PART-A
INTRODUCTORY MICRO ECONOMICS
UNIT 1: INTRODUCTION

KEY CONCEPTS

- MICRO ECONOMICS
- ECONOMY
- TYPES OF ECONOMY
  - PLANNED ECONOMY
  - MARKET ECONOMY
- CENTRAL PROBLEMS OF AN ECONOMY | BASIC ECONOMIC PROBLEMS
  - WHAT TO PRODUCE?
  - HOW TO PRODUCE?
  - FOR WHOM TO PRODUCE?
- CAUSES OF AN ECONOMIC PROBLEM
- PRODUCTION POSSIBILITY CURVE
- MARGINAL OPPORTUNITY COST –MOC
- MARGINAL RATE OF TRANSFORMATION
- SCARCITY OF RESOURCES
- OPPORTUNITY COST
- POSITIVE ECONOMIC ANALYSIS AND NORMATIVE ECONOMIC ANALYSIS

1. MICRO ECONOMICS:
   It is a study of behaviour of individual units of an economy such as individual consumer, producer etc.

2. ECONOMY:
   An economy is a system by which people get their living.

3. TYPES OF ECONOMY:
   (i) Capitalist economy / Market economy
   (ii) Socialist economy / Planned economy
   (iii) Mixed economy

4. MARKET ECONOMY:
   It is an economic system, in which all material means of production are owned and operated by the private with profit motive.

5. PLANNED ECONOMY:
   In this economy all material means of production are owned by the government or by a centrally planned authority. All important decisions regarding production, exchange and distributions, consumptions of goods and services are made by the government or by a centrally planned authority

6. ECONOMIC PROBLEM:
   “An economic problem is basically the problem of choice” which arises due to scarcity of resources having alternative uses”.

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7. **CAUSES OF ECONOMIC PROBLEM:**
   i) Scarcity of resources
   ii) Unlimited wants
   iii) Limited resources having alternative uses

8. **BASIC (CENTRAL) ECONOMIC PROBLEMS**
   i) Allocation of resources
      a. What to produce?
      b. How to produce?
      c. For whom to produce
   ii). Efficient Utilization of resources
   iii.) Growth of resources

9. **PRODUCTION POSSIBILITY CURVE (PPC):**
   PP curve shows all the possible combination of two goods that can be produced with the help of available resources and technology.

10. **MARGINAL OPPORTUNITY COST:** MOC of a particular good along PPC is the amount of other good which is sacrificed for production of additional unit of another good.

11. **MARGINAL RATE OF TRANSFORMATION:** MRT is the ratio of units of one good sacrificed to produce one more unit of other good.
    \[
    \text{MRT} = \frac{\text{Unit of one good sacrificed}}{\text{More unit of other good produced}} = \frac{\Delta y}{\Delta x}
    \]

12. **SCARCITY OF RESOURCES:** Scarcity of resources means shortage of resources in relation to their demand.

13. **OPPORTUNITY COST:** It is the cost of next best alternative foregone.

14. **POSITIVE ECONOMICS:** Positive economics deals with what is, what was (or) how an economic problem facing the society is actually solved.

15. **NORMATIVE ECONOMICS:** It deals with what ought to be (or) how an economic problem should be solved.

**VERY SHORT ANSWER QUESTIONS (1 MARK)**

1. What is economics about?
   Ans : - Economics is the study of the problem of choice arising out of scarcity of resources having alternative uses.

2. Define scarcity.
   Ans : - Scarcity means shortage of resources in relation to their demand is called scarcity.

3. What is an economy?
   Ans : - An economy is a system by which people get their living.

   Ans : - Central problem is concerned with the problems of choice (or) the problem of resource allocation.
5. What do you understand by positive economic analysis?
Ans : - It deals with what is (or) how an economic problem facing an economy is solved. It analyses the cause of effect relationship.

6. What do you understand by normative economic analysis?
Ans : - Normative economic analysis deals with what ought to be (or) how an economic problem should be solved.

7. Give one reason which gives rise to economic problems?
Ans : - Scarcity of resources which have alternative uses.

8. Name the three central problems of an economy.
Ans : - i) What to produce?
ii) How to produce?
iii) For whom to produce?

9. What is opportunity cost?
Ans : - It is the cost of next best alternative foregone.

10. Why is there a need for economizing of resources?
Ans : - Resources are scarce in comparison to their demand, therefore it is necessary to use resources in the best possible manner without wasting it.

11. What is production possibility frontier?
Ans : - It is a boundary line which shows the various combinations of two goods which can be produced with the help of given resources and technology.

12. Why PPC is concave to the origin?
Ans : - PPC is concave to the origin because of increased marginal opportunity cost.

13. Define marginal rate of transformation.
Ans : - MRT is the ratio of units of one good sacrificed to produce one more unit of other goods. MRT = Δy / Δx

14. What does a point inside the PPC indicate?
Ans : - Any point inside the production possibility curve indicate underutilization of resources.

15. What do you mean by the problem of what to produce?
Ans : - It is the problem of choosing which goods and services should be produced in what quantities.
16. What do you understand by the problem of how to produce?
Ans :- It is the problem of choosing technique of production of goods and services.
17. What does the problem for whom to produce indicate?
Ans :- The problem of for whom to produce refers to the distribution of goods and services produced in the economy.
18. Give two examples each of micro economics & macroeconomics.
Ans :- Micro economics – Individual demand, individual supply
         Macroeconomics – Aggregate demand and aggregate supply
19. What does a rightward shift of PPC indicate?
Ans :- It indicates a) growth of resources b) improvement in technology
20. What is meant by economising of resources?
Ans :- It means making best use of available resources.

SHORT ANSWER QUESTIONS (3 / 4 MARKS)
1. What is production possibility frontier?
   Ans :- It is a boundary line which shows that maximum combination of two goods which can be produced with the help of given resources and technology at a given period of time.
   Ex: An economy can produce two goods say rice or oil by using all its resources. The different combination of rice and oil are as follows:

<table>
<thead>
<tr>
<th>Production Possibilities</th>
<th>Rice (quintals)</th>
<th>Oil (litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>
2. Draw a production possibility curve and mark the following situations:
   
a) underutilization of resources  
b) full employment of resources  
c) growth of resources

Ans. Every point on PP curve like ABCDEF indicates full employment and efficient uses of resources.  
Any point below or inside PP curve like G underutilization of resources.  
Any point above PP curves like H indicates growth of resources.
**Production Possibility Curve And Opportunity Cost**

It refers to a curve which shows the various production possibilities that can be produced with given resources and technology.

**Production Possibilities**

<table>
<thead>
<tr>
<th>Production Possibility</th>
<th>Commodity A</th>
<th>Commodity B</th>
<th>Marginal opportunity cost of commodity A</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>14</td>
<td>15-14=1</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>12</td>
<td>14-12=2</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>09</td>
<td>12-9=3</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>05</td>
<td>9-5=4</td>
</tr>
<tr>
<td>F</td>
<td>5</td>
<td>0</td>
<td>5-0=5</td>
</tr>
</tbody>
</table>

If the economy devotes all its resources to the production of commodity B, it can produce 15 units but then the production of commodity A will be zero. There can be a number of production possibilities of commodity A & B.

If we want to produce more commodities B, we have to reduce the output of commodity A & vise versa.

**Shape of PP curve and marginal opportunity cost.**

1) PP curve is a downward sloping curve.

In a full employment economy, more of one goods can be obtained only by giving up the production of another goods. It is not possible to increase the production of both of them with the given resources.
2) The shape of the production possibility curve is concave to the origin.

The opportunity cost for a commodity is the amount of other commodity that has been forgone in order to produce the first.

The marginal opportunity cost of a particular good along the PPC is defined as the amount sacrificed of the other good per unit increase in the production of the good in question.

**Example:** Suppose a doctor having a private clinic in Delhi is earning Rs. 5 lakhs annually.

There are two other alternatives for him.

1) Joining a Govt. hospital in Bangalore earning Rs. 4 lakhs annually.

2) Opening a clinic in his home town in Mysore and earning 3 lakhs annually.

The opportunity cost will be joining Govt. hospital in Bangalore.

Increasing marginal opportunity cost implies that PPC is concave.

**Shift in PP curve**

1) **Upward shift**

   (a) When there is improvement in technology.

   (b) Increase in resources.

2) **Downward shift**

   When Resources depletes
3. Distinguish between a centrally planned economy and a market economy.

<table>
<thead>
<tr>
<th>SNo</th>
<th>Planned Economy</th>
<th>Market Economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All the materials means of production are owned by government.</td>
<td>All the materials means of production are owned by private individuals.</td>
</tr>
<tr>
<td>2</td>
<td>Main objectives of production is social welfare</td>
<td>Main objectives of production are maximization of profit.</td>
</tr>
<tr>
<td>3</td>
<td>Ownership of property is under government control.</td>
<td>There is no limit to private ownership of property.</td>
</tr>
<tr>
<td>4</td>
<td>All the economic problems are solved as per direction of the planning commission.</td>
<td>All the economic problems are solved through price mechanism i.e., demand and supply.</td>
</tr>
</tbody>
</table>

4. Distinguish between micro economics and macroeconomics.

<table>
<thead>
<tr>
<th>SNo</th>
<th>Micro economics</th>
<th>Macro economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>It studies individual economic unit.</td>
<td>It studies aggregate economic unit</td>
</tr>
<tr>
<td>2</td>
<td>It deals with determination of price and output in individual markets</td>
<td>It deals with determination of general price level and output in the economy.</td>
</tr>
<tr>
<td>3</td>
<td>Its central problems are price determination and allocation of resources.</td>
<td>Its central problem is determination of level of Income and employment in the economy.</td>
</tr>
</tbody>
</table>

**HOTS**

1. Does massive unemployment shift the PPC to the left?

Ans:- Massive unemployment will shift the PPC to the left because labour force remains underutilized. The economy will produce inside the PPC indicating underutilization of resources.

2. What does the slope of PPC show?

Ans. The slope of PPC indicates the increasing marginal opportunity cost.

3. From the following PP schedule calculate MRT of good x.

<table>
<thead>
<tr>
<th>Production possibilities</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of good x units</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Production of good y units</td>
<td>14</td>
<td>13</td>
<td>11</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>
Production of good X units | Production of good Y units | MRT = Δy / Δx
---|---|---
0 | 14 | -
1 | 13 | 1:1
2 | 11 | 2:1
3 | 8 | 3:1
4 | 4 | 4:1

4. Difference between positive and normative economics.

<table>
<thead>
<tr>
<th>SNo</th>
<th>Positive Economics</th>
<th>Normative Economics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>It deals with what is what was.</td>
<td>It deals with what ought to be.</td>
</tr>
<tr>
<td>2</td>
<td>It is based on cause and effect of facts.</td>
<td>It is based on ethics.</td>
</tr>
<tr>
<td>3</td>
<td>It can be verified with actual data</td>
<td>It cannot be verified with actual data.</td>
</tr>
<tr>
<td>4</td>
<td>In this value of judgments are not given.</td>
<td>In this value of judgments are given.</td>
</tr>
</tbody>
</table>

**How are fundamental problems solved in the capitalistic economy.**

In a market-oriented or capitalist economy, the fundamental problems are solved by the market mechanism. Price is influenced by the market forces of demand and supply. These forces help to decide what, how and for whom to produce.

**How are fundamental problems solved in the planned economy.**

In a planned economy all the economic decisions regarding what, how and for whom to produce are solved by the state through planning. Economic planning replaces the price mechanism. The market is regulated by the state. The prices of the various products are fixed by the state called administered prices.
UNIT 2

CONSUMER EQUILIBRIUM AND DEMAND

KEY CONCEPTS

1. UTILITY
   A) MARGINAL UTILITY
   B) LAW OF DIMINISHING MARGINAL UTILITY

2. CONDITIONS OF CONSUMER’S EQUILIBRIUM

3. INDIFFERENCE CURVE ANALYSIS

4. THE CONSUMER’S BUDGET
   A) BUDGET SET
   B) BUDGET LINE

5. PREFERENCES OF THE CONSUMER
   A) INDIFFERENCE CURVE
   B) INDIFFERENCE MAP

6. CONDITIONS OF CONSUMER’S EQUILIBRIUM

7. DEMAND
   A) INDIVIDUAL DEMAND
   B) MARKET DEMAND
   C) DEMAND SCHEDULE
   D) DEMAND CURVE

8. DETERMINANTS OF DEMAND

9. MOVEMENT ALONG THE DEMAND CURVE
   A) EXTENSION
   B) CONTRACTION

10. SHIFT IN THE DEMAND CURVE
    A) INCREASE IN DEMAND
    B) DECREASE IN DEMAND

11. MEASUREMENT OF PRICE ELASTICITY OF DEMAND
    A) TOTAL EXPENDITURE METHOD
    B) PROPORTIONATE METHOD
    C) GEOMETRIC METHOD

12. FACTORS AFFECTING PRICE – ELASTICITY OF DEMAND

ONE MARK QUESTIONS AND ANSWERS

1. What do you mean by utility?
   Ans :- Utility is the want satisfying power of a commodity.

2. How is total utility derived from marginal utility?
   Ans :- Total utility is the sum total of marginal utilities of various units of a commodity.
   
   \[ TU_n = MU_1 + MU_2 + MU_3 + \ldots + MU_n \]
3. State the law of equi-marginal utility.
Ans: It states that a consumer gets maximum satisfaction when the ratio of the marginal utilities of two goods and their prices is equal i.e., MUx / Px = MUy / Py

4. What will you say about MU when TU is maximum?
Ans: MU is zero when TU is maximum

5. Give the reason behind a convex indifference curve.
Ans: Diminishing marginal rate of substitution.

**HOTS QUESTIONS**

1. Give the formula for calculating the slope of the budget line.
Ans: It is equal to the ratio of the prices of the two commodities, i.e., Px / Py

2. Suppose a consumer’s preferences are monotonic. What can you say about his preference ranking over the bundles (10,10), (10,9) and (9,9)?
Ans: Consumer will monotonically prefer bundle (10,10) to (10,9) and (9,9) and also prefer bundle (10,9) to (9,9)

3. A rise in the income of the consumer leads to a fall in the demand for commodity ‘x’.
   What type of good is commodity ‘x’?
Ans: Inferior good

4. What do you mean by substitute and complementary goods? Give two examples each.
   Ans: Substitute goods are those goods which can be used in place of each other. Ex. Tea and Coffee. Complementary goods are those goods which are used together to satisfy a given want. Ex: Car and petrol.

5. Mention one factor that causes a left ward shift of the demand curve.
   Ans: Fall in income of a consumer.

6. What causes a movement along the demand curve of a commodity?
   Ans: When the price of a commodity changes and other factors remain constant, there will be movement along the demand curve.

7. What is demand function?
   Ans: A demand function shows the functional relationship between the quantity demanded and the factors on which demand depends on.
8. Draw a demand curve with unitary elasticity.

\[
\text{Ans: -} \quad D \quad E.D=1
\]


\[
\text{Ans: - It refers to the degree of responsiveness of quantity demanded to change in price.}
\]

**3. AND 4 MARKS QUESTIONS & ANSWERS**

1. Explain the law of Diminishing Marginal Utility with the help of a table and a diagram.

\[
\text{Ans: - The law of diminishing Marginal Utility states that as we consume more and more units of a commodity, the MU derived from the successive units of that commodity goes on decreasing. It is explained with the help of following schedule and diagram.}
\]

**Relationship between MU and TU:**

i) When MU is positive TU rises.

ii) When MU is zero TU is maximum.

iii) When MU is negative, TU falls

<table>
<thead>
<tr>
<th>UNITS</th>
<th>TU</th>
<th>MU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>-2</td>
</tr>
</tbody>
</table>

Diagram: 

2. What is meant by consumer’s equilibrium? State its conditions in case of two commodities approach.
a) **Meaning**: A consumer is to be equilibrium when he is spending his given income on various goods and services to get maximum satisfaction.

b) **Conditions**:
   i) \( \frac{MU_x}{P_x} = \frac{MU_y}{P_y} \) (MUs are equal to their prices)
   ii) \( P_x \times P_y + P_y \times Q_y = \)
   iii) \( M \) (Money spent is equal to income)

3. What is the difference between cardinal and ordinal utility analysis.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Cardinal Utility</th>
<th>Ordinal Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Given by Prof. Alfred Marshall</td>
<td>Given by Prof. J.R. Hicks</td>
</tr>
<tr>
<td>2</td>
<td>Utility can be measured numerically</td>
<td>It cannot be measured numerically</td>
</tr>
<tr>
<td>3</td>
<td>Unit of measurement is ‘utils’</td>
<td>Possible for a consumer to scale his preferences.</td>
</tr>
</tbody>
</table>

4. Explain any three determinants of demand for a commodity.

   **Ans**: Following are the three determinants of demand for a commodity.
   i) **Price of the commodity**: When the price of a commodity increases the demand for that commodity decreases and vice versa.
   ii) **Income of the consumer**: When the income increases the demand for that commodity also increases and vice-versa.
   iii) **Price of related goods**:
      a) In complementary goods demand rises with fall in price.
      b) In substitute goods demand for a commodity falls with a fall in the price of other substitute goods.

5. Draw a) perfectly elastic demand curve, b) perfectly in-elastic demand curve and c) unitary elastic demand curve.

   **Ans**: a) perfectly in-elastic demand

   ![Perfectly Inelastic Demand Curve](image1)

   b) perfectly elastic

   ![Perfectly Elastic Demand Curve](image2)
6. Explain any four factors that affect elasticity of demand.

Ans: Following are the factors affecting price elasticity of demand.

a) Nature of the commodity.
b) Level of income.
c) Availability of substitutes.
d) Tastes and preferences.
e) Possibility of postponement of use.
f) Various uses of the commodity.

HOTS

1. Is the demand for the following elastic, moderate elastic, highly elastic? Give reasons.

   (i) Demand for petrol
   (ii) Demand for text books
   (iii) Demand for cars
   (iv) Demand for milk

Ans: -

i) Demand for petrol is moderately elastic, because when the price of the petrol goes up, the consumer will reduce the use of it.

ii) Demand for text books is completely inelastic. In case of text books, even a substantial change in price leaves the demand unaffected.

iii) Demand for cars is elastic. It is a luxury good, when the price of the car rises, the demand for the car comes down.

iv) Demand for milk is elastic, because price of the milk increases then the consumer purchase less quantity milk.

2. What is the relationship between slope and elasticity of a demand curve?

   Ans: - The formula of Ed is Ed = ΔQ / ΔP * P / Q

   The formula for the slope of the demand curve is, slope = ΔP / ΔQ

   The relationship between slope and elasticity of demand is, Ed = 1 / slope * P/Q
6 MARK QUESTIONS

3. How is equilibrium achieved with the help of indifference curve analysis?
   Ans: a) definition: In the indifference curve approach, consumer’s equilibrium is achieved at the point at which budget line just touches a particular indifference curve, i.e. the point, at which the budget line is tangent to a particular indifference curve. This is the point of maximum satisfaction.
   
   b) Diagram:

   c) Diagram Explanation:
      i) ‘AB’ is the budget line.
      
      ii) It is sure that consumer’s equilibrium will lie on some point on ‘AB’
      
      iii) Indifference map (set of IC1, IC2, IC3) shows consumers scale of preferences between different combinations of good ‘x’ and good ‘y’
      
      iv) Consumers equilibrium will achieve where budget line (AB) is tangent to the IC2.
      
   d) Essential conditions for consumers equilibrium:
      
      i) Budget line must be tangent to indifference curve i.e., MRS $xy = P_x / P_y$
      
      ii) Indifference curve must be convex to the origin.
      
   e) Consumers cannot achieve the following:
      
      i) P and ‘r’ points on budget line give satisfaction, but, choosing point ‘q’ puts him on a higher IC gives more satisfaction.
      
      ii) He cannot move on IC3, as it is beyond his money income.

4. Explain the effect of the following on the market demand of a commodity.
   a. Change in price of related goods
   b. Change in the number of its buyers.
   
   Ans: i) Meaning: Market demand is the aggregates of the quantities demanded by all the consumers in the market at different prices.
ii) Factors affecting market demand:

a) Price of the commodity: When the price goes up demand for its falls and vice-versa.
b) Income of the consumers: When the income of the consumers goes up the demand for a commodity also goes up.
c) Price of related goods:
   i) Complementary goods: The demand for a commodity rises with a fall in the price of its complementary good (Car and petrol)
   ii) Substitute goods: Demand for a commodity falls with a fall in the price of other substitute good (Tea & Coffee).
d) Tastes and preferences: Any favourable change in consumers’ tastes will lead to increase in market demand and any unfavourable change in consumers' tastes will lead to decrease in market demand.
e) Consumer’s group: More the consumers more will be market demand and vice-versa.

5. Explain the various degrees of price elasticity of demand with the help of diagrams.

   Ans:- There are five degrees of price elasticity of demand. They are,
   a) Perfectly elastic demand (Ed=∞): a slight or no change in the price leads to infinite changes in the quantity demanded.
   b) Perfectly Inelastic demand (Ed=0): Demand of a commodity does not change at all irrespective of any change in its price.
   c) Unitary elastic demand (Ed=1): When the percentage change in demand (%) of a commodity is equal to the percentage change in price.
   d) Greater than unitary elastic demand (Ed>1): When percentage change in demand of a commodity is more than the percentage change in its price.
   e) Less than unitary elastic demand (Ed<1): When percentage change in demand of a commodity is less than the percentage change in its price.

   Diagrams

   ![Diagram of various degrees of price elasticity of demand]
6. Derive the total utility schedule from the marginal utility.

<table>
<thead>
<tr>
<th>Units consumed</th>
<th>Marginal utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

7. A consumer buys 50 units of a good at Rs. 4/- per unit. When its price falls by 25 percent its demand rises to 100 units. Find out the price elasticity of demand.

Ans: Ed=4

8. Price elasticity of demand for wheat is equal to unity and a household demands 40 Kg of wheat when the price is Rs.1 per Kg. At what price will the household demand 36 kg of wheat?

Ans: The price of wheat rises to Rs.1.10 per Kg.

9. The quantity demanded of a commodity at a price of Rs.10 per unit is 40 units. Its price elasticity of demand is -2. Its price falls by Rs.2/- per unit. Calculate its quantity demanded at the new price.

Ans: 56 units.
UNIT 3

PRODUCER BEHAVIOUR AND SUPPLY

Basic concepts to be studied under this unit.

Production function: refers to the functional relationship between inputs and output for a given state of technology.

\[ O_x = f(i_1, i_2, \ldots, i_n) \]

Where,
- \( O_x \) = output of a commodity
- \( f \) = functional relationship
- \( i_1, i_2, \ldots, i_n \) = ‘n’ number of inputs required to produce output of \( x \).

Time period, can be classified as,
1. Very short period or market period
2. Short period / short run
3. Long period / long run

Market period: is that period where supply / output cannot be altered or changed.

Short period / run: is that period where supply / output can be altered / changed by changing only variable factors of production. In other words fixed factors of production remain fixed.

Long period: is that period where all factors of production are changed to bring about changes in output / supply. No factor is fixed.

Difference between short run & long run:

<table>
<thead>
<tr>
<th>Basis</th>
<th>Short Run</th>
<th>Long Run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning</td>
<td>Only variable factors are changed</td>
<td>All factors are changed</td>
</tr>
<tr>
<td>Price Determination</td>
<td>Demand is active.</td>
<td>Both demand &amp; supply play an important role.</td>
</tr>
<tr>
<td>Classification</td>
<td>Factors are classified as fixed &amp; variable.</td>
<td>All factors are variable.</td>
</tr>
</tbody>
</table>

Fixed factors: These factors remain fixed or cannot be changed in the short run.

Variable factors: These factors are varied to bring about changes in output.

Concept of product: - Refers to volume of goods produced by a firm or an industry during a specific period of time.

Concepts of product:
Total Product: Total quantity of goods produced by a firm / industry during a given period of time with given number of inputs.
Average product = output per unit of variable input.

APP = TPP / units of variable factor

Average product is also known as average physical product.

Marginal product (MP): refers to addition to the total product, when one more unit of variable factor is employed.

\[ MP_n = TP_n - TP_{n-1} \]

\[ MP_n = \text{Marginal product of } n\text{th unit of variable factor} \]

\[ TP_n = \text{Total product of } n\text{ units of variable factor} \]

\[ TP_{n-1} = \text{Total product of } (n-1)\text{ unit of variable factor}. \]

\[ n=\text{no. of units of variable factor} \]

\[ MP = \frac{\Delta TP}{\Delta n} \]

We derive TP by summing up MP

\[ TP = \sum MP \]

**LAW OF VARIABLE PROPORTION OR RETURNS TO A VARIABLE FACTOR**

**Statement of law of variable proportion:** In short period, when only one variable factor is increased, keeping other factors constant, the total product (TP) initially increases at an increasing rate, then increases at a decreasing rate and finally TP decreases.

**Explanation of law of variable proportion with a schedule and a diagram**

Schedule of Law of variable proportion

<table>
<thead>
<tr>
<th>Fixed factor</th>
<th>Variable factor</th>
<th>Total product</th>
<th>Marginal product</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land in acres</td>
<td>Labour</td>
<td>Units</td>
<td>Units</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>-</td>
<td>I - Increasing returns to a factor</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>15</td>
<td>10</td>
<td>II - diminishing returns to a factor</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>30</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>40</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5</td>
<td>45</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6</td>
<td>45</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>40</td>
<td>-5</td>
<td>III - Negative returns to a factor</td>
</tr>
</tbody>
</table>
Phase I / Stage I / Increasing returns to a factor
- TPP increases at an increasing rate
- MPP also increases.

Phase II / Stage II / Diminishing returns to a factor
- TPP increases at decreasing rate
- MPP decreases / falls
- This phase ends when MPP is zero & TPP is maximum

Phase III / Stage III / Negative returns to a factor
- TPP diminishes / decreases
- MPP becomes negative.

Reasons for increasing returns to a factor
- Better utilizations of fixed factor
- Increase in efficiency of variable factor.
- Indivisibility of factors.
- Reasons for diminishing returns to a factor.
- Optimum combination of factors
- Imperfect substitutes.
Reasons for negative returns to a factor

- Limitation of fixed factors
- Poor coordination between variable and fixed factor
- Decrease in efficiency of variable factors.

Relation between MPP / MP – TPP / TP

- As long as MPP increases TPP increases at an increasing rate
- When MPP decreases TPP increases diminishing rate.
- When MPP is Zero, TPP is maximum
- When MPP is negative, TPP starts decreasing

Short answer questions and Long answer questions

1. What is meant by production?
   Ans: Transformation of Input into Output.

2. What will be MP when TP is maximum?
   Ans: MP will be zero.

3. Define market period, Short run & Long run.
   Ans: Refer time period.

4. Explain the law of variable proportions with the help of a schedule and a diagram
   6 Marks

5. What are the reasons for
   a) Increasing returns to a factor
   b) Diminishing returns to a factor
   c) Negative returns to a factor
   6 Marks

6. Explain the difference between MPP & TPP.
   4 Marks

HOTS

Giving reasons, state whether the following statements are true or false:

1. When there are diminishing returns to a factor, total product always decreases.
   Ans: False, as TPP increases at a decreasing rate when there is diminishing returns to a factor.

2. TPP increases only when MPP increases.
   Ans: False, TPP also increases when MPP decreases but remains positive.

3. Increase in TPP always indicates that there are increasing returns to a factor.
   Ans: False. TPP increases even when there are diminishing returns to a factor.

4. When there are diminishing returns to a factor marginal and total products always fall.
   Ans: False, only MPP falls, not TPP. In case of diminishing returns to a factor, TPP increases at diminishing rate.
5. Calculate MP for the following.

<table>
<thead>
<tr>
<th>Variable factor unit</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP unit</td>
<td>0</td>
<td>5</td>
<td>13</td>
<td>23</td>
<td>28</td>
<td>28</td>
<td>24</td>
</tr>
</tbody>
</table>

Ans :- MP: 0 5 8 10 5 0 -4

**COST**

**Cost of production**: Expenditure incurred on various inputs to produce goods and services.

**Cost function**: Functional relationship between cost and output.

\[ C = f(q) \]

Where \( c = \) cost of production
\( q = \) quantity of product
\( f = \) functional relationship

**Money cost**: Money expenses incurred by a firm for producing a commodity or service.

**Explicit cost**: Actual payment made on hired factors of production. For example wages paid to the hired labourers, rent paid for hired accommodation, cost of raw material etc.

**Implicit cost**: Cost incurred on the self-owned factors of production.
For example, interest on owners capital, rent of own building, salary for the services of entrepreneur etc.

**Opportunity cost**: is the cost of next best alternative foregone / sacrificed.

**Fixed cost**: are the cost which are incurred on the fixed factors of production.

These costs remain fixed whatever may be the scale of output. These costs are present even when the output is zero.

These costs are present in short run but disappear in the long run.

**Numerical example of fixed cost**

<table>
<thead>
<tr>
<th>Output</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>TFC</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

TFC = Total Fixed Cost
TFC is also called as “overhead cost”, “supplementary cost”, and “unavoidable cost”.

**Total Variable Cost** : TVC or variable cost – are those costs which vary directly with the variation in the output. These costs are incurred on the variable factors of production.

These costs are also called “prime costs”, “Direct cost” or “avoidable cost”.

These costs are zero when output is zero.

Numerical example,

<table>
<thead>
<tr>
<th>Output</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>TVC</td>
<td>0</td>
<td>10</td>
<td>16</td>
<td>25</td>
<td>38</td>
<td>55</td>
</tr>
</tbody>
</table>

**Diagrammatic presentation of TVC**

**Difference between TVC & TFC**

<table>
<thead>
<tr>
<th>Basis</th>
<th>TVC</th>
<th>TFC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaning</td>
<td>Vary with the level of output</td>
<td>Do not vary with the level of output</td>
</tr>
<tr>
<td>Time period</td>
<td>Can be changed in short period</td>
<td>Remain fixed in short period</td>
</tr>
<tr>
<td>Cost at zero output</td>
<td>Zero</td>
<td>Can never be zero</td>
</tr>
<tr>
<td>Factors of production</td>
<td>Cost incurred on all variable factors</td>
<td>Cost incurred on fixed factors of production</td>
</tr>
<tr>
<td>Shape of the cost curve</td>
<td>Upward sloping</td>
<td>Parallel to x axis</td>
</tr>
</tbody>
</table>
Total cost: is the total expenditure incurred on the factors and non-factor inputs in the production of goods and services.

It is obtained by summing TFC and TVC at various levels of output.

**Relation between TC, TFC and TVC**

1. TFC is horizontal to x axis.
2. TC and TVC are inversely, S shaped (they rise initially at a decreasing rate, then at a constant rate & finally at an increasing rate) due to law of variable proportions.
3. At zero level of output TC is equal to TFC.
4. TC and TVC curves parallel to each other.

\[ \text{TC} = \text{TFC} + \text{TVC} \]
\[ \text{TFC} = \text{TC} - \text{TVC} \]
\[ \text{TVC} = \text{TC} - \text{TFC} \]

Average cost: are the “cost per unit” of output produced.

Average fixed cost is the per unit fixed cost of production.

\[ \text{AFC} = \frac{\text{TFC}}{Q} \]

AFC declines with every increase in output. It’s a rectangular hyperbola. It goes very close to x axis but never touches the x axis as TFC can never be zero.

Average variable cost is the cost per unit of the variable cost of production.

\[ \text{AVC} = \frac{\text{TVC}}{\text{output}} \]

AVC falls with every increase in output initially. Once the optimum level of output is reached AVC starts rising.

Average total cost (ATC) or Average cost (AC): refers to the per unit total cost of production.

\[ \text{ATC} = \frac{\text{TC}}{\text{Output}} \]
\[ \text{AC} = \text{AFC} + \text{AVC} \]
Phases of AC

I phase: When both AFC and AVC fall, AC also fall.
II phase: When AFC continues to fall, AVC remaining constant AC falls till it reaches minimum.
III phase: AC rises when rise in AVC is more than fall in AVC.

**Important observations of AC, AVC & AFC**

1. AC curve always lie above AVC (because AC includes AVC & AFC at all levels of output).
2. AVC reaches its minimum point at an output level lower than that of AC because when AVC is at its minimum AC is still falling because of fall in AFC.
3. As output increases, the gap between AC and AVC curves decreases but they never intersect.

**Marginal cost**: refers to the addition made to total cost when an additional unit of output is produced.

\[ MC_n = TC_n - TC_{n-1} \]

\[ MC = \Delta TC / \Delta Q \]

Note: MC is not affected by TFC.

**Relationship between AC and MC**

- Both AC & MC are derived from TC
- Both AC & MC are “U” shaped (Law of variable proportion)
- When AC is falling MC also falls & lies below AC curve.
- When AC is rising MC also rises & lies above AC
- MC cuts AC at its minimum where MC = AC

**Important formulae at a glance**

1. TFC = TC – TVC or TFC=AFC x output or TFC = TC at 0 output.
2. TVC = TC – TFC or TVC = AVC x output or TVC = \(\Sigma\) MC
3. TC = TVC + TFC or TC = AC x output or TC = \(\Sigma\) MC + TFC
4. MC\(_n\) = TC\(_n\) – TC\(_{n-1}\) or MC\(_n\) = TVC\(_n\) – TVC\(_{n-1}\)
5. AFC = TFC / Output or AFC = AC-AVC or ATC – AVC
6. AVC = TVC / Output or AVC = AC-AFC
7. AC = TC / Output or AC=AVC + AFC

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Short answers and Long Answer questions:
1. What is cost of production?
2. Define cost function.
3. What are money costs?
4. Distinguish between explicit and implicit costs.
5. How do you define an opportunity cost?
6. What difference you find between fixed and variable costs?
7. Why the fixed cost curve is a horizontal straight line to the X axis?
8. Why variable costs are are variable?
9. What is average cost? How do you derive it?
10. Explain AVC, AFC & ATC and explain the relationship between these costs.
11. Explain the relationship TC, TFC & TVC.
12. With a diagram describe the various phases of AC.
13. Bring out the relationship between AC & MC

**HOTS**

1. Why AFC curve never touches ‘x’ axis though lies very close to x axis?
   Ans: - Because TFC can never be zero.
2. Why AVC and AFC always lie below AC?
   Ans: AC is the summation of AVC & AFC so AC always lies above AVC & AFC.
3. Why TVC curve start from origin?
   Ans: TVC is zero at zero level of output.
4. When TVC is zero at zero level of output, what happens to TFC or Why TFC is not zero at zero level of output?
   Ans: Fixed cost are to be incurred even at zero level of output.

**Revenue**

Revenue: Money received by a firm from the sale of a given output in the market.

Total Revenue: Total sale receipts or receipts from the sale of given output.

\[ TR = \text{Quantity sold} \times \text{Price} \quad \text{(or) output sold} \times \text{price} \]

Average Revenue: Revenue or Receipt received per unit of output sold.

- \[ AR = \frac{TR}{\text{Output sold}} \]
- AR and price are the same.
- \[ TR = \text{Quantity sold} \times \text{price or output sold} \times \text{price} \]
- \[ AR = \frac{\text{(output / quantity} \times \text{price})}{\text{Output / quantity}} \]
- AR= price

AR and demand curve are the same. Shows the various quantities demanded at various prices.
Marginal Revenue: Additional revenue earned by the seller by selling an additional unit of output.

- \( MR_n = TR_n - TR_{n-1} \)
- \( MR_n = \Delta TR_n / \Delta Q \)
- \( TR = \Sigma MR \)

Relationship between AR and MR (when price remains constant or perfect competition)

Under perfect competition, the sellers are price takers. Single price prevails in the market. Since all the goods are homogeneous and are sold at the same price AR = MR. As a result AR and MR curve will be horizontal straight line parallel to OX axis. (When price is constant or perfect competition)

Relation between TR and MR (When price remains constant or in perfect competition)

When there exists single price, the seller can sell any quantity at that price, the total revenue increases at a constant rate(MR is horizontal to X axis)
Relationships between AR and MR under monopoly and monopolistic competition (Price changes or under imperfect competition)

- AR and MR curves will be downward sloping in both the market forms.
- AR lies above MR.
- AR can never be negative.
- AR curve is less elastic in monopoly market form because of no substitutes.
- AR curve is more elastic in monopolistic market because of the presence of substitutes.

Relationship between TR and MR. (When price falls with the increase in sale of output)

- Under imperfect market AR will be downward sloping – which shows that more units can be sold only at a less price.
- MR falls with every fall in AR / price and lies below AR curve.
- TR increases as long as MR is positive.
- TR falls when MR is negative.
- TR will be maximum when MR is zero.
**Break-even point:** It’s that point where TR = TC or AR = AC. Firm will be earning normal profit.

**Shut down point:** A situation when a firm is able to cover only variable costs or TR = TVC

**Formulae at a glance:**

- TR = price or AR \times Output sold or TR = \sum MR
- AR (price) = TR ÷ units sold
- MR_n = MR_n - MR_{n-1}

**HOTS**

1. Can MR be negative or zero.
   
   **Ans:** Yes, MR can be zero or negative.

2. If all units are sold at the same price how will it affect AR and MR?
   
   **Ans:** AR and MR will be equal at levels of output

3. What is price line?
   
   **Ans:** Price line is nothing but AR line and is horizontal to X-axis in perfect competition.

4. Can TR be a horizontal straight line?
   
   **Ans:** Yes, when MR is zero.

5. What do you mean by revenue?

6. Explain the concept of revenue (TR, AR and MR)

7. Define AR

8. Prove that AR = price
9. Prove that AR is nothing but demand curve
10. Explain the relationships between AR and MR when price is constant and when price falls.
11. Explain the relationships between TR and MR when price is constant.
12. What is break-even point? Explain with a diagram.
13. When the situation of ‘shut–down’ point arises for a firm?
14. What happens to TR when a) MR is increasing, b) decreasing but remains positive and c) MR is negative?
   Ans:- a) TR increases at an increasing rate.
   b) TR increases at a diminishing rate.
   c) TR decreases.
15. Why AR is more elastic in monopolistic competition than monopoly?
   Ans:- Monopolistic competition market has close substitutes. Monopoly market does not have close substitutes.
16. Why TR is 45° angle in perfect competition market?
   Ans:- In perfect competition market the goods are sold at the same price so AR= MR and the TR increases at a constant rate.
17. Can there be Break-even point with AR = AC
   Ans:- Yes there can be break even point with AR=AC.
UNIT – IV

FORMS OF MARKET AND PRICE DETERMINATION

MARKET: Market is a mechanism in which buyers and sellers come into contact for the purchase and sale of goods and services.

Market structure: refers to number of firms operating in an industry, nature of competition between them and the nature of product.

Types of market on the basis of competition

a) Perfect competition.
b) Monopoly.
c) Monopolistic Competition.
d) Oligopoly.

ea) Perfect competition: refers to a market situation in which there are large number of buyers and sellers. Firms sell homogeneous products at a uniform price.

b) Monopoly market: Monopoly is a market situation dominated by a single seller who has full control over the price.

c) Monopolistic competition: It refers to a market situation in which there are many firms sell closely related but differentiated products.

d) Oligopoly is a market structure in which there are few sellers of a commodity and large number of buyers.

e) Duopoly: refers to a market situation where there are only two sellers/producers selling a commodity

Features of perfect competition:

1. Very large number of buyers and sellers.
2. Homogeneous product.
3. Free entry and exit of firms.
4. Perfect knowledge.
5. Perfect mobility of factors of production.
6. Absence of transportation cost.
7. Absence of selling cost.

Features of monopoly:

1. Single seller of a commodity.
2. Absence of close substitute of the product.
3. Difficulty of entry of a new firm.
4. Negatively sloped demand curve.
5. Full control over price.
6. Price discrimination exists
Features of monopolistic competition

1. Large number of buyers and sellers but less than perfect competition.
2. Product differentiation.
3. Freedom of entry and exit.
4. Selling cost.
5. Lack of perfect knowledge.
6. High transportation cost.
7. Partial control over price.

Main features of Oligopoly.

1. Few dominant firms.
3. Barrier to entry.
4. Homogeneous or differentiated product.
5. Price rigidity.

Features of pure competition

1. Large number of buyers and sellers.
2. Homogeneous products.
3. Free entry and exit of firm.

Equilibrium: It means a position of rest there is no tendency to change.

Market equilibrium: It means equality between quantity demanded and quantity supplied of a commodity in the market.

Equilibrium price: This is the price at which market demand of a commodity is exactly equal to the market supply.

Market demand: It refers to the sum total demand for a commodity by all buyers in the market.

Market supply: It refers to supply of a commodity by all the firms in the market.

Very short answer questions

1. Define perfect competition
   Ans: Perfect competition is a market with large number of buyers and sellers, selling homogeneous product at same price.

2. Define monopoly.
   Ans: Monopoly is a market situation dominated by a single seller who has full control over the price.

3. Define monopolistic competition.
   Ans: It refers to a market situation in which many buyers and sellers selling differentiated product and have partial control over the price.
4. Under which market form firm is a price maker?

Ans:- Perfect competition

5. What are selling cost?

Ans:- Cost incurred by a firm for the promotion of sale is known as selling cost.

6. What is oligopoly?

Ans:- Oligopoly is defined as a market structure in which there are few sellers of the commodity.

7. In which market form is there product differentiation?

Ans:- Monopolistic competition market

8. What is product differentiation?

Ans: It means close substitutes offered by different producers to show their output differ from other output available in the market. Differentiation can be in color, size packing, brand name etc to attract buyers.

9. What do you mean by patent rights?

Ans:- Patent rights is an exclusive right or license granted to a company to produce a particular output under a specific technology.

10. What is price discrimination?

Ans: - It refers to charging of different prices from different consumers for different units of the same product.

11. What is the shape of marginal revenue curve under monopoly?

Ans:- Under monopoly market MR curve is downwards sloping curve form left to right and it lies below the AR curve.

12. What do you mean by abnormal profits?

Ans:- It is a situation for the firm when TR > TC.

13. Why AR is equal to MR under perfect competition?

Ans:- AR is equal to MR under perfect competition because price is constant.
14. What are advertisement costs?
Ans:- Advertisement cost are the expenditure incurred by a firm for the promotion of its sales such as publicity through TV, Radio, Newspaper, Magazine etc.

15. What is short period?
Ans:- Short period refers to that much time period when quantity of output can be changed only by changing the quantity of variable input and fixed factors remaining same.

16. Define long period.
Ans:- Long period refers to that much time period available to a firm in which it can increase its outputs by changing its fixed and variable inputs.

17. What is market period?
Ans: Market period is defined as a very short time period in which supply of commodity cannot be increased.

18. What is meant by normal profit?
Ans:- Normal profit is the minimum amount of profit which is required to keep an entrepreneur in production in the long run.

19. What is break-even price?
Ans:- In a perfectly competitive market, break-even price is the price at which a firm earn normal profit (Price=AC). In the long run, Break-even price is that price where P=AR=MC

Short Answer Questions: (3 / 4 Marks)

1. Explain any four characteristics of perfect competition market.
Ans:- i) Large number of buyers and sellers: The number of buyers and sellers are so large in this market that no firm can influence the price.
   ii) Homogeneous products: Products are uniform in nature. The products are perfect substitute of each other. No seller can charge a higher price for the product. Otherwise he will lose his customers.
   iii) Perfect knowledge: Buyers as well as sellers have complete knowledge about the product.
   iv) Free entry and exit of firm: Under perfect competition any firm can enter or exit in the market at any time. This ensures that the firms are neither earning abnormal profits nor incurring abnormal losses.

2. Explain briefly why a firm under perfect competition is a price taker not a price maker?
Ans:- A firm under perfect competition is a price taker not a price maker because the price is determined by the market forces of demand of supply. This price is known as equilibrium price. All the firms in the industry have to sell their outputs at this equilibrium price. The reason is that, number of firms under perfect competition is so large. So no firm can influence the price by its supply. All firms produce homogeneous product.
3. Distinguish between monopoly and perfect competition.
Ans:-

<table>
<thead>
<tr>
<th>Perfect Competition</th>
<th>Monopoly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very large number of buyers and sellers.</td>
<td>Single seller of the product.</td>
</tr>
<tr>
<td>Products are homogenous</td>
<td>Product has no close substitute</td>
</tr>
<tr>
<td>Firm is the price taker and not a maker</td>
<td>Firm is price maker not price taker</td>
</tr>
<tr>
<td>Price is uniform in the market ie price =AC</td>
<td>Due to price discrimination price is not uniform.</td>
</tr>
<tr>
<td>Free entry and exit of firms.</td>
<td>Very difficult entry of new firms.</td>
</tr>
</tbody>
</table>

4. Which features of monopolistic competition are monopolistic in nature?
Ans:- i) Product differentiation  
   ii) Control over price  
   iii) Downward sloping demand curve

5. What are the reasons which give emergence to the monopoly market?
Ans:-

   i) Patent Rights: Patent rights are the authority given by the government to a particular firm to produce a particular product for a specific time period.
   ii) Formation of Cartel: Cartel refers to a collective decision taken by a group of firms to avoid outside competition and securing monopoly right.
   iii) Government licensing: Government provides the license to a particular firm to produce a particular commodity exclusively.
6. Explain the process of price determination under perfect competition with the help of schedule and a diagram.

Ans:- Equilibrium price is that price which is determined by market forces of demand and supply. At this price both demand and supply are equal to each other. Diagrammatically it is determined at the point where demand curve and supply curve intersect each other. At this point price is known as equilibrium price and quantity is known as equilibrium quantity.

<table>
<thead>
<tr>
<th>Price (Rs.)</th>
<th>M.D (Units)</th>
<th>M.S (Units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

7. When will equilibrium price not change even if demand and supply increase?

Ans:- When proportionate increase in demand is just equal to proportionate increase in supply. Equilibrium price will not change. It can be shown in the following diagrams.
In the above diagram increase in demand is just equal to increase in supply. Demand curve shift from D to \( D_1 \) and supply curve shift from \( S \) to \( S_1 \) which intersect at point \( E \). Thus equilibrium price remain unchanged at \( OP \) though equilibrium quantity increased from \( OQ \) to \( OQ_1 \).

8. How does increase in price of substitute goods in consumption affect the equilibrium price of a good? Explain with a diagram.

Ans:- An increase in price of substitute goods (coke) will cause increase in demand for its related goods (Pepsi). The demand curve for Pepsi will shift to the right side. The supply curve of Pepsi remains the same. It will lead to an increase in equilibrium price of Pepsi and increase in quantity also.

Result: Price increases from \( OP \) to \( OP_1 \). Quantity demand increases from \( OQ \) to \( OQ_1 \).

9. How does the equilibrium price of a normal commodity change when income of its buyers falls? Explain the chain effects.

Ans:-

- When income falls demand falls
- Supply remaining unchanged. There is excess supply at a given price
- This leads to competition among sellers to reduce the price.
- As a result demand starts rising and supply starts falling.
- These changes continue till a new equilibrium price is established where demand equal supply.
- Equilibrium price falls.
10. Why is the demand curve facing monopolistically competitive firm likely to be very elastic?

Ans:- It is because the product produced by monopolistically competitive firms are close substitute to each other. If the products are closer substitutes to each other the elasticity of demand is high which makes the firm demand curve is elastic.

11. Show with the help of diagram the effect on equilibrium price and quantity when supply is perfectly inelastic and demand increases and decreases?

Ans:-

When supply is perfectly inelastic and demand increases. Demand curve shift to towards right. The new demand curve D1 intersects the supply curve at point E1.

Result : Price increases from OP to OP1 and quantity demand remains unchanged.

In the above diagram demand curve shift left wards from D to D1 Price falls from OP to OP1 , but quantity remains same.
12. Explain the implication of free entry and free exit of a firm in perfect competitive market.

Ans: - If there is free entry and free exit of firms, then no firm can earn abnormal profit in the long run (firm earn zero abnormal profit). Each firm earns just normal profit.

LONG ANSWER QUESTIONS (6 MARKS)

1. Equilibrium price may or may not change with shifts in both demand and supply curve. Comment.

Ans: - There can be 3 situations of a simultaneous right wards shift of supply curves and demand curves.

i) When demand increases more than supply price and quantity both will increase.

When increase in demand is more than increase in supply price increases from OP to OP1. Quantity increases from OM to OM1. Increase in price is less than increase in quantity.

ii) When demand increases less than supply, price will fall but quantity will rise.
When supply increases more than demand price falls from OP to OP1 and quantity demand increases from OM to OM1. Decrease in price is less than increase in quantity.

i) When demand and supply increases equally then equilibrium price remain same.

When increase in demand is equal to increase in supply price remains unchanged at OP. Quantity exchanged increases from OQ to OQ1.

2. Distinguish between collusive and non-collusive oligopoly. Explain the following features of oligopoly.
   a) Few firms.
   b) Non-price competition.

Ans:- Collusive oligopoly is one in which the firm cooperate with each other in deciding price and output.

Non collusive oligopoly is one in which firms compete with each other.

Few firms: There are few sellers of the commodity and each seller sells a substantial portion of the output of the industry. The number of firm is so small that each seller knows that he can influence the price by his own action and that he can provoke rival firms to react.

Non price competition: The firms are afraid of competition through lowering the price because it may start price war. Therefore they complete through the non price factors like advertising, after sales service etc.
3. With the help of demand and supply schedule explain the meaning of excess demand and its effects on price of a commodity.

**Ans:**

<table>
<thead>
<tr>
<th>Price(Rs.)</th>
<th>Market demand (in kg.)</th>
<th>Market supply(in kg.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>50</td>
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</table>

The above schedule shows market demand and market supply of the commodity at different prices. At the price of 7 and 6 the market demand is greater than market supply. This is the situation of excess demand. There will be competition among the buyers resulting in a rise in price. Rise in price will result in fall in market demand and rise in market supply. This reduces the excess demand. These changes continue till the price rises to Rs. 8 at which excess demand is zero. The excess demand results in a rise in price of the commodity.

4. Market for a good is in equilibrium. There is increase in demand for the goods. Explain the chain effect of this change.

**Ans:**

- Increase in demand shift the demand curve from D to D<sub>1</sub> to right leading to excess demand E E<sub>1</sub> at the given price OP.
- There will be competition among buyers leading to rise in price.
- As price rise supply starts rising (along S) demand starts falling.
- These changes continues till D=S at a new equilibrium at E<sub>1</sub>
- The quantity rises to OM to OM<sub>1</sub> and price rises OP to OP<sub>1</sub>
5. Distinguish between monopoly and monopolistic competition.

Ans:- i) Under monopoly there is single seller / producer of the commodity. Whereas under monopolistic competition there are large numbers of sellers, so the firm under monopoly has greater influence over price than under monopolistic competition.

ii) There is freedom of entry of new firms under monopolistic competition where as there is no such freedom under monopoly. As a result a monopolist can earn abnormal profit in the long run.

iii) Under monopolistic competition the product is heterogeneous while under monopoly there is no close substitute of the product.

iv) Demand curve in a monopoly market is less elastic than the demand curve under monopolistic competition because under monopoly there is no close substitute of the product.

HOTS

1. How much loss a firm can bear in the short run?

Ans:- A firm can bear losses up to its total fixed cost in the short run.

2. The firms are earning abnormal profits. Will the number of firms in the industry change?

Ans:- If firms are getting abnormal profit new firms will enter the industry.

3. If firms are making abnormal losses will the number of firms in the industry change?

Ans:- When firms are suffering losses, the number of firms in the industry will decrease as some firms may exit from the industry.

4. Why is demand curve facing a monopolistic competition firm likely to be more elastic?

6. Ans:- In monopolistic competition market the demand curve of a firm is likely to be more elastic, the reason behind this is that all the firm in the industry produce close substitute of each other. If close substitute of any good is available in the market then elasticity of demand is very high because whenever there is a hike in price the consumer will shift to its substitutes. That is why a firm’s demand curve under monopolistic competition is more elastic.

5. Explain how the efficiency may increase if two firms merge.

Ans:- i) When two firms merge then there combined efforts and efficiency brings more output to the firm. Increase in the sale of output and economies of scale can be availed. It leads to division of labour and can get advantage of the specialization. Use of better and advanced technology saves the cost of production.