers and sellers remains unchanged.
- The commodity is measurable and available in small units.
- The tastes and preferences of buyers remain unchanged.
- The cost of all factors of production does not change over a period of time.
- The time period under consideration is short.
- The technology used remains constant.
- The producer is rational.
- Natural factors remain stable.
- Expectations of producers and the government policy do not change over a period of time.

5. Explain the exceptions to the law of supply.

Ans :

1. Agricultural products

The law of exception is not applicable to agricultural products. The production of these products is dependent on so many factors which are uncontrollable, such as climate and availability of fertile land. Thus, the production of agricultural products cannot be increased beyond a limit. Therefore, even a rise in price cannot increase the supply of these products beyond a limit.

2. Goods for auction

Auctions goods are offered for sale through bidding. Auction can take place due to various reasons, for instance, a bank may auction the assets of a customer in case of his failure in paying off the debts over a period of time. Thus, supply of these goods cannot increase or decrease beyond a limit. In case of these goods, a rise or fall in price does not impact the supply.

3. Expectation of change in prices in the future

Law of supply is not applicable under the circumstances when there is an expectation of change in the prices of a product in the near future. For instance, if the price of wheat rises and is expected to increase further in the next few months, sellers may not increase supply and store huge quantities in the hope of achieving profits at the time of a price rise.

4. Supply of labour

The law of supply fails in the case of labour. After a certain point, the rise in wages does not increase the supply of labour. At higher wages, labour prefers to work for lesser hours. This happens due to change in preference of labour for leisure hours.

6. Define supply schedule.

Ans :

Supply schedule can be defined as a tabular representation of the law of supply. It represents the quantities of a product supplied by a supplier at different prices and time periods, keeping all other factors constant. There can be two types of supply schedules, namely individual supply schedule and market supply schedule.

7. Define supply function.

Ans :

Supply function is the mathematical expression of law of supply. In other words, supply function quantifies the relationship between quantity supplied and price of a product, while keeping the other factors at constant. The law of supply expresses the nature of relationship between quantity supplied

and price of a product, while the supply function measures that relationship. The supply function can be expressed as:

$$Q_s = f(P_a, P_b, P_c, T, T_p)$$

Where,

Q_s = Supply

P_a = Price of the good supplied

P_b = Price of other goods

P_c = Price of factor input

T = Technology

T_p = Time Period

According to supply function, the quantity supplied of a good (Q_s) varies with price of that good (P_a), the price of other goods (P_b), the price of factor input (P_c), technology used for production (T), and time period (T_p)

8. What do you understand by Market Equilibrium?

Ans :

According to the economic theory, the price of a product in a market is determined at a point where the forces of supply and demand meet. The point where the forces of demand and supply meet is called equilibrium point. Conceptually, equilibrium means state of rest. It is a stage where the balance between two opposite functions, demand and supply, is achieved. Mathematically, market equilibrium is expressed as:

$$Q^d(P) = Q^s(P)$$

Where

$Q^d(P)$ is the quantity demanded at price P

$Q^s(P)$ is the quantity supplied at price P

9. Indifference curve

Ans :

An indifference curve can be defined as the locus of points each representing a different combination of two substitutes, which yield the same level of utility to a consumer. Therefore, the consumer is indifferent to any combination of two commodities if he/she has to make a choice between them. This is because an individual consumes a variety of goods over time and realises that one good can be substituted with another without compromising on the satisfaction level. When these combinations are plotted on the graph, the resulting curve is called indifference curve. This curve is also called the iso-utility curve or equal utility curve.

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Ans :

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Another assumption of the analysis is that the consumer is able to arrange the available combinations of goods according to preference or indifference for them. Between two combinations he is assumed to be either indifferent or prefer one to the other. In technical language, it is called 'Scale of Preference'. Stated simply it means that if there are a number of combinations, the consumer is able to arrange them in an ascending or descending order of his preference and is able to indicate the combinations among which he is indifferent. This assumption may be called the assumption of ordering ability.

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The indifference curve analysis is based on the concept of ordinal utility. Ordinal Utility implies that the consumer is in a position to rank the alternative combinations available to him by a simple comparison of the satisfaction obtainable from the given combinations. Ordinal utility does not require quantitative measurement of utilities of different combinations.

11. State the criticisms of Indifference Curve Analysis?

Ans :

Although the concept of IC is vital to explain the ordinal approach, it is criticised on various grounds.

Let us discuss these points of criticism in detail:

1. Ignorance towards market behaviour

indifference curve analysis considers only two commodities in the market. However, the market is full of a large number of commodities. Thus, it does not consider market behaviour in the analysis of consumer behaviour. For example, a change in the price of other commodities in the market may affect the purchase of the commodities being considered.

2. Two commodities model

IC analysis is based on the combinations of two commodities. Considering more than two commodities in IC analysis makes the calculations more complex. This may further make it difficult to predict consumer behaviour.

3. Ignorance towards demonstration effect

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Choose the Correct Answers

1. Method of break even point. [a]
   (a) Graphical method (b) LPP
   (c) Trend (d) None
2. Which of the following refers to the characteristics of a market that influence the behavior and performance of firms that sell in that market? [d]
   (a) Market power (b) Market conduct
   (c) Market performanance (d) Market structure
3. The structure of the market is not based on. [d]
   (a) Degree of seller concentration (b) Degree of the buyer concentration
   (c) Degree of product differentiation (d) Condition of exit from the market
4. The lesser the power an individual firm has to influence the market in which it operates, the _____ competitive the market is. [d]
   (a) Less (b) Least
   (c) Low (d) More
5. Based on which of the following, the market can be divided into perfect markets and imperfect markets ? [d]
   (a) Degree of concentration (b) Degree of differentiation
   (c) Degree of condition (d) Degree of competition
6. In a perfect competition, the demand curve for an individual firm is horizontal and [b]
   (a) Perfectly inelastic (b) Perfectly elastic
   (c) Unit elasticity (d) None of the above
7. Under perfect competition, the price is equal to [a]
   (a) AR = MR (b) AR > MR
   (c) MR > AR (d) MR not equal to AR
8. Based on the number of sellers, imperfect markets are categorized as [d]
   (a) Monopsony (b) Duopsony
   (c) Oligopsony (d) Monopolistic competition
9. Based on the number of buyers, imperfect markets, markets can be classified as [d]
   (a) Monopoly (b) Duopoly
   (c) Monopolistic competition (d) Oligopsony
10. _____ is the relationship between price of commodity and quantity of supply [c]
   (a) Supply (b) Demand
   (c) Supply schedule (d) None of the above

Fill in the Blanks

1. The relation between price of commodity and its quantity of supply statement is called _____.
2. The quantity of unit supply and its various determinant factors, functional relation is stated through an equation is called _____.
3. The concept of consumer's surplus was first mentioned by _____.
4. _____ is experienced in commodities which are highly useful but relatively cheap.
5. Consumer's surplus _____.
6. _____ is an economic concept that differs from the pleasure and usefulness a commodity may give to in individual.
7. An _____ is a table representing the various combinations of goods which give equal satisfaction to the consumer.
8. The Marginal Rate of Substitution stands for _____.
9. _____ are convex to the origin.
10. The market with a single buyer is called _____.

ANSWERS

1. Supply demand schedule
2. Supply function
3. J.A. Dupuit
4. Consumer's surplus
5. Potential price - Actual price
6. Utility
7. Indifference schedule
8. Marginal Rate of Substitution
9. Indifference curves
10. Monopoly

UNIT IV

PRODUCTION ANALYSIS

Concept of Production - production function - Total Production - Marginal Production - Average Production - returns to a factor - Law of Variable Proportions - Law of Returns to Scale - Isocost – Isoquants - Economies and Dis-economies of Scale.

4.1 Concept of Production

Q1. Explain the Concept of Production

Ans :

Definitions

(i) According to James Bates and J.R. Parkinson, "Production can be defined as an organized activity of transforming physical inputs (resources) into outputs (finished products), which will satisfy the products' needs of the society."

(ii) According to J.R. Hicks, "Production is an activity whether physical or mental, which is directed to the satisfaction of other people's wants through exchange."

Production can be defined as the process of converting the inputs into outputs. Inputs include land, labour and capital, whereas output includes finished goods and services. In other words, production is an act of creating value that satisfies the wants of the individuals.

Organizations engage in production for earning maximum profit, which is the difference between the cost and revenue. Therefore, their production decisions depend on the cost and revenue. The main aim of production is to produce maximum output with given inputs.

For attaining the maximum output, inputs are combined in more than one way. The most efficient combination is chosen from the different combinations. The decisions for choosing the combinations depend upon the purchase of inputs, distribution of budget among inputs, allocation of inputs and combination of output.

Production is considered very important by organizations because of the following reasons:

- Helps in creating value by applying labour on land and capital.
- Improves welfare as more commodities mean more utility.
- Generates employment and income, which develops the economy.
- Helps in understanding the relation between cost and output.

Q2. What are the factors of Production?

Ans :

Factors of production are the inputs that are used for producing the final output with the main aim of earning an economic profit. Land, labour, capital and enterprise are the main factors of production. Each and every factor is important and plays a distinctive role in the organization.

Let us learn these factors of production in detail:

- **Land:** Land is the gift of nature and includes the dry surface of the earth and the natural resources on or under the earth's surface, such as forests, rivers, sunlight, etc. Land is utilized to produce income called rent. Land is available in fixed quantity; thus, does not have a supply price. This implies that the change in price of land does not affect its supply. The return for land is called rent.
- **Labour:** Labour is the physical and mental efforts of human beings that undertake the production process. It includes unskilled, semi-skilled and highly skilled labour. The supply of labour is affected by the change in its prices. It increases with an increase in wages. The return for labour is called wages and salary.

- **Capital:** Capital is the wealth created by human beings. It is one of the important factors of production of any kind of goods and services, as production cannot take place without the involvement of capital. Capital is an output of a production process that goes into another production process as an input. It is divided into two parts, namely, physical capital and human capital. Physical capital includes tangible resources, such as buildings, machines, tools and equipment, etc. Human capital includes knowledge and skills of human resource, which is gained by education, training and experience. Return for capital is termed as interest.
- **Enterprise:** Collecting, coordinating and utilising the factors of production for achieving economic gains is called an enterprise. An enterprise is an organisation that undertakes commercial purposes or business ventures and focuses on providing goods and services. An enterprise is composed of individuals and physical assets with a common goal of generating profits. An entrepreneur is the person who creates an enterprise. The success or failure depends on the efficiency of the entrepreneur. Profit is the remuneration of the entrepreneur, which is the residual income from business after the payment of rent, wages and interest.

4.1.1 Production function

Q3. Define Production function.

Ans : **(June-17)**

Definitions

Production function can be defined as a technological relationship between the physical inputs and physical output of the organisation.

(i) **According to Stigler,** "production function is the name given to the relationship between the rates of input of productive services and the rate of output…"

(ii) **According to Samuelson,** "Production Function is the technological relationship, which explains the quantity of production that can be produced by a certain group of inputs. It is related with a given state of technological change."

(iii) **According to In the words of Watson,** "The relation between a firm's physical production (output) and the material factors of production (input) is referred to as production function."

Inputs include the factors of production, such as land, labour, capital, whereas physical output includes quantities of finished products produced. The long-run production function (Q) is usually expressed as follows:

$$Q = f(LB, L, K, M, T, t)$$

Where,

LB = land and building
L = labour
K = capital
M = raw material
T = technology
t = time

Q4. Explain the assumptions, uses and limitations of Production function.

Ans :

Assumptions

Production function is based on the following assumptions:

- Production function is related to a specific time period.
- The state of technology is fixed during this period of time.
- The factors of production are divisible into the most viable units.
- There are only two factors of production, labour and capital.
- Inelastic supply of factors in the short-run period.

Uses

The uses of production function are as follows:

- Helps in making short-term decisions, such as optimum level of output.
- Helps in making long-term decisions, such as deciding the production level.
- Helps in calculating the least cost combination of various factor inputs at a given level of output.

- Gives logical reasons for making decisions. For example, if price of one input falls, one can easily shift to other inputs.

Limitations

The advantages, production function also suffers from some limitations, which are given as follows:

- Restricts itself to the case of two inputs and one output.
- Assumes smooth and continuous curve, which is not possible in the real world, as there are always discontinuities in production.
- Assumes technology as fixed, which is not possible in the real world.
- Assumes perfectly competitive market, which is rare in the real world.

4.1.2 Total Production - Marginal Production - Average Production

Q5. Define the following terms

(a) Total Production

(b) Marginal Production

(c) Average Production

Ans :

(a) Total Product (TP)

It can be defined as the total quantity of output produced by an organisation for a given quantity of input. It is also known as total physical product.

(b) Marginal Product (MP)

Marginal product refers to the product obtained by increasing one unit of input. In terms of labour, the change in total quantity of product produced by including one more worker is termed as marginal product of labour. Marginal product of labour (MPL) can be calculated with the help of the following formula:

$$MPL = \Delta Q / \Delta L$$

Where, ΔQ = Change in output

ΔL = Change in labour

ΔQ = new product – old product

ΔL = new labour – old labour

(c) Average Product (AP)

It refers to the ratio of the total product to the variable input used for obtaining the total product. It is the product produced per unit of variable input employed when fixed inputs are held constant. The average product is calculated as:

Average Product = Total Product/ variable inputs employed

4.2 Returns to a Factor

Q6. Explain the concept of Returns to a Factor

Ans :

Meaning

Returns to factors are also called factor productivities. Productivity is the ratio of output to the input. Factor productivity refers to the short-run relationship of input and output. The productivity of one unit of a factor of production will be equal to the output it can generate. The productivity of a particular factor is measured with the assumption that the other factors are not changed or remain unchanged. Only that particular factor under study is changed.

Returns to factors refer to the output or return generated as a result of change in one or more factors, keeping the other factors unchanged. Given a percentage of increase or decrease in a particular factor such as labour, is it yielding proportionate increase or decrease in production. This is analysed in 'returns to factors.'

The change in productivity can be measured in terms of

(a) Total productivity: The total output generated at varied levels of input of a particular factor (while other factors remain constant), is called total physical product.

(b) Average productivity: The total physical product divided by the number units of that particular factor used yields average productivity.

(c) Marginal productivity: The marginal physical product is the additional output generated by adding an additional unit of the factor under study, keeping the other factors constant.

4.3 Law of Variable Proportions

Q7. Explain the law of diminishing returns.

(OR)

Explain the likely behaviour of total product, average product and marginal product when only one input is increased for increasing production. Indicate the phases of Law of Variable Proportion.

(OR)

Explain the different stages of the law of variable Proportions. Which stage is important for Production.

Ans : **(June-18, June-17, Dec.-16, Imp.)**

According to G. Stigler, "As equal increments of one input are added; the inputs of other productive services being held, constant, beyond a certain point the resulting increments of the product will decrease, i.e., the marginal product will diminish."

According to F. Benham, "As the proportion of one factor in a combination of factors is increased, after a point, first the marginal and then the average product of that factor will diminish." In the words of Alfred Marshall, "An increase in the Capital and Labour applied in the cultivation of land causes, in general, less than proportionate increase in the amount of produce raised unless it happens to coincide with an improvement in the art of agriculture."

According to Richard A. Bilas, "If the input of one resource to other resources is held constant, total product (output) will increase but beyond some point, the resulting output increases will become smaller and smaller".

The law of diminishing returns is an important concept of the economic theory. This law examines the production function with one variable keeping the other factors constant. It explains that when more and more units of a variable input are employed at a given quantity of fixed inputs, the total output may initially increase at an increasing rate and then at a constant rate, and then it will eventually increase at diminishing rates. It implies that the total output initially increases with an increase in variable input at a given quantity of fixed inputs, but it starts decreasing after a point of time.

The main assumptions made under the law of diminishing returns are as follows:

- The state of technology is given and changed.
- The prices of the inputs are given.
- Labour is the variable input and capital is the constant input.
- Let us understand the law of diminishing returns with the help of an example. Suppose an organisation has fixed amount of land (fixed factor) and workers (variable factor) as the labour in the short-run production. For increasing the level of production, it can hire more workers. In such a case, the production function of the organisation would be as follows:

  Q = f(L), K

  Q = Total Production

  L = Labour

  K = Capital (Constant)

Table Shows the law of diminishing returns:

Table: Output-Labour Combinations

No. of Workers (L)	Total Product (TP_L)	Marginal Product (MP_L)	Average Product (AP_L)	Stages of Production (on the basis of MP_L)
1	80	80	80	Increasing
2	170	90	85 →	returns
3	270	100	90	
4	368	98	92	Diminishing
5	430	62	86 →	returns
6	480	50	80	
7	504	24	72	
8	504	0	63	
9	495	-9	55 →	Negative returns
10	470	-25	47	

From Table we can see that MP of labour rises till 3 units of labour. Beyond this point, the MP of labour starts decreasing. After using the 8 units of labour, the MP of labour starts becoming negative.

In Table, the last column shows the three stages of production, which are explained as follows:

- **Stage I: Increasing returns:** It refers to the stage of production in which the total output increases initially with the increase in the number of labour. Table shows the increase in the marginal product till the number of workers increased to 3.
- **Stage II: Diminishing returns:** It refers to the stage of production in which the total output increases, but marginal product starts declining with the increase in the number of workers. Table shows the declining of marginal product as the number of workers reaches 4.
- **Stage III: Negative returns:** It refers to the stage of production in which the total product starts declining with an increase in the number of workers. As shown in Table, the total output reaches to maximum level at the 8th worker. After that, the total output starts declining. Marginal product becomes negative at this stage. Figure shows the graphical representation of the three stages of production:

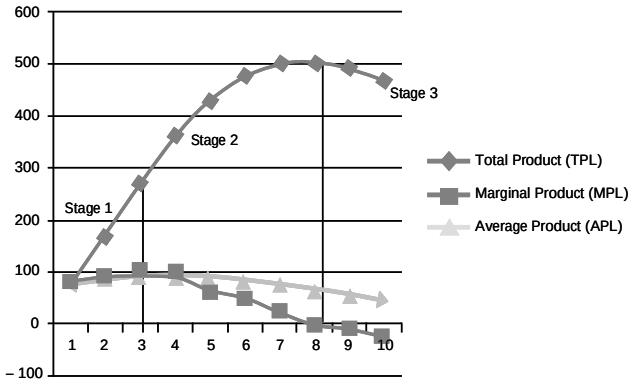


Figure: Stages of Production

From Figure, the following can be inferred:

- Stage 1: MPL > APL
- Stage 2: MPL < APL (both greater than zero)
- Stage 3: MPL < 0, APL > 0

4.4 Law of Returns to Scale

Q8. 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 : **(Dec.-16)**

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 percentage 'increase in the output where all the inputs vary in the same proportion.

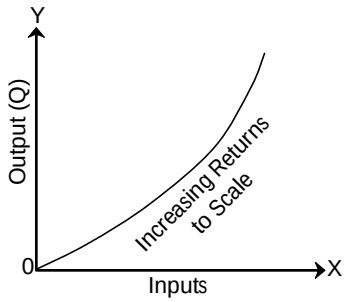
Types of Returns to Scale

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.

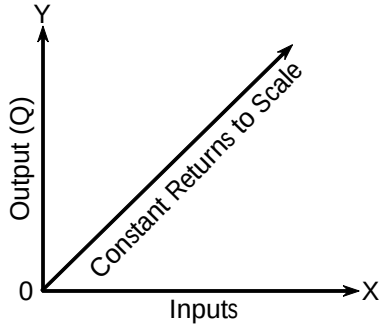
(i) In industries where the possibility to undertake production at a small scale, their a situation of increasing returns occur.

(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.

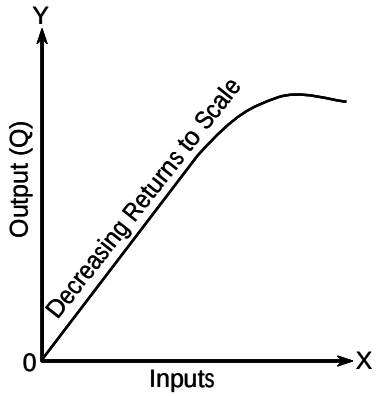
2. Constant Returns to Scale

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.

4.5 ISOCOST

Q9. Explain the concept of Isocost.

Ans : **(June-18, Imp.)**

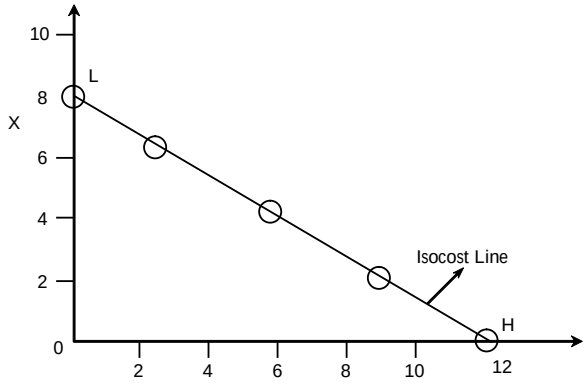
Iso-cost curve is the locus of points of all different combinations of labour and capital that an organisation can employ, given the price of these inputs. Iso-cost line represents the price of factors along with the amount of money an organisation is willing to spend on factors. In other words, it shows different combinations of factors that can be purchased at a certain amount of money. The slope of the iso-cost line depends upon the ratio of price of labour to the price of capital.

For example, a producer has a total budget of `120, which he wants to spend on the factors of production, namely, X and Y. The price of X in the market is `15 per unit and the price of Y is `10 per unit. Table depicts the combinations:

Table: Combinat ions of X and Y

Combinations	Units of X	Units of Y	Total expenditure
A	8	0	120
B	6	3	120
C	4	6	120
D	2	9	120
E	0	12	120

The iso-cost line is shown in Figure:



As shown in Figure, if the producer spends the whole amount of money to purchase X, then he/she can purchase 8 units of X. On the other hand, if the producer purchases Y with the whole amount, then he/she would be able to get 12 units. If points H and L are joined on X and Y axes, respectively, then a straight line is obtained, which is called iso-cost line. All the combinations of X and Y that lie on this line, would have the same amount of cost that is '120. Similarly, other iso-cost lines can be plotted by taking cost more than '120, in case the producer is willing to spend more amount of money on the production factors.

With the help of isoquant and iso-cost lines, a producer can determine the point at which inputs yield maximum profit by incurring minimum cost. Such a point is termed as producer's equilibrium.

4.6 ISOQUANTS

Q10. Explain the concept of Isoquants curves.

(OR)

Explain the internal and external economies of scale of production.

Ans : **(June-18, Dec.-16)**

Meaning

A technical relation that shows how inputs are converted into output is depicted by an isoquant curve. It shows the optimum combinations of factor inputs with the help of prices of factor inputs and their quantities that are used to produce the same output. The term ISO implies equal and quant means quantity or output. For example, for producing 100 calendars, 90 units of capital and 10 units of labour are used. Isoquant curves are also called as equal product curves or production indifference curves.

Definitions

(i) **According to Ferguson,** "An isoquant is a curve showing all possible combinations of inputs physically capable of producing a given level of output."

(ii) **According to Peterson,** "An isoquant 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."

The assumptions of an isoquant curve are as follows:

- There are only two factor inputs, labour and capital, to produce a particular product.
- Capital, labour and goods are divisible in nature.
- Capital and labour are able to substitute each other up to a certain limit.
- Technology of production is given over a period of time.
- Factors of production are used with full efficiency.

Let us learn isoquant with the help of the following table.

Table shows the different combinations of two factor inputs, namely, labour and capital for producing 150 tonnes of output:

Table : Combinat ions of two fa ctor inputs

Labour	Capital
6	40
7	28
8	18
9	12
10	8

Figure shows the isoquant curve of different labour capital combinations that help in producing 150 tonnes of output**:**

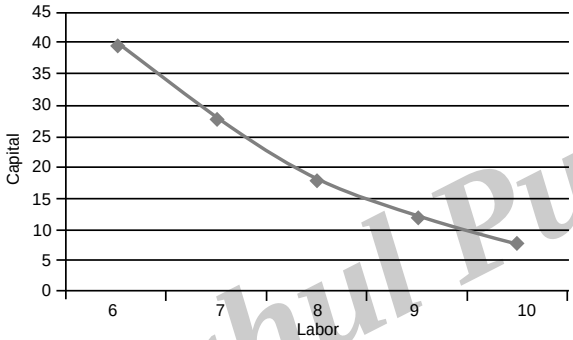


Figure: Isoquant Curve

Some of the properties of the isoquant curves are as follows:

- **Isoquant curves slope downwards**

  It implies that the slope of the isoquant curve is negative. This is because when capital (K) is increased, the quantity of labour (L) is reduced or vice versa, to keep the same level of output.

- **Isoquant curves are convex to origin**

  It implies that factor inputs are not perfect substitutes. This property shows the substitution of inputs and diminishing marginal rate of technical substitution of isoquant. The marginal significance of one input (capital) in terms of another input (labour) diminishes along with the isoquant curve.

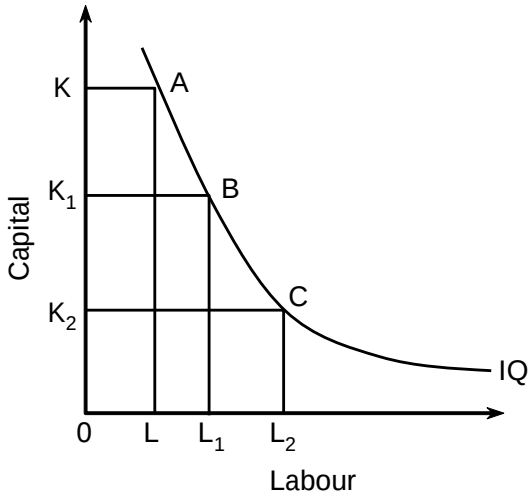


Fig.: Shows the convex isoquant curve

The convexity represents that the MRTS diminishes if we move from point A to B and from B to C along the isoquant. The MRTS diminishes because the two inputs labour and capital are not perfect substitutes.

Thus, for every increase in labour, there is a decrease in capital.

If isoquant is concave, the MRTS of labour for capital increases.

Figure shows the concave isoquant curve:

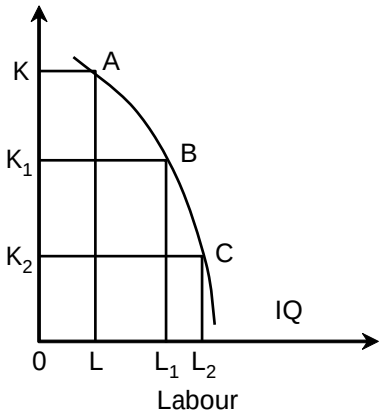


Fig.: Convex isoquant curve

As shown in Figure, if we move from point A to B and from B to C along the isoquant, the MRTS increases. It shows that the two inputs labour and capital are perfect substitutes. Thus, for every increase in labour, there is an increase in capital.

- **Isoquant curves cannot intersect each other**

  An isoquant implies the different levels of combination producing different levels of in puts. If the isoquants intersect each other, it would imply that a single input combination can produce two levels of output, which is not possible. The law of production would fail to be applicable.

- **The higher the isoquant the higher the output**

  It implies that the higher isoquant represents higher output. The upper curve of the isoquant produces more output than the curve beneath. This is because the larger combination of input results in a larger output as compared to the curve that is beneath it.

4.7 ECONOMIES AND DIS-ECONOMIES OF SCALE

Q11. Explain the internal and external economies of scale of production.

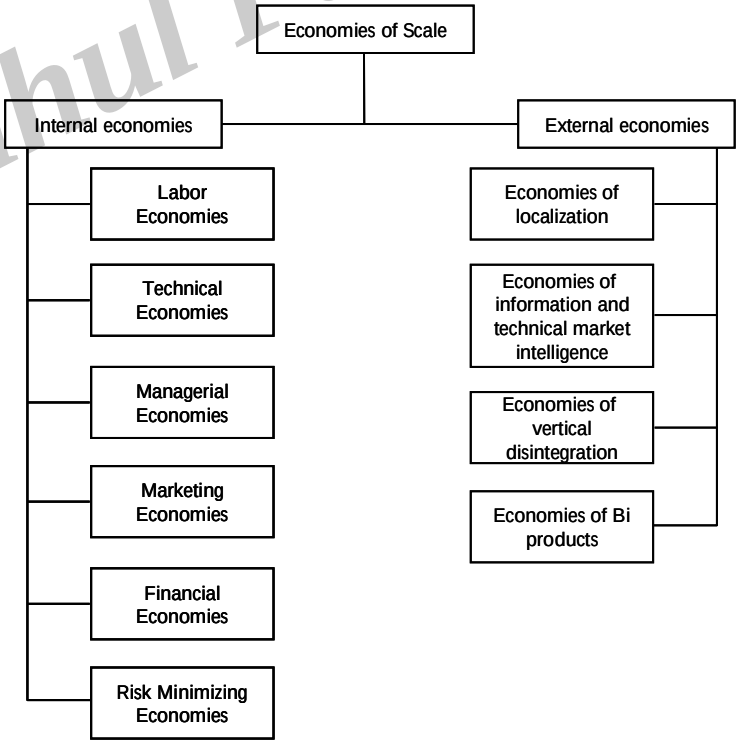
(OR)

Explain briefly about Economies and Dis-economies of Scale

Ans : **(Dec.-16)**

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

It 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 dimen-sions:

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.

Q12. Distinguish between internal and external economies of scale.

Ans :

S.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.

Short Question and Answers

1. Internal economies of scale

Ans :

It 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.

(i) 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.

(ii) 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.

(iii) 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.

(iv) 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)

2. Isoquants

Ans :

Meaning

A technical relation that shows how inputs are converted into output is depicted by an isoquant curve. It shows the optimum combinations of factor inputs with the help of prices of factor inputs and their quantities that are used to produce the same output. The term ISO implies equal and quant means quantity or output. For example, for producing 100 calendars, 90 units of capital and 10 units of labour are used. Isoquant curves are also called as equal product curves or production indifference curves.

Definitions

(i) According to Ferguson, "An isoquant is a curve showing all possible combinations of inputs physically capable of producing a given level of output."

(ii) According to Peterson, "An isoquant 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."

The assumptions of an isoquant curve are as follows:

- There are only two factor inputs, labour and capital, to produce a particular product.
- Capital, labour and goods are divisible in nature.
- Capital and labour are able to substitute each other up to a certain limit.
- Technology of production is given over a period of time.
- Factors of production are used with full efficiency.

3. Returns to scale

Ans :

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 percentage 'increase in the output where all the inputs vary in the same proportion.

4. Concept of production.

Ans :

Definitions

(i) According to James Bates and J.R. Parkinson, "Production can be defined as an organized activity of transforming physical inputs (resources) into outputs (finished products), which will satisfy the products' needs of the society."

(ii) According to J.R. Hicks, "Production is an activity whether physical or mental, which is directed to the satisfaction of other people's wants through exchange."

Production can be defined as the process of converting the inputs into outputs. Inputs include land, labour and capital, whereas output includes finished goods and services. In other words,

production is an act of creating value that satisfies the wants of the individuals.

Organizations engage in production for earning maximum profit, which is the difference between the cost and revenue. Therefore, their production decisions depend on the cost and revenue. The main aim of production is to produce maximum output with given inputs.

5. What are the factors of Production?

Ans :

Factors of production are the inputs that are used for producing the final output with the main aim of earning an economic profit. Land, labour, capital and enterprise are the main factors of production. Each and every factor is important and plays a distinctive role in the organization.

Let us learn these factors of production in detail:

- **Land:** Land is the gift of nature and includes the dry surface of the earth and the natural resources on or under the earth's surface, such as forests, rivers, sunlight, etc. Land is utilized to produce income called rent. Land is available in fixed quantity; thus, does not have a supply price. This implies that the change in price of land does not affect its supply. The return for land is called rent.
- **Labour:** Labour is the physical and mental efforts of human beings that undertake the production process. It includes unskilled, semi-skilled and highly skilled labour. The supply of labour is affected by the change in its prices. It increases with an increase in wages. The return for labour is called wages and salary.
- **Capital:** Capital is the wealth created by human beings. It is one of the important factors of production of any kind of goods and services, as production cannot take place without the involvement of capital. Capital is an output of a production process that goes into another production process as an input. It is divided into two parts, namely, physical capital and human capital. Physical capital includes tangible resources, such as buildings, machines, tools and equipment, etc. Human capital includes knowledge and skills of human resource, which is gained by education, training and experience. Return for capital is termed as interest.
- **Enterprise:** Collecting, coordinating and utilising the factors of production for achieving economic gains is called an enterprise. An enterprise is an organisation that undertakes commercial purposes or business ventures and focuses on providing goods and services. An enterprise is composed of individuals and physical assets with a common goal of generating profits. An entrepreneur is the person who creates an enterprise. The success or failure depends on the efficiency of the entrepreneur. Profit is the remuneration of the entrepreneur, which is the residual income from business after the payment of rent, wages and interest.

6. Define Production function.

Ans :

Definitions

Production function can be defined as a technological relationship between the physical inputs and physical output of the organisation.

(i) According to Stigler, "production function is the name given to the relationship between the rates of input of productive services and the rate of output…"

(ii) According to Samuelson, "Production Function is the technological relationship, which explains the quantity of production that can be produced by a certain group of inputs. It is related with a given state of technological change."

(iii) According to In the words of Watson, "The relation between a firm's physical production (output) and the material factors of production (input) is referred to as production function."

Inputs include the factors of production, such as land, labour, capital, whereas physical output includes quantities of finished products produced. The long-run production function (Q) is usually expressed as follows:

Q = f (LB, L, K, M, T, t)

Where,

LB = land and building

L = labour

K = capital

M = raw material

T = technology

t = time

7. Marginal Product

Ans :

Marginal product refers to the product obtained by increasing one unit of input. In terms of labour, the change in total quantity of product produced by including one more worker is termed as marginal product of labour. Marginal product of labour (MPL) can be calculated with the help of the following formula:

$$MPL = \Delta Q / \Delta L$$

Where, ΔQ = Change in output

ΔL = Change in labour

ΔQ = new product – old product

ΔL = new labour – old labour

8. Returns to a Factor

Ans :

Meaning

Returns to factors are also called factor productivities. Productivity is the ratio of output to the input. Factor productivity refers to the short-run relationship of input and output. The productivity of one unit of a factor of production will be equal to the output it can generate. The productivity of a particular factor is measured with the assumption that the other factors are not changed or remain unchanged. Only that particular factor under study is changed.

Returns to factors refer to the output or return generated as a result of change in one or more factors, keeping the other factors unchanged. Given a percentage of increase or decrease in a particular factor such as labour, is it yielding proportionate increase or decrease in production. This is analysed in 'returns to factors.'

9. Isocost.

Ans :

Iso-cost curve is the locus of points of all different combinations of labour and capital that an organisation can employ, given the price of these inputs. Iso-cost line represents the price of factors along with the amount of money an organisation is willing to spend on factors. In other words, it shows different combinations of factors that can be purchased at a certain amount of money. The slope of the iso-cost line depends upon the ratio of price of labour to the price of capital.

10. External economies

Ans :

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.

11. Dis-Economies of Scale

Ans :

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.

12. Internal Diseconomies of Scale

Ans :

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.

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  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.

13. External diseconomies of scale

Ans :

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.

14. Cobb-Douglas Production Function

Ans :

The production function, as originally suggested by C.W. Cobb, was of the following form :

$$Q = AL^b K^{1-b}$$

where, Q = Total output

L = Units of labour

K = Units of capital

A = A constant

B = A parameter.

Properties of Cobb-Douglas Production Function :

1. Both L and K should be positive for Q to exist. If either of these is zero, Q will be zero. This implies that both labour and capital be combined to get output.

2. If we look at the parameters we find that their sum [(b + (1 – b)] equal 1. This means that the function in the original form assumes constant return to scale.

$$Q = AL^{\alpha} K^{\beta}$$

where ($\alpha + \beta$) could be greater than, equal to or less than 1. When ($\alpha + \beta$) = returns to scale are constant, when ($\alpha + \beta$) > 1 returns to scale are increasing, and when ($\alpha + \beta$) < 1 returns to scale are decreasing.

3. Another important feature of the function is that its parameters represent factor-shares in output, for example,

$$\alpha = \frac{\text{Wage share}}{\text{Total income}} \text{ and}$$

$$\beta = \frac{\text{Rental share}}{\text{Total income}}$$

4. We can also find the short-run relationship of inputs and output (e.g., marginal product of labour and marginal product of capital) with the help of this function.

Marginal product of labour (MP_L) = α (Q/L) and

Marginal product of capital (MP_K) = β (Q/K).

5. In its original form, the Cobb-Douglas production function has the elasticity of substitution as unity. This property has important policy implication for formulation of an income policy.

15. Importance of Cobb-Douglas Production Function

We know that 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 α and β (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 posses other attributes. For example, the sum of (α + β) shows the returns to scale in the production process; α and β 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 is the output and X_1, X_2, ... X_n, are different inputs.

16. Fixed Costs and Variable Costs

Ans :

Fixed Costs. In the short-run some factors are necessarily fixed and some are freely variable. The fixed factors are machinery and plant and superior types of labour. The expenditure incurred on these factors is called fixed cost. These costs are fixed in the sense that they do not change in the short-period.

These costs have to be met even at zero output. Some fixed costs are fixed for years (interest on bonds and debenture, depreciation etc); others are fixed over months (salaries of chief officers); and still others are fixed at least for parts of the plant (heating and lighting).

Variable Costs. The second set of costs in the short-run are variable costs. These costs vary with every change in output. Marshall called variable costs as prime costs or direct costs or special costs. Variable costs include the costs of labour used directly in the manufacture of a product and the extra wear and tear of the plant.

Choose the Correct Answers

1. With which of the following is the production function more concerned ? [c]
   (a) Financial aspects (b) Technological aspects
   (c) Physical aspects (d) Economic aspects
2. In the production function, at any given time, the output from a given set of inputs is. [a]
   (a) Always fixed (b) Always variable
   (c) Semi-fixed (d) Semi-variable
3. Which of the following is defined at a given stage of technical knowledge? [b]
   (a) Theory of Production (b) Production Function
   (c) Law of Diminishing Returns (d) Law of Constant Returns
4. The Production Function is also known as. [c]
   (a) Output-costs relationship (b) Input-costs relationship
   (c) Input-output relationship (d) Output-input relationship
5. The Law of Returns is also called. [b]
   (a) Law of Fixed Proportions (b) Law of Variable Proportions
   (c) Law of Constant Returns (d) Law of Increasing Returns
6. The Law of Returns states that when at least one factor of production is fixed and when others are varied, the total output in the initial stages will _____ at an increasing rate, and after reaching certain level of output, the total output will _____ at declining rate. [d]
   (a) Increase, decrease (b) Decrease, increase
   (c) Decrease, decrease (d) Increase, increase
7. Isoquants are also called [a]
   (a) Isoproduct curves (b) Isocost curves
   (c) Price indifference curve (d) Indifference curve
8. Which of the following represents all such combinations that yield equal quantity of output. [c]
   (a) Isoprice curve (b) Isocost curve
   (c) Isoquant curve (d) Indifference curve
9. Which of the following represent the combination of inputs that will cost the producer the same amout of money ? [c]
   (a) Isoquants (b) Isoproducts
   (c) Isocosts (d) Isoprices
10. If the level of production changes, the total cost changes and thus the isocost curve. [b]
   (a) Moves downwards (b) Moves upwards
   (c) Moves in a linear fashion (d) Moves in a haphazard manner

Fill in the Blanks

1. Production function reveals _____ relationship that reveals the maximum amount of output possible from each set of inputs.
2. The quantities of output throughout a given _____ are equal.
3. The product indifference curve is also called _____.
4. The fact that the isoproduct curve is convex to the origin reveals that the input factors are not _____.
5. L-shaped isocost denotes _____ coefficients of production.
6. The rate at which one input factor is substituted with the other to attain a given level of output is called _____.
7. Returns to scale are also called _____.
8. The ratio of input to output is called _____.
9. The additional output for a given additional unit of input is called _____.
10. The economies that accrue to all the firms in an industrial estate are called _____.

ANSWERS

1. Technological
2. Isoproduct or isoquant
3. Isoproduct of isoquants
4. Perfect substitutes
5. Fixed
6. Marginal Rate of Technical Substitution
7. Factor productivities
8. Productivity
9. Factor productivities
10. External economies

UNIT V

COST AND REVENUEANALYSIS:

Theory of Cost - Concepts of Cost - Short run and Long run cost curves - Traditional and Modern Approaches - Revenue Curves – relationship between total marginal and average revenues - Break Even Analysis – Meaning – Assumptions – Uses and Limitations.

5.1 THEORY OF COST

5.1.1 Concepts of Cost

Q1. Explain the concept of cost.

Ans : **(June-18)**

Introduction

For the production of commodities and services, organisations incur various expenditures on different activities, such as purchase of raw material, payment of salaries/wages to the labour and purchase or leasing machines and building. These expenditures constitute the cost borne by the organisation for the production of its products and services. Inputs utilised multiplied by their respective prices, when added together constitute the money value of these inputs referred to as the cost of production. In other words, cost refers to the amount of resources required for the production of commodities and services. The resources utilised in the production would be money or money's worth usually expressed in monetary units.

Definition

(i) According to Chartered Institute of Management Accountants, CIMA defines cost as, "the amount of expenditure (actual or notional) incurred on, or attributed to, a specified thing or activity". Cost is the expenditure, measured in monetary terms, incurred or to be incurred in order to achieve a specific objective. Cost is an important factor in business analysis and decision making especially pertaining to the following aspects:

1. Identifying the weak points in production management
2. Minimising the cost of production
3. Finding the optimum level of production
4. Estimating the cost of business operations
5. Determining the price margins for selling the goods produced.

Q2. Explain different types of cost.

(OR)

Explain the different cost concepts used in the process of cost analysis.

Ans : **(June-18, June-17, Dec.-16)**

1. Opportunity Costs

Opportunity cost is also referred to as alternative cost. An organisation has limited resources, such as land, labour, capital, etc., which can be put to alternative uses having different returns. Organisations tend to utilise their limited resources for the most productive alternative and forgo the income expected from the second best use of these resources.

2. Explicit Costs

Explicit costs, also referred to as actual costs, include those payments that the employer makes to purchase or own the factors of production. These costs comprise payments for raw materials, interest paid on loans, rent paid for leased building or machinery and taxes paid to the government. An explicit cost is one that has occurred and is clearly reported in accounting books as a separate cost. For example, if an organisation borrows a sum of ` 70,00,000 at an interest rate of 4% per year, the interest cost of ` 2,80,000 per year would be an explicit cost for the organisation.

3. Implicit Costs

Unlike explicit costs, there are certain other costs that cannot be reported as cash outlays in accounting books. These costs are referred to as implicit costs. Opportunity costs are examples of implicit cost borne by an organisation. Let us understand the concept of implicit cost with the help of an example. An employee in an organisation takes a vacation to travel to his relative's place. In this case, the implicitcosts borne by the employee would be the salary that the employee could have earned if he/she had not taken the leave. Implicit costs are added to the explicit cost to establish a true estimate of the cost of production. Implicit costs are also referred to as imputed costs, implied costs or notional costs.

4. Accounting Costs

Accounting costs include the financial expenditure incurred by a firm in acquiring inputs for the production of a commodity. These expenditures include salaries/wages of labour, payment for the purchase of raw materials and machinery, etc. Accounting costs are recorded in the books of accounts of a firm and appear on the firm's income statement. Accounting costs include all explicit costs along with certain implicit costs of an organisation. For example, depreciation expenses (implicit cost) are included in the books of account as a firm's accounting costs.

5. Economic Costs

Economic costs include the total cost of opting for one alternative over another. The concept of economic costs is similar that of opportunity costs or implicit costs with the only difference that economic costs include the accounting cost (or explicit cost) as well as the opportunity cost (or implicit cost) incurred to carry out an action over the forgone action. For example, if the economic cost of the employee in the above example would include his/her week's pay as well as the expense incurred on the vacation.

6. Business Costs

Business costs include all the expenditures incurred to carry out a business. The concept of business cost is similar to the explicit costs. Business costs comprise all the payments and contractual obligations made by a business, added to the book cost of depreciation of plant and equipment. These costs are used to calculate the profit or loss made by a business, filing for income tax returns and other legal procedures.

7. Full Costs

The full costs include the business costs, opportunity costs, and normal profit. Full costs of an organisation include cost of materials, labour and both variable and fixed manufacturing overheads that are required to produce a commodity.

8. Fixed Costs

Fixed costs refer to the costs borne by a firm that do not change with changes in the output level. Even if the firm does not produce anything, its fixed costs would still remain the same. For example, depreciation, administrative costs, rent of land and buildings, taxes, etc. are fixed costs of a firm that remain unchanged even though the firm's output changes. However, if the time period under consideration is long enough to make alterations in the firm's capacity, the fixed costs may also vary.

9. Variable Costs

Variable costs refer to the costs that are directly dependent on the output level of the firm. In other words, variable costs vary with the changes in the volume or level of output. For example, if an organisation increases its level of output, it would require more raw materials. Cost of raw material is a variable cost for the firm. Other examples of variable costs are labour expenses, maintenance costs of fixed assets, routine maintenance expenditure, etc. However, the change in variable costs with changes in output level may not necessarily be in the same proportion. The proportionality between the variable costs and output depends upon the utilisation of fixed assets during the production process. The sum of fixed costs and variable costs of a firm constitutes its total cost of production. This can be expressed as follows:

Total Costs of a firm (TC) = Fixed costs (FC) + Variable costs (VC)

10. Incremental Costs

Incremental costs involve the additional costs resulting due to a change in the nature of level of business activity. It characterises the additional cost that would have not been incurred if an additional unit was not produced. As these costs may be avoided by avoiding the possible variation in the production, they are also referred to as avoidable costs or escapable costs. For example, if a production house has to run for additional two hours, the electricity consumed during the extra hours is an additional cost to the production house. The incremental cost comprises the variable costs.

Q3. Define cost function.

Ans :

There are a number of a determinants of costs. Some of them are identifiable in cost behaviour of a firm. Some are not.

Cost function spells out the determinants of costs. Usually, factors like the prices of inputs, the rate of output, the size of plant, and the state of technology are the major determinants of the cost of production. Hence, we may say that cost is a function of prices of inputs, the rate of output, the size of the plant and the state of technology.

In symbolic terms, the cost function may be stated thus:

$$C = f(F, O, P, T)$$

where C standards for the costs,

f denotes functional relationship

P refers to the factor input prices

0 stands for the rate of output

P refers to the size of plant and

T stands for the state of technology

Instead of such a comprehensive cost function, a simplified cost function is usually considered by economists in the theory of firm.

In economic theory, thus, a simplified cost function expresses mathematically the relationship between cost and output.

In the cost analysis, economists apply costs to the inputs in relation to the output over a period of time. Functionally, the cost behaviour, i.e., cost-output relationship, is observed in the short run as well as in the long run. We have, thus, shot-run as well as in the long run. We have, thus, short-run cost function which states cost- output relationship or the behaviour of costs under a given scale of output in the short run.

Similarly, there is the long-run cost function which states cost-output relationship or the behaviuor of costs with the chaining scale of output in the long run. The short run and long run cost functions are important for a firm to consider the price or equilibrium level of output determination.

Cost function of a firm can be expressed statistically as cost schedule or graphically in the form of a cost curve.

5.2 Short Run and Long Run Cost Curves

5.2.1 Traditional and Modern Approaches

Q4. Show a diagramatic relationship between short run average cost curves and marginal cost curves.

(OR)

Explain the relationship between short run average costs and short run marginal costs.

Ans : **(June-18, Dec.-16)**

The traditional theory of costs analyses the behavior of cost curves in the short-run and long-run and arrives at the conclusion that both the short-run and long-run cost curves are U-shaped but the long-run cost curves are flatter than short-run cost curves.

Short-run Costs of The Traditional Theory

In the traditional theory of the firm, in the short run, there are variable inputs and at least one fixed input. This suggests that short run costs are divided into fixed costs and variable costs. Thus, there are three concepts of total cost in the short run: Total fixed costs (TFC), total variable costs (TVC), and total costs (TC).

TC = TFC + TVC

1. Total Fixed Cost

These are costs of production that do not change (vary) with the level of output, and they are incurred whether the firm is producing or not. They are independent of the level of output and it is the sum of all costs incurred by the firm for fixed inputs, and it is always the same at any level of output. It includes;

(a) Salaries of administrative staff

(b) Depreciation (wear and tear) of machinery

(c) Expenses for building depreciation and repairs

(d) Expenses for land maintenance and depreciation (if any). Another element that may be treated in the same way as fixed costs is the normal profit, which a lump sum including a percentage return on is fixed capital and allowance for risk.

Total Fixed Cost (TFC) is graphically denoted by a straight line parallel to the output axis

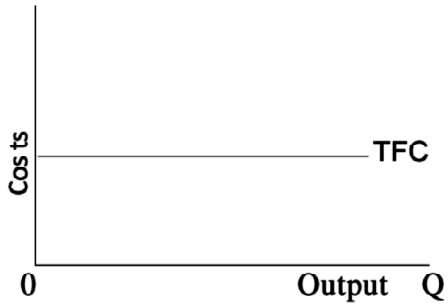


Fig.: Total Fixed Cost

2. Total Variable Cost

These are costs of production that change They rise when output increases and fall when output declines. They include

(a) the raw materials

(b) the cost of direct labour

(c) the running expenses of fixed capital, such as fuel, ordinary repairs and routine maintenance. It is the total cost incurred by the firm for variable inputs.

TVC = f (Q)

In the traditional theory of the firm, the total variable cost (TVC) has an inverse-S-shape, graphically shown below, and it reflects the law of variable proportions.

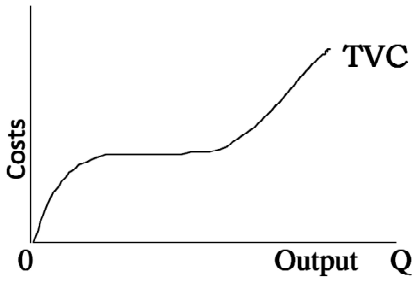


Fig.: Total Variable Cost

3. Total Cost

The firm's short run total cost is the sum of the total fixed cost (TFC) and total variable cost (TVC) at any given level of output. Total cost also varies with the level of the firm's output.

$$TC = TFC + TVC \quad 2$$

$$TC = f(Q) \quad 3$$

From Equation 2, it follows that:

$$TFC = TC - TVC \quad 4$$

$$TVC = TC - TFC \quad 5$$

According to the law of variable proportions, at the initial stage of production with a given plant, as more of the variable factor(s) is employed; its productivity increases and the average variable cost fall. This continues until the optimal combination of the fixed and variable factors is reached.

Beyond this point, as increased quantities of the variable factor(s) are combined with the fixed factor(s) the productivity of the variable factor(s) decline (and the AVC rises). By adding the TFC and TVC we obtain the TC of the firm.

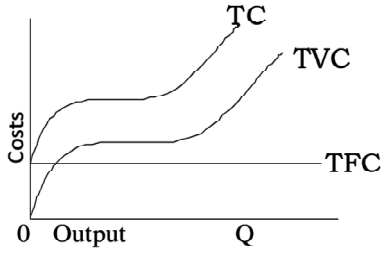


Fig.: Total Cost

Other Cost Concepts

From the Total-Cost curves we obtain Average-Cost curves.

(a) Average Fixed Cost (AFC): The AFC at any given level of output is total fixed cost divided by output. In symbol, this becomes:

$$AFC = \frac{TFC}{Q} > 0$$

Graphically, the AFC is a rectangular hyperbola, showing at all its points the same magnitude, that is, the level of TFC.

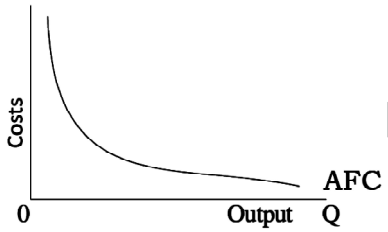


Fig.: Average Fixed Cost

(b) Average Variable Cost (AVC): The average variable cost at any given level of output is total variable cost divided by output. In symbol, it becomes:

$$AVC = \frac{TVC}{Q} \quad .....7$$

The SAVC curve falls initially as the productivity of the variable factor(s) increases, reaches a minimum when the plant is operated optimally (with optimal combination of fixed and variable factors), and rises beyond that point, due to law of diminishing returns.

Thus, the SAVC curve is therefore U-shaped as seen below:

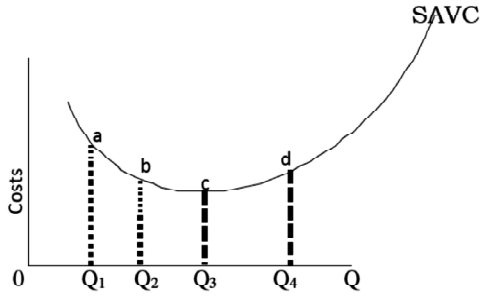


Fig.: Short-run Average variable Cost

(c) Average Total Cost (ATC): In the short-run analysis, average cost is more important than total cost. The units of output that a firm produces do not cost the same to the firm, but must be sold at the same price.

Therefore, the firm must know the per-unit cost or the average cost. Thus, the short-run average cost of a firm is the average fixed costs, the average variable cost and average total costs. The short run average total cost (SAC) at any given output level is obtained by simply dividing total cost by the output level:

$$SAC = \frac{STC}{Q} \qquad .....8$$

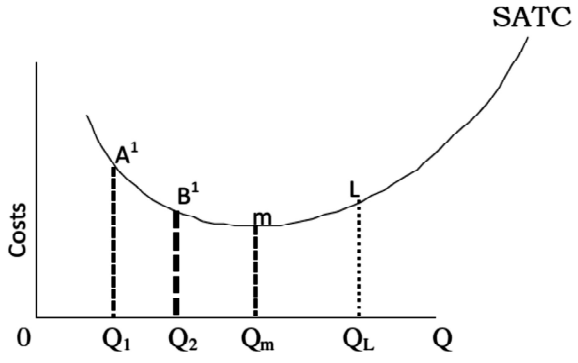
Since $STC = TFC + TVC$

Then, $SAC = \frac{TFC + TVC}{Q}$

$$SAC = \frac{TFC}{Q} + \frac{TVC}{Q}$$

$$SAC = AFC + AVC \qquad ..... 9$$

Graphically, the ATC curve is derived in the same way as the SAVC. The shape of the ATC is similar to that of AVC (both being U-shaped). Initially, the ATC declines, it reaches a minimum at the optimal operation of the plant (Qm) and subsequently rises again, as seen in Figure.



Fig,: short-run Average Total cost

From Equation 9 we know that the SAC can be alternatively defined as the sum of AFC and AVC. Therefore,

$$AFC = SAC - AVC \qquad 10$$

and

$$AVC = SAC - AFC \qquad 11$$

The U-shape of both the AVC and the ATC reflects the law of variable proportions or law of diminishing returns to the variable factor(s) of production.

(d) Short run Marginal Cost (SMC): Marginal Cost is the addition to total cost resulting from the production of an additional unit of output. The short-run marginal cost is defined as a change in total cost (TC) which results from a unit change in output. Mathematically, the Marginal Cost is the first derivative of the TC function. Marginal Cost is the addition to Total

Cost by producing an additional unit of output.

Therefore, if

$$MC = SMC = \frac{\Delta TC}{\Delta Q} \text{ or } \frac{\Delta C}{\Delta Q} \qquad .....12$$

or $SMC = \frac{\Delta TVC + \Delta TFC}{Q}$

But since it is zero (fixed costs being fixed)

$$SMC = \frac{\Delta TVC}{\Delta Q} \qquad ....13$$

However, to derive the marginal cost from a total cost function, we find the derivative of total cost (TC) with respect to output (Q):

$$SMC = \frac{dTC}{dQ} > 0 \qquad .....14$$

Graphically, the MC is the slope of the TC curve (which of course is the same at any point as the slope of the TVC). The slope of a curve at any one of its points is the slope of the tangent at that point.

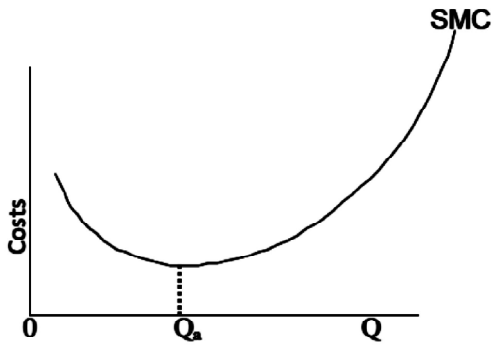


Fig.: Short-run Marginal Cost SMC

Thus, the SMC curve is also U-shaped, as seen above. Therefore, the traditional theory of costs postulates that in the short-run, the costs curves (AVC, ATC and MC) are U-shaped reflecting the law of variable proportions. In the short-run with a fixed plant there is a phase of increasing productivity (falling unit costs) and the phase of decreasing productivity (increasing unit costs) of the variable factor(s). Between these two phases of plant operation there is a single point at which unit costs are at a minimum. When this point on the SATC is reached the plant is utilized optimally, that is, with optimal combination (proportions) of fixed and variable factors.

Relationship Between Short-run Cost Curves

The data on Table. gives a short run cost schedules for a hypothetical firm.

Output per week (a)	TFC (b)	TVC (c)	TC (d)	AFC (e)	AVC (f)	SAC (g)	SMC (h)
0	2000	0	2000	0	0	0	0
100	2000	800	2800	20	8.0	28.0	8.0
260	2000	1600	3600	7.7	6.2	13.8	5.0
400	2000	2400	4400	5.0	6.0	11.0	5.7
520	2000	3000	5000	3.8	5.8	9.6	6.7
620	2000	3800	5800	3.2	6.1	9.4	8.0
680	2000	4600	6600	2.9	6.8	9.7	13.3
720	2000	5400	74000	2.8	7.5	10.3	20.0
750	2000	6000	8000	2.7	8.0	10.7	26.7
760	2000	6800	8800	2.6	8.9	11.6	80.0
760	2000	7600	9600	2.6	10.0	12.6	₹

Table. Short run cost schedules for a firm (hypothetical data)

Note that in some cases, the AFC, and AVC do not add up exactly to the SAC. This is due to the fact that figures are rounded up table. reveals two important information which must be emphasized; to give an insight into management strategies for profit maximization, or loss minimization.

(a) When output is zero, TFC and TC are equal to each other. This implies that a firm incurs a loss which is equal to the TFC if nothing is produced after the firm's plant has been installed. Such a loss will likely be in terms of rent on factory building, if not owned by the firm, interest on money borrowed from the bank, and wear and tear (depreciation) of fixed assets as a result of being neglected or exposed to unfavorable weather conditions.

(b) Average fixed cost (AFC) falls as output (Q) is increased. This occurs because TFC is the same at any level of output. Therefore, the larger the output level, the more these overhead costs are spread out.

The Relationship Between ATC and AVC

The AVC is a part of the ATC, given

ATC = AFC + AVC

Both AVC and ATC are U-shaped, reflecting the law of variable proportions. However, the minimum point of the ATC occurs to the right of the minimum point of AVC in the figures above due to the fact that ATC includes AFC and the AVC falls continuously with increases in output. After AVC has reached its lowest point and starts rising, its rises is over a certain range, set off by the fall in the AFC, so that ATC continues to fall (over that range) despite the increase in AVC. Thus, the rise in AVC eventually becomes greater than the fall in the AFC so that the ATC starts increasing. The AVC approaches the ATC asymptotically as X increases.

In Figur, the minimum AVC is reached at Q1 while the ATC is at its minimum at Q2. Between Q1 and Q2 the fall in AFC more than offsets the rise in AVC so that the ATC continues to fall. Beyond Q2 the increase in AVC is not offset by the fall in AFC so that ATC rises.

Relationship Between MC AND ATC

The MC cuts the ATC and the AVC at their lowest points. Recall that MC is the change in Total Cost (TC)

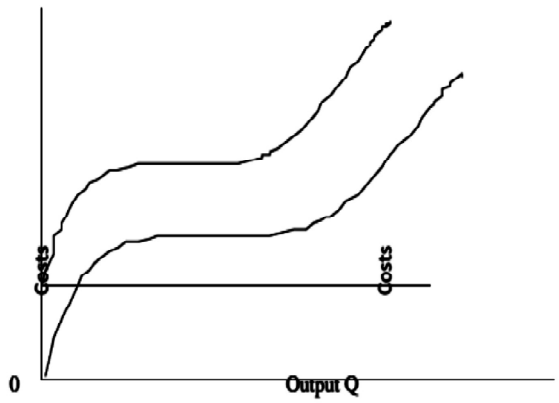


Fig.: Firm's Total Costs in-t he Short-run

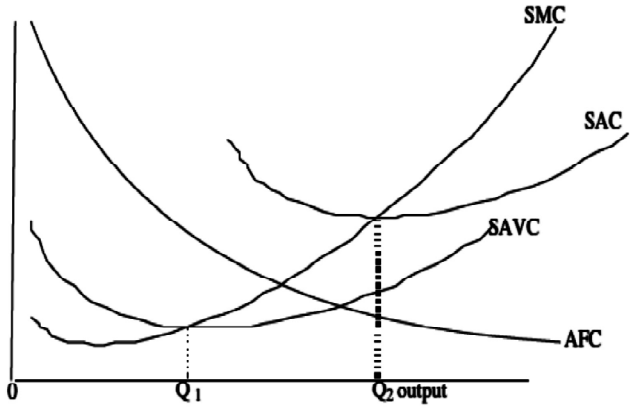


Fig.: Firm's Average Marginal Costs in-t he Short-run

for producing an extra unit of output. Assume that we start from a level of n units of output. If we increase the output by one unit the MC is the change in TC resulting from the production of the (n+1)th unit.

The AC at each level of output is found by dividing TC by Q.

Thus, the AC at the level of Qn is

$$ACn = \frac{TCn}{Qn} \quad .....15$$

and the AC at the level Q_{n+1} is

$$AC_{n+1} = \frac{TCn+1}{Qn+1} \quad .....16$$

Clearly,

$$TC_{n+1} = TCn + MC \quad .....17$$

Thus, if the MC of (n+1)th unit is less than ACn (i.e. the AC of the previous 'n' units) the ACn+1 will be smaller than ACn. If the MC of the (n+1)th is higher than the ACn, the ACn+1 will be higher than ACn.

Thus, so long as the MC lies below the AC curve, it pulls the latter (AC curve) downwards; when the MC rises above the AC, it pulls the AC upwards, as in Figure.

Both the inverse S-shape of the total cost curves and the U-shape of the average and marginal cost curves in the short-run reflect the law of diminishing returns (law of variable proportions). For instance, over the range of output from the origin to Q1 in Figure 1.8b, productivity per unit of variable factor increases as more of the variable factor is applied to a given quantity of the fixed factor. The AVC falls and reaches its minimum at Q1. Beyond Q1, as increased quantities of the variable factor are combined with a given quantity of fixed factors, the output per unit of the variable factor declines and the AVC rises. Note that, the TC and the TVC curves in Figure, have the same shape, since they differ by only a constant amount.

Q5. Explain long run cost of the traditional theory.

Ans :

In the Long-run, there are no fixed factors of production, hence all factors are assumed to be variable. Hence, the concepts of fixed and variable factors are not applicable. It follows therefore that: Where LAC is the long-run average cost, LTC is the long-run total cost, and Q is the level of output. Note that the long-run cost curve is a planning curve, as a guide to the entrepreneur in his decision to plan the future expansion of his output. Similarly, if LMC stands for long-run marginal cost, LTC for long-run total cost, and Q for output, we can define LMC as the relationship between long-run total cost, average cost, and marginal cost are illustrated in Figures.

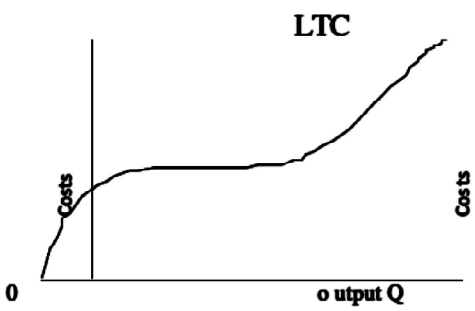


Fig.: Long-run Total Costscurvefor afirm

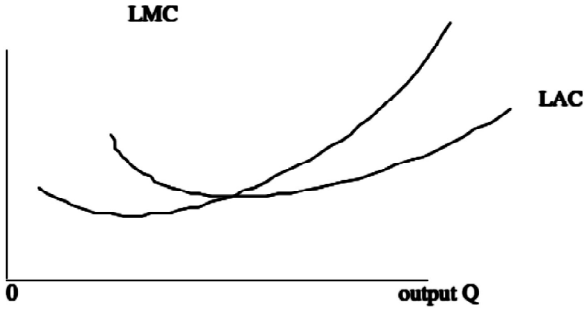


Fig.: Firms L - ong-run A verage and Marginal Costs

The long-run total cost shows the relationship between the total cost of a firm and its level of output when all inputs are variable, so that it is possible for the firm to produce each level of output with the optimal combination of inputs. The long-run average cost, or cost per unit of output is obtained as total cost divided by quantity of output. The long-run marginal cost is equal to the change in long-run total cost divided by the change in quantity of output.

The Long-run Average Cost Curve

In the long-run, it is technically possible for the firm to build a plant of any size according to its desires because all factors of production are variable. The long-run average cost curve (LAC) shows variation in the firm's unit cost of production as it alters its plant size. But once a firm has installed a particular plant, it goes back to the short-run situation. The longrun average cost (LAC) curve of the firm shows the minimum average cost of producing various levels of output from all possible short-run average curves (SAC). Thus, the LAC curve is derived from short-run cost curves. Each point on the LAC corresponds to a point on a short-run cost curve, which is tangent to the LAC at the point. Let's examine in details how the LAC is derived from the SRC curves. Assuming the available technology of the firm at a particular point of time includes three methods of production, each with a different plant size; a small plant, medium plant and large plant. The small plant operates with costs denoted by the curve SAC1, the medium size plant operates with the costs on SAC2 and the large-size plant gives rise to costs shown on SAC3.

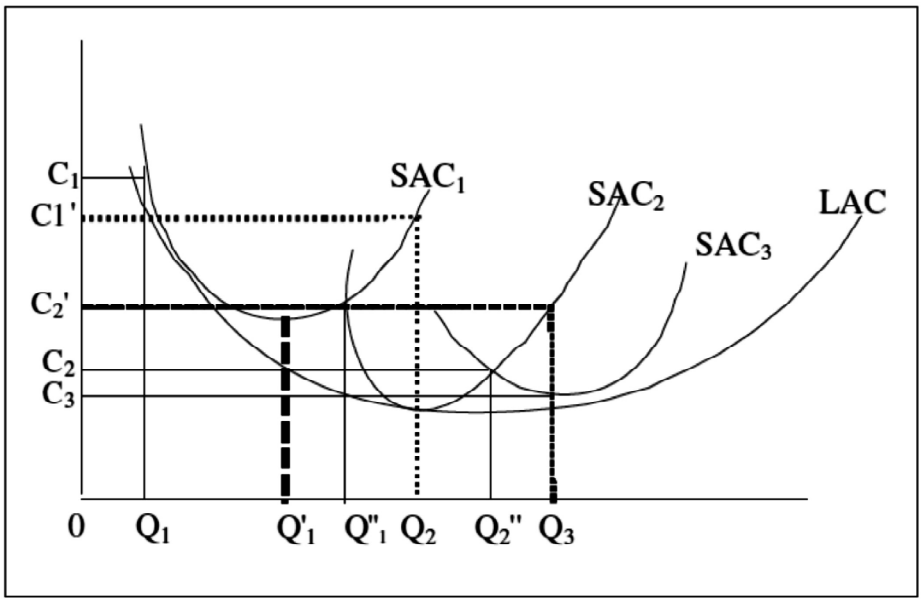


Fig.: Long-run Average Cost

If the firm plans to produce output Q_1 it will choose the small plant. If it plans to produce Q_2 it will choose the medium plant. If it chooses to produce Q_3 it will choose the large size plant. If the firm starts with the small plant and its demand gradually increases, it will produce at lower cost. Beyond that point costs start increasing. If its demand reaches level Q_1, the firm can either continue to produce with the small plant or it can install the medium size plant. The decision at this point depends not on costs but on the firm's expectations about its future demand. If the firm expects that the demand will expand further than Q, it will install the medium plant because with this, plant outputs larger than Q_1 are produced with a lower cost. Similar considerations hold for the decision of the firm when it reaches the level Q_2. If it expects its demand to stay constant at this level, the firm will not install the large plant, given that it involves a larger investment which is profitable only if demand expands beyond Q_2. For example, the level of output Q_3 is produced at a cost C_3 with the larger plant, while it costs C'2 is produced with the medium size plant (C_2 C_3).

If we relax the assumptions of the existence of only three plants and assume that the available technology includes many plant sizes, each suitable for a certain level of output, the points of intersection of consecutive plants (which are the crucial points for the decision of whether to switch to a larger plant) are more numerous. If we assume that there are a very large number of plants, we obtain a continuous curve, which is the planning LAC curve of the firm. The LAC Curve is a locus of points denoting the least cost of producing the corresponding output. It is a planning curve because on the basis of this curve the firm decides what plant to setup in order to produce optimally (at minimum cost) the expected level of output. The firm chooses the short-run plant which allows it to produce the anticipated (in the long-run) output at the least possible cost. In the traditional theory of firm, the LAC Curve is U-shaped and it is often called the "envelope curve" because it envelops the SAC Curves as seen on Figure.

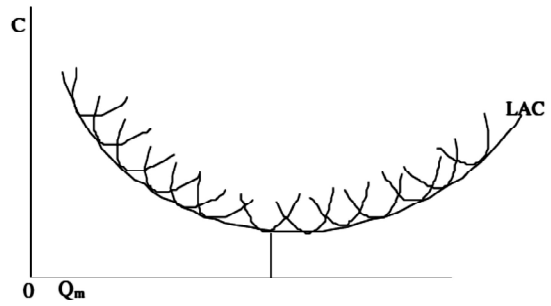


Fig.: The Envelope Curve

Q6. Explain Short run cost of the modern theory.

Ans :

The modern theory of cost differs from the traditional theory of costs with regards to the shapes of the cost curves. The U-shaped cost curves of the traditional theory have been questioned by various writers both on theoretical, a priori, and on empirical grounds.

As early as 1939, George Stigler suggested that the short-run average variable cost has a flat stretch over a range of output which reflects the fact that firms build plant with some flexibility in their productive capacity. The reasons for this reserve capacity have been discussed in detail by various economists. The shape of the long run cost curve has attracted greater attention in economic literature, due to the serious policy implication of the economies of large scale production. Several reasons have been put forward to explain why the long-run cost curve is L-shaped rather than U-shaped. It has been argued that managerial diseconomies can be avoided by the improved methods of modern management science, and when they appear (at a very large scale of output) they are insignificant relative to the technical (production) economies of large plants, so that the total costs per unit of output falls, at least over the scales which have been operated in the real industrial world. Like the traditional theory, modern microeconomics distinguishes between short run and long run costs.

Short-run Costs Curves

As in the traditional theory, short-run costs in the modern theory of costs are distinguished into short-run average fixed cost (AFC), short-run

average variable cost (SAVC), short-run average cost (SAC), and short-run marginal cost curves (SMC). As usual, they are derived from the total cost which is divided into fixed cost and total variable cost. But in the modern theory, the SAVC and SMC curves have a saucer-type shape or bowlshape rather than a U-shape. As the AFC curve is a rectangular hyperbola, the SAC curve has a U-shape even in the modern theory.

The Average Fixed Cost

This is the cost of indirect factors; it is the cost of the physical and personal organizations of the firm. The fixed cost include cost for

(a) salaries and other expenses of administrative staff

(b) salaries of staff involved directly in production but paid on a fixed term basis

(c) the wear and tear of machinery (standard depreciation allowance

(d) the expenses for maintenance of buildings

(e) the expenses for the maintenance of land on which the plant is installed and operated.

The planning of the plant (or the firm) consists of deciding the size of the fixed and indirect factors which determine the size of the plant, because they set limits to its production capacity. Direct factors such as labour and raw materials are assumed not to set limit on size; the firm can acquire them easily from the market without any time lag. The business man will start his planning with a figure for the level of output which he anticipates selling, and he will choose the size of plant which allows him to produce this level of output more efficiently, and with the maximum flexibility, the business man will want to be able to meet seasonal and cyclical fluctuations in his demand.

Reserve capacity will give the business man greater flexibility for repairs of broken down machinery without disrupting the smooth flow of the production process. The entrepreneur will want to have more freedom to increase his output if demand increases. All businessmen hope for growth. In view of anticipated increase in demand, the entrepreneur builds some reserve capacity because he would not like to let all new demand go to his rivals as this may endanger his future hold in the market. It also gives him some flexibility for minor alterations of his product, in view of changing tastes of customers.

Technology usually makes it necessary to build into the plant some reserve capacity. Some basic types of machinery (e.g. a turbine) may not be technically fully employed when combined with other small types of machines in certain numbers. More of which may not be required, given the specific size of the chosen plant. Furthermore, some machinery may be so specialized as to be available only on order, which takes time. In this case, such machinery will be bought in excess of the minimum requirement at present numbers, as a reserve. Some reserve capacity will always be allowed in the land and buildings, since expansion of operations may be seriously limited if new land or new buildings have to be acquired. Finally, there will be some reserve capacity on the organizational and administrative level. The administrative staff will be hired at such numbers as to allow some increase in the operations of the firm.

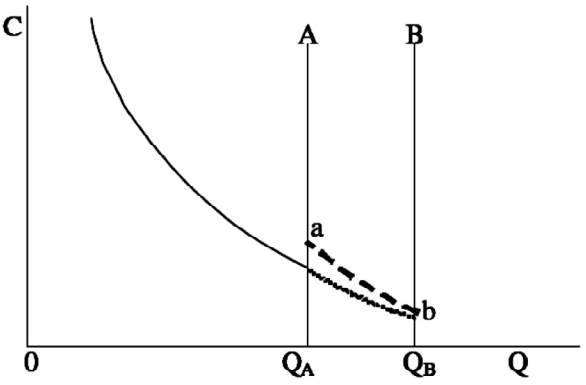


Fig.: Average Fixed Cost Curve

In summary, the businessman will not necessarily choose the plant which will give him the lowest cost, but rather, that equipment which will allow him the greatest possible flexibility for minor alterations of his product or his technique of production.

Under these conditions, the AFC curve will be as in Figure. The firm has some "largest capacity" units of machinery which set an absolute limit to the short-run expansion of output (boundary B). The firm also has small-unit machinery, which sets a limit to expansion (boundary A). This, however, is not an absolute boundary because the firm can

increase its output in the short-run (until the absolute limit B is reached), either by paying overtime to direct labour for working longer hours (here the AFC is shown by the dotted line), or by buying some additional small unit type of machinery here the AFC curve shifts upwards, and starts falling again, as shown on line ab).

The Average Variable Cost

As in the traditional theory, the average variable cost of modern microeconomics includes the cost of:

(a) Direct labour which varies with output;

(b) Raw materials;

(c) Running expenses of machinery.

The short-run average cost curve (SAVC) in modern theory has a saucer-type shape, that is, it is broadly U-shaped but has a flat stretch over a range of output. The flat stretch corresponds to the built-in plant reserve capacity. Over this stretch, the SAVC is equal to the MC both being constant per unit of output. To the left of the flat stretch, MC lies below the SAVC, while to the right of the flat stretch the MC rises above the SAVC. The falling part of the SAVC shows the reduction in cost due to the better utilization of the fixed factor and the consequent increase in skills and productivity of the variable factor (labour). With better skills, the wastes in raw materials are also being reduced and a better utilization of the whole plant is reached.

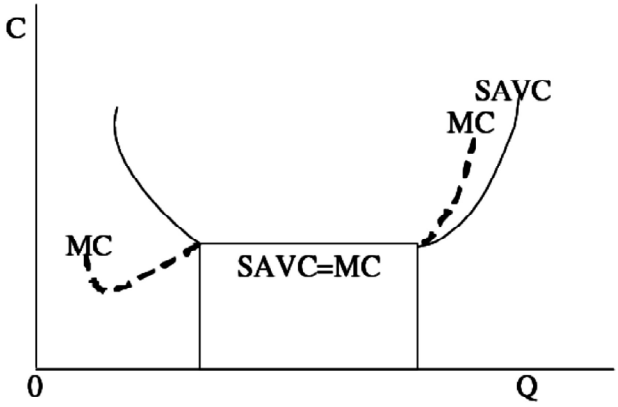


Fig.: SAVC curve

The increasing part of the SAVC reflects reduction in labour productivity due to the longer hours of work, the increase in cost of labour due to overtime payment (which is higher than the current wage), the wastes in material and the more frequent breakdown of machinery as the firm operates with overtime or with more shifts. The innovation of modern microeconomics in this field is the theoretical establishment of a short-run SAVC curve with a flat stretch over a certain range of output. The reserve capacity makes it possible to have constant SAVC within a certain range of output as shown in Figure. It should be clear that this reserve capacity is planned in order to give the maximum flexibility in the operation of the firm. It is completely different from the excess capacity which arises with the U-shaped average cost curve of the traditional theory of the firm. The traditional theory assumes that each plant is designed without any flexibility, as such; if the firm produces an output Q, smaller than Qm, there is excess (unplanned) capacity, equal to the difference Qm-Q. This excess capacity is obviously undesirable because it leads to higher unit costs.

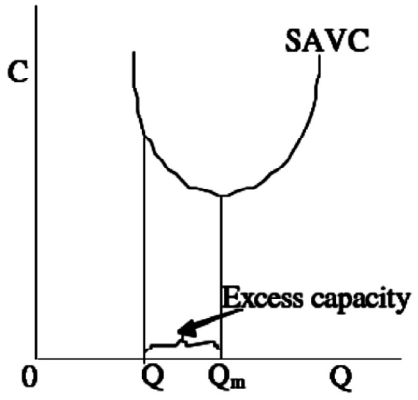


Fig.: Excess Capacity

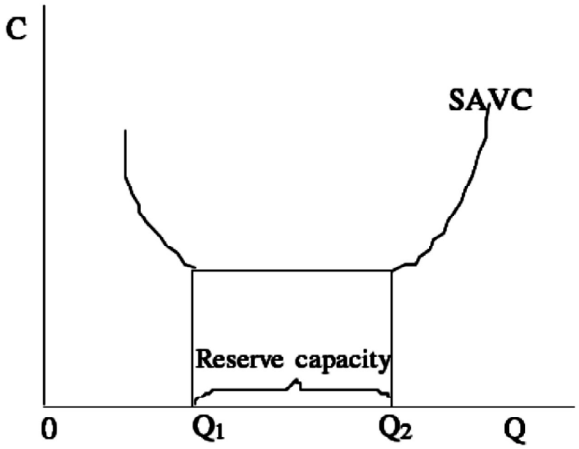


Fig.: Reserve Capacity

In the modern theory of costs, the range of output Q1Q2 in Figure. reflects the planned capacity which does not lead to increased costs.

Q7. Explain Long run cost of the modern theory.

Ans : **(June-18)**

All costs are variable in the long run and they give rise to a long run cost curve which is roughly L-shaped. Empirical evidence about the long run average cost curve reveals that the LAC curve is L-shaped rather than U-shaped. In the beginning, the LAC curve rapidly falls but after a point, "the curve remains flat, or may slope gently downwards, at its right-hand end". Production cost fall continuously with increases in output. At very large scales of output, managerial costs may rise. But the fall in production costs more than offsets the increase in the managerial costs, so that the total LAC falls with increases in scale. Economists have assigned the following reasons for the L-shape of the LAC curve.

1. Production and Managerial costs

In the long-run, all costs being variable, production costs and managerial costs of a firm are taken into account when considering the effect of expansion of output on average costs. As output increases, production costs fall continuously while managerial cost may rise at very large scales of output. But the fall in production costs outweighs the increase in managerial costs so that the LAC curve falls with increases in output. We analyze the behaviour of production and managerial costs in explaining the L-Shaped of the LAC Curve.

(a) Production Costs

As a firm increases its scale of production, costs fell steeply in the beginning and then gradually. This is due to the technical economies of large scale production enjoyed by the firm. Initially, these economies are substantial, but after a certain level of output, when all or most of these economies have been achieved, the firm reaches the minimal optimal scale or minimum efficient scale (MES). Given the technology of the industry, the firm can continue to enjoy some technical economies at outputs larger than the MES for the following reasons.

(a) From further decentralization and improvement in skills and productivity of labour.

(b) From lower repair costs after the firm reaches a certain size; and

(c) By itself producing some of the materials and equipment cheaply which the firm needs instead of buying them from other firms.

(b) Managerial Costs

In modern firms, for each plant there is a corresponding managerial set-up for its smooth operation. There are various levels of management, each having a separate management technique applicable to a certain range of output. Thus, given a managerial setup for a plant, its managerial costs first fall with the expansion of output and it is only at a very large scale of output, they rise very slowly.

In summary, production costs fall smoothly at very large scales, while managerial costs may rise slowly at very large scales of output. But the fall in production costs more than offsets the rise in managerial costs so that the LAC curve falls smoothly or becomes flat at very large scales of output, thereby giving rise to the L-shape of the LAC curve. In order to draw such an LAC curve, we take three short-run average cost curves SAC1, SAC2, and SAC3 representing three plants with the same technology.

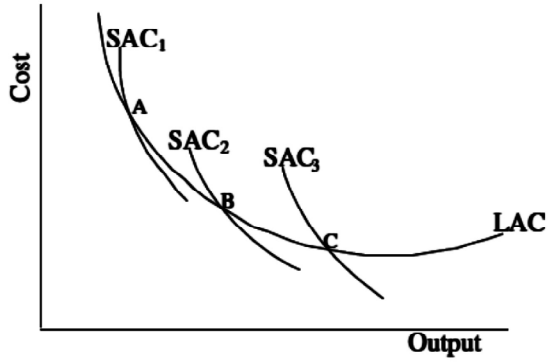


Fig.: The LAC curve

Each SAC curve includes production costs, managerial costs, other fixed costs and a margin for normal profits. Each scale of plant (SAC) is subject to a typical load factor capacity so that points A, B and C represent the minimal optimal scale of output of each plant. By joining all such points as A, B and C of a large number of SACs, we trace out a smooth and continuous LAC curve, as shown in Figure.

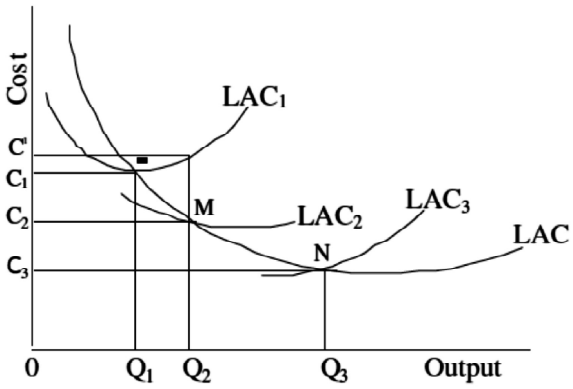


Fig.: LAC Curve

This curve does not turn up at very large scales of output. It does not envelope the SAC curves but intersects them at the optimal level of output of each plant.

2. Technical progress

Another reason for the existence of the Lshaped LAC curve in the modern theory of costs is technical progress. The traditional theory of costs assumes no technical progress while explaining the U-shaped LAC curve. The empirical results on long-run costs confirm the widespread existence of economies of scale due to technical progress in firms. The period, between which technical progress has taken place, the long-run average costs show a falling trend. The evidence on diseconomies is much less certain. So an upturn of the LAC at the top end of the size scale has not been observed. The L-shape of the LAC curve due to technical progress is explained in Figure.

Suppose the firm is producing $0Q_1$ output on LAC_1 curve at per unit cost of $0C_1$ output on LAC_1 curve at a per unit cost of $0C_1$. If there is an increase in demand for the firm's product to $0Q_2$, with no change in technology, the firm will produce 0Q2 output along the LAC_1 curve at per unit cost of 0C. If, however, there is technical progress in the firm, it will install a new plant having LAC2 as the long-run average cost curve. On this plant, it produces $0Q_2$ output at a lower cost $0C_2$ per unit. Similarly, if the firm decides to increase its output to $0Q_3$ to meet further rise in demand, technical progress may have advanced to such a level that it installs the plant with the LAC_3 curve. Now it produces $0Q_3$ output at a still lower cost $0C_3$ per unit. If the minimum points, L, M and N of these U-shaped long-run

average cost curves LAC_1, LAC_2 and LAC_3 are joined by a line, it forms an L-shaped gently sloping downward curve LAC.

3. Learning

Yet another reason for the L-shaped long-run average cost curve is the learning process. Learning is the product of experience. If experience in this context can be measured by the amount of a commodity produced, then higher the production is, the lower it is per unit cost. The consequences of learning are similar to increasing returns. First, the knowledge gained from working on a large scale cannot be forgotten. Second, learning increases the rate of productivity. Third, experience is measured by the aggregate output produced since the firm first started to produce the product. Learning by doing has been observed when firm starts producing new products. After they have produced the first unit, they are able to reduce the time required for production and thus reduce per unit cost.

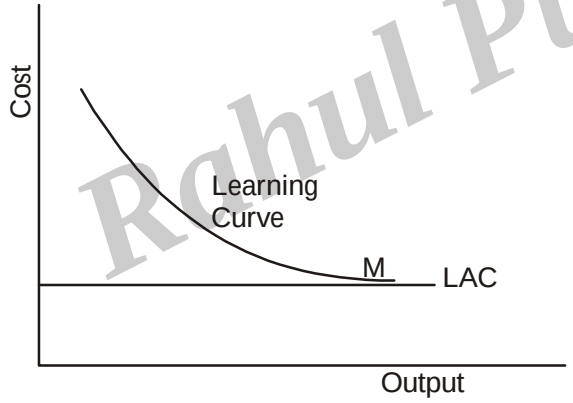


Fig.: The Learning Curve

Figure, shows a learning curve (LAC) which relates the cost of producing a given output to the total output over the entire time period. Growing experience with making the product leads to falling costs as more and more of it is produced. When the firm has exploited all learning possibilities, costs reach a minimum level, M in the figure. Thus the LAC curve is L-shaped due to learning by doing.

5.3 Revenue Curves

Q8. Define revenue? Explain different types of revenues ?

Ans :

Meaning

Profit making is the most important objective of a firm. The profit earned by a firm can be increased either by reducing the cost of production or by increasing the revenue. Revenue is the total amount of money received by an organisation in return of the goods sold or services provided during a given time period. In other words, revenue of a firm refers to the amount received by the firm from the sale of a given quantity of a commodity in the market. For example, if a firm obtains ` 2,50,000 from the sale of 10 computers, the received amount of ` 2,50,000 is its revenue earned during the time period. The concept of revenue consists of three important types of revenue, as shown in Figure.

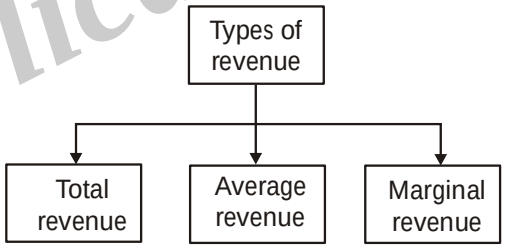


Fig.: Type of Revenue

The different types of revenues in a firm are discussed.

1. Total Revenue

Total Revenue (TR) of a firm refers to total receipts from the sale of a given quantity of a commodity. In other words, total revenue is the total income of a firm. Total revenue is calculated by multiplying the quantity of the commodity sold with the price of the commodity. Symbolically,

Total Revenue = Quantity × Price

For example, if a firm sells 10 fans at a price of ` 2,000 per fan, then the total revenue would be calculated as follows:

10 fans × ` 2,000 = ` 20, 000

2. Average Revenue

Average Revenue (AR) of a firm refers to the

revenue earned per unit of output sold. It is calculated by dividing the total revenue of the firm by the total number of units sold. Symbolically,

$$\text{Average Revenue} = \frac{\text{Total Revenue}}{\text{Total number of units sold}}$$

For example, if total revenue from the sale of 10 fans at the rate of ` 2000 per fan is ` 20,000, then:

$$\text{Average Revenue} = \frac{2000}{10} = ` 2,000$$

Here, it is important to note that AR and price of a commodity are equal in value. This can be explained as follows:

$$TR = \text{Quantity} \times \text{Price} \quad .....(1)$$

$$AR = \frac{TR}{Q} \quad .....(2)$$

Substituting the value of TR from equation (1) in equation (2),

$$AR = \frac{\text{Quantity} \times \text{Price}}{\text{Quantity}}$$

Therefore, AR = Price

3. Marginal Revenue

Marginal Revenue (MR) of a firm refers to the revenue earned by selling an additional unit of the commodity. In other words, the change in total revenue resulting from the sale of an additional unit is called marginal revenue. Symbolically,

$$MR_n = TR_n - TR_{n-1}$$

Where MRn = marginal revenue of nth unit (additional unit), TR_n = total revenue from n units, TR_{n-1} = Total revenue from (n – 1) units and n = number of units sold.

For example, if the total revenue realised from the sale of 10 fans is ` 2,000 and that from sale of 11 fans is ` 2,500, then MR of the 11th fan will be calculated as follows:

$$MR_{11} = TR_{11} - TR_{10}$$

Or MR_{11} = ` 2,500 – ` 2,000 = ` 500

Another method to calculate MR is as follows:

MR is the change in TR when an additional unit is sold. However, when change in units sold is more than one, MR can also be computed using the following method:

$$MR = \frac{\text{Change in Total Revenue}}{\text{Change in number of units}}$$

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

Let us understand this with the help of an example. Suppose the total revenue realised from sale of 10 fans is ` 2,000 and that from sale of 14 fans is ` 4,000, marginal revenue will be calculated as follows:

$$MR = \frac{\text{TR of 14 fans} - \text{TR of 10 fans}}{\text{14 fans} - \text{10 fans}}$$

$$MR \ \frac{4000 - 2000}{14 - 10} = \frac{2000}{4} \ ` 500$$

5.3.1 Relationship between Total Marginal and Average Revenues

Q9. Explain the Relationship between Total Marginal and Average Revenues.

Ans :

Marginal revenue is the additional revenue added by an additional unit of output, expressed as follows:

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

Let us consider an example to understand the relationship between TR and MR. A firm sells 100 units of a commodity at the rate of `10 per unit. Therefore,

TR= 10 × 100 = `1000

To increase sales, the firm needs to cut down its prices. The firm then sells 101 units at the rate ` 9.95. Therefore, TR is ` 1004.95 (101×9.95).

In this case, MR would be calculated as follows:

$$MR_{101} = TR_{101} - TR_{100}$$

MR = 1004.95 – 1000 = ` 4.95

As discussed earlier, AR = Price of the commodity. Therefore, if the firm sells 100 units at the rate of '10, the AR for each unit is '10. However, as the firm intends to sell more units, the AR (or price) drops. This can only happen if the MR is below price or AR.

From the above illustrations, the following conclusions are drawn:

1. If MR is greater than zero, the sale of an additional unit increases the TR.
2. If MR is below zero, then the sale of an additional unit decreases the TR.
3. If MR is zero, then the sale of an additional unit results in no change in the TR.

These relationships between TR and MR exist as marginal revenue measures the slope of the total revenue curve. Figure. shows the relationship between TR and MR:

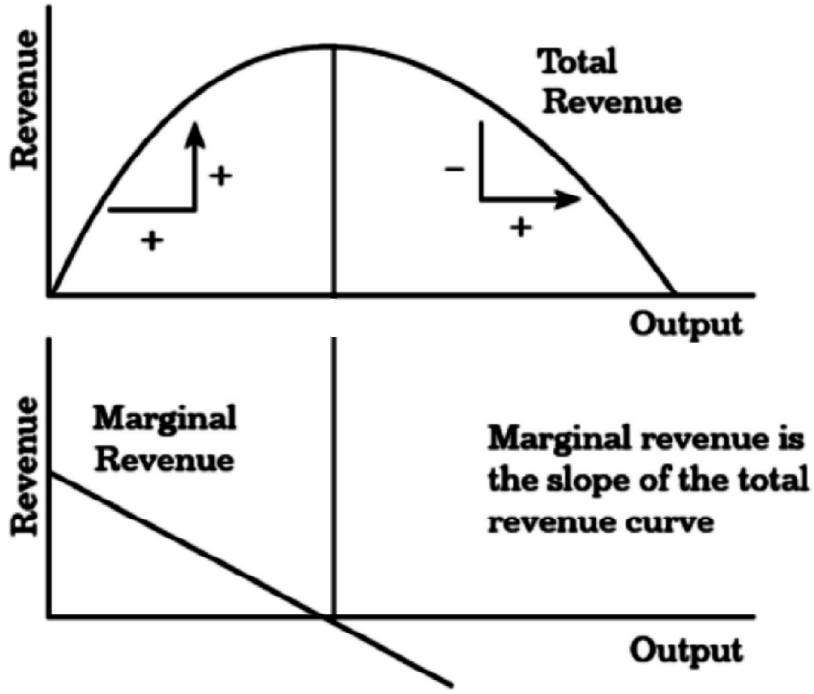


Fig.: Marginal Revenue and Total Revenue

The TR curve is shaped like an inverted U. Slope of a curve is measured as the rise over the run. The rise in the slope of the TR curve represents the change in TR, whereas the run in the TR curve represents the change in output. Therefore,

$$\text{Slope of TR curve} = \frac{\text{Change in Total Revenue}}{\text{Change in number of units}} = \text{MR}$$

Q10. Explain the Relationship between Average Revenues and Marginal Revenue.

Ans :

In a perfectly competitive market, where there is no market control, marginal revenue is equal to average revenue, and the average revenue remains constant. On the other hand, under imperfect competition and monopoly, where there is sufficient market control, marginal revenue is less than average revenue, and the average revenue falls.

The general relationship between AR and MR is as follows:

1. Marginal revenue is less than average revenue:

MR < AR occurs for a firm selling an output in a monopoly market, where a single firm sells to several customers. A monopoly market faces market control and has a negatively-sloped demand curve. In order to sell more units, a firm in the monopoly market must charge a lower price. For example, if a firm wants to increase the quantity of a commodity (priced `10) sold from 400 units to 500 units, it has to decrease the price from ` 10 to ` 9.95. The average revenue generated from 500 units would be the new price. The revenue lost in lowering the price for the first 400 units is only slightly offset by the revenue gained from the sale of the additional 100 units. The loss of revenue on existing units is the reason that marginal revenue is less than the price (AR). In Figure, the negatively-sloped MR curve lies below the negatively-sloped AR curve. As the marginal revenue is less than the average revenue, the average revenue curve declines.

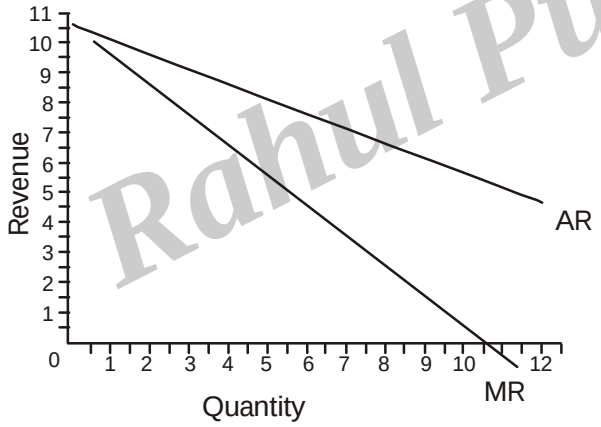


Fig.: Marginal Revenue Less Than Average Revenue

2. Marginal revenue is equal to average revenue

MR = AR occurs for a firm selling an output in a perfectly competitive market, where there are several sellers and several buyers of a given product. In such a scenario, to sustain in the market firms sell products at the prevailing market price. Since, the firms in a perfectly competitive market receive the same price for each unit (and additional units), the marginal revenue is equal to the per unit price, which is equal to AR. This is shown in Figure.

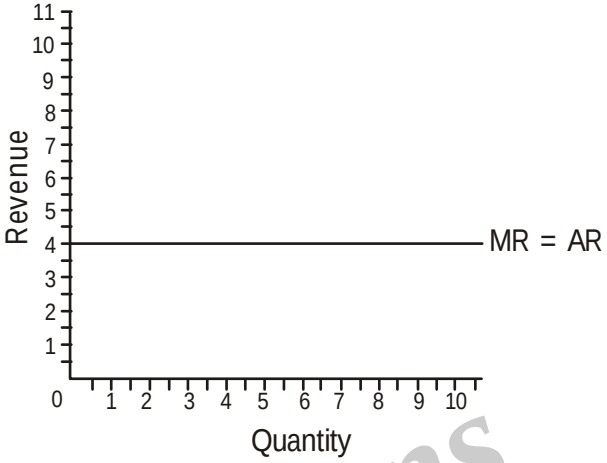


Fig.: Marginal Revenue Equal to Average Revenue

5.4 BREAK EVEN ANALYSIS

5.4.1 Meaning

Q11. Explain briefly about Break Even Analysis.

Ans : **(June-17, Dec.-16)**

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.

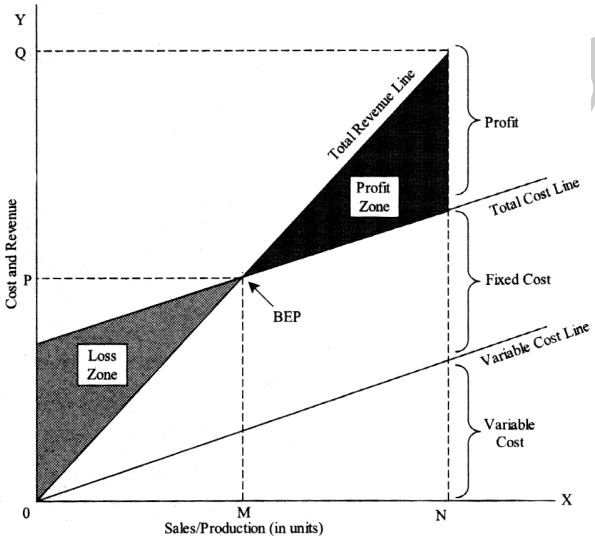

Fig. : Break-even Chart

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.

Q12. 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 × 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.

5.4.2 Assumptions

Q13. State the assumptions in Break Even Analysis.

Ans :

Validity of the break-even analysis depends upon several assumptions. We should appreciate the significance of each of these assumptions. The main assumptions are as follows :

1. The behaviour of costs and revenues of the firm can be reliably determined and remains linear over the relevant range.
2. Costs can be divided into fixed and variable. The fixed costs remain constant over the output range under consideration. While variable costs vary proportionally with volume.
3. Sale prices remain unchanged.
4. Prices of cost of production remain unaltered.
5. Productivity and efficiency in the firm remain unchanged.
6. Break-even analysis covers either a single product or a sales mix.
7. Costs and revenues are to be compared on a common activity base.
8. Volume is the only relevant factor affecting cost.
9. Changes in inventory levels are presumed to be insignificant in amount.
10. The rupees of revenue and the rupees of cost incurred remain uniform in terms of their purchasing power.
11. Lastly, the volume of sales and the volume of production are equal.

5.4.3 Uses and Limitations

Q14. Explain the utility of break-even analysis in managerial decision making.

Ans :

Uses

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.

Q15. Explain the limitations of break even analysis.

Ans :

Limitations

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.

Q16. State the applications of break even analysis.

Ans :

(i) It helps in the determination of selling price which will give the desired profits.

(ii) It helps in the fixation of sales volume to cover a given return on capital employed.

(iii) It helps in forecasting costs and profit as a result of change in volume.

(iv) It gives suggestions for shift in sales mix.

(v) It helps in making inter-firm comparison of profitability.

(vi) It helps in determination of costs and revenue at various levels of output.

(vii) It is an aid in management decision-making (e.g., make or buy, introducing a product etc.), forecasting, long-term planning and maintaining profitability.

(viii) It reveals business strength and profit earning capacity of a concern without much difficulty and effort.

Q17. State the importance of break evan analysis.

Ans :

(i) Manages the size of units to be sold

With the help of break-even analysis, the company or the owner comes to know how many units need to be sold to cover the cost. The variable cost and the selling price of an individual product and the total cost are required to evaluate the break-even analysis.

(ii) Budgeting and setting targets

Since the company or the owner knows at which point a company can break-even, it is easy for them to fix a goal and set a budget for the firm accordingly. This analysis can also be practised in establishing a realistic target for a company.

(iii) Manage the margin of safety

In a financial breakdown, the sales of a company tend to decrease. The break-even analysis helps the company to decide the least number of sales required to make profits. With the margin of safety reports, the management can execute a high business decision.

(iv) Monitors and controls cost

Companies' profit margin can be affected by the fixed and variable cost. Therefore, with break-even analysis, the management can detect if any effects are changing the cost.

(v) Helps to design pricing strategy

The break-even point can be affected if there is any change in the pricing of a product. For example, if the selling price is raised, then the quantity of the product to be sold to break-even will be reduced. Similarly, if the selling price is reduced, then a company needs to sell extra to break-even.

Short Question and Answers

1. Opportunity Costs

Ans :

Opportunity cost is also referred to as alternative cost. An organisation has limited resources, such as land, labour, capital, etc., which can be put to alternative uses having different returns. Organisations tend to utilise their limited resources for the most productive alternative and forgo the income expected from the second best use of these resources.

2. Explicit Costs

Ans :

Explicit costs, also referred to as actual costs, include those payments that the employer makes to purchase or own the factors of production. These costs comprise payments for raw materials, interest paid on loans, rent paid for leased building or machinery and taxes paid to the government. An explicit cost is one that has occurred and is clearly reported in accounting books as a separate cost. For example, if an organisation borrows a sum of ` 70,00,000 at an interest rate of 4% per year, the interest cost of ` 2,80,000 per year would be an explicit cost for the organisation.

3. Implicit Costs

Ans :

Unlike explicit costs, there are certain other costs that cannot be reported as cash outlays in accounting books. These costs are referred to as implicit costs. Opportunity costs are examples of implicit cost borne by an organisation. Let us understand the concept of implicit cost with the help of an example. An employee in an organisation takes a vacation to travel to his relative's place. In this case, the implicitcosts borne by the employee would be the salary that the employee could have earned if he/she had not taken the leave. Implicit costs are added to the explicit cost to establish a true estimate of the cost of production. Implicit costs are also referred to as imputed costs, implied costs or notional costs.

4. Economic Costs

Ans :

Economic costs include the total cost of opting for one alternative over another. The concept of economic costs is similar that of opportunity costs or implicit costs with the only difference that economic costs include the accounting cost (or explicit cost) as well as the opportunity cost (or implicit cost) incurred to carry out an action over the forgone action. For example, if the economic cost of the employee in the above example would include his/her week's pay as well as the expense incurred on the vacation.

5. Fixed Costs

Ans :

Fixed costs refer to the costs borne by a firm that do not change with changes in the output level. Even if the firm does not produce anything, its fixed costs would still remain the same. For example, depreciation, administra-tive costs, rent of land and buildings, taxes, etc. are fixed costs of a firm that remain unchanged even though the firm's output changes. However, if the time period under consideration is long enough to make alterations in the firm's capacity, the fixed costs may also vary.

6. Variable Costs

Ans :

Variable costs refer to the costs that are directly dependent on the output level of the firm. In other words, variable costs vary with the changes in the volume or level of output. For example, if an organisation increases its level of output, it would require more raw materials. Cost of raw material is a variable cost for the firm. Other examples of variable costs are labour expenses, maintenance costs of fixed assets, routine maintenance expenditure, etc. However, the change in variable costs with changes in output level may not necessarily be in the same proportion. The proportionality between the variable costs and output depends upon the utilisation of fixed assets during the

production process. The sum of fixed costs and variable costs of a firm constitutes its total cost of production. This can be expressed as follows:

Total Costs of a firm (TC) = Fixed costs (FC) + Variable costs (VC)

7. Incremental Costs

Ans :

Incremental costs involve the additional costs resulting due to a change in the nature of level of business activity. It characterises the additional cost that would have not been incurred if an additional unit was not produced. As these costs may be avoided by avoiding the possible variation in the production, they are also referred to as avoidable costs or escapable costs. For example, if a production house has to run for additional two hours, the electricity consumed during the extra hours is an additional cost to the production house. The incremental cost comprises the variable costs.

8. Theory of cost

Ans :

For the production of commodities and services, organisations incur various expenditures on different activities, such as purchase of raw material, payment of salaries/wages to the labour and purchase or leasing machines and building. These expenditures constitute the cost borne by the organisation for the production of its products and services. Inputs utilised multiplied by their respective prices, when added together constitute the money value of these inputs referred to as the cost of production. In other words, cost refers to the amount of resources required for the production of commodities and services. The resources utilised in the production would be money or money's worth usually expressed in monetary units.

Definition

(i) According to Chartered Institute of Management Accountants, CIMA defines cost as, "the amount of expenditure (actual or notional) incurred on, or attributed to, a specified thing or activity". Cost is the expenditure, measured in monetary terms, incurred or to be incurred in order to achieve a specific objective. Cost is an important factor in business analysis and decision making especially pertaining to the following aspects:

1. Identifying the weak points in production management
2. Minimising the cost of production
3. Finding the optimum level of production
4. Estimating the cost of business operations
5. Determining the price margins for selling the goods produced.

9. Define revenue.

Ans :

Profit making is the most important objective of a firm. The profit earned by a firm can be increased either by reducing the cost of production or by increasing the revenue. Revenue is the total amount of money received by an organisation in return of the goods sold or services provided during a given time period. In other words, revenue of a firm refers to the amount received by the firm from the sale of a given quantity of a commodity in the market. For example, if a firm obtains ` 2,50,000 from the sale of 10 computers, the received amount of ` 2,50,000 is its revenue earned during the time period.

10. Different types of revenues.

Ans :

(i) Total Revenue

Total Revenue (TR) of a firm refers to total receipts from the sale of a given quantity of a commodity. In other words, total revenue is the total income of a firm. Total revenue is calculated by multiplying the quantity of the commodity sold with the price of the commodity. Symbolically,

Total Revenue = Quantity × Price

For example, if a firm sells 10 fans at a price of ` 2,000 per fan, then the total revenue would be calculated as follows:

10 fans × ` 2,000 = ` 20, 000

(ii) Average Revenue

Average Revenue (AR) of a firm refers to the revenue earned per unit of output sold. It is calculated by dividing the total revenue of the firm

by the total number of units sold. Symbolically,

$$\text{Average Revenue} = \frac{\text{Total Revenue}}{\text{Total number of units sold}}$$

For example, if total revenue from the sale of 10 fans at the rate of ` 2000 per fan is ` 20,000, then:

$$\text{Average Revenue} = \frac{2000}{10} = ` 2,000$$

Here, it is important to note that AR and price of a commodity are equal in value. This can be explained as follows:

$$TR = \text{Quantity} \times \text{Price} \quad .....(1)$$

$$AR = \frac{TR}{Q} \quad .....(2)$$

Substituting the value of TR from equation (1) in equation (2),

$$AR = \frac{\text{Quantity} \times \text{Price}}{\text{Quantity}}$$

Therefore, AR = Price

(iii) Marginal Revenue

Marginal Revenue (MR) of a firm refers to the revenue earned by selling an additional unit of the commodity. In other words, the change in total revenue resulting from the sale of an additional unit is called marginal revenue. Symbolically,

$$MR_n = TR_n - TR_{n-1}$$

Where MRn = marginal revenue of nth unit (additional unit), TR_n = total revenue from n units, TR_{n-1} = Total revenue from (n – 1) units and n = number of units sold.

For example, if the total revenue realised from the sale of 10 fans is ` 2,000 and that from sale of 11 fans is ` 2,500, then MR of the 11th fan will be calculated as follows:

$$MR_{11} = TR_{11} - TR_{10}$$

Or MR_{11} = ` 2,500 – ` 2,000 = ` 500

Another method to calculate MR is as follows:

MR is the change in TR when an additional unit is sold. However, when change in units sold is more than one, MR can also be computed using the following method:

$$MR = \frac{\text{Change in Total Revenue}}{\text{Change in number of units}}$$

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

Let us understand this with the help of an example. Suppose the total revenue realised from sale of 10 fans is ` 2,000 and that from sale of 14 fans is ` 4,000, marginal revenue will be calculated as follows:

$$MR = \frac{\text{TR of 14 fans} - \text{TR of 10 fans}}{\text{14 fans} - \text{10 fans}}$$

$$MR \ \frac{4000 - 2000}{14 - 10} = \frac{2000}{4} \ ` 500$$

11. 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)

$$= \boxed{\frac{\text{Fixed Costs}}{\text{Contribution on Margin Per Unit}}}$$

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.

12. State the assumptions in Break Even Analysis.

Ans :

Validity of the break-even analysis depends upon several assumptions. We should appreciate the significance of each of these assumptions. The main assumptions are as follows :

1. The behaviour of costs and revenues of the firm can be reliably determined and remains linear over the relevant range.
2. Costs can be divided into fixed and variable. The fixed costs remain constant over the output range under consideration. While variable costs vary proportionally with volume.
3. Sale prices remain unchanged.
4. Prices of cost of production remain unaltered.
5. Productivity and efficiency in the firm remain unchanged.
6. Break-even analysis covers either a single product or a sales mix.
7. Costs and revenues are to be compared on a common activity base.
8. Volume is the only relevant factor affecting cost.
9. Changes in inventory levels are presumed to be insignificant in amount.
10. The rupees of revenue and the rupees of cost incurred remain uniform in terms of their purchasing power.
11. Lastly, the volume of sales and the volume of production are equal.

13. Explain the utility of break-even analysis in managerial decision making.

Ans :

Uses

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.

14. Limitations of break even analysis.

Ans :

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.

Choose the Correct Answers

1. Fixed cost per unit changes with. [d]

   (a) Volume of scales (b) Profit

   (c) Production (d) Volume of production

2. Which of the following varies with the volume of production? [b]

   (a) Fixed costs (b) Variable costs

   (c) Semi fixed costs (d) Semi variable costs

3. Which of the following is ascertained for a change in the level of activity? [b]

   (a) Marginal (b) Incremental

   (c) Controllable (d) Opportunity

4. Costs that involve cash outflows at sometimes and hence they are recorded in the books of account are called. [d]

   (a) Opportunity costs (b) Incremental costs

   (c) Sunk costs (d) Outlay costs

5. The costs that must be considered for decision making are called. [b]

   (a) Outlay costs (b) Opportunity costs

   (c) Incremental costs (d) Controllable costs

6. Explicit costs are called. [b]

   (a) In house costs (b) Non cash costs

   (c) In pocket costs (d) Out of pocket costs

7. Which of the following do not involve payment of cahs as they are not actually incurred ? [b]

   (a) Explicit costs (b) Implicit costs

   (c) Book costs (d) Incremental costs

8. Implicit or imputed costs are also called. [c]

   (a) Future costs (b) Controllable costs

   (c) Book costs (d) Joint costs

9. Which of the following is a technique for profit planning and control ? [a]

(a) Break even analysis (b) Break one point

(c) Cost unit (d) Diminishing

10. Which of the following is not a synonym for 'no profit or no loss point'. [d]

(a) Break even point (b) Break even analysis

(c) CVP analysis (d) Marginal costing

11. Which of the following terms explains the change in the cost and volume and its impact on profit ? [c]

(a) Break even point (b) Break even analysis

(c) Cost - Volume - Profit Analysis (d) Standard costing

12. A firm is said to be attain the BEP where. [d]

(a) TR > TC (b) TR × TC

(c) TR < TC (d) TR = TC

Fill in the Blanks

1. The relationship between the variable cost and volume of production is _____.
2. The cost of the best alternative foregone is called _____.
3. Telephone bill is an example of _____ costs.
4. Addition to costs as a result of change in the level of business activity is called _____.
5. The expenses that do not have cash outflow are called _____.
6. The salary of a manager is an example of _____ .
7. Timing of cash flows are determined in _____ costs.
8. When variable cost decreases, the BEP _____.
9. when selling price per unit decreases, the BEP _____.
10. Break-even point is also called _____.

ANSWERS

1. Directly proportional
2. Opportunity cost
3. Semi-fixed or semi-variable cost
4. Incremental costs
5. Book costs
6. Out-of-pocket costs
7. Economic costs
8. Decreases
9. Increases
10. No profit, no loss point

FACULTY OF COMMERCE

B.Com. I Year I-Semester(CBCS) Examination

(Common Paper for General/Computers/Computer Applications/ Foreign Trade and Tax Procedure Courses)

May / June - 2018

BUSINESS ECONOMICS

Time: 3 Hours | Max. Marks: 80

Note: Answer any **FIVE** of the following questions

PART – A (5 × 4 = 20 Marks)

[Short Answer Type]

ANSWERS

1. Non Economic Activity **(Unit-I, SQA.15)**
2. Price Theory **(Unit-I, SQA.6)**
3. Cross Demand **(Unit-II, SQA.6)**
4. Supply Function **(Unit-III, SQA.7)**
5. Cobb-Douglass Production Function **(Unit-IV, SQA.14)**
6. Marginal Product **(Unit-IV, SQA.7)**
7. Break Even Point (BEP) **(Unit-V, SQA.11)**
8. Derived Demand **(Unit-V, SQA.2)**

PART – B (5 × 12 = 60 Marks)

[Essay Answer Type]

Note: Answer to all the questions

9. (a) What is meant by Business Economics? Explain the Nature and Scope of Business Economics. **(Unit-I, Q.No.1,4,6)**

OR

(b) Briefly explain the Law of Substitution / Equi-marginal utility. **(Unit-I, Q.No.19)**

10. (a) What do you mean by demand ? Why does demand curve slopes downwards? Briefly explain it. **(Unit-II, Q.No.1,7)**

OR

(b) Define Price Elasticity of Demand. Explain the methods of its measurement. **(Unit-II, Q.No.15,24)**

11. (a) What is meant by indifference Curve ? What are its properties. **(Unit-III, Q.No.14,16)**

OR

(b) Explain the Consumer Surplus theory. **(Unit-III, Q.No.10)**

12. (a) Briefly explain the Law of variable proportions and its significance. **(Unit-IV, Q.No.7)**

OR

(b) Explain the producer equilibrium through ISO QUANTS. and ISO COST Line. **(Unit-IV, Q.No.9,10)**

13. (a) Briefly explain the Long Run Average Cost Curve and its characteristics. **(Unit-V, Q.No.7)**

OR

(b) What is meant by Cost ? Explain different types of cost **(Unit-V, Q.No.1,2)**

FACULTY OF COMMERCE

B.Com. I Year I-Semester(CBCS) Examination

(Common Paper for General/Computers/Computer Applications/ Foreign Trade and Tax Procedure Courses)

November / December - 2017

BUSINESS ECONOMICS

Time: 3 Hours Max. Marks: 80

Note: Answer any **FIVE** of the following questions

PART – A (5 × 4 = 20 Marks)

[Short Answer Type]

ANSWERS

1. Marginal Product **(Unit-IV, SQA.7)**
2. Giffen Paradox **(Unit-II, SQA.11)**
3. Joint Demand **(Unit-II, SQA.7)**
4. Consumer Surplus **(Unit-III, SQA.2)**
5. Production Function **(Unit-IV, SQA.6)**
6. Opportunity Cost **(Unit-V, SQA.1)**
7. Incremental Cost **(Unit-V, SQA.7)**
8. Demand Function **(Unit-II, SQA.4)**

PART – B (5 × 12 = 60 Marks)

[Essay Answer Type]

Note: Answer to all the questions

9. (a) Distinguish between Micro and Macro Economics and explain their subject matter. **(Unit-I, Q.No.17)**

OR

(b) Explain about the Law of Diminishing Marginal Utility and its importance. **(Unit-I, Q.No.19)**

10. (a) Explain the Law of Demand and its Exemptions. **(Unit-II, Q.No.10,11)**

OR

(b) What is meant by Price Elasticity of Demand? Explain its kinds with curves. **(Unit-II, Q.No.15)**

11. (a) Briefly explain the Law of Supply. **(Unit-III, Q.No.2)**

OR

(b) Explain the Consumer Equilibrium through Indifference Curves. **(Unit-III, Q.No.14)**

12. (a) Explain about Internal and External Economies. **(Unit-IV, Q.No.11)**

OR

(b) What is meant by ISO QUANT curve and explain its properties ? **(Unit-IV, Q.No.10)**

13. (a) Explain the Cost and Output Relation in the short run period. **(Unit-V, Q.No.4)**

OR

(b) Define Break Even Point (BEP). Briefly explain the Break Even Analysis, Its importance and limitations. **(Unit-V, Q.No.11,17,15)**

FACULTY OF COMMERCE

B.Com. I Year I-Semester(CBCS) Examination

(Common Paper for General/Computers/Computer Applications/ Foreign Trade and Tax Procedure Courses)

December - 2016

BUSINESS ECONOMICS

Time: 3 Hours Max. Marks: 80

Note: Answer any **FIVE** of the following questions

PART – A (5 × 4 = 20 Marks)

[Short Answer Type]

ANSWERS

1. Nature of Business Economics **(Unit-I, SQA.3)**
2. Equal Marginal Utility **(Unit-I, SQA.14)**
3. Substitution effect **(Unit-II, SQA.16)**
4. Elasticity of demand **(Unit-II, SQA.1)**
5. Consumer Surplus **(Unit-III, SQA.2)**
6. Returns to Scale **(Unit-IV, SQA.3)**
7. Isoquants **(Unit-IV, SQA.2)**
8. Opportunity cost **(Unit-V, SQA.1)**

PART – B (5 × 12 = 60 Marks)

[Essay Answer Type]

Note: Answer to all the questions

9. (a) Define microeconomics. What is its importance ? List its limitations **(Unit-I, Q.No.10,13)**

OR

(b) Define Utility. Explain the Law of Diminishing Marginal Utility with the help of utility schedule **(Unit-I, Q.No.18,19)**

10. (a) Using an example of your own, distinguish between shifts and demand and movements along a demand curve. **(Unit-II, Q.No.9)**

OR

(b) Define elasticity of demand. What are the methods of measuring elasticity of demand **(Unit-II, Q.No.13,24)**

11. (a) Explain Law of supply. What are the factors influencing supply ? **(Unit-III, Q.No.6,8)**

OR

(b) Define Indifference Curve. Explain the properties of indifference curve. **(Unit-III, Q.No.14,16)**

12. (a) Explain the likely behaviour of total product, average product and marginal product when only one input is increased for increasing production. Indicate the phases of Law of Variable Proportion. **(Unit-IV, Q.No.7)**

OR

(b) Explain the internal and external economies of scale of production. **(Unit-IV, Q.No.11)**

13. (a) Show a diagramatic relationship between Short run Average cost curves and Marginal cost curves. **(Unit-V, Q.No.3)**

OR

(b) What is Break-even Chart ? Explain how it can be used to find the break-evenpoint. **(Unit-V, Q.No.11)**

FACULTY OF COMMERCE

B.Com. III Year V-Semester(CBCS) Examination

(Common Paper for General/Computers/Computer Applications/ Foreign Trade and Tax Procedure Courses)

MODEL PAPER - I

BUSINESS ECONOMICS

Time: 3 Hours Max. Marks: 80

Note: Answer any **FIVE** of the following questions

PART – A (5 × 4 = 20 Marks)

ANSWERS

1. Define Business Economics. **(Unit-I, SQA.1)**
2. Define Micro economics. **(Unit-I, SQA.6)**
3. Derived Demand **(Unit-II, SQA.2)**
4. What is demand function? How do you determine it. **(Unit-II, SQA.4)**
5. Define law of supply. **(Unit-III, SQA.1)**
6. Explain the exceptions to the law of supply. **(Unit-III, SQA.5)**
7. Cobb-Douglas Production Function **(Unit-IV, SQA.14)**
8. Incremental Costs **(Unit-V, SQA.7)**

PART – B (5 × 12 = 60 Marks)

Note: Answer to all the questions

9. (a) Explain the scope of business economics. **(Unit-I, Q.No.6)**

OR

(b) State and explain the Law of Diminishing Marginal Utility. **(Unit-I, Q.No.19)**

10. (a) What are the Factors influencing Demand? **(Unit-II, Q.No.4)**

OR

(b) What is price elasticity of demand ? Explain different types of price elasticity of Demand? **(Unit-II, Q.No.15)**

11. (a) What do you understand by Market Equilibrium? Describe the impact of increase in both demand and supply on Equilibrium. **(Unit-III, Q.No.9)**

OR

(b) Explain the concept of budget line. **(Unit-III, Q.No. 19)**

12. (a) Explain the different stages of the law of variable Proportions. Which stage is important for Production. **(Unit-IV, Q.No.7)**

OR

(b) Explain the concept of Isoquants curves. **(Unit-IV, Q.No.10)**

13. (a) Show a diagramatic relationship between short run average cost curves and marginal cost curves. **(Unit-V, Q.No. 4)**

OR

(b) Define revenue? Explain different types of revenues ? **(Unit-V, Q.No.8)**

FACULTY OF COMMERCE

B.Com. III Year V-Semester(CBCS) Examination

(Common Paper for General/Computers/Computer Applications/ Foreign Trade and Tax Procedure Courses)

MODEL PAPER - II

BUSINESS ECONOMICS

Time: 3 Hours Max. Marks: 80

Note: Answer any **FIVE** of the following questions

PART – A (5 × 4 = 20 Marks)

ANSWERS

1. Define macro economics. **(Unit-I, SQA.7)**
2. Marginal Utility. **(Unit-I, SQA.10)**
3. Define Demand. **(Unit-II, SQA.3)**
4. Cross Demand **(Unit-II, SQA.6)**
5. What is consumer surplus? **(Unit-III, SQA.2)**
6. Define supply schedule. **(Unit-III, SQA.6)**
7. Define Production function. **(Unit-IV, SQA.6)**
8. Define revenue. **(Unit-V, SQA.9)**

PART – B (5 × 12 = 60 Marks)

Note: Answer to all the questions

9. (a) Compare and contrast micro economics and macro economics. **(Unit-I, Q.No.17)**

OR

(b) State the advantages and limitations of micro economics. **(Unit-I, Q.No.13)**

10. (a) Why the demand curve slope down-wards from left to right ? **(Unit-II, Q.No.7)**

OR

(b) What are the exceptions to the law of demand? **(Unit-II, Q.No.11)**

11. (a) What are the determinants of supply? **(Unit-III, Q.No.8)**

OR

(b) What are the properties of Indifference Curve Analysis? **(Unit-III, Q.No.16)**

12. (a) Define the law of returns to scale and explain its relevance in production management. **(Unit-IV, Q.No.8)**

OR

(b) Explain the internal and external economies of scale of production. **(Unit-IV, Q.No.11)**

13. (a) Explain Long run cost of the modern theory. **(Unit-V, Q.No.7)**

OR

(b) Explain briefly about Break Even Analysis. **(Unit-V, Q.No.11)**

FACULTY OF COMMERCE

B.Com. III Year V-Semester(CBCS) Examination

(Common Paper for General/Computers/Computer Applications/ Foreign Trade and Tax Procedure Courses)

MODEL PAPER - III

BUSINESS ECONOMICS

Time: 3 Hours Max. Marks: 80

Note: Answer any **FIVE** of the following questions

PART – A (5 × 4 = 20 Marks)

ANSWERS

1. What are the exceptions of Law of Equimarginal Utility. **(Unit-I, SQA.13)**
2. Define Utility. **(Unit-I, SQA.8)**
3. Define Demand Schedule. **(Unit-II, SQA.12)**
4. Define Law of Demand. **(Unit-II, SQA.10)**
5. Supply **(Unit-III, SQA.3)**
6. State the criticisms of Indifference Curve Analysis? **(Unit-III, SQA.11)**
7. Returns to scale **(Unit-IV, SQA.3)**
8. Opportunity Costs **(Unit-V, SQA.1)**

PART – B (5 × 12 = 60 Marks)

Note: Answer to all the questions

9. (a) Define Micro economics. Explain the importance of Micro economics. **(Unit-I, Q.No.10)**

OR

(b) State the explain Law of Equimarginal Utility. **(Unit-I, Q.No. 21)**

10. (a) What are the determinants of price Elasticity of Demand ? **(Unit-II, Q.No. 17)**

OR

(b) Explain briefly about Measurement of Elasticity of Demand. **(Unit-II, Q.No.24)**

11. (a) What is consumer surplus? How did marshall measure it? **(Unit-III, Q.No.10)**

OR

(b) Show how a consumer attains equilibrium with the help of indifference curve. **(Unit-III, Q.No.14)**

12. (a) Explain the concept of Isocost. **(Unit-IV, Q.No.9)**

OR

(b) Distinguish between internal and external economies of scale. **(Unit-IV, Q.No.12)**

13. (a) Explain the different cost concepts used in the process of cost analysis. **(Unit-V, Q.No. 2)**

OR

(b) Explain Short run cost of the modern theory. **(Unit-V, Q.No.6)**