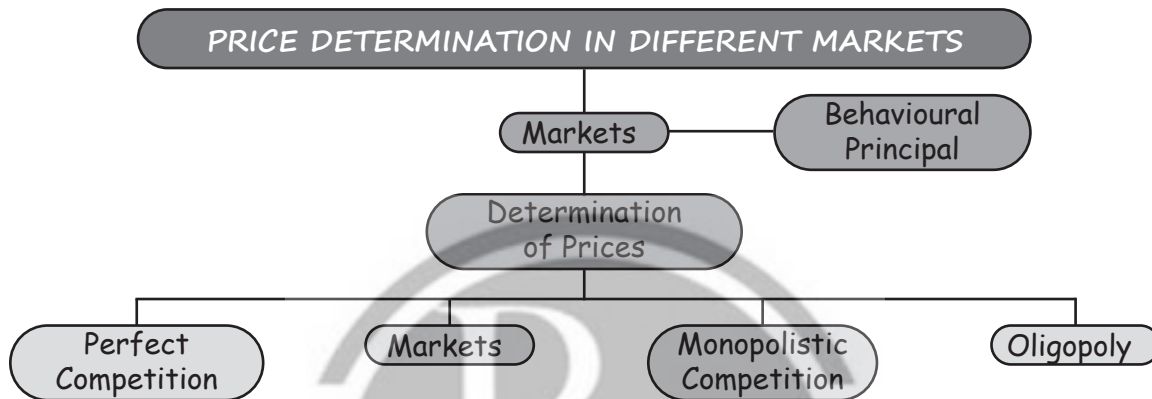


Price Determination in Different Markets

- ❖ Unit 1: *Market Structures: Perfect Competition, Monopoly and Monopolistic Competition. Using Game Theory to study Oligopoly*
- ❖ Unit 2: *Price Determination in Different Markets.*
- ❖ Unit 3: *Price - Output Determination under Different Market Forms.*

Price Determination in Different Markets

CHAPTER OVERVIEW



MEANING OF MARKET



- ❑ A market is a collection of buyers and sellers with the potential to trade.
- ❑ The actual or potential interactions of the buyers and sellers determine the price of a product or service.

- ❑ Market simply as all those buyers and sellers of a good or service who influence price.
- ❑ A market need not be formal or held in a particular place.
- ❑ Second-hand cars are often bought and sold through newspaper advertisements.
- ❑ In the present high tech world, goods and services are effortlessly bought and sold online. As a probability distribution exists only in theory, it is called the theoretical distribution of Probability.

The elements of market are:

- (i) Buyers and sellers; A product or service;
- (ii) Bargaining for a price;
- (iii) Knowledge about market conditions; and
- (iv) One price for a product or service at a given time.

TRY YOUR UNDERSTANDING 4.1.1

1. Market consists of
 - (a) Buyer and Seller
 - (b) One price for one product at a given time
 - (c) Both (a) and (b)
 - (d) None
2. A market is a collection of buyers and sellers with the potential to trade. The elements of a market are:
 - (a) Buyers and sellers
 - (b) A product or service
 - (c) Bargaining for a price
 - (d) Knowledge about market conditions and
 - (e) One price for a product or service at a given time.
3. Which of the following is not an element of a market?
 - (a) Knowledge about market conditions.
 - (b) No bargaining for a price
 - (c) Land
 - (d) Buyer and seller
4. The market is the direct relationship between
 - (a) Buyer and seller
 - (b) Whole seller and retailer
 - (c) Consumer and manufactures
 - (d) None of the above

Answer Key

1. (c) 2. (c) 3. (c) 4. (a)

CLASSIFICATION OF MARKET

Markets are generally classified into product markets and factor markets.

- ❑ **Product markets:** It refers to the market for goods and services in which households buy the goods and services they want from firms. While product markets allocate goods to consumers,

- **Factor markets:** It refers to the market where firms buy the resources they need – land, labour, capital and entrepreneurship factor markets allocate productive resources to producers.

The prices in factor markets are known as factor prices.

ON THE BASIS OF GEOGRAPHICAL AREA

On the basis of geographical area covered, markets are classified into:

1. Local Markets
 2. Regional Markets
 3. National Markets
 4. International Markets
- **Local Markets:** When buyers and sellers are limited to a local area or region, the market is called a local market.
Generally, highly perishable goods and bulky articles, In this case, the extent of the market is limited to a particular locality.
For example, locally supplied services such as those of hair dressers and retailers have a narrow customer base.
 - **Regional Markets:** Regional markets cover a wider area such as a few adjacent cities, parts of states, or cluster of states.
The size of the market is generally large and the nature of buyers may vary in their demand characteristics. For eg. Mekhela Chador (Traditional Assamese Saree) is primarily worn by women in Assam and adjoining areas, Regional movies.
 - **National Markets:** When the demand for a commodity or service is limited to the national boundaries of a country, we say that the product has a national market.
The trade policy of the government may restrict the trading of a commodity within the country.
For example Hindi books may have national markets in India; outside India one may not have market for Hindi books.
 - **International markets:** A commodity is said to have international market when it is exchanged internationally. Usually, high value and small bulk commodities are demanded and traded internationally. For example Gold and Silver are examples of commodities that have international market.
The above classification has become more or less out-dated as we find that in modern days even highly perishable goods have international market.

ON THE BASIS OF TIME

Alfred Marshall conceived the 'Time' element in markets and on the basis of this, markets are classified into:

- **Very short period market:** Market period or very short period refers to a period of time in which supply is fixed and cannot be increased or decreased.

Commodities like vegetables, flowers, fish, eggs, fruits, milk, etc., which are perishable and the supply of which cannot be changed in the very short period come under this category.

Since supply is fixed, very short period price is dependent on demand. An increase in demand will raise the prices vice versa.

- ❑ **Short-period Market:** Short period is a period which is slightly longer than the very short period.

In this period, the supply of output may be increased by increasing the employment of variable factors with the given fixed factors and state of technology.

- ❑ **Long-period Market:** In the long period, all factors become variable and the supply of commodities may be changed by altering the scale of production.

As such, supply may be fully adjusted to changes in demand conditions. The interaction between long run supply and demand determines long run equilibrium price or 'normal price'.

- ❑ **Very long-period or secular period:** Is one when secular movements are recorded in certain factors over a period of time. The period is very long.

The factors include the size of the population, capital supply, supply of raw materials etc.

TRY YOUR UNDERSTANDING 4.1.2

1. Who introduced the time element in economics?
(a) Adam Smith (b) Alfred Marshall
(c) Robert Malthus (d) J.M. Keynes
2. Which commodity is best for the short term period market?
(a) Fruits and Vegetables (b) Automobiles
(c) Electronic goods (d) All of the above
3. Secular period is also known as
(a) Very short period (b) Very long period
(c) Short period (d) Long period

Answer Key

1. (b) 2. (a) 3. (b)

ON THE BASIS OF NATURE OF TRANSACTIONS

- ❑ **Spot or cash Market:** Spot transactions or spot markets refer to those markets where goods are exchanged for money payable either immediately or within a short span of time. For example, grains sold in the Mandi at the current prices and cash is payable immediately are thus part of Spot Market.
- ❑ **Forward or Future Market:** In this market, transactions involve contracts with a promise to pay and deliver goods at some future date. For example, purchase of foreign currency contract at future rate from bank.

ON THE BASIS OF REGULATION

1. *Regulated Market:* transactions are statutorily regulated so as to put an end to unfair practices. Such markets may be established for specific products or for a group of products. For example, stock exchange.
2. *Unregulated Market:* It is also called a free market as there are no stipulations on the transactions. For example. Weekly markets (Haat Bazaar).

ON THE BASIS OF VOLUME OF BUSINESS

1. *Wholesale Market:* The wholesale market is the market where the commodities are bought and sold in bulk or large quantities. Transactions generally take place between traders. i.e. Business to Business (B2B).
2. *Retail Market:* When the commodities are sold in small quantities, it is called retail market. This is the market for ultimate consumers. i.e. Business to Consumer (B2C).

ON THE BASIS OF COMPETITION

Based on the type of competition markets are classified into

1. Perfectly competitive market and
2. Imperfectly competitive market.

We shall study these markets in greater detail.

TRY YOUR UNDERSTANDING 4.13

1. is also called a free market as there are no stipulations on the transactions
(a) Unregulated (b) Regulated (c) Retail (d) Spot
2. In this market, transactions involve contracts with a promise to pay and deliver goods at some future date
(a) Spot market (b) Future market
(d) Unregulated market (c) Retail market
3. On the basis of nature of transaction, a market may be classified into:
(a) Regulated and Unregulated Market
(b) Wholesale and Retail Market
(c) Cash and Forward Market
(d) National and International Market

Answer Key

1. (a) 2. (b) 3. (c)

TYPES OF MARKET STRUCTURES

- ❑ **Perfect Competition:** Perfect competition is characterized by many sellers selling identical products to many buyers.

- ❑ **Monopolistic Competition:** It differs in only one respect, namely, there are many sellers offering differentiated products to many buyers. For example, shampoo manufacturers.
- ❑ **Monopoly:** It is a situation where there is a single seller producing for many buyers. Its product is necessarily extremely differentiated since there are no competing sellers producing products which are close substitutes. For example, Indian Railways.
- ❑ **Oligopoly:** There are a few sellers selling competing products to many buyers. For example, Telecom Industry. Table 1 summarizes the major distinguishing characteristics of these four major market forms.

Markets are generally classified into product markets and factor markets.

Table-1: Distinguishing Features of Major Types of Markets

| Assumption | Market Types | | | |
|--------------------------------------|---------------------|--------------------------|---------------------|-------------------|
| | Perfect Competition | Monopolistic Competition | Oligopoly | Monopoly |
| Number of sellers | Very large | Large | Small numbers | One |
| Product differentiation | None | Slight | None to substantial | Extreme |
| Price elasticity of demand of a firm | Infinite | Large | Small | Small |
| Degree of control over price | None | Some | Some | Very considerable |

Before discussing each market form in greater detail, it is worthwhile to know the concepts of total, average and marginal revenue and the behavioural principles which apply to all market conditions.

CONCEPTS OF TOTAL REVENUE, AVERAGE REVENUE AND MARGINAL REVENUE

- ❑ **Total Revenue:**

$$TR = P \times Q.$$

Where, TR is total revenue

P is price of a commodity sold.

Q is quantity of a commodity sold.

- ❑ **Average Revenue:** Average revenue is the revenue earned per unit of output.

It is nothing but price of one unit of output because price is always per unit of a commodity. For this reason, average revenue curve is also the firm's demand curve.

$$AR = TR/Q$$

$$\text{Or } AR = P \times Q/Q$$

$$\text{Or } AR = P$$

- **Marginal Revenue:** Marginal revenue (MR) is the change in total revenue resulting from the sale of an additional unit of the commodity.

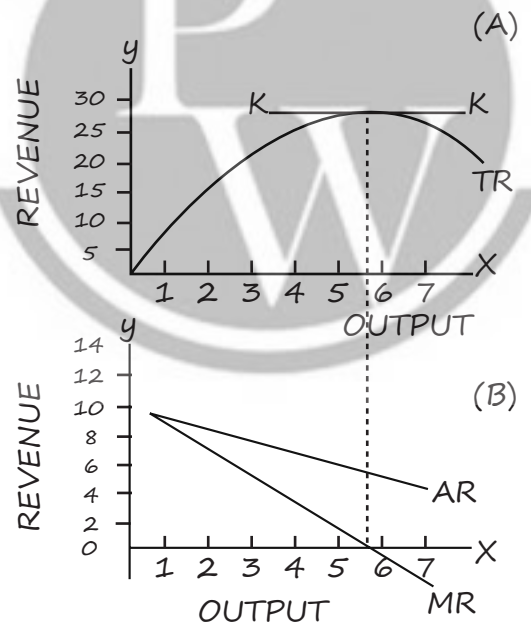
$$MR = \Delta TR / \Delta Q$$

$$MR_n = TR_n - TR_{n-1}$$

n-1

Table-2: Total Revenue, Average Revenue & Marginal Revenue

| Units | Total Revenue | Average Revenue | Marginal Revenue |
|-------|---------------|-----------------|------------------|
| 1 | 10 | 10 | 10 |
| 2 | 18 | 9 | 8 |
| 3 | 24 | 8 | 6 |
| 4 | 28 | 7 | 4 |
| 5 | 30 | 6 | 2 |
| 6 | 30 | 5 | 0 |
| 7 | 28 | 4 | -2 |
| 8 | 24 | 3 | -4 |
| 9 | 18 | 2 | -6 |
| 10 | 10 | 1 | -8 |



MEANING AND TYPES OF MARKETS

Average revenue keeps on falling showing inverse relationship between price and quantity demanded. It represents demand function of X to the firm.

Marginal revenue keeps on falling and after becoming zero it becomes negative.

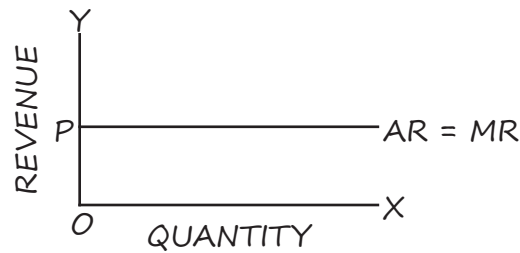
Also note that TR at any particular level of output is the sum of marginal revenues till that level of output which can be expressed as:-

$$TR = \sum MR$$

Price Determination in Different Markets

Marginal revenue is always less than the price.

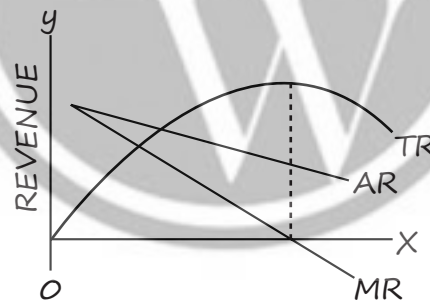
It may be noted that in all forms of imperfect competition, the average revenue curve of an individual firm slopes downwards as in these market forms, when a firm increases the price of its product, its quantity demanded decreases and vice versa. Under perfect competition, however, since the firms are price takers, the average revenue (or price) curve or demand curve is perfectly elastic. Perfectly elastic average revenue curve means that an individual firm has constant average revenue (or price). When price remains constant, marginal revenue will be equal to average revenue and thus AR curve and MR curve will coincide and will be horizontal curves as shown in figure below.



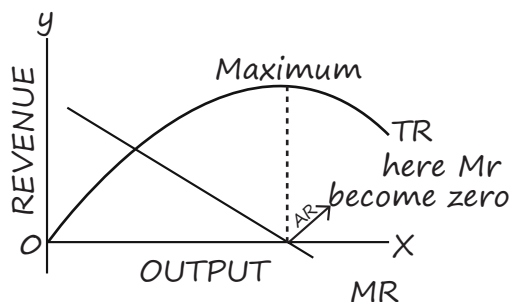
AR and MR Curves under Perfect Competition

TRY YOUR UNDERSTANDING 4.1.4

- When TR is at its peak then MR is equal to-
 - Zero
 - Positive
 - Negative
 - None of the above



- When TR is max, then MR is
 - Zero
 - One
 - Both (a) and (b)
 - None



3. Demand of good increases from 15 units to 16 units if price decreases from ₹ 40 to ₹ 38. What will be MR of 16th units.

- (a) 8 (b) 16
(c) 38 (d) 15

Answer Key

1. (a) 2. (a) 3. (a)

RELATIONSHIP BETWEEN AR, MR, TR AND PRICE ELASTICITY OF DEMAND

It is to be noted that marginal revenue, average revenue and price elasticity of demand are uniquely related to one another through the formula:

$$MR = AR \times \frac{e - 1}{e}$$

Where e = price elasticity of demand

Thus if $e = 1$, $MR = AR \times \frac{0}{1}$ $MR = 0$

and if $e > 1$, MR will be positive and if $e < 1$, MR will be negative.

In a straight line downward falling demand curve, we know that the coefficient of price elasticity at the middle point is equal to one. It follows that the marginal revenue corresponding to the middle point of the demand curve (or AR curve) will be zero. On the upper portion of the demand curve, where the elasticity is more than one, marginal revenue will be positive and on the lower portion of the demand curve where elasticity is less than one, marginal revenue will be negative. These can be shown in diagram :

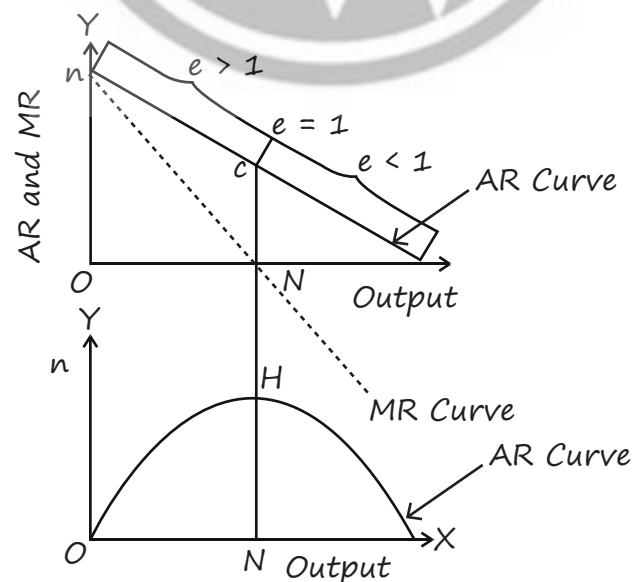


Figure. Relationship between AR, MR, TR and Price Elasticity of Demand

In figure, DD is the AR or demand curve. At point C, elasticity is equal to one. Corresponding to C on the AR curve, the marginal revenue is zero. Thus, MR curve is touching X-axis at N (corresponding to C on the AR curve). At a greater quantity than ON, the elasticity of the AR curve is less than one and the marginal revenue is negative. Negative marginal revenue means MR curve goes below the X-axis to the fourth quadrant. Marginal revenue being negative means that total revenue will diminish if a quantity greater than ON is sold. Total revenue will be rising up to ON output since up to this the marginal revenue remains positive. It follows that total revenue will be maximum where elasticity is equal to one. Thus, TR is shown to be at its highest level at ON level of output (corresponding to the point C on AR curve). Beyond ON Level of output, the TR curve has a negative slope.

TRY YOUR UNDERSTANDING 4.1.5

1. Marginal revenue will be positive where price elasticity of demand is:
 - (a) Zero
 - (b) More than one
 - (c) Less than one
 - (d) Equal to one
2. Demand curve is also known as:
 - (a) MR curve
 - (b) AR curve
 - (c) MC curve
 - (d) MR Reserve
3. Demand for a product is unitary elastic then
 - (a) $MR = 0$
 - (b) $MR > 0$
 - (c) $MR < 0$
 - (d) none of the above

Answer Key

1. (b) 2. (a) 3. (b)

BEHAVIOURAL PRINCIPLES

Principle 1- A firm should not produce at all if its total variable costs are not met.

It is a matter of common sense that a firm should produce only if it will do better by producing than by not producing. The firm always has the option of not producing at all. If a firm's total revenues are not enough to make good even the total variable costs, it is better for the firm to shut down. In other words, a competitive firm should shut down if the price is below AVC. In that case, it will minimise loss because then its total cost will be equal to its fixed costs and it will have an operating loss equal to its fixed cost. The sunk fixed cost is irrelevant to the shutdown decision because fixed costs are already incurred. This means that the minimum average variable cost is equal to the shut-down price, the price at which the firm ceases production in the short run. Shutting down is temporary and does not necessarily mean going out of business.

If price (AR) is greater than minimum AVC, but less than minimum ATC, the firm covers its variable cost and some but not all of fixed cost. If price is equal to minimum ATC, the firm covers both fixed and variable costs and earns normal profit or zero economic profit. If price is greater than minimum ATC, the firm not only covers its full cost, but also earns positive economic profit or super normal profit.

Principle 2 – The firm will be making maximum profits by expanding output to the level where marginal revenue is equal to marginal cost.

In other words, it will pay the firm to go on producing additional units of output so long as the marginal revenue exceeds marginal cost i.e., additional units add more to revenues than

to cost. At the point of equality between marginal revenue and marginal cost, it will earn maximum profits.

The above principle can be better understood with the help of figure 5 which shows a set of hypothetical marginal revenue and marginal cost curves. Marginal revenue curve slopes downwards and marginal cost curve slopes upwards. They intersect each other at point E ($MC = MR$) which corresponds to output Q^* . Up to Q^* level of output, marginal revenue is greater than marginal cost and at output level Q^* they are equal. The firm will be maximizing profits at E (or at Q^* level of output). For all levels of output less than Q^* , additional units of output add more to revenue than to cost (as their MR is more than MC) and thus it will be profitable for the firm to produce them. The firm will be foregoing profit equal to the area EFG if it stops at A. Similarly profits will fall, if a greater output than Q^* is produced as they will add more to cost than to revenues. On the units from Q^* th to Bth, the firm will be incurring a loss equal to the area EHI.

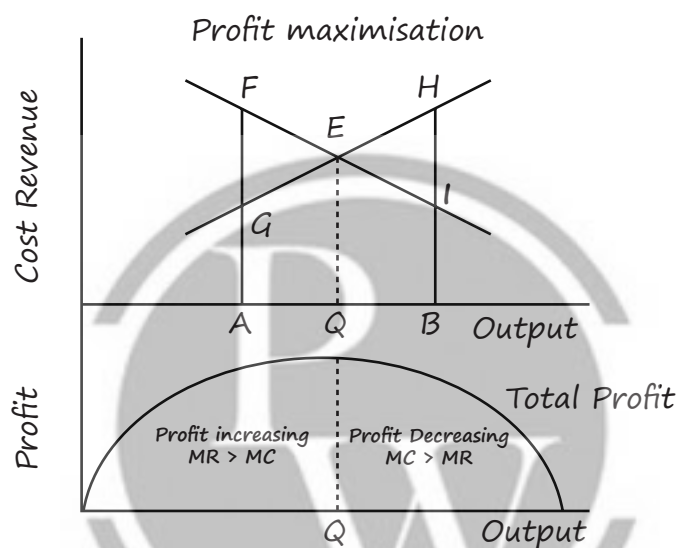


Figure. Equilibrium of the Firm: Maximization of Profits

To conclude, the firm will maximize profits at the point at which marginal revenue is equal to marginal cost.

TRY YOUR UNDERSTANDING 4.1.6

1. According to Behavioural Principles. (1 Mark)
 - (a) a firm should not produce at all if its total variable costs are not met.
 - (b) a firm will be making maximum profits by expanding output to the level where marginal revenue is equal to marginal cost.
 - (c) Both (a) and (b)
 - (d) None of these

Answer Key

1. (c)



Determination of prices

PRICE DETERMINATION

- ❑ Demand and supply interact to strike a balance so that equilibrium price is determined in a free market.
- ❑ But sometimes Government intervenes and determines the price either fully or partially.
- ❑ For example,
- ❑ The Government of India fixes the price of petrol, diesel, kerosene, coal, fertilizers, etc. which are critical inputs.
- ❑ It also fixes the procurement prices of wheat, rice, sugarcane, etc. in order to protect the interests of both producers and consumers.

DETERMINATION OF PRICES – A GENERAL VIEW

In an open competitive market, equilibrium price is determined at the equality of market demand and market supply of the commodity. In this situation market demand curve intersects market supply curve. In an equilibrium state, the aggregate quantity that all firms wish to sell equals the total quantity that all buyers in the market wish to buy and therefore, the market clears. Equilibrium price or market clearing price is the price at which the quantity demanded of a commodity equals the quantity supplied of the commodity i.e. at this price there is no unsold stock or no unsupplied demand.

To analyse how equilibrium price is determined in a market, we need to bring together demand for and supply of the commodity in the market, for this we have the following schedule:

Table-1: Determination of Price

| S.No. | Price (₹) | Demand Units | Supply (Units) |
|-------|-----------|--------------|----------------|
| 1 | 1 | 60 | 5 |
| 2 | 2 | 35 | 35 |
| 3 | 3 | 20 | 45 |
| 4 | 4 | 15 | 55 |
| 5 | 5 | 10 | 65 |

When we plot the above points on a single graph with price on Y-axis and quantity demanded and supplied on X-axis, we get a figure as shown below:

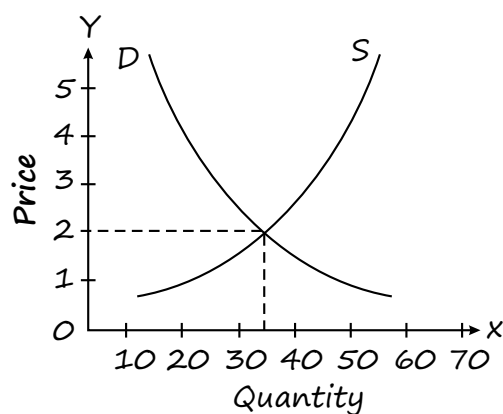


Figure. Determination of Equilibrium Price

It is easy to see what will be the market price of the article. It cannot be ₹ 1, because at that price there would be 60 units in demand, but only 5 units on offer. Competition among buyers would force the price up. On the other hand, it cannot be ₹ 5, for at that price, there would be 65 units on offer for sale but only 10 units in demand. Competition among sellers would force the price down. At ₹ 2, demand and supply are equal (35 units) and the market price will tend to settle at this figure. This is equilibrium price and quantity – the point at which price and output will tend to stay. Once this point is reached, we will have stable equilibrium. Equilibrium is said to be stable if any disturbance to it is self-adjusting so that the original equilibrium is restored. In other words, if the equilibrium be disrupted, the market returns to equilibrium. It should be noted that it would be stable only if other things are equal.

Figure will demonstrate how stable equilibrium is achieved through price mechanism or market mechanism. If the market price is above the equilibrium price, say ₹15, the market supply is greater than market demand and there is an excess supply or surplus in the market. Competing sellers will lower prices in order to clear their unsold stock. As we know, other things remaining constant, as price falls quantity demanded rises and quantity supplied falls. In this process the supply-demand gap is reduced and eventually eliminated thus restoring equilibrium.

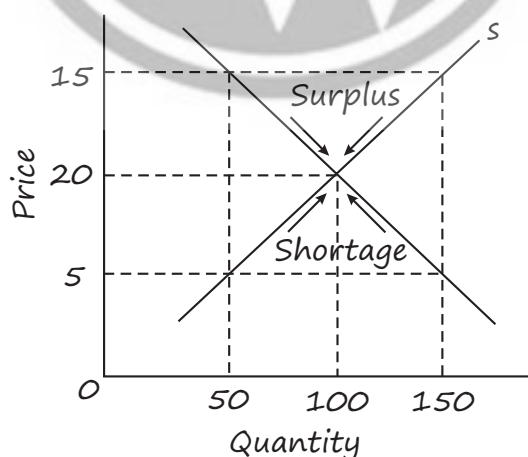


Figure. Stable Equilibrium

Likewise, if the prevailing market price is below equilibrium, say ₹ 5 in our example, a shortage arises as quantity demanded exceeds the quantity supplied. The shortage prompts the price to rise, as the buyers, who are unable to obtain as much of the good as they desire, bid the price higher. The market price tends to increase. Other things remaining the same,

the price rise causes a decrease in the quantity demanded by the buyers and an increase in the quantity supplied by the sellers and vice versa. This process will continue as long as demand exceeds supply. The market thus achieves a state where the quantity that firms sell is equal to the quantity that the consumers desire to buy. At equilibrium price (₹ 10), the supply decisions of the firms tend to match the demand decisions of the buyers. Thus, the equilibrium is restored automatically, through the fundamental working of the market and price movements eliminate shortage or surplus.

CHANGES IN DEMAND AND SUPPLY

The above analysis of market equilibrium was done by us under the *ceteris paribus* assumption. The facts of the real world, however, are such that the determinants of demand other than price of the commodity under consideration (like income, tastes and preferences, population, technology, prices of factors of production etc.) always change causing shifts in demand and supply. Such shifts affect equilibrium price and quantity. The four possible changes in demand and supply are:

- (i) An increase (shift to the right) in demand;
- (ii) A decrease (shift to the left) in demand;
- (iii) An increase (shift to the right) in supply;
- (iv) A decrease (shift to the left) in supply.

We will consider each of the above changes one by one.

(i) An increase in demand: In figure, the original demand curve of a normal good is DD and supply curve is SS . At equilibrium price OP , demand and supply are equal to OQ . Now suppose the money income of the consumer increases and the demand curve shifts to D_1D_1 and the supply curve remains the same. We will see that on the new demand curve D_1D_1 at OP price, demand increases to OQ_2 while supply remains the same i.e. OQ and there is excess demand in the market equal to $Q Q_2$. Since supply is short of demand, price will go up to OP_1 . With the higher price, supply will also shoot up generating an increase in the quantity supplied or an upward movement along the supply curve. Ultimately, a new equilibrium between demand and supply will be reached. At this equilibrium point, OP_1 is the price and OQ_1 is the quantity which is demanded and supplied.

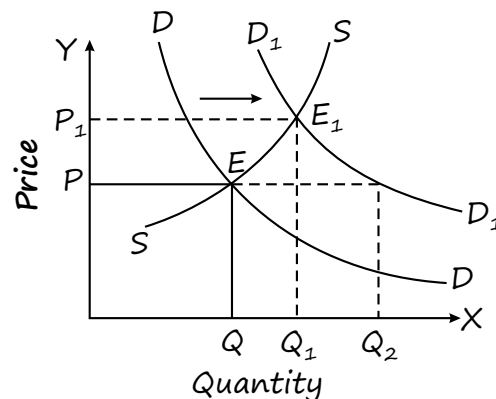


Figure. Increase in Demand, causing an increase in equilibrium price and quantity

Thus, we see that, with an increase in demand, there is an increase in equilibrium price, as a result of which the quantity supplied rises. As such, the quantity sold and purchased also increases.

- (i) **Decrease in Demand:** The opposite will happen when demand falls as a result of a fall in income, while the supply remains the same. The demand curve will shift to the left and become D_1D_1 while the supply curve remains as it is. With the new demand curve D_1D_1 , at original price OP , OQ_2 is demanded and OQ is supplied. As the supply exceeds demand, price will come down and quantity demanded will go up. A new equilibrium price OP_1 will be settled in the market where demand OQ_1 will be equal to supply OQ_1 .

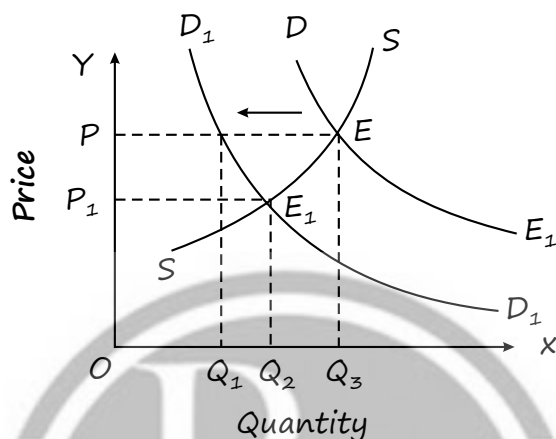


Figure. Decrease in Demand Resulting in a Decrease in Price and Quantity Demanded

Thus, with a decrease in demand, there is a decrease in the equilibrium price and quantity demanded and supplied.

- (ii) **Increase in Supply:** Let us now assume that demand does not change, but there is an increase in supply say, because of improved technology.

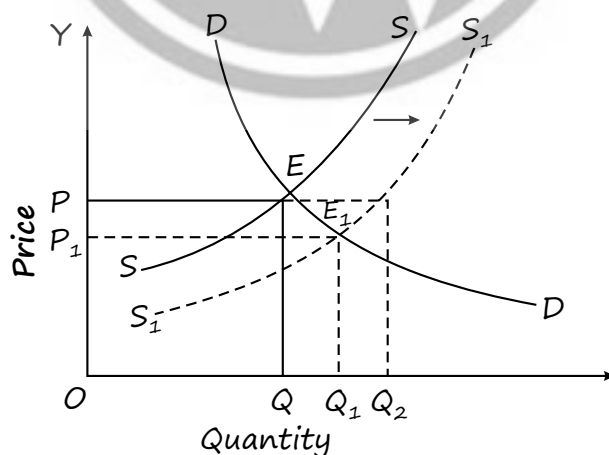


Figure. Increase in Supply, Resulting In Decrease in Equilibrium Price and Increase in Quantity Supplied

The supply curve SS will shift to the right and become S_1S_1 . At the original equilibrium price OP , OQ is demanded and OQ_2 is supplied (with new supply curve). At the original price, a surplus now exists; as a result, the equilibrium price falls and the quantity demanded

rises. A new equilibrium price OP_1 will be settled in the market where demand OQ_1 will be equal to supply OQ_1 . Thus, as a result of an increase in supply with demand remaining the same, the equilibrium price will go down and the quantity demanded will go up.

(iii) **Decrease in Supply:** Let us now assume that due to obsolete technology, there is decrease in supply. In the figure, the supply curve SS will shift to the left and become S_1S_1 . At the original equilibrium price OP , OQ is quantity demanded and OQ_2 is quantity supplied (with new supply curve). At the original price, a deficit now exists; as a result equilibrium price rises and the quantity demanded decreases. A new equilibrium price OP_1 will be settled in the market where demand OQ_1 will be equal to supply OQ_1 .

Thus as a result of decrease in supply we will find that equilibrium price will go up, but the amount sold and purchased will go down as shown in figure 11.

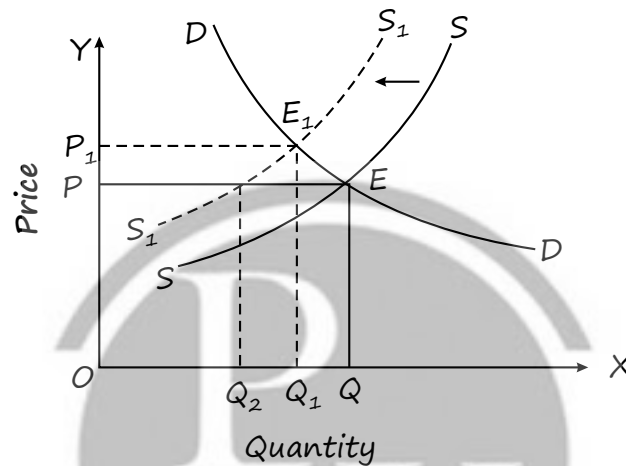


Figure. Decrease in Supply Causing an Increase in the Equilibrium Price and a fall in Quantity Demanded

SIMULTANEOUS CHANGES IN DEMAND AND SUPPLY

Till now, we were considering the effect of a change either in demand or in supply on the equilibrium price and quantity sold and purchased. It sometimes happens that events shift both the demand and supply curves at the same time. This is not unusual; in real life, supply curves and demand curves for many goods and services typically shift quite often because of continuous change in economic environment. During a war, for example, shortage of goods will often lead to decrease in their supply while full employment causes high total wage payments which increase demand.

What happens when the demand and supply curves shift in the same direction? We may discuss the effect on equilibrium price and quantity when both demand and supply increase simultaneously with the help of the diagrams in the next page:

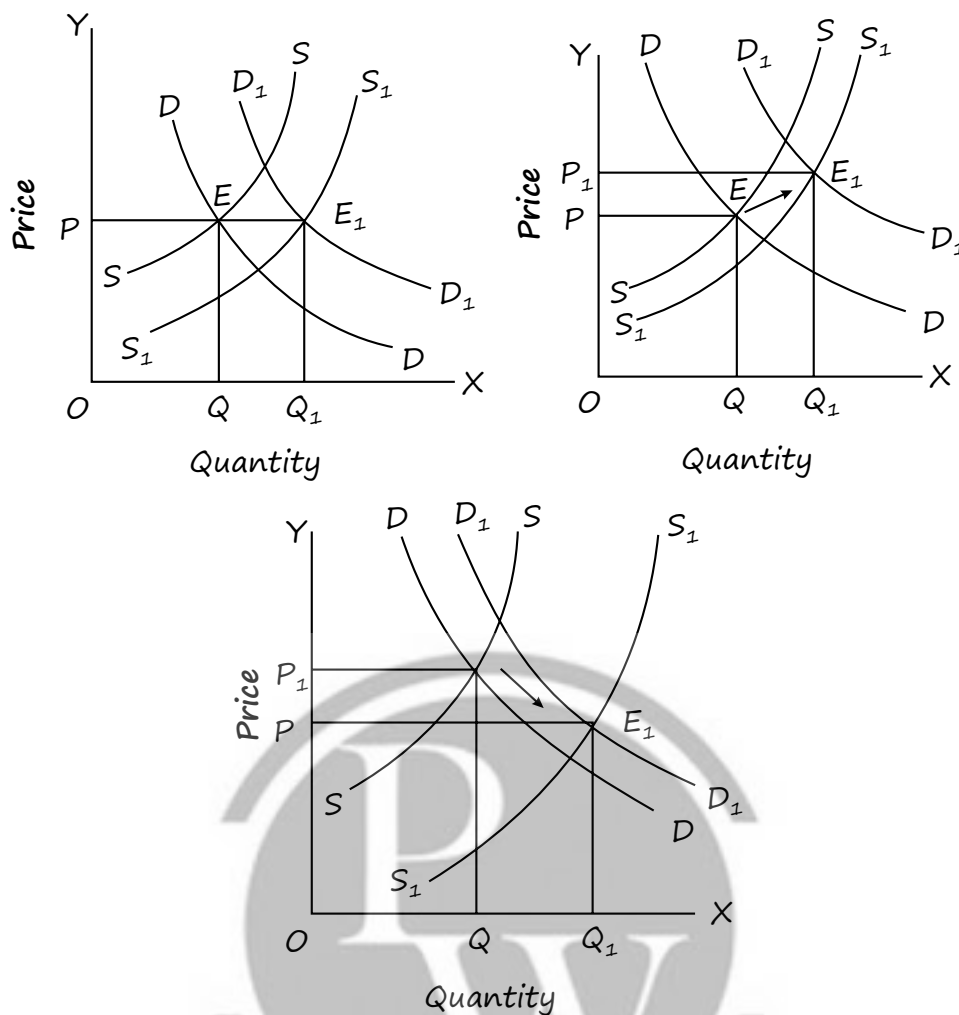


Figure. Simultaneous Change in Demand and Supply

Figure shows simultaneous change in demand and supply and its effects on the equilibrium price. In the figure, the original demand curve DD and the supply curve SS meet at E at which OP is the equilibrium price and OQ is the quantity bought and sold.

Figure (a) shows that increase in demand is equal to increase in supply. The new demand curve D_1D_1 and S_1S_1 meet at E_1 . The new equilibrium price is equal to the old equilibrium price (OP). However, equilibrium quantity is more.

Figure (b) shows that increase in demand is more than increase in supply. Hence, the new equilibrium price OP_1 is higher than the old equilibrium price OP . The opposite will happen i.e. the equilibrium price will go down if there is a simultaneous fall in demand and supply and the fall in demand is more than the fall in supply.

Figure (c) shows that supply increases in a greater proportion than demand. The new equilibrium price will be less than the original equilibrium price. Conversely, if the fall in the supply is more than proportionate to the fall in the demand, the equilibrium price will go up.

What is the effect on equilibrium price and quantity when both demand and supply decrease? You can check it yourselves with the help of diagrams.

We can summarise the two possible outcomes when the supply and demand curves shift in the same direction as follows:

- When both demand and supply increase, the equilibrium quantity increases but the change in equilibrium price is uncertain.
- When both demand and supply decrease, the equilibrium quantity decreases but the change in equilibrium price is uncertain.

What happens when the demand and supply curves shift in opposite direction? We may discuss the effect on equilibrium price and quantity when demand and supply curves shift in opposite direction with the help of the diagrams given in the next page:

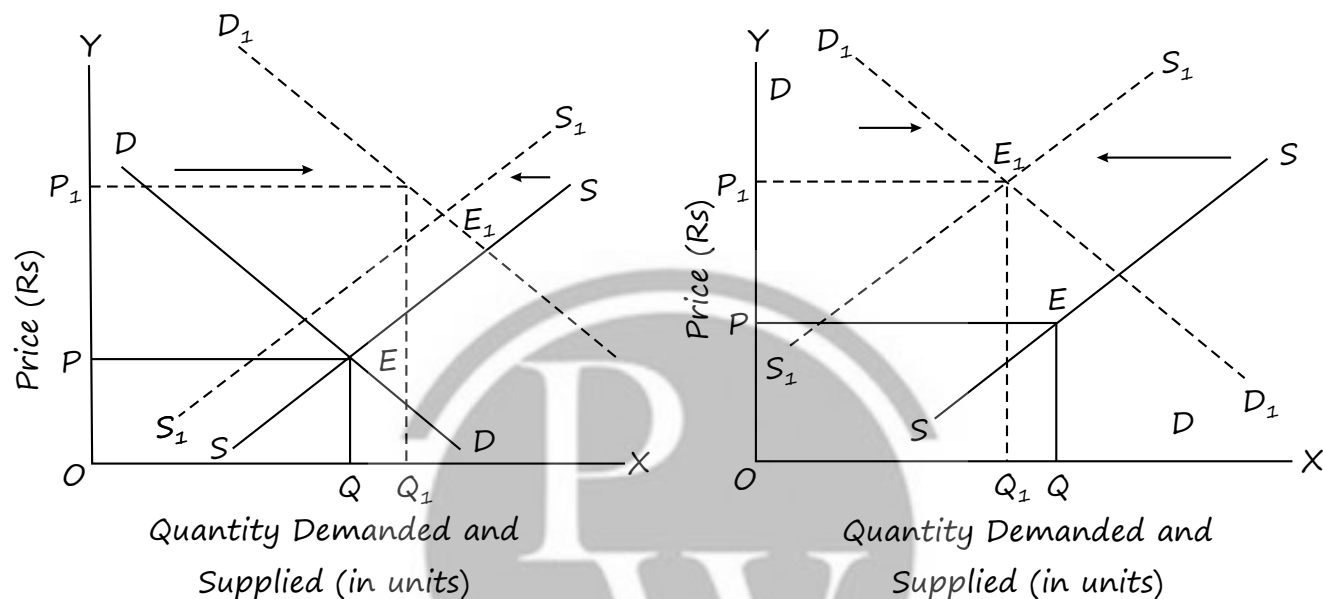


Figure. Effect on Equilibrium Price and Quantity When Demand and Supply Curves Shift in Opposite Directions

In panel (a) there is a simultaneous rightward shift of the demand curve and leftward shift of the supply curve. Here, the increase in demand is more than the decrease in supply, therefore, the equilibrium price and equilibrium quantity will rise. In panel (b) there is also a coincident rightward shift of the demand curve and leftward shift of the supply curve. Here, the decrease in supply is more than the increase in demand, consequently, the equilibrium price rises and the equilibrium quantity falls. In both cases, the equilibrium price rises from P to P_1 as the equilibrium moves from E to E_1 . What is the effect on quantity? In panel (a), the increase in demand is large relative to the decrease in supply and the equilibrium quantity rises as a result. In panel (b), the decrease in supply is large relative to the increase in demand, and the equilibrium quantity falls as a result. That is, when demand increases and supply decreases, the actual quantity bought and sold can go either way, depending on how much the demand and supply curves have shifted.

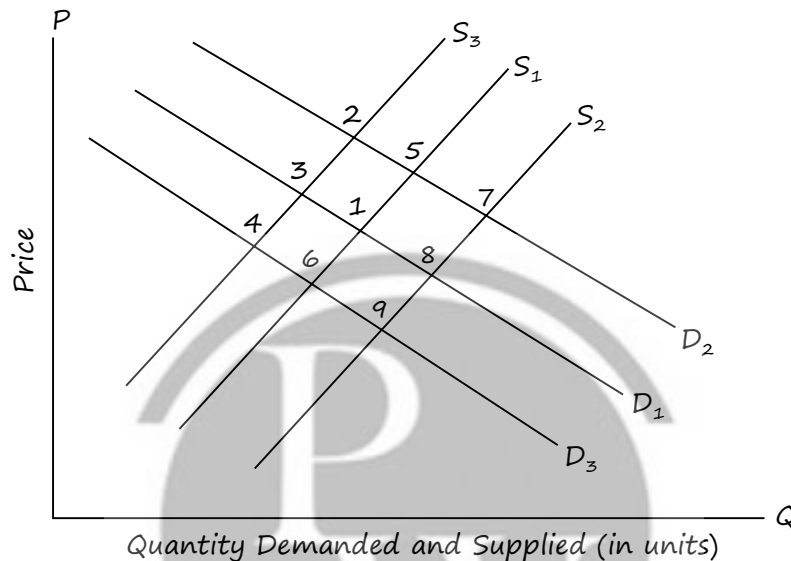
In general, when supply and demand shift in opposite directions, we cannot predict what the ultimate effect will be on the quantity bought and sold. What we can say is that a curve that shifts a disproportionately greater distance than the other curve will have a disproportionately greater effect on the quantity bought and sold.

We can summarise the two possible outcomes when the supply and demand curves shift in the opposite directions as follows:

- When demand increases and supply decreases, the equilibrium price rises but nothing certain can be said about the change in equilibrium quantity.
- When demand decreases and supply increases, the equilibrium price falls but nothing certain can be said about the change in equilibrium quantity.

ILLUSTRATION 1

D_1 and S_1 are the original demand and supply curves. D_2 , D_3 , S_2 and S_3 are possible new demand and supply curves. Starting from initial equilibrium point (1), what point on the graph is most likely to result from each change given in Questions 1 to 4?



SOLUTION:

1. Assume X is a normal good. Holding everything else constant, assume that income rises and the price of a factor of production also increases. What point in the figure above is most likely to be the new equilibrium price and quantity?
2. We are analyzing the market for good Z . The price of a complement good, good Y , declines. At the same time, there is technological advance in the production of good Z . What point in the figure above is most likely to be the new equilibrium price and quantity?
3. Heavy rains in Maharashtra during 2005 and 2006 caused havoc with the rice crop. What point in the figure above is most likely to be the new equilibrium price and quantity?
4. Assume that consumers expect the prices of new cars to significantly increase next year. What point in the figure above is most likely to be the new equilibrium price and quantity?

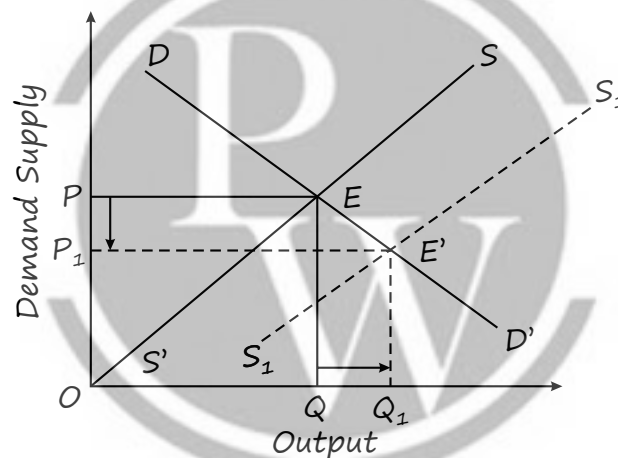
LET US TRY ANSWERING THESE QUESTIONS

1. When income of people rises, the demand curve will shift to the right (becomes D_2) as X is given to be a normal good. An increase in the price of factors of production used in the production of the good under consideration will decrease its supply and shift the supply curve to the left to S_3 . The new demand and supply of X will meet at Point 2.

- When the price of a complementary good falls, the demand for the good in question increases. Therefore, when price of the complementary good Y falls, the demand curve for Z will move to right and become D2 and due to technological advancement the supply of Z will increase and become S2. The new demand and supply of Z will meet at Point 7.
- Due to heavy rains, the supply of rice will fall and the new equilibrium point will be 3. It is assumed that there is no change in demand.
- If prices of cars are expected to increase in future, the demand curve will shift to right. Assuming that the supply remains constant, the new equilibrium point will be 5.

TRY YOUR UNDERSTANDING 4.2.1

- An increase in supply with demand remaining the same, brings about
 - An increase in equilibrium quantity and decrease in equilibrium price
 - An increase in equilibrium price and decrease in equilibrium quantity
 - Decrease in both equilibrium price and quantity
 - None of these



- When both demand and supply increase, how does it effect the equilibrium quantity and equilibrium price?
 - The equilibrium quantity increases but the change in equilibrium price is uncertain
 - The equilibrium quantity decreases but change in equilibrium price is uncertain
 - Equilibrium price increases but the change in equilibrium quantity is uncertain
 - Equilibrium price decreases but the change in equilibrium quantity is uncertain.
- is determined when the quantity demanded of a commodity becomes equal to the quantity supplied.

| | |
|------------------------|-----------------------|
| (a) Market supply | (b) Market demand |
| (c) Market equilibrium | (d) None of the above |
- The quantity sold at equilibrium level is known as

| | |
|--------------------------|----------------------|
| (a) Equilibrium quantity | (b) Maximum quantity |
| (c) Quantity supplied | (d) All of the above |

5. _____ is when decisions of consumers and producers in the market are coordinated through the free flow of prices.
- (a) Price elasticity (b) Price making
(c) Price taking (d) Price mechanism
6. Each firm under market equilibrium earns_____.
- (a) Supernatural profit (b) Negative profit
(c) Normal profit (d) None of the above
7. Suppose the technology for producing personal computers improves and, at the same time, individuals discover new uses for personal computers so that there is greater utilisation of personal computers. Which of the following will happen to equilibrium price and equilibrium quantity?
- (a) Price will increase: quantity cannot be determined.
(b) Price will decrease: quantity cannot be determined.
(c) Quantity will increase: price cannot be determined.
(d) Quantity will decrease: price cannot be determined
8. Price-taking firms, i.e., firms that operate in a perfectly competitive market, are said to be "small" relative to the market. Which of the following best describes this smallness?
- (a) The individual firm must have fewer than 10 employees
(b) The individual firm faces a downward-sloping demand curve.
(c) The individual firm has assets of less than ₹ 20 lakhs.
(d) The individual firm is unable to affect market price through its output decisions.
9. In the table below what will be equilibrium market price ?

| Price | Demand (Tonnes per annum) | Supply (Tonnes per annum) |
|-------|----------------------------|---------------------------|
| 1 | 1000 | 400 |
| 2 | 900 | 500 |
| 3 | 800 | 600 |
| 4 | 700 | 700 |
| 5 | 600 | 800 |
| 6 | 500 | 900 |
| 7 | 400 | 1000 |
| 8 | 300 | 1100 |

- (a) ₹ 2 (b) ₹ 3 (c) ₹ 4 (d) ₹ 5

Answer Key

1. (a) 2. (a) 3. (c) 4. (a) 5. (d) 6. (c) 7. (c) 8. (d) 9. (c)



Price-Output Determination Under Different Market Forms

INTRODUCTION

We shall discuss the nature of four of the most important market structures namely,

- perfect competition,
- monopoly,
- monopolistic competition and
- oligopoly and

how these market structures operate to determine short-run and long-run equilibrium price and quantity.

PERFECT COMPETITION

FEATURES

Suppose you go to a vegetable market and enquire about the price of potatoes from a shopkeeper. He says potatoes are for 20 per kg. In the same way, you enquire from many shopkeepers and you get the same answer. What do you notice? You notice the following facts:

1. There are large number of buyers and sellers in the potatoes market.
2. All the shopkeepers are selling potatoes at 20 per kg.
3. Product homogeneity i.e. all the sellers are selling almost the same quality of potatoes

CHARACTERISTICS

1. There are large number of buyers and sellers no buyer or seller is in a position to influence the price, demand or supply in the market.
2. The products supplied by all firms are identical or are homogeneous in all respects so that they are perfect substitutes.
3. all consumers have perfect information about competing prices.
4. Every firm is free to enter the market or to go out of it.
5. There is perfect knowledge of the market conditions on the part of buyers and sellers. such a market is called pure competition:
6. Perfectly competitive markets have very low transaction costs. Buyers and sellers do not have to spend much time and money finding each other and entering into transactions.
7. Under perfect competition, all firms individually are price takers.

Examples of perfect competition which is regarded as a myth by many, the agricultural products, financial instruments (stock, bonds, foreign exchange), precious metals (gold, silver, platinum)

PRICE DETERMINATION UNDER PERFECT COMPETITION

Equilibrium of the Industry: An industry in economic terminology consists of a large number of independent firms. Each such unit in the industry produces a homogeneous product so that there is competition amongst goods produced by different units. When the total output of the industry is equal to the total demand, we say that the industry is in equilibrium; the price then prevailing is equilibrium price. A firm is said to be in equilibrium when it is maximising its profits and has no incentive to expand or contract production.

As stated above, under competitive conditions, the equilibrium price for a given product is determined by the interaction of the forces of demand and supply for it as is shown in figure 14 in the next page.

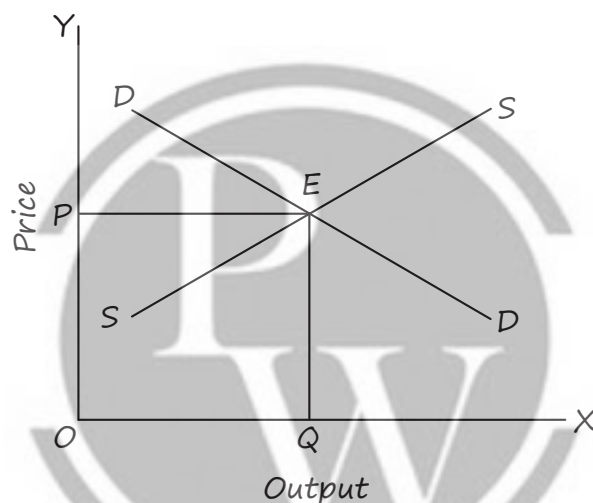


Figure. Equilibrium of a competitive industry

In Fig. 14, OP is the equilibrium price and OQ is the equilibrium quantity which will be sold at that price. The equilibrium price is the price at which both demand and supply are equal and therefore, no buyer who wanted to buy at that price goes dissatisfied and none of the sellers is dissatisfied that he could not sell his goods at that price. It may be noticed that if the price were to be fixed at any other level, higher or lower, demand remaining the same, there would be no equilibrium in the market. Likewise, if the quantities of goods were greater or smaller than the demand, there would not be equilibrium in the market.

Equilibrium of the Firm: The firm is said to be in equilibrium when it maximizes its profit. The output which gives maximum profit to the firm is called equilibrium output. In the equilibrium state, the firm has no incentive either to increase or decrease its output.

Firms in a competitive market are price-takers. This is because there are a large number of firms in the market who are producing identical or homogeneous products. As such these firms cannot influence the price in their individual capacities. They have to accept the price determined through the interaction of total demand and total supply of the commodity which they produce.

This is illustrated in the following figure:

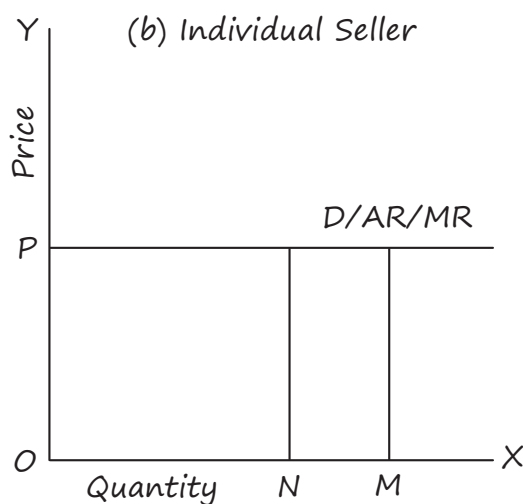


Figure. The firm's demand curve under perfect competition

The market price OP is fixed through the interaction of total demand and total supply of the industry. Firms have to accept this price as given and as such they are price-takers rather than price-makers. They cannot increase the price above OP individually because of the fear of losing its customers to other firms. They do not try to sell the product below OP because they do not have any incentive for lowering it. They will try to sell as much as they can at price OP .

As such, P -line acts as demand curve for the firm. Because it is a price taker, the demand curve D facing an individual competitive firm is given by a horizontal line at the level of market price set by the industry. In other words, the demand curve of each firm is perfectly (or infinitely) elastic. The firm can sell as much or as little output as it likes along the horizontal price line. Since price is given, a competitive firm has to adjust its output to the market price so that it earns maximum profit. Let us see in table 4 where demand and supply schedule for the industry were as follows:

Table-4: Equilibrium price for industry

| Price (₹) | Demand (units) | Supply (units) |
|-----------|----------------|----------------|
| 1 | 60 | 5 |
| 2 | 35 | 35 |
| 3 | 20 | 45 |
| 4 | 15 | 55 |
| 5 | 10 | 65 |

Equilibrium price for the industry is determined through the interaction of demand and supply is ₹2 per unit. The individual firms will accept ₹2 per unit as the price and sell different quantities at this price. Let us consider the case of firm 'X'. Firm X's quantity sold, total revenue, average revenue and marginal revenue are as given in Table 5.

Table-5: Trends in Revenue of a Competitive Firm

| Price (₹) | Quantity Sold | Total Revenue | Average Revenue | Marginal Revenue |
|-----------|---------------|---------------|-----------------|------------------|
| 2 | 8 | 16 | 2 | 2 |
| 2 | 9 | 18 | 2 | 2 |
| 2 | 10 | 20 | 2 | 2 |
| 2 | 11 | 22 | 2 | 2 |
| 2 | 12 | 24 | 2 | 2 |

Firm X's price, average revenue and marginal revenue are equal to ₹2. Thus, we see that in perfectly competitive market a price-taking firm's average revenue, marginal revenue and price are equal. As a result, when the firm sells an additional unit, its total revenue increases by an amount equal to its price.

$$AR = MR = \text{Price.}$$

Conditions for equilibrium of a firm: As discussed earlier, a firm, in order to attain equilibrium position, has to satisfy two conditions as below: (Note that because competitive firms take price as fixed, this is a rule for setting output, not price).

1. The marginal revenue should be equal to the marginal cost. i.e. $MR = MC$. If MR is greater than MC, there is always an incentive for the firm to expand its production further and gain by selling additional units. If MR is less than MC, the firm will have to reduce output since an additional unit adds more to cost than to revenue. Profits are maximum only at the point where $MR = MC$. Because the demand curve facing a competitive firm is horizontal, so that $MR = P$, the general rule for profit maximization can be simplified. A perfectly competitive firm should choose its output so that marginal cost equals price.
2. The MC curve should cut MR curve from below. In other words, MC should have a positive slope.

SHORT-RUN PROFIT MAXIMIZATION BY A COMPETITIVE FIRM

We shall begin with the short-run output decision and then move on to the long run. In the short run, a firm operates with a fixed amount of capital and must choose the levels of its variable inputs so as to maximize profit.

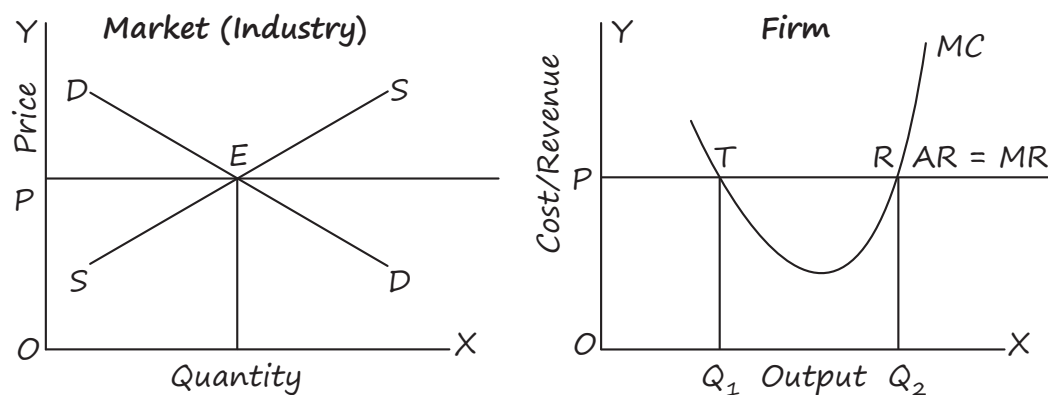


Figure. Equilibrium position of a firm under perfect competition

In figure, DD and SS are the industry demand and supply curves which intersect at E to set the market price as OP. The firms of perfectly competitive industry adopt OP price as given and considers P-Line as demand (average revenue) curve which is perfectly elastic at P. As all the units are priced at the same level, MR is a horizontal line equal to AR line. Note that MC curve cuts MR curve at two places T and R respectively. But at T, the MC curve is cutting MR curve from above. T is not the point of equilibrium as the second condition is not satisfied. The firm will benefit if it goes beyond T as the additional cost of producing an additional unit is falling. At R, the MC curve is cutting MR curve from below. Hence, R is the point of equilibrium and OQ_2 is the equilibrium level of output.

SHORT RUN SUPPLY CURVE OF THE FIRM IN A COMPETITIVE MARKET

One interesting thing about the MC curve of a firm in a perfectly competitive industry is that it depicts the firm's supply curve. This can be shown with the help of the following figure:

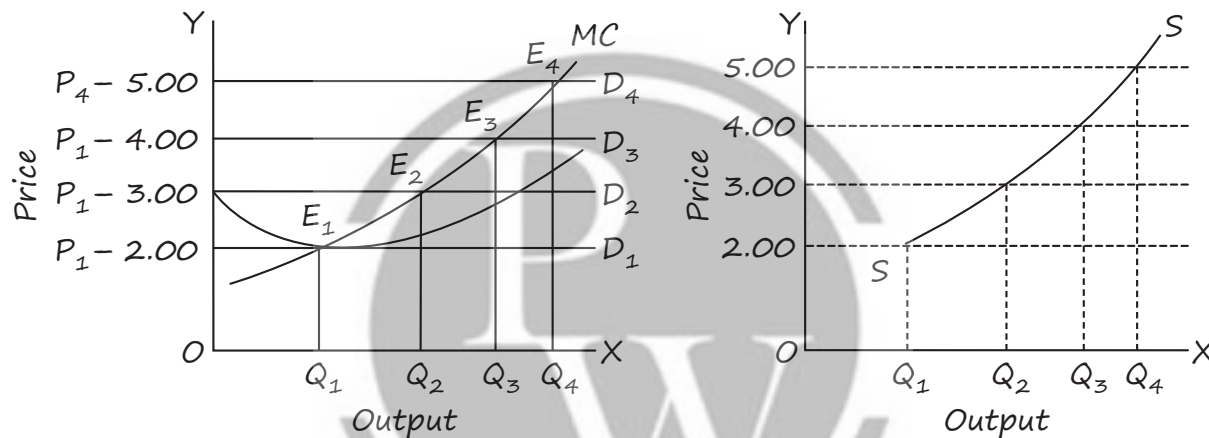


Figure. Marginal cost and supply curves for a price-taking firm

Suppose the market price of a product is ₹2. Corresponding to it we have D_1 as demand curve for the firm. At price ₹2, the firm supplies Q_1 output because here $MR = MC$. If the market price is ₹3, the corresponding demand curve is D_2 . At ₹3, the quantity supplied is Q_2 . Similarly, we have demand curves D_3 and D_4 and corresponding supplies are Q_3 and Q_4 . The firm's marginal cost curve which gives the marginal cost corresponding to each level of output is nothing but firm's supply curve that gives various quantities the firm will supply at each price. For prices below AVC, the firm will supply zero units because the firm is unable to meet even its variable cost. For prices above AVC, the firm will equate price and marginal cost. When price is high enough to meet the AVC, a firm will decide to continue its production. In fig. 17, at price ₹2, the AVC of the firm is covered and therefore, the firm need not shutdown. Thus, in perfect competition, the firm's marginal cost curve above AVC has the identical shape of the firm's supply curve.

CAN A COMPETITIVE FIRM EARN PROFITS?

In the short run, a firm will attain equilibrium position and at the same time, it may earn supernormal profits, normal profits or losses depending upon its cost conditions. Following are the three possibilities:

Supernormal Profits: There is a difference between normal profits and supernormal profits. When the average revenue of a firm is just equal to its average total cost, a firm earns normal profits or zero economic profits. It is to be noted that here a normal percentage of profits for the entrepreneur for his managerial services is already included in the cost of production. When a firm earns supernormal profits, its average revenues are more than its average total cost. Thus, in addition to normal rate of profit, the firm earns some additional profits. The following example will make the above concepts clear:

Suppose the cost of producing 1,000 units of a product by a firm is ₹15,000. The entrepreneur has invested ₹50,000 in the business and the normal rate of return in the market is 10 per cent. That is, the cost of self owned factor (capital) used in the business or implicit cost is ₹5000/-. The entrepreneur would have earned ₹5,000 (10% of ₹50,000) if he had invested it elsewhere. Thus, total cost of production is ₹20,000 (₹15,000 + ₹5,000). If the firm is selling the product at ₹20, it is earning normal profits because AR (₹20) is equal to ATC (₹20). If the firm is selling the product at ₹22 per unit, its AR (₹22) is greater than its ATC (₹20) and it is earning supernormal profit at the rate of ₹2 per unit.

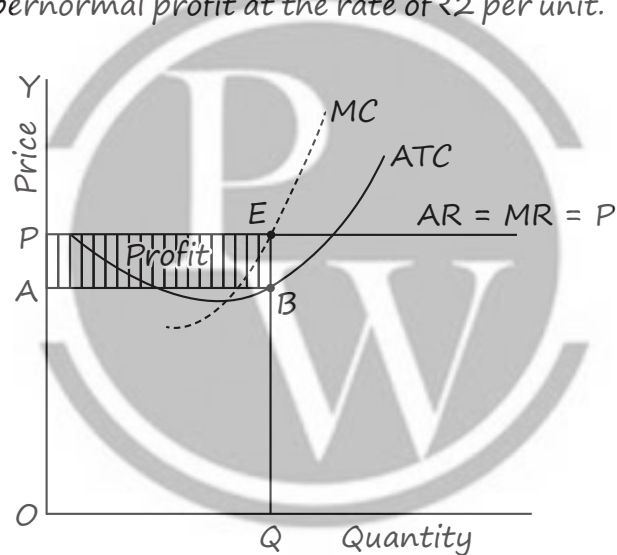


Figure. Short run equilibrium: Supernormal profits of a competitive firm

Figure shows the revenue and cost curves of a firm which earns supernormal profits in the short run. MR (marginal revenue) curve is a horizontal line and MC (marginal cost) curve is a U-shaped curve which cuts the MR curve at E. The firm is in equilibrium at point E where marginal revenue is equal to marginal cost. OQ is the equilibrium output for the firm. At this level of output, the average revenue or price per unit is EQ and average total cost is BQ. The firm's profit per unit is EB (AR-ATC). Total profits are ABEP. (EB x OQ ; OQ = AB). Applying the principle Total Profit = TR - TC, we find total profit by finding the difference between OPEQ and OABQ which is equal to ABEP.

Normal profits: When a firm just meets its average total cost, it earns normal profits. Here AR = ATC.

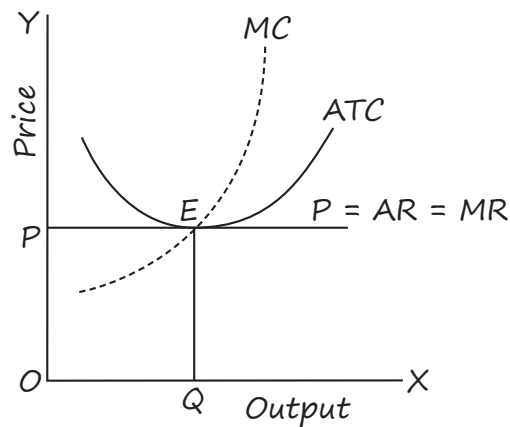


Figure. Short run equilibrium of a competitive firm: Normal profits

The figure shows that $MR = MC$ at E . The equilibrium output is OQ . At this level of output, price or AR covers full cost (ATC). Since $AR = ATC$ or $OP = EQ$, the firm is just earning normal profits. Applying $TR - TC$, we find that $TR - TC = \text{zero}$ or there is zero economic profit.

Losses: The firm can be in an equilibrium position and still makes losses. This is the situation when the firm is minimising losses. For all prices above the minimum point on the AVC curve, the firm will stay open and will produce the level of output at which $MR = MC$. When the firm is able to meet its variable cost and a part of fixed cost, it will try to continue production in the short run. If it recovers a part of the fixed costs, it will be beneficial for it to continue production because fixed costs (such as costs towards plant and machinery, building etc.) are already incurred and in such case it will be able to recover a part of them. But, if a firm is unable to meet its average variable cost, it will be better for it to shutdown. This shutdown may be temporary. When the market price rises, the firm resumes production. Fig. Short run equilibrium of a competitive firm: Losses

In figure 20, E is the equilibrium point and at this point $AR = EQ$ and $ATC = BQ$ since $BQ > EQ$, the firm is having per unit loss equal to BE and the total loss is $ABEP$.

ILLUSTRATION 2

“Tasty Burgers” is a small kiosk selling Burgers and is a price-taker. The table below provides the data of ‘Tasty Burgers’ output and costs in Rupees.

| Quantity | Total Cost | Fixed Cost | Variable Cost | Average Variable Cost | Average Fixed Cost | Marginal Cost |
|----------|------------|------------|---------------|-----------------------|--------------------|---------------|
| 0 | 100 | | | | | |
| 10 | 210 | | | | | |
| 20 | 300 | | | | | |
| 30 | 400 | | | | | |
| 40 | 540 | | | | | |
| 50 | 790 | | | | | |
| 60 | 1060 | | | | | |

Question-1: If burgers sell for ₹14 each, what is Tasty Burgers’ profit maximizing level of output?

Question-2: What is the total variable cost when 60 burgers are produced?

Question-3: What is average fixed cost when 20 burgers are produced?

Question-4: Between 10 to 20 burgers, what is the marginal cost?

SOLUTION

Let us try to solve each of these questions.

First of all it is better to fill the blanks in the Table.

Since the total cost when zero product is produced is ₹100, the total fixed cost of “Tasty Burgers” will be

₹100/-

We fill the data now:

| Quantity | Total Cost | Fixed Cost | Variable Cost | Average Variable Cost | Average Fixed Cost | Marginal Cost (DTC) | Marginal Cost |
|----------|------------|------------|---------------|-----------------------|--------------------|---------------------|---------------|
| 0 | 100 | 100 | - | - | - | - | - |
| 10 | 210 | 100 | 110 | 11 | 10.0 | 110 | 11 |
| 20 | 300 | 100 | 200 | 10 | 5.0 | 90 | 9 |
| 30 | 400 | 100 | 300 | 10 | 3.33 | 100 | 10 |
| 40 | 540 | 100 | 440 | 11 | 2.50 | 140 | 14 |
| 50 | 790 | 100 | 690 | 13.80 | 2.0 | 250 | 25 |
| 60 | 1060 | 100 | 960 | 16 | 1.66 | 270 | 27 |

Now let us answer the questions.

Answer-1: The price of Burger is ₹14. Since it is given that “Tasty Burger” is price-taker, it is a perfectly competitive firm. In a perfectly competitive market all the products are sold at the same price, that means $AR = MR$. In order to find out the profit maximizing level of output, MR should be equal to MC . Here $AR = MR = ₹14$. From the table we can see that $MR (14) = MC (14)$ when 40 burgers are produced. Therefore, the profit maximising level of output of burgers is 40 units.

Answer-2: The Total Variable Cost at 60 burgers is ₹960.

Answer-3: The Average Fixed Cost at 20 burgers is ₹5.

Answer-4: Between 10 to 20 burgers, the Marginal Cost is ₹9.

LONG RUN EQUILIBRIUM OF A COMPETITIVE FIRM

In the short run, one or more of the firm's inputs are fixed. In the long run, firms can alter the scale of operation or quit the industry and new firms can enter the industry. In a market with entry and exit, a firm enters when it believes that it can earn a positive long run profit and exits when it faces the possibility of a long-run loss. Firms are in equilibrium in the long run when they have adjusted their plant so as to produce at the minimum point of their long run ATC curve, which is tangent to the demand curve defined by the market price. In the long run, the firms will be earning just normal profits, which are included in the ATC. If they are making supernormal profits in the short run, new firms will be attracted into

the industry; this will lead to a fall in price (a down ward shift in the individual demand curves) and an upward shift of the cost curves due to increase in the prices of factors as the industry expands. These changes will continue until the ATC is tangent to the demand curve. If the firms make losses in the short run, they will leave the industry in the long run. This will raise the price and costs may fall as the industry contracts, until the remaining firms in the industry cover their total costs inclusive of normal rate of profit.

In figure, we show how firms adjust to their long run equilibrium position. As in the short run, the firm faces a horizontal demand curve. If the price is OP , the firm is making super-normal profits working with the plant whose cost is denoted by SAC_1 . If the firm believes that the market price will remain at OP , it will have incentive to build new capacity and it will move along its LAC . At the same time, new firms will be entering the industry attracted by the excess profits. As the quantity supplied in the market increases, the supply curve in the market will shift to the right and price will fall until it reaches the level of OP_1 (in figure 21a) at which the firms and the industry are in long run equilibrium.

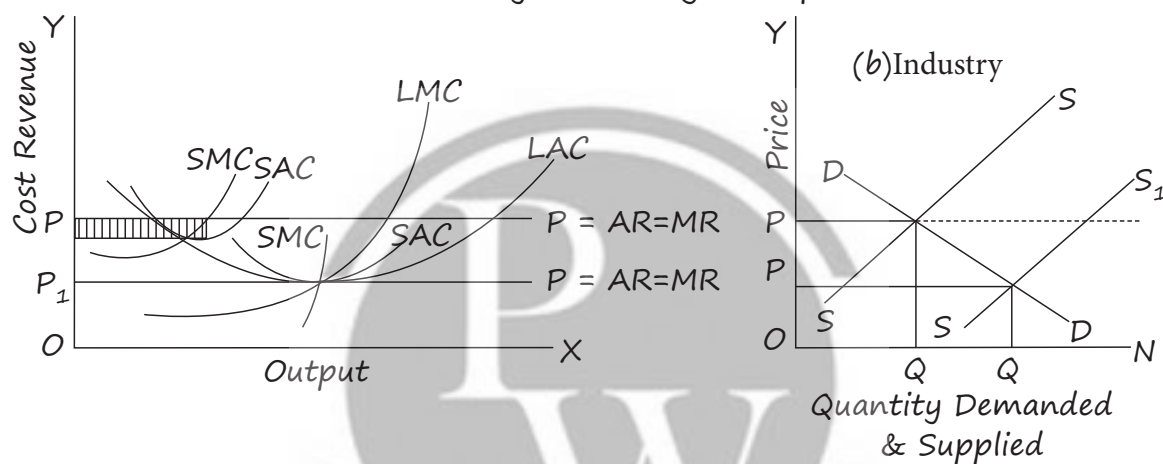


Figure. Long run equilibrium of the firm in a perfectly competitive market

The condition for the long run equilibrium of the firm is that the marginal cost should be equal to the price and the long run average cost i.e. $LMC = LAC = P$.

The firm adjusts its plant size so as to produce that level of output at which the LAC is the minimum possible. At equilibrium, the short run marginal cost is equal to the long run marginal cost and the short run average cost is equal to the long run average cost. Thus, in the long run we have,

$$SMC = LMC = SAC = LAC = P = MR$$

This implies that at the minimum point of the LAC , the corresponding (short run) plant is worked at its optimal capacity, so that the minima of the LAC and SAC coincide. On the other hand, the LMC cuts the LAC at its minimum point and the SMC cuts the SAC at its minimum point. Thus, at the minimum point of the LAC the above equality is achieved.

LONG RUN EQUILIBRIUM OF THE INDUSTRY

A long-run competitive equilibrium of a perfectly competitive industry occurs when three conditions hold: All firms in the industry are in equilibrium i.e. all firms are maximizing profit. No firm has an incentive either to enter or exit the industry because all firms are earning zero economic profit or normal profit.

The price of the product is such that the quantity supplied by the industry is equal to the quantity demanded by consumers.

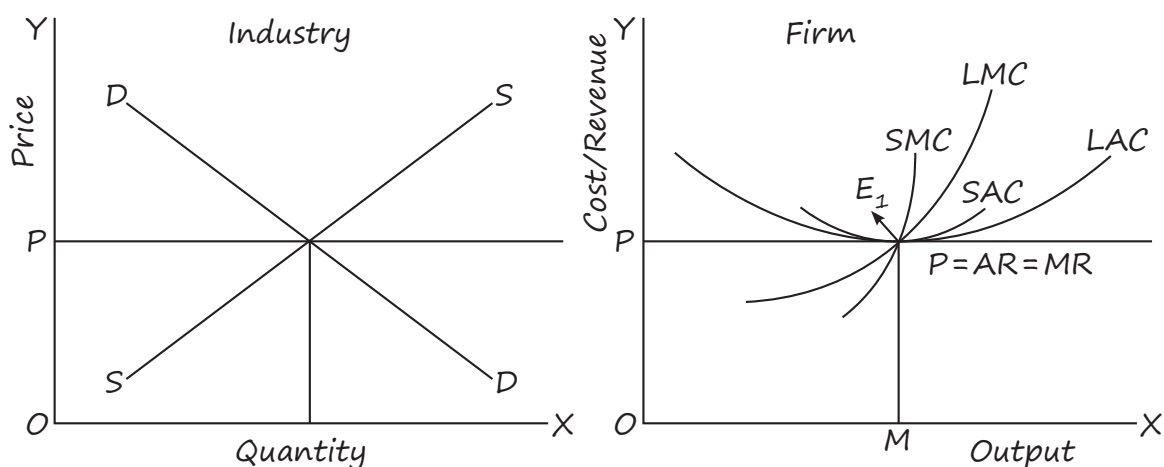


Figure. Long run equilibrium of a competitive industry and its firms

Figure shows that in the long-run $AR = MR = LAC = LMC$ at E_1 . In the long run, each firm attains the plant size and output level at which its cost per unit is as low as possible. Since E_1 is the minimum point of LAC curve, the firm produces equilibrium output OM at the minimum (optimum) cost. A firm producing output at optimum cost is called an optimum firm. In the long run, all firms under perfect competition are optimum firms having optimum size and these firms charge minimum possible price which just covers their marginal cost.

Thus, in the long run, under perfect competition, the market mechanism leads to optimal allocation of resources. The optimality is shown by the following outcomes associated with the long run equilibrium of the industry:

1. The output is produced at the minimum feasible cost.
2. Consumers pay the minimum possible price which just covers the marginal cost i.e. $MC = AR$. ($P = MC$)
3. Plants are used to full capacity in the long run, so that there is no wastage of resources i.e. $MC = AC$.
4. Firms earn only normal profits i.e. $AC = AR$.
5. Firms maximize profits (i.e. $MC = MR$), but the level of profits will be just normal.
6. There is optimum number of firms in the industry. In other words, in the long run, $LAR = LMR = P = LMC = LAC$ and there will be optimum allocation of resources.

It should be remembered that the perfectly competitive market system is a myth. This is because the assumptions on which this system is based are never found in the real world market conditions.

TRY YOUR UNDERSTANDING 4.2.2

1. Which of the following is closely related to perfect competition?
 (a) Mobiles (b) Cars (c) Utensils (d) Agricultural Products

2. Which of the following represents the supply curve in a perfect competitive market.
 (a) MC curve (b) AC curve (c) AR curve (d) MR curve
3. MR Curve in perfect competition is _____.
 (a) Parallel to X-axis (b) Parallel to Y-axis
 (c) Fall from left to right (d) Rise from left to right
4. In perfect Competition when the firm is a price taker, which curve among the following will be a _____ straight line?
 (a) Marginal Cost (b) Average Cost
 (c) Total Cost (d) Marginal Revenue
5. Which perfect completion firm is described as:
 (a) Price taker and not price maker.
 (b) Price maker and not price taker.
 (c) Neither price maker nor price taker.
 (d) None of the above.
6. In a perfectly Competitive Indus-try, the MC Curve of a firm depicts.
 (a) The industry demand Curve (b) The Firm's demand Curve
 (c) The industry's supply Curve (d) The Firm's supply Curve.
7. If a perfectly competitive firms earns super normal profits then _____.
 (a) $AR > MR$ (b) $AR < MR$
 (c) $AR = MR$ (d) None of the above
8. When _____ we know that the firms are earning just normal profits.
 (a) $AC = AR$ (b) $MC = MR$ (c) $MC = AC$ (d) $AR = MR$
9. When _____ we know that the firms must be producing at the minimum point of the average cost curve and so there will be productive efficiency.
 (a) $AC = AR$ (b) $MC = AC$ (c) $MC = MR$ (d) $AR = MR$
10. A firm encounters its "shutdown point" when:
 (a) Average total cost equals price at the profit-maximizing level of output.
 (b) Average variable cost equals price at the profit-maximizing level of output.
 (c) Average fixed cost equals price at the profit-maximizing level of output.
 (d) Marginal cost equals price at the profit-maximizing level of output.
11. A firm will close down in the short period, if its AR is less than:
 (a) AC (b) AVC (c) MC (d) None of the above
12. A competitive firm in the short run incur losses. The firm continues production, if:
 (a) $P > AVC$ (b) $P = AVC$ (c) $P < AVC$ (d) $P > = AVC$
13. What are the conditions for the long run equilibrium of the competitive firm?
 (a) $LMC = LAC = P$ (b) $SMC = SAC = LMC$
 (c) $R = MR$ (d) All of these

Answer Key

1. (d) 2. (a) 3. (a) 4. (d) 5. (a) 6. (d) 7. (c) 8. (a) 9. (b) 10. (b)
11. (b) 12. (d) 13. (d)

MONOPOLY

- ❑ The word 'Monopoly' means "alone to sell".
- ❑ Monopoly is a situation in which there is a single seller of a product which has no close substitute.
- ❑ Pure monopoly is never found in practice.
- ❑ However, in public utilities such as transport, water and electricity, we generally find a monopoly form of market.

FEATURES OF MONOPOLY MARKET

The following are the major features of the monopoly market:

1. **Single seller of the product:** In a monopoly market, there is only one firm producing or supplying a product. This single firm constitutes the industry and as such there is no distinction between firm and industry in a monopolistic market. Monopoly is characterized by an absence of competition.
2. **Barriers to Entry:** In a monopolistic market, there are strong barriers to entry. The barriers to entry could be economic, institutional, legal or artificial.
3. **No close-substitutes:** A monopoly firm has full control over the market supply of a product or service. A monopolist is a price maker and not a price taker. The monopolist generally sells a product which has no close substitutes. In such a case, the cross elasticity of demand for the monopolist's product and any other product is zero or very small. The price elasticity of demand for monopolist's product is also less than one. As a result, the monopolist faces a steep downward sloping demand curve.
4. **Market power:** A monopoly firm has market power i.e. it has the ability to charge a price above marginal cost and earn a positive profit.

While to some extent all goods are substitutes for one other, there may be essential characteristics in a good or group of goods which give rise to gaps in the chain of substitution. If one producer can so exclude competition that he controls the supply of a good, he can be said to be 'monopolist' – a single seller.

HOW DO MONOPOLIES ARISE?

A few reasons for occurrence and continuation of monopoly are:

1. Strategic control over a scarce resources, inputs or technology
2. Through developing or acquiring control over a unique product that is difficult or costly for other companies to copy.
3. Governments granting exclusive rights to produce and sell a good or a service.

4. Patents and copyrights given by the government to protect intellectual property rights and to encourage innovation.
5. Strategic control over a scarce resources, inputs or technology by a single firm limiting the access of other firms to these resources.
6. Business combinations or cartels (illegal in most countries)
7. Extremely large start-up costs
8. Natural monopoly arises when there are very large economies of scale.
For e.g. telephone service, natural gas supply and electrical power distribution.
9. Enormous goodwill
10. Stringent legal and regulatory requirements
11. Firms use various anti-competitive practices

In real life, pure monopolies are not common because monopolies are either regulated or prohibited altogether.

But, one producer may dominate the supply of a good or group of goods.

Earlier, in public utilities, e.g. transport, water, electricity generation etc. monopolistic markets existed so as to reap the benefits of large scale production.

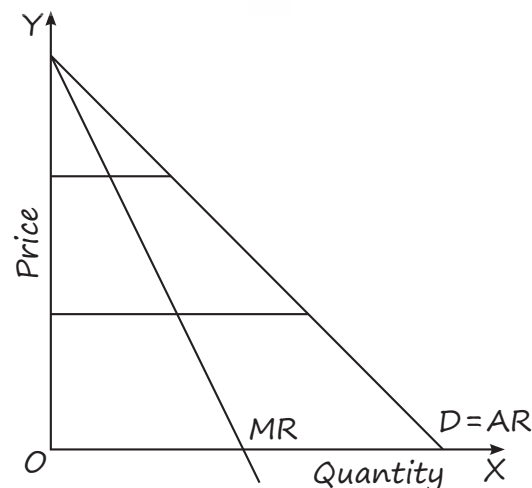
But these markets have been deregulated and opened to competition over a period of time.

In India, Indian Railways has monopoly in rail transportation. There is government monopoly over production of nuclear power.

MONOPOLIST'S REVENUE CURVES

A monopolist is free to set any price it desires and will usually set the price that yields the largest possible profit due to absence of government intervention,

Since the monopolist firm is assumed to be the only producer of a particular product, its demand curve is identical with the market demand curve for the product.



A monopolist's demand curve and marginal revenue curve

The market demand curve, which exhibits the total quantity of a product that buyers will offer to buy at each price, also shows the quantity that the monopolist will be able to sell at every price that he sets. If we assume that the monopolist sets a single price and supplies all buyers who wish to purchase at that price, we can easily find his average revenue and marginal revenue curves. A monopolist's demand curve and marginal revenue curve

Suppose the straight line in Fig. is the market demand curve for a particular product 'A'

Suppose M/s. X and Co. is the only producer of the product A so that it faces the entire market demand. The firm faces a downward sloping demand curve, because if it wants to sell more it has to reduce the price of the product.

Average revenue, Total revenue and Marginal revenue for a Monopolist

| Quantity sold | Average Revenue (₹) (AR = P) | Total Revenue (₹) (TR) | Marginal Revenue (₹) (MR) |
|---------------|---------------------------------|---------------------------|------------------------------|
| 0 | 10.00 | 0 | |
| 1 | 9.50 | 9.50 | 9.50 |
| 2 | 9.00 | 18.00 | 8.50 |
| 3 | 8.50 | 25.50 | 7.50 |
| 4 | 8.00 | 32.00 | 6.50 |
| 5 | 7.50 | 37.50 | 5.50 |
| 6 | 7.00 | 42.00 | 4.50 |
| 7 | 6.50 | 45.50 | 3.50 |
| 8 | 6.00 | 48.00 | 2.50 |
| 9 | 5.50 | 49.50 | 1.50 |
| 10 | 5.00 | 50.00 | .50 |
| 11 | 4.50 | 49.50 | (-).50 |

The relationship between AR and MR of a monopoly firm can be stated as follows:

- ❑ AR and MR are both negatively by sloped (downward sloping) curves.
- ❑ The slope of the MR curve is twice that of the AR curve.
- ❑ AR cannot be zero, but MR can be zero or even negative. Monopolies are mainly of two types:

Simple monopoly

Where the monopolist charges uniform price from all buyers For example, Indian Railways charging same fare from all AC 3Tier passengers an

Discriminating monopoly

Where the monopolist charges different prices from different buyers of the same good or service for eg. Dynamic fare charged by Indian Railways in specific trains.

Profit maximisation in a Monopolised Market: Equilibrium of the Monopoly Firm

How a monopoly firm decides its output and price in the short run and in the long run.?

Short run Equilibrium

Conditions for equilibrium:

$$MR = MC$$

MC Curve cut MR curve from below

Conditions for equilibrium

The twin conditions for equilibrium in a monopoly market are the same as that of a firm in a competitive industry. Graphically, we can depict these conditions.

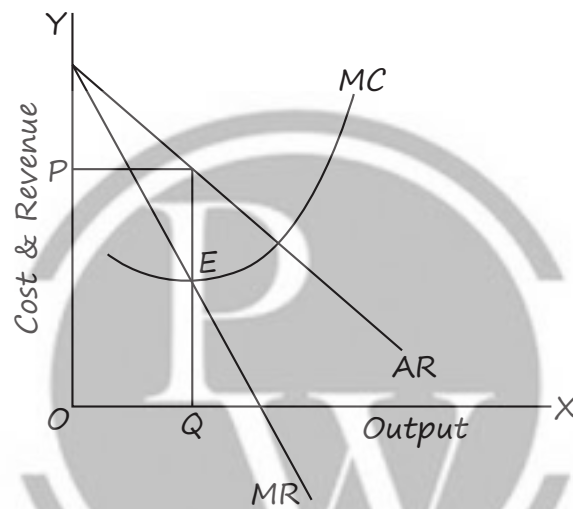


Figure. Equilibrium of a monopolist (Short run)

In order to know whether the monopolist is making profits or losses in the short run, we need to introduce the average total cost curve.

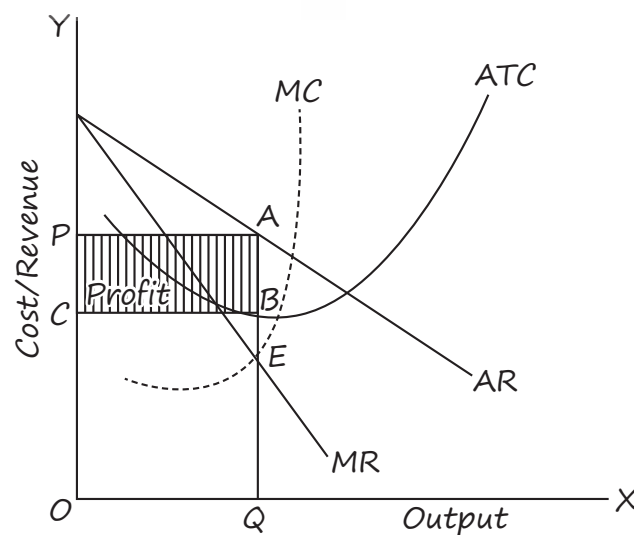
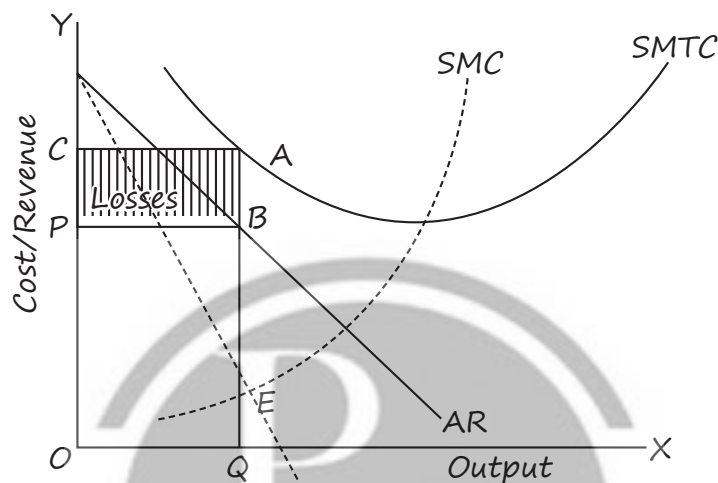


Figure. Firm's equilibrium under monopoly: Maximisation of profits

MC cuts MR at E to give equilibrium output as OQ. At OQ, the price charged is OP. At output level OQ, the price per unit is QA (=OP) and the cost per unit is BQ. Therefore, the economic profit per unit given by $AR - ATC$ is AB (AQ-BQ). The total profit is ABCP.

Can a monopolist incur losses?

One of the misconceptions about a monopoly firm is that it makes profits at all times. It is to be noted that there is no certainty that a monopolist will always earn an economic or supernormal profit. It all depends upon his demand and cost conditions. If a monopolist faces a very low demand for his product and the cost conditions are such that $ATC > AR$, he will not be making profits, rather, he will incur losses.



the monopolist incurs losses to the extent of AB per unit or total loss is ABPC. Whether the monopolist stays in business in the short run depends upon whether he meets his average variable cost or not. If he covers his average variable cost and at least a part of fixed cost, he will not shut down because he contributes something towards fixed costs which are already incurred. If he is unable to meet even his average variable cost, he will shutdown.

Long Run equilibrium

Long run is a period long enough to allow the monopolist to adjust his plant size or to use his existing plant at any level that maximizes his profit. In the absence of competition, the monopolist need not produce at the optimal level. He can produce at a sub-optimal scale also. In other words, he need not reach the minimum of LAC curve; he can stop at any point on the LAC where his profits are maximum.

However, one thing is certain, the monopolist will not continue if he makes losses in the long run. He will continue to make super normal profits even in the long run as entry of outside firms is blocked.

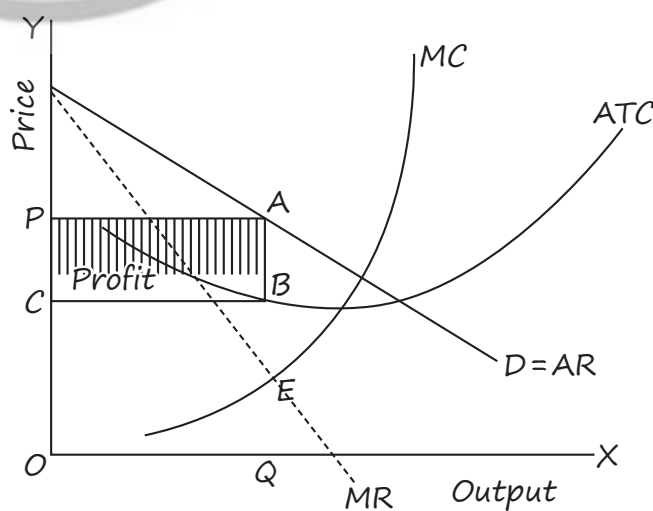


Figure. Long run equilibrium of a monopolist

PRICE DISCRIMINATION

Examples:

- ❑ The family doctor in your neighbourhood charges a higher fee from a rich patient compared to the fee charged from a poor patient even though both are suffering from viral fever. Why?
- ❑ Electricity companies sell electricity at a cheaper rate for home consumption in rural areas than for industrial use. Why?
- ❑ Railways separate high-value or relatively small-bulk commodities which can bear higher freight charges from other categories of goods.
- ❑ Some countries dump goods at low prices in foreign markets to capture them.
- ❑ Some universities charge higher tuition fees from evening class students than from other scholars.
- ❑ A lower subscription is charged from student readers in case of certain journals.
- ❑ Lower charges on phone calls at off peak time.

MEANING

- ❑ Price discrimination occurs when a producer sells a specific commodity or service to different buyers at two or more different prices for reasons not associated with differences in cost.
- ❑ Price discrimination is a method of pricing adopted by a monopolist in order to earn abnormal profits.
- ❑ Price discrimination cannot persist under perfect competition because the seller has no influence over the market determined price.

CONDITIONS FOR PRICE DISCRIMINATION

PRICE DISCRIMINATION IS POSSIBLE ONLY UNDER THE FOLLOWING CONDITIONS

- ❑ Firm should have price-setting power.
- ❑ The seller should be able to divide his market into two or more sub-markets.
- ❑ The price-elasticity of the product should be different in different sub-markets.
- ❑ monopolist charges a higher price in a market which has a relatively inelastic demand. ($e < 1$)
- ❑ monopolist charges a low price in a market which has a relatively elastic demand. ($e > 1$)
- ❑ It should not be possible for the buyers of low-priced market to resell the product to the buyers of high-priced market i.e. there must be no market arbitrage. (No arbitrage)
- ❑ On the whole, the monopolist benefits from such discrimination.

Example: The single monopoly price is ₹30 and the elasticities of demand in markets A and B are respectively 2 and 5. Then,

A numerical example will help you understand price-discrimination more clearly.

Suppose the single monopoly price is ₹30 and the elasticities of demand in markets A and B are respectively 2 and 5. Then,

$$\text{MR in market A} = AR_A \left(\frac{e-1}{e} \right) = 30 \left(\frac{2-1}{2} \right) = 15$$

$$\text{MR in Market B} = AR_B \left(\frac{e-1}{e} \right) = 30 \left(\frac{5-1}{5} \right) = 24$$

Marginal revenues in the two markets are different when elasticities of demand at the single price are different.

Marginal revenue in the market in which elasticity is high is greater than the marginal revenue in the market where elasticity is low.

Therefore, it is profitable for the monopolist to transfer some amount of the product from market A where elasticity is less and therefore marginal revenue is low, to market B where elasticity is high and marginal revenue is large.

Thus, when the monopolist transfers one unit from A to B, the loss in revenue (₹15) will be more than compensated by gain in revenue (₹24). On the whole, the gain in revenue will be ₹9 (24-15).

It is to be noted that when some units are transferred from A to B, the price in market A will rise and it will fall in B. This means that the monopolist is now discriminating between markets A and B. Again, It is to be noted that there is a limit to which units of output can be transferred from A to B.

Once this limit is reached and once a point is reached when the marginal revenues in the two markets become equal as a result of transfer of output, it will no longer be profitable to shift more output from market A to market B.

When this point of a equality is reached, the monopolist will be charging different prices in the two markets – a higher price in market A with lower elasticity of demand and a lower price in market B with higher elasticity of demand.

Objectives of Price discrimination

1. to earn maximum profit
2. to dispose off surplus stock
3. to enjoy economies of scale
4. to capture foreign markets and
5. to secure equity through pricing.

Price discrimination may take place for reasons such as

- differences in the nature and types of persons who buy the products,
- differences in the nature of locality where the products are sold and
- differences in the income level, age, size of the purchase, time of purchase.

Price discrimination may be related to the consumer surplus enjoyed by the consumers. Prof. Pigou classified three degrees of price discrimination.

Under the first degree price discrimination:

The monopolist separates the market into each individual consumer and charges them the price they are willing and able to pay and thereby extract the entire consumer surplus.

Doctors, lawyers, consultants etc., charging different fees, prices decided under 'bid and offer' system, auctions, and through negotiations are examples of first degree price discrimination.

Under the second degree price discrimination,

Different prices are charged for different quantities of sold. The two possibilities are:

1. Different consumers pay different price if they buy different quantity. Larger quantities are available at lower unit price.

For example, a family pack of soaps or biscuits tends to cost less per kg than smaller packs.

2. Each consumer pays different price for consecutive purchases. For example, suppliers of services such as telephone, electricity, water, etc., sometimes charge higher prices when consumption exceeds a particular limit.

Under the third degree price discrimination,

Price varies by attributes such as location or by customer segment. Here the monopolist will divide the consumers into separate sub-markets and charge different prices in different sub-markets.

Examples: Dumping, charging different prices for domestic and commercial uses, lower prices in railways for senior citizens, etc.

EQUILIBRIUM UNDER PRICE DISCRIMINATION

Under simple monopoly, a single price is charged for the whole output; but under price discrimination the monopolist will charge different prices in different sub-markets.

In order to reach the equilibrium position, the discriminating monopolist has to make three decisions:

1. How much total output should he produce?
2. How the total output should be distributed between the two sub-markets? and
3. What prices he should charge in the two sub-markets?
 - the discriminating monopolist will compare the marginal revenue with the marginal cost of the output.
 - But he has to find out first, the aggregate marginal revenue of the two sub-markets taken together and compare this aggregate marginal revenue with marginal cost of the total output.
 - Aggregate marginal revenue curve is obtained by summing up laterally the marginal revenue curves of the sub-markets.

The discriminating monopolist will maximize his profits by producing the level of output at which marginal cost curve (MC) intersects the aggregate marginal revenue curve (AMR).

It is manifest from the diagram (iii) that profit maximizing output is OM , for only at OM aggregate marginal revenue is equal to the marginal cost of the whole output. Thus, the discriminating monopolist will decide to produce OM level of output.

For the discriminating monopolist to be in equilibrium it is essential not only that the marginal revenues in the two sub-markets should be the same but that they should also be equal to the marginal cost of the whole output.

To conclude, demand and cost conditions being given, the discriminating monopolist will produce total output OM and will sell amount OM_1 in sub-market A and amount OM_2 in sub-market B. It should be noted that the total output OM will be equal to $OM_1 + OM_2$.

Another important thing which the discriminating monopolist has to discover is what prices will be charged in the two sub-markets.

It is clear from the demand curve that amount OM_1 of the good can be sold at price OP_1 in sub-market A.

Therefore, price OP_1 will be set in sub-market A. Like wise, amount OM_2 can be sold at price OP_2 in sub-market B. Therefore, price OP_2 will be set in sub-market B.

Further, it should be noted that price will be higher in market A where the demand is less elastic than in market B where the demand is more elastic. Thus, price OP_1 is greater than the price OP_2 .

Price discrimination is usually resorted to by a monopolist to secure higher profit and to acquire and sustain monopoly power.

There is loss of economic welfare as the price paid is higher than marginal cost. Price discrimination also results in reduced consumer surplus.

However, there are some favourable outcomes as well.

The increase in revenue due to price discrimination will enable some firms to stay in business who otherwise would have made a loss.

Many essential services (e.g. railways) cannot be profitably run unless price discrimination is followed.

Some consumers, especially, poor consumers, will benefit from lower prices as they would not have been able to purchase the good or service if uniform high prices are charged for all consumers.

Once the total output to be produced has been determined,

the next task for the discriminating monopolist is to distribute the total output between the two sub-markets.

He will distribute the total output OM in such a way that the marginal revenues in the two sub-markets are equal.

The marginal revenues in the two sub-markets must be equal if the profits are to be maximized.

If he is so allocating the output into two markets that the marginal revenues in the two are not equal, then it will pay him to transfer some amount from the sub-market in which the marginal revenue is less to the sub-market in which the marginal revenue is greater.

Only when the marginal revenues in the two markets are equal, it will be unprofitable for him to shift any amount of the good from one market to the other.

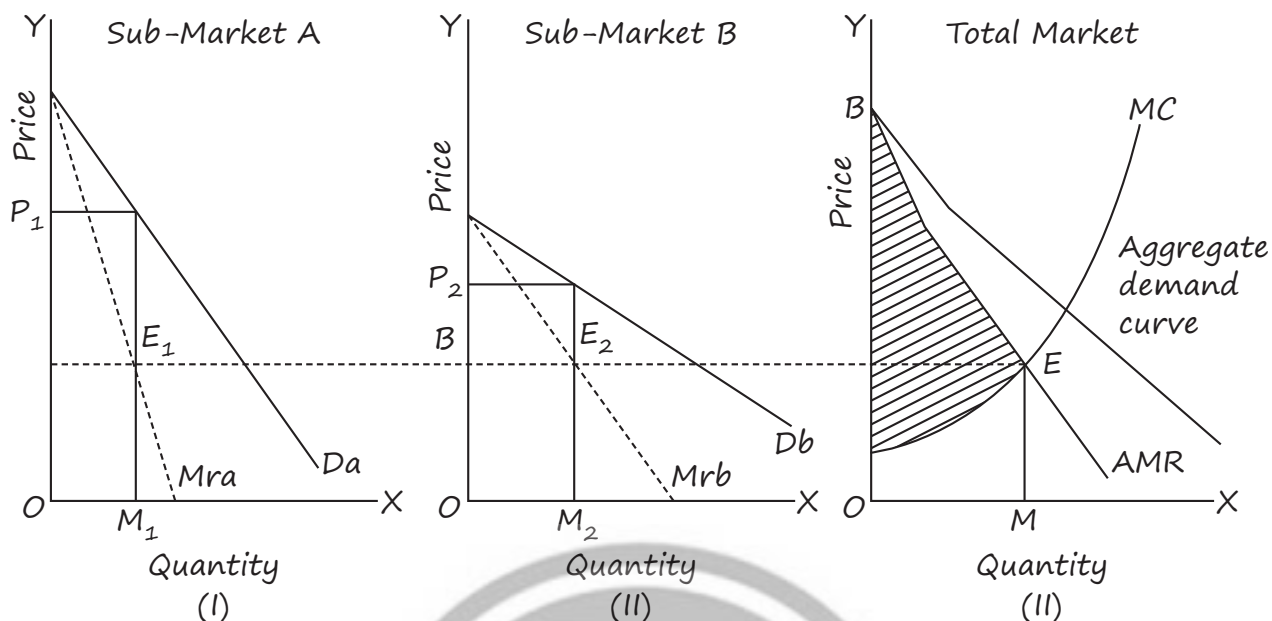


Figure. Fixation of total output and price in the two sub-markets by the discriminating monopolist

ECONOMIC EFFECTS OF MONOPOLY

1. Monopoly is often criticized because it reduces aggregate economic welfare through loss of productive and allocative efficiency.
2. Monopolists charge substantially higher prices and produce lower levels of output than would exist if the product were produced by competitive firms.
3. Monopolists earn economic profits in the long run which are unjustifiable.
4. Monopoly prices exceed marginal costs and therefore reduces consumer surplus. There is a transfer of income from the consumers to the monopolists. Not only that consumers pay higher prices, but they would also not be able to substitute the good or service with a more reasonably priced alternative.
5. Monopoly restricts consumer sovereignty and consumers' opportunities to choose what they desire.
6. Monopolists may use unjust means for creating barriers to entry to sustain their monopoly power. They often spend huge amount of money to maintain their monopoly position. This leads increases average total cost of producing a product.
7. A monopolist having substantial financial resources is in a powerful position to influence the political process in order to obtain favourable legislation.
8. Very often, monopolists do not have the necessary incentive to introduce efficient innovations that improve product quality and reduce production costs.
9. Monopolies are able to use their monopoly power to pay lower prices to their suppliers.

10. The economy is also likely to suffer from 'X' inefficiency, which is the loss of management efficiency associated with markets where competition is limited or absent.

Since monopolies are exploitative and generate undesirable outcomes in the economy, a number of steps are taken by governments to prevent the formation of monopolies and to regulate them if they are already present.

TRY YOUR UNDERSTANDING 4.2.3

- Prices in monopoly are higher than price under:
(a) Oligopoly (b) Duopoly (c) Monopoly (d) Perfect Competition
- No substitution are found in which form of Market:
(a) Perfect competition (b) Oligopoly
(c) Monopoly (d) Monopolistic Competition
- Monopolist can determine :
(a) Price (b) Output
(c) Either price or output (d) None
- Under which of the following forms of market structure does a firm has a very considerable control over the price of its product?
(a) Monopoly (b) Monopolistic Competition
(c) Oligopoly (d) Perfect Competition
- The distinction between a single firm and an Industry vanishes in which of the following market conditions?
(a) Perfect Competition (b) Imperfect Competition
(c) Pure Competition (d) Monopoly
- The demand curve of a monopoly firm will be
(a) Upward sloping (b) Downward sloping
(c) Horizontal (d) Vertical
- What is the shape of monopolist Average Revenue Curve?
(a) Falls from left to right
(b) Is parallel to X-axis
(c) Is parallel to Y-axis
(d) Rise from left to right

Answer Key

1. (d) 2. (c) 3. (c) 4. (a) 5. (d) 6. (b) 7. (a)

IMPERFECT COMPETITION-MONOPOLISTIC COMPETITION

The practice of product and service differentiation gives each seller a chance to attract business to himself on some basis other than price.

Thus, this market contains features of both the markets :- monopoly and perfect competition.



In fact, this type of market is more common than pure competition or pure monopoly. The industries in monopolistic competition include clothing, manufacturing and retail trade in large cities. There are many hundreds of grocery shops, shoe stores, stationery shops, restaurants, repair shops, laundries, manufacturers of women's dresses and beauty parlours in a medium sized or large city.

FEATURES OF MONOPOLISTIC COMPETITION

1. Large number of sellers:

- In a monopolistically competitive market, there are large number of independent firms who individually have a small share in the market.

2. Product differentiation:

- the products of different sellers are differentiated on the basis of brands.
- Because competing products are close substitutes, demand is relatively elastic, but not perfectly elastic as in perfect competition.
- Firms use size, design, color, shape, performance, features and distinctive packaging and promotional techniques to make their products different.
- all brands are close substitutes of one another; the seller who increases the price of the product will lose some of his customers to his competitors. Thus, this market is a blend of monopoly and perfect competition.

3. Freedom of entry and exit:

- Barriers to entry are comparatively low and new firms are free to enter the market if they find profit prospects and existing firms are free to quit.

4. Non-price competition:

- Sellers attempt to promote their products not by cutting prices but by incurring high expenditure on publicity and advertisement and other sales promoting techniques. This is because price competition may result in price – wars which may throw a few firms out of market or reduce the profit margins.

PRICE-OUTPUT DETERMINATION UNDER MONOPOLISTIC COMPETITION: EQUILIBRIUM OF A FIRM

In a monopolistically competitive market, since the product is differentiated, each firm does not face a perfectly elastic demand for its products. Each firm makes independent decisions about price and output. Each firm is a price maker and is in a position to determine the price of its own product. As such, the firm is faced with a downward sloping demand curve for its product. Generally, the less differentiated the product is from its competitors, the more elastic this curve will be.

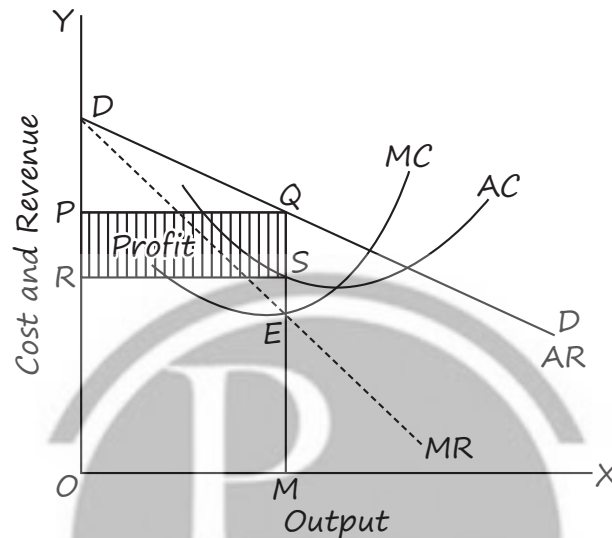


Figure. Short run equilibrium of a firm under monopolistic competition: Supernormal profits

The firm depicted in figure 29 has a downward sloping but flat demand curve for its product. The firm is assumed to have U-shaped short run cost curves.

CONDITIONS FOR THE EQUILIBRIUM OF AN INDIVIDUAL FIRM

The conditions for price-output determination and equilibrium of an individual firm may be stated as follows:

1. $MC = MR$
2. MC curve must cut MR curve from below.

Figure 29 shows that MC cuts MR curve at E. At E, the equilibrium price is OP and the equilibrium output is OM. Since per unit cost is SM, per unit supernormal profit (i.e. price - cost) is QS (or PR) and the total supernormal profit is PQSR.

It is also possible that a monopolistically competitive firm may incur losses in the short run. Price Determination in Different Markets

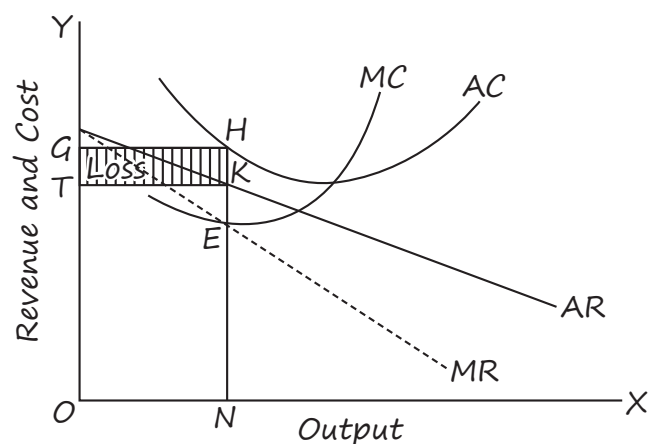


Fig.: Short run equilibrium of a firm under Monopolistic Competition - With losses

run. This is shown in fig. 30. The figure shows that per unit cost (HN) is higher than price OT (or KN) of the product of the firm and the loss per unit is KH (HN-KN). The total loss is GHKT.

What about long run equilibrium of the firm? If the firms in a monopolistically competitive industry earn supernormal profits in the short run, there will be an incentive for new firms to enter the industry. As more firms enter, profits per firm will go on decreasing as the total demand for the product will be shared among a larger number of firms. This will happen till all supernormal profits are wiped away and all firms earn only normal profits. Thus, in the long run all firms under monopolistic competition will earn only normal profits.

Figure 31 shows the long run equilibrium of a firm in a monopolistically competitive market. The average revenue curve touches the average cost curve at point T corresponding to quantity Q and price P. At equilibrium (i.e. $MC = MR$) supernormal profits are zero, since average revenue equals average costs. All firms are earning zero economic profits or just normal profits.

In case of persisting losses, in the long run, the loss making firms will exit from the market and this will go on till the remaining firms make normal profits only.

It is to be noted that an individual firm which is in equilibrium in the long run, will be operating at levels at which it does not fully realize economies of large scale production. In other words, the plants are not used to optimum capacity.

However, any attempt to produce more to secure the advantage of least cost production will be irrational since the price reduction to sell the larger output will exceed the cost reduction made possible. If output is increased up to R in the above figure, we find that average total cost will be greater than average revenue. Thus, a monopolistically competitive firm which is in equilibrium in the long run is at a position where it has excess capacity. That is, it is producing a lower quantity than its full capacity level. The firm in figure 31 could expand its output from Q to R and reduce average costs. But it does not do so because in doing so, the firm would reduce average revenue more than it reduces average costs. It implies that, firms in monopolistic competition are not of optimum size and there exists excess capacity (QR in our example above) of production with each firm.

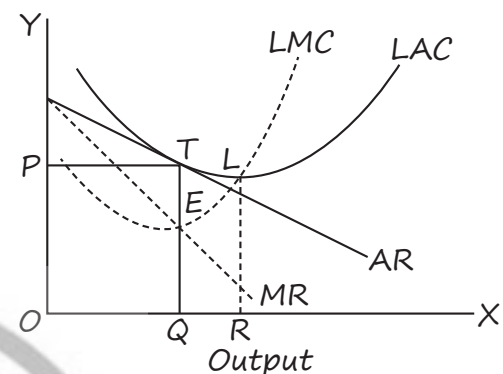


Fig.: The long-term equilibrium of a firm in monopolistic competition

SUMMARY (IN SIMPLE WORDS)

- ❑ the product is differentiated,
- ❑ each firm does not face a perfectly elastic demand for its products.
- ❑ Each firm makes independent decisions about price and output.
- ❑ Each firm is a price maker and is in a position to determine the price of its own product.

SHORT RUN EQUILIBRIUM OF A FIRM UNDER MONOPOLISTIC COMPETITION: SUPERNORMAL PROFITS

The firm depicted in figure has a downward sloping but flat demand curve for its product. The firm is assumed to have U-shaped short run cost curves.

CONDITIONS FOR THE EQUILIBRIUM OF AN INDIVIDUAL FIRM

The conditions for price-output determination and equilibrium of an individual firm may be stated as follows:

1. $MC = MR$
2. MC curve must cut MR curve from below.

LOSS

Monopolistically competitive firm may incur losses in the short run in the long run all firms under monopolistic competition will earn only normal profits.

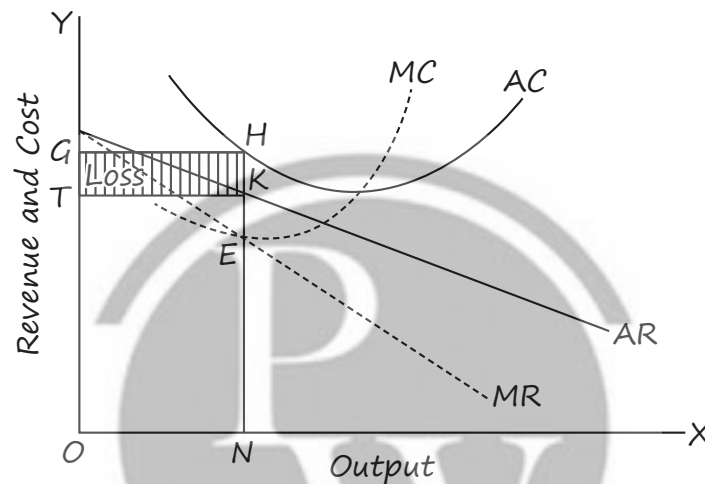


Figure. Short run equilibrium of a firm under Monopolistic Competition – With losses

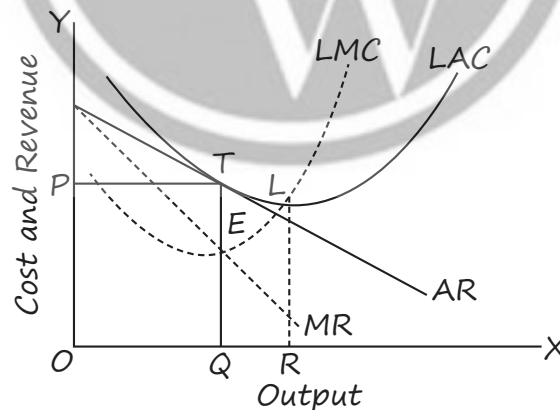


Figure. The long-term equilibrium of a firm in monopolistic competition

in the long run, the loss making firms will exit from the market and this will go on till the remaining firms make normal profits only.

TRY YOUR UNDERSTANDING 4.2.4

1. Monopolistic competition differs from perfect competition primarily because _____.
 - (a) In monopolistic competition, firms can differentiate their products.
 - (b) In perfect competition, firms can differentiate their products.

- (c) In monopolistic competition, entry into the industry is blocked.
 (d) In monopolistic competition, there are relatively few barriers to entry.
2. Which market have characteristic of product differentiation?
 (a) Perfect Competition (b) Monopoly
 (c) Monopolistic Competition (d) Oligopoly
3. The structure of the toothpaste industry in India is best described as _____.
 (a) Perfectly competitive. (b) Monopolistic.
 (c) Monopolistically competitive. (d) Oligopolistic.
4. A market structure in which many firms sell products that are similar but not identical is known as:
 (a) Monopolistic competition (b) Monopoly
 (c) Perfect competition (d) Oligopoly
5. Which market has the concept of 'group' equilibrium in the long-run _____.
 (a) Oligopoly (b) Monopoly
 (c) Monopolistic competition (d) Perfect competition.
6. In monopolistic competition excess capacity in the firm _____.
 (a) Always exists (b) Sometimes exists
 (c) Never exists (d) None of the above

Answer Key

1. (a) 2. (c) 3. (c) 4. (a) 5. (c) 6. (a)

The following table presents a comparison of the three market forms we have discussed so far:

Table-7: Comparison of Perfect Competition, Monopoly and Monopolistic Competition

| Perfect Competition | Monopoly | Monopolistic Competition |
|--|--|--|
| Large number of buyers and large number of firms in the industry | Single seller, no difference between firm and industry | Large number of buyers and large number of firms in the industry |
| Homogeneous products which are perfect substitutes | No close substitutes | Differentiated products which are close substitutes, but not perfect substitutes |
| Insignificant market share | Command over the whole market | Each firm is small relative to the market |
| Competition among firms is perfect | Absence of competition | Imperfect competition |
| Complete absence of monopoly | High degree of monopoly power prevails | Some degree of monopoly power due to product differentiation |
| Free entry and exit | Strong barriers to entry | Free entry and exit |

| <i>Perfect Competition</i> | <i>Monopoly</i> | <i>Monopolistic Competition</i> |
|---|---|--|
| <i>Price-taker</i> | <i>Price maker</i> | <i>Some control over price</i> |
| <i>Price is equal to marginal cost</i> | <i>Price is higher than marginal cost</i> | <i>Price is higher than marginal cost</i> |
| <i>Price less than other market forms</i> | <i>High equilibrium price</i> | <i>Price is high compared to perfect competition</i> |
| <i>Demand curve is infinitely elastic</i> | <i>Downward sloping and highly inelastic demand curve</i> | <i>Downward sloping and more elastic demand curve</i> |
| <i>MR and AR represented by the same curve</i> | <i>MR starts at the same point as AR, and is twice steep when compared to AR</i> | <i>MR starts at the same point as AR, and is twice steep when compared to AR</i> |
| <i>TR straight line positively sloping through the origin</i> | <i>TR inverted U shaped</i> | <i>TR inverted U shaped</i> |
| <i>No price discrimination - same price for all units</i> | <i>Can practice price discrimination by selling a product at different prices</i> | <i>Depends on the extent of monopoly power the firm has</i> |
| <i>No super-normal profits in the long run</i> | <i>Super normal profits both in the short run and long run</i> | <i>No super-normal profits in the long run</i> |
| <i>No selling costs</i> | <i>Generally low selling costs, only for informing the consumers</i> | <i>Due to severe competition, selling costs are vital to persuade buyers</i> |
| <i>Price being given, decides only quantity of output</i> | <i>Decides on both price and output</i> | <i>Decides on both price and output</i> |
| <i>Product is produced at the minimum average cost</i> | <i>Produced at the declining portion of average cost curve</i> | <i>Produced at the declining portion of average cost curve</i> |
| <i>Equilibrium quantity is highest and produced at least cost</i> | <i>Equilibrium quantity less than other market forms</i> | <i>Equilibrium quantity less than optimal, there is excess capacity</i> |
| <i>No consumer exploitation</i> | <i>Consumers can be exploited by charging high prices</i> | <i>Consumers are influenced through price and non price competition</i> |
| <i>Efficient allocation of resources</i> | <i>Inefficient allocation of resource</i> | <i>Inefficient allocation of resource</i> |
| <i>No wastage of resources</i> | <i>Wastage of resource</i> | <i>Huge wastage of resources for advertisements</i> |

OLIGOPOLY

- ❑ Oligopoly is an important form of imperfect competition.
- ❑ Oligopoly is often described as 'competition among the few'.
- ❑ Prof. Stigler defines oligopoly
- ❑ when there are few (two to ten) sellers in a market selling homogeneous or differentiated products, oligopoly is said to exist.
- ❑ under oligopoly a few firms exercise their power to keep possible competitors out.
- ❑ Example cold drinks industry or automobile industry. Airlines industry, petroleum refining, power generation, mobile telephony and Internet service providers

TYPES OF OLIGOPOLY

Pure oligopoly or perfect oligopoly

Differentiated or imperfect oligopoly

Open and closed oligopoly:

Collusive and Competitive oligopoly:

Partial or full oligopoly:

Syndicated and organized oligopoly:

PURE OLIGOPOLY OR PERFECT OLIGOPOLY

Occurs when the product is homogeneous in nature,

Example: Aluminium industry.

Steel industry

Petroleum Industry

This type of oligopoly tends to process raw materials or produce intermediate goods that are used as inputs by other industries.

DIFFERENTIATED OR IMPERFECT OLIGOPOLY

occurs when goods sold is based on product differentiation, e.g. Talcum powder

Open and closed oligopoly:

OPEN OLIGOPOLY

In an open oligopoly market new firms can enter the market and compete with the existing firms.

CLOSED OLIGOPOLY

in closed oligopoly entry is restricted.

COLLUSIVE AND COMPETITIVE OLIGOPOLY:

Collusive Oligopoly

When few firms of the oligopoly market come to a common understanding or act in collusion with each other either in fixing price or output or both.

Competitive Oligopoly

When there is absence of such an understanding among the firms and they compete with each other.

PARTIAL OR FULL OLIGOPOLY

Partial Oligopoly

when the industry is dominated by one large firm which is considered or looked upon as the leader of the group.

The dominating firm will be the price leader.

Full Oligopoly

In full oligopoly, the market will be conspicuous by the absence of price leadership.

SYNDICATED AND ORGANIZED OLIGOPOLY

Syndicated Oligopoly

Refers to that situation where the firms come together and sell their products with common interest through a centralized syndicate.

Organized Oligopoly

Refers to the situation where the firms have central association for fixing the prices, output, quotas, etc.

Characteristics of Oligopoly Market

- ❑ The oligopolistic industry is dominated by a small number of large firms, each of which is comparatively large relative to the total size of the market.
- ❑ These large firms exercise considerable control over the market.
- ❑ An oligopoly market may have a large number of firms along with very large firms, but most of the market share will be enjoyed by the few large firms and therefore they conquer and retain market control.
- ❑ There are strong barriers to entry (refer barriers to entry discussed under monopoly).

STRATEGIC INTERDEPENDENCE

The most important feature of oligopoly is interdependence in decision-making of the few firms which comprise the industry.

A firm has to necessarily respond to its rivals' actions, and simultaneously the rivals also respond to the firm's actions.

IMPORTANCE OF ADVERTISING AND SELLING COST

Firms have to employ various aggressive and defensive marketing weapons to gain greater share in the market or to maintain their share.

It is to be noted that firms in such type of market avoid price cutting and try to compete on non-price basis.

GROUP BEHAVIOUR

The theory of oligopoly is a theory of group behaviour,

The group may or may not have a leader.

If there is a firm which acts as a leader, it has to get others to follow it.

Each oligopolist closely watches the business behaviour of the other oligopolists in the industry

PRICE AND OUTPUT DECISIONS IN AN OLIGOPOLISTIC MARKET

An oligopolistic firm cannot have sure and determinate demand curve, since the demand curve keeps shifting as the rivals change their prices in reaction to the price changes made by it.

Now when an oligopolist does not know his demand curve, what price and output he will fix cannot be ascertained by economic analysis.

However, economists have established a number of price-output models for oligopoly market depending upon the behaviour pattern of other firms in the market.

IMPORTANT OLIGOPOLY MODELS ARE

1. It is assumed by some economists that oligopolistic firms ignore their interdependence and make their decisions independently.
When interdependence is ignored, the demand curve becomes definite and the equilibrium output is found out by equating marginal cost and marginal revenue.
2. Some economists assume that an oligopolist is able to predict the reaction pattern of his competitors and on the basis of his prediction; he makes decisions relating to price and quantity.
 - **In Cournot model:** the firms' control variable is output in contrast to price. They do not collude.
 - **In Stackelberg's model:** the leader commits to an output before all other firms. The rest of the firms are followers and they choose their outputs so as to maximize profits, given the leader's output.
 - **In Bertrand model:** price is the control variable for firms and each firm independently sets its price in order to maximize profits.
3. The third approach is that oligopolists enter into agreement and try to pursue their common interests.
 - They jointly act as a monopoly organization and fix their prices in such a manner that their joint profits are maximized.
 - They will then share the profits, market or output among them as agreed. Entering into collusion or forming a cartel is generally considered illegal because it restricts trade and creates situations which are close to monopoly.

PRICE LEADERSHIP

- Cartels are often formed in industries where there are a few firms, all of which are similar in size.

- ❑ A group of firms that explicitly agree (collude) to coordinate their activities is called a cartel.
- ❑ large firm surrounded by a large number of small firms.
- ❑ the large firm has to decide how to set its price
- ❑ One strategy is to adopt a 'live and let live philosophy'
- ❑ Specifically, the dominant firm accepts the presence of fringe firms and sets the price to maximize its profit, taking into account the fringe firms' behaviour.
- ❑ This is called price-leadership by dominant firm.

ANOTHER TYPE OF PRICE LEADERSHIP IS BY A LOW COST FIRM

- ❑ Here, the price leader sets the price in such a manner that it allows some profits to the followers also.
- ❑ Whatever price is charged by the price leader is generally accepted by the follower firms.
- ❑ Thus, we find that fixing of price under oligopoly is very tricky affair and involves a number of assumptions regarding the behaviour of the oligopolistic group.

TRY YOUR UNDERSTANDING 4.2.5

1. Which of the following is true?
 - (a) Perfect competition sells heterogeneous product
 - (b) Oligopolistic incurs a good amount of selling cost
 - (c) Monopolist always earns super normal profit
 - (d) Oligopolistic economy do not get hike in their normal profit

Answer Key

1. (b)

KINKED DEMAND CURVE

It has been observed that in many oligopolistic industries prices remain sticky or inflexible for a long time.

Many explanations have been given for this price rigidity under oligopoly and the most popular explanation is the kinked demand curve hypothesis given by an American economist Paul A. Sweezy. Hence this is called Sweezy's Model.

The demand curve facing an oligopolist, according to the kinked demand curve hypothesis, has a 'kink' at the level of the prevailing price. It is because the segment of the demand curve above the prevailing price level is highly elastic and the segment of the demand curve below the prevailing price level is inelastic. A kinked demand curve dD with a kink at point P is shown in Fig. 32.

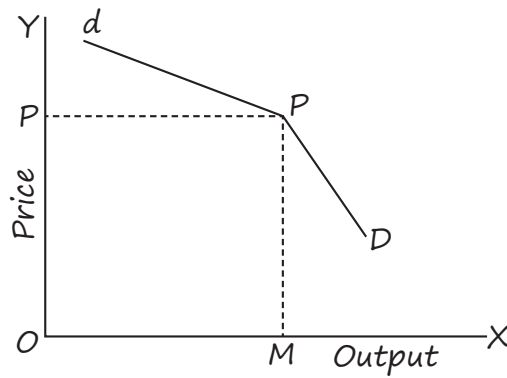


Figure. Kinked Demand Curve under oligopoly

Each oligopolist believes that if it lowers the price below the prevailing level its competitors will follow him and will accordingly lower prices, (inelastic)

Whereas if it raises the price above the prevailing level, its competitors will not follow its increase in price.(elastic)

TRY YOUR UNDERSTANDING 4.2.6

- In Oligopoly upper part shows which elasticity:
 - Less than
 - Greater than
 - Zero
 - Negative
- One characteristic not typical of oligopolistic industry is:
 - Horizontal demand curve.
 - Too much importance to non-price competition.
 - Price leadership.
 - A small number of firms in the industry.
- The structure of the cold drink industry in India is best described as:
 - Perfectly competitive.
 - Monopolistic.
 - Monopolistically competitive.
 - Oligopolistic.
- Price rigidity is a situation found in which of the following market forms?
 - Perfect competition.
 - Monopoly.
 - Monopolistic competition.
 - Oligopoly.
- Oligopoly having identical products is known as
 - Pure oligopoly
 - Collusive oligopoly
 - Independent oligopoly
 - None of these
- When the industry is dominated by one large firm which is considered as the leader of the group, the market is described as:
 - Open oligopoly
 - Perfect oligopoly
 - Partial oligopoly
 - Organized oligopoly.
- The demand curve of oligopoly is:
 - Horizontal
 - Vertical
 - Kinked
 - Rising left to right

8. When new firms of the oligopoly market come to a common understanding or act in collusion with each other either in fixing price or output or both, then it is called as
- (a) Competitive oligopoly (b) Syndicated oligopoly
(c) Collusive oligopoly (d) Partial oligopoly

Answer Key

1. (b) 2. (a) 3. (d) 4. (d) 5. (a) 6. (c) 7. (c) 8. (c)

OTHER IMPORTANT MARKET FORMS

Other important market forms are:

Duopoly, a subset of oligopoly, is a market situation in which there are only two firms in the market.

Monopsony is a market characterized by a single buyer of a product. or service and is mostly applicable to factor markets in which a single firm is the only buyer of a factor.

Oligopsony is a market characterized by a small number of large buyers and is mostly relevant to factor markets.

Bilateral monopoly is a market structure in which there is only a single buyer and a single seller i.e. it is a combination of monopoly market and a monopsony market.

TRY YOUR UNDERSTANDING 4.2.7

1. Monopsony means
- (a) Where there are large firms
(b) There is a single buyer
(c) Small number of large buyers
(d) Single seller and single buyer

Answer Key

1. (b)

NAME OF ECONOMIST IN THIS CHAPTER

| | |
|----------------|--|
| Prof. | Defined oligopoly |
| Paul A. Swezy | Kinked demand curve |
| Cournot Model | The firms Control variable is output in contrast to price |
| Stackelberg | The leader commits to an output before all other firms |
| Bertrand Model | Price is contral variable for firms and each firms is independently sets its price in order to maximize profits. |

MULTIPLE CHOICE QUESTIONS

1. In the table below what will be equilibrium market price?

| Price (₹) | Demand (tonnes per annum) | Supply (tonnes per annum) |
|-----------|---------------------------|---------------------------|
| 1 | 1000 | 400 |
| 2 | 900 | 500 |
| 3 | 800 | 600 |
| 4 | 700 | 700 |
| 5 | 600 | 800 |
| 6 | 500 | 900 |
| 7 | 400 | 1000 |
| 8 | 300 | 1100 |

- (a) ₹2 (b) ₹3 (c) ₹4 (d) ₹5

2. Assume that when price is ₹20, the quantity demanded is 9 units, and when price is ₹19, the quantity demanded is 10 units. Based on this information, what is the marginal revenue resulting from an increase in output from 9 units to 10 units.

- (a) ₹20 (b) ₹19 (c) ₹10 (d) ₹1

3. Assume that when price is ₹20, the quantity demanded is 15 units, and when price is ₹18, the quantity demanded is 16 units. Based on this information, what is the marginal revenue resulting from an increase in output from 15 units to 16 units?

- (a) ₹18 (b) ₹16 (c) ₹12 (d) ₹28

4. Suppose a firm is producing a level of output such that $MR > MC$, what should be firm do to maximize its profits?

- (a) The firm should do nothing
 (b) The firm should hire less labour
 (c) The firm should increase price
 (d) The firm should increase output

5. Marginal Revenue is equal to:

- (a) The change in price divided by the change in output
 (b) The change in quantity divided by the change in price
 (c) The change in $P \times Q$ due to a one unit change in output
 (d) Price, but only if the firm is a price searcher

6. Suppose that a sole proprietorship is earning total revenues of ₹1,00,000 and is incurring explicit costs of ₹75,000. If the owner could work for another company for ₹30,000 a year, we would conclude that :

- (a) The firm is incurring an economic loss
 (b) Implicit costs are ₹25,000

- (c) The total economic costs are ₹1,00,000
(d) The individual is earning an economic profit of ₹25,000
7. Which of the following is not an essential condition of pure competition?
(a) Large number of buyers and sellers
(b) Homogeneous product
(c) Freedom of entry
(d) Absence of transport cost
8. What is the shape of the demand curve faced by a firm under perfect competition?
(a) Horizontal (b) Vertical
(c) Positively sloped (d) Negatively sloped
9. Which is the first order condition for the profit of a firm to be maximum?
(a) $AC = MR$
(b) $MC = MR$
(c) $MR = AR$
(d) $AC = AR$
10. Which of the following is not a characteristic of a “price-taker”?
(a) $TR = P \times Q$
(b) $AR = \text{Price}$
(c) Negatively – sloped demand curve
(d) Marginal Revenue = Price
11. Which of the following statements is false?
(a) Economic costs include the opportunity costs of the resources owned by the firm
(b) Accounting costs include only explicit costs
(c) Economic profit will always be less than accounting profit if resources owned and used by the firm have any opportunity costs
(d) Accounting profit is equal to total revenue less implicit costs
12. With a given supply curve, a decrease in demand causes
(a) an overall decrease in price but an increase in equilibrium quantity
(b) an overall increase in price but a decrease in equilibrium quantity
(c) an overall decrease in price and a decrease in equilibrium quantity
(d) no change in overall price but a reduction in equilibrium quantity
13. It is assumed in economic theory that
(a) decision making within the firm is usually undertaken by managers, but never by the owners
(b) the ultimate goal of the firm is to maximise profits, regardless of firm size or type of business organisation
(c) as the firm’s size increases, so do its goals
(d) the basic decision making unit of any firm is its owners

14. Assume that consumers' incomes and the number of sellers in the market for good A both decrease. Based upon this information, we can conclude, with certainty, that the equilibrium:
- (a) price will increase (b) price will decrease
 (c) quantity will increase (d) quantity will decrease
15. If supply increases in a greater proportion than demand
- (a) The new equilibrium price and quantity will be greater than the original equilibrium price and quantity
 (b) The new equilibrium price will be greater than the original equilibrium price but equilibrium quantity will be higher
 (c) The new equilibrium price and quantity will be lower than the original equilibrium price and quantity
 (d) The new equilibrium price will be lower than the original equilibrium and the new equilibrium quantity will be higher
16. Assume that in the market for good Z there is a simultaneous increase in demand and the quantity supplied. The result will be :
- (a) an increase in equilibrium price and quantity
 (b) a decrease in equilibrium price and quantity
 (c) an increase in equilibrium quantity and uncertain effect on equilibrium price
 (d) a decrease in equilibrium price and increase in equilibrium quantity.
17. Suppose the technology for producing personal computers improves and, at the same time, individuals discover new uses for personal computers so that there is greater utilisation of personal computers. Which of the following will happen to equilibrium price and equilibrium quantity?
- (a) Price will increase; quantity cannot be determined
 (b) Price will decrease; quantity cannot be determined
 (c) Quantity will increase; price cannot be determined
 (d) Quantity will decrease; price cannot be determined
18. Which of the following is not a condition of perfect competition?
- (a) A large number of firms
 (b) Perfect mobility of factors
 (c) Informative advertising to ensure that consumers have good information
 (d) Freedom of entry and exit into and out of the market
19. Which of the following is not a characteristic of a perfectly competitive market?
- (a) Large number of firms in the industry
 (b) Outputs of the firms are perfect substitutes for one another
 (c) Firms face downward-sloping demand curves
 (d) Resources are very mobile
20. Which of the following is not a characteristic of monopolistic competition?
- (a) Ease of entry into the industry
 (b) Product differentiation

- (c) A relatively large number of sellers
 - (d) A homogeneous product
21. Monopoly may arise in a product market because
- (a) A significantly important resource for the production of the commodity is owned by a single firm
 - (b) The government has given the firm patent right to produce the commodity
 - (c) The costs of production and economies of scale makes production by a single producer more efficient
 - (d) All the above
22. Oligopolistic industries are characterized by:
- (a) a few dominant firms and substantial barriers to entry
 - (b) a few large firms and no entry barriers
 - (c) a large number of small firms and no entry barriers
 - (d) one dominant firm and low entry barriers
23. Price-taking firms, i.e., firms that operate in a perfectly competitive market, are said to be “small” relative to the market. Which of the following best describes this smallness?
- (a) The individual firm must have fewer than 10 employees
 - (b) The individual firm faces a downward-sloping demand curve
 - (c) The individual firm has assets of less than ₹20 lakhs
 - (d) The individual firm is unable to affect market price through its output decisions
24. For a price-taking firm :
- (a) marginal revenue is less than price
 - (b) marginal revenue is equal to price
 - (c) marginal revenue is greater than price
 - (d) the relationship between marginal revenue and price is indeterminate
25. Monopolistic competition differs from perfect competition primarily because
- (a) in monopolistic competition, firms can differentiate their products
 - (b) in perfect competition, firms can differentiate their products
 - (c) in monopolistic competition, entry into the industry is blocked
 - (d) in monopolistic competition, there are relatively few barriers to entry
26. The long-run equilibrium outcomes in monopolistic competition and perfect competition are similar, because in both market structures
- (a) the efficient output level will be produced in the long run
 - (b) firms will be producing at minimum average cost
 - (c) firms will only earn a normal profit
 - (d) firms realise all economies of scale
27. Which of the following is the distinguishing characteristic of oligopolies?
- (a) A standardized product
 - (b) The goal of profit maximization

- (c) The interdependence among firms
 (d) Downward-sloping demand curves faced by firms
28. In which form of the market structure is the degree of control over the price of its product by a firm very large?
 (a) Monopoly (b) Imperfect Competition
 (c) Oligopoly (d) Perfect competition
29. Average revenue curve is also known as:
 (a) Profit Curve (b) Demand Curve
 (c) Average Cost Curve (d) Indifference Curve
30. Under which of the following forms of market structure does a firm have no control over the price of its product?
 (a) Monopoly (b) Monopolistic competition
 (c) Oligopoly (d) Perfect competition
31. Discriminating monopoly implies that the monopolist charges different prices for his commodity:
 (a) from different groups of consumers
 (b) for different uses
 (c) at different places
 (d) any of the above
32. Price discrimination will be profitable only if the elasticity of demand in different sub-markets is:
 (a) uniform (b) different (c) less (d) zero
33. In the context of oligopoly, the kinked demand hypothesis is designed to explain
 (a) Price and output determination
 (b) Price rigidity
 (c) Price leadership
 (d) Collusion among rivals
34. The firm in a perfectly competitive market is a price-taker. This designation as a price-taker is based on the assumption that
 (a) the firm has some, but not complete, control over its product price
 (b) there are so many buyers and sellers in the market that any individual firm cannot affect the market
 (c) each firm produces a homogeneous product
 (d) there is easy entry into or exit from the market place
35. Suppose that the demand curve for the XYZ Co. slopes downward and to the right. We can conclude that
 (a) the firm operates in a perfectly competitive market
 (b) the firm can sell all that it wants to at the established market price
 (c) the XYZ Co. is not a price-taker in the market because it must lower price to sell additional units of output
 (d) the XYZ Co. will not be able to maximise profits because price and revenue are subject to change

36. If firms in the toothpaste industry have the following market shares, which market structure would best describe the industry?

| Market share | (% of market) |
|------------------------------------|---------------|
| Toothpaste | 18.7 |
| Dentipaste | 14.3 |
| Shinibright | 11.6 |
| I can't believe its not toothpaste | 9.4 |
| Brighter than white | 8.8 |
| Pastystuff | 7.4 |
| Others | 29.8 |

- (a) Perfect competition
 (b) Monopolistic competition
 (c) Oligopoly
 (d) Monopoly
37. The kinked demand curve model of oligopoly assumes that
 (a) the response (of consumers) to a price increase is less than the response to a price decrease
 (b) the response (of consumers) to a price increase is more than the response to a price decrease
 (c) the elasticity of demand is constant regardless of whether price increases or decreases
 (d) the elasticity of demand is perfectly elastic if price increases and perfectly inelastic if price decreases
38. A firm encounters its “shutdown point” when:
 (a) average total cost equals price at the profit-maximising level of output
 (b) average variable cost equals price at the profit-maximising level of output
 (c) average fixed cost equals price at the profit-maximising level of output
 (d) marginal cost equals price at the profit-maximising level of output
39. Suppose that, at the profit-maximizing level of output, a firm finds that market price is less than average total cost, but greater than average variable cost. Which of the following statements is correct?
 (a) The firm should shutdown in order to minimise its losses
 (b) The firm should raise its price enough to cover its losses
 (c) The firm should move its resources to another industry
 (d) The firm should continue to operate in the short run in order to minimize its losses
40. When price is less than average variable cost at the profit-maximising level of output, a firm should:
 (a) produce where marginal revenue equals marginal cost if it is operating in the short run
 (b) produce where marginal revenue equals marginal cost if it is operating in the long run

- (c) shutdown, since it will lose nothing in that case
 (d) shutdown, since it cannot even cover its variable costs if it stays in business
41. A purely competitive firm's supply schedule in the short run is determined by
 (a) its average revenue
 (b) its marginal revenue
 (c) its marginal utility for money curve
 (d) its marginal cost curve
42. One characteristic not typical of oligopolistic industry is
 (a) horizontal demand curve
 (b) too much importance to non-price competition
 (c) price leadership
 (d) a small number of firms in the industry
43. The structure of the toothpaste industry in India is best described as
 (a) perfectly competitive (b) monopolistic
 (c) monopolistically competitive (d) oligopolistic
44. The structure of the cold drink industry in India is best described as
 (a) perfectly competitive (b) monopolistic
 (c) monopolistically competitive (d) oligopolistic
45. Which of the following statements is incorrect?
 (a) Even a monopolistic firm can have losses
 (b) Firms in a perfectly competitive market are price takers
 (c) It is always beneficial for a firm in a perfectly competitive market to discriminate prices
 (d) Kinked demand curve is related to an oligopolistic market
46. Under perfect competition, in the long run, there will be no _____.
 (a) normal profits (b) supernormal profits
 (c) production (d) costs
47. When _____, we know that the firms are earning just normal profits.
 (a) $AC = AR$ (b) $MC = MR$
 (c) $MC = AC$ (d) $AR = MR$
48. When _____, we know that the firms under perfect competition must be producing at the minimum point of the average cost curve and so there will be productive efficiency.
 (a) $AC = AR$ (b) $MC = AC$
 (c) $MC = MR$ (d) $AR = MR$
49. When _____, there will be allocative efficiency meaning thereby that the cost of the last unit is exactly equal to the price consumers are willing to pay for it and so that the right goods are being sold to the right people at the right price.
 (a) $MC = MR$ (b) $MC = AC$
 (c) $MC = AR$ (d) $AR = MR$

50. Agricultural goods markets depict characteristics close to
(a) perfect competition (b) oligopoly
(c) monopoly (d) monopolistic competition
51. Which of the following is not a characteristic of a competitive market?
(a) There are many buyers and sellers in the market
(b) The goods offered for sales are largely the same
(c) Firms generate small but positive supernormal profits in the long run
(d) Firms can freely enter or exit the market
52. Which of the following markets would most closely satisfy the requirements for a perfectly competitive market?
(a) Electricity (b) Cable television
(c) Cola (d) Milk
53. Which of the following statements is accurate regarding a perfectly competitive firm?
(a) Demand curve is downward sloping
(b) The demand curve always lies above the marginal revenue curve
(c) Average revenue need not be equal to price
(d) Price is given and is determined by the equilibrium in the entire market
54. The market for hand tools (such as hammers and screwdrivers) is dominated by Draper, Stanley, and Craftsman. This market is best described as
(a) Monopolistically competitive
(b) a monopoly
(c) an oligopoly
(d) perfectly competitive
55. A market structure in which many firms sell products that are similar but not identical is known as
(a) monopolistic competition (b) monopoly
(c) perfect competition (d) oligopoly
56. When an oligopolist individually chooses its level of production to maximize its profits, it charges a price that is
(a) more than the price charged by either monopoly or a competitive market
(b) less than the price charged by either monopoly or a competitive market
(c) more than the price charged by a monopoly and less than the price charged by a competitive market
(d) less than the price charged by a monopoly and more than the price charged by a competitive market.
57. In the long-run equilibrium of a competitive market, firms operate at
(a) the intersection of the marginal cost and marginal revenue
(b) their efficient scale
(c) zero economic profit
(d) all of these answers are correct

58. Which of the following is not a characteristic of a monopolistically competitive market?
 (a) Free entry and exit (b) Abnormal profits in the long run
 (c) Many sellers (d) Differentiated products
59. In a very short period market:
 (a) the supply is fixed (b) the demand is fixed
 (c) demand and supply are fixed (d) none of the above
60. Time element was conceived by
 (a) Adam Smith (b) Alfred Marshall
 (c) Pigou (d) Lionel Robinson
61. Total revenue =
 (a) price \times quantity (b) price \times income
 (c) income \times quantity (d) none of the above
62. Average revenue is the revenue earned
 (a) per unit of input (b) per unit of output
 (c) different units of input (d) different units of output
63. AR can be symbolically written as:
 (a) MR / Q (b) Price \times quantity
 (c) TR / Q (d) none of the above
64. AR is also known as:
 (a) price (b) income (c) revenue (d) none of the above
65. Marginal revenue can be defined as the change in total revenue resulting from the:
 (a) purchase of an additional unit of a commodity
 (b) sales of an additional unit of a commodity
 (c) sale of subsequent units of a product
 (d) none of the above
66. When $e > 1$ then MR is
 (a) zero (b) negative (c) positive (d) one
67. When $e = 1$ then MR is
 (a) positive (b) zero (c) one (d) negative
68. When $e < 1$ then MR is
 (a) negative (b) zero (c) positive (d) one
69. In Economics, the term 'market' refers to a:
 (a) place where buyer and seller bargain a product or service for a price
 (b) place where buyer does not bargain
 (c) place where seller does not bargain
 (d) none of the above

70. Under perfect competition a firm is the _____.
- (a) price-maker and not price-taker
 - (b) price-taker and not price-maker
 - (c) neither price-maker nor price-taker
 - (d) none of the above
71. A Monopolist is a
- (a) price-maker
 - (b) price-taker
 - (c) price-adjuster
 - (d) none of the above
72. Price discrimination is one of the features of _____.
- (a) monopolistic competition
 - (b) monopoly
 - (c) perfect competition
 - (d) oligopoly
73. Under monopoly, the degree of control over price is:
- (a) none
 - (b) some
 - (c) very considerable
 - (d) none of the above
74. Generally, perishable goods like butter, eggs, milk, vegetables etc., will have
- (a) regional market
 - (b) local market
 - (c) national market
 - (d) none of the above
75. At price P_1 , the firm in the figure would produce
- (a) Zero output
 - (b) Q_3
 - (c) Q_5
 - (d) Q_6
76. Secular period is also known as
- (a) very short period
 - (b) short period
 - (c) very long period
 - (d) long period
77. Stock exchange market is an example of
- (a) unregulated market
 - (b) regulated market
 - (c) spot market
 - (d) none of the above
78. The market for the ultimate consumers is known as
- (a) whole sale market
 - (b) regulated market
 - (c) unregulated market
 - (d) retail market
79. The condition for pure competition is
- (a) large number of buyer and seller, free entry and exist
 - (b) homogeneous product
 - (c) both (a) and (b)
 - (d) large number of buyer and seller, homogeneous product, perfect knowledge about the product
80. Pure oligopoly is based on the _____ products
- (a) differentiated
 - (b) homogeneous
 - (c) unrelated
 - (d) none of the above

81. In oligopoly, when the industry is dominated by one large firm which is considered as leader of the group, Then it is called:
- (a) full oligopoly (b) collusive oligopoly
(c) partial oligopoly (d) syndicated oligopoly
82. When the products are sold through a centralized body, oligopoly is known as
- (a) organized oligopoly (b) partial oligopoly
(c) competitive oligopoly (d) syndicated oligopoly
83. When the monopolist divides the consumers into separate sub markets and charges different prices in different sub-markets it is known as
- (a) first degree of price discrimination
(b) second degree of price discrimination
(c) third degree of price discrimination
(d) none of the above
84. Under _____ the monopolist will fix a price which will take away the entire consumers' surplus.
- (a) second degree of price discrimination
(b) first degree of price discrimination
(c) third degree of price discrimination
(d) none of the above
85. Price discrimination is related to
- (a) time (b) size of the purchase
(c) income (d) any of the above
86. The firm and the industry are one and the same in _____
- (a) Perfect competition (b) Monopolistic competition
(c) Duopoly (d) Monopoly
87. The demand curve of a monopoly firm will be
- (a) Upward sloping (b) Downward sloping
(c) Horizontal (d) Vertical
88. If the average cost is higher than the average revenue then the firm incurs _____
- (a) Normal profit (b) Abnormal profit
(c) Loss (d) No profit, no loss
89. Which of the following statements is correct?
- (a) Price rigidity is an important feature of monopoly
(b) Selling costs are possible under perfect competition
(c) Under perfect competition factors of production do not move freely as there are legal restrictions
(d) An industry consists of many firms

90. Which of the following statements is incorrect?
- Under monopoly there is no difference between a firm and an industry
 - A monopolist may restrict the output and raise the price
 - Commodities offered for sale under a perfect competition will be heterogeneous
 - Product differentiation is peculiar to monopolistic competition
91. For market the essential condition is –
- A particular geographical place
 - Control of the government
 - Close contact between buyers and sellers
 - None of these
92. Assume that when Price is ₹10, the quantity demanded is 5 units and when Price is ₹12 the quantity demanded is 4 units. Based on this information, what is the Marginal Revenue resulting from increase in output from 4 units to 5 units.
- ₹5
 - ₹4
 - ₹2
 - ₹3
93. Average revenue is equal to
- The change in P & Q due to a one unit change in output
 - Nothing but price of one unit of output
 - The change in quantity divided by change in price
 - Graphically it denotes the firm's supply curve
94. Example of a commodity said to have an International Market
- Perishable Goods
 - High Value and Small Bulk Commodities
 - Product whose trading is restricted by government
 - Bulky Articles
95. Stock Exchange is example of _____ Market:
- Regulated Market
 - Spot Market
 - Forward Market
 - Retail Market
96. Conditions for equilibrium of a firm are:
- MR = MC
 - MC should cut MR from below
 - MR = AR and MC should cut MR from below
 - MR = MC and MC should have a positive slope
97. Natural Monopoly arises when
- There is enormous goodwill enjoyed by a firm
 - There are stringent legal and regulatory requirement
 - There are very large Economies of Scale
 - There are Business Combinations and Cartels

98. Price Discrimination cannot persist under the following market form:

- (a) Perfect Competition (b) Monopoly
(c) Monopolistic (d) Oligopoly

99. Sweezy's Model explains the concept of price rigidity relating to following market form:

- (a) Oligopoly Market (b) Perfect Competition Market
(c) Monopoly Market (d) Monopolistic Market

100. Combination of Monopoly Market and Monopsony Market is called as:

- (a) Duopoly Market (b) Oligopoly Market
(c) Bilateral Monopoly Market (d) Monopolistic Market

101. Price varies by attributes such as location or by Customer Segment is degree of Price Discrimination.

- (a) First (b) Second (c) Third (d) Fourth

Answer Key

| | | | | | | | |
|---------|---------|---------|----------|----------|---------|---------|---------|
| 1. (c) | 2. (c) | 3. (c) | 4. (d) | 5. (c) | 6. (a) | 7. (d) | 8. (a) |
| 9. (b) | 10. (c) | 11. (d) | 12. (c) | 13. (b) | 14. (d) | 15. (d) | 16. (c) |
| 17. (c) | 18. (c) | 19. (c) | 20. (d) | 21. (d) | 22. (a) | 23. (d) | 24. (b) |
| 25. (a) | 26. (c) | 27. (c) | 28. (a) | 29. (b) | 30. (d) | 31. (d) | 32. (b) |
| 33. (b) | 34. (b) | 35. (c) | 36. (c) | 37. (b) | 38. (b) | 39. (d) | 40. (d) |
| 41. (d) | 42. (a) | 43. (c) | 44. (d) | 45. (c) | 46. (b) | 47. (a) | 48. (b) |
| 49. (c) | 50. (a) | 51. (c) | 52. (d) | 53. (d) | 54. (c) | 55. (a) | 56. (d) |
| 57. (d) | 58. (b) | 59. (a) | 60. (b) | 61. (a) | 62. (b) | 63. (c) | 64. (a) |
| 65. (b) | 66. (c) | 67. (b) | 68. (a) | 69. (a) | 70. (b) | 71. (a) | 72. (b) |
| 73. (c) | 74. (b) | 75. (a) | 76. (c) | 77. (b) | 78. (d) | 79. (c) | 80. (b) |
| 81. (c) | 82. (d) | 83. (c) | 84. (b) | 85. (d) | 86. (d) | 87. (b) | 88. (c) |
| 89. (d) | 90. (c) | 91. (c) | 92. (c) | 93. (b) | 94. (b) | 95. (a) | 96. (d) |
| 97. (c) | 98. (a) | 99. (a) | 100. (c) | 101. (c) | | | |

