



## CHAPTER – 4

# PRICE DETERMINATION IN DIFFERENT MARKETS

## Unit 3

### Price-output Determination Under Different Market Forms

**Learning Objectives**

At the end of this unit you will be able to :

- ◆ understand how price and quantity demanded and supplied are determined in perfect competition, monopoly, oligopoly and monopolistic competition.
- ◆ understand the conditions required to make price discrimination by monopolist successful.
- ◆ understand how firms in an oligopolist market are independent.

In this unit, we shall study the determination of price and output under perfect competition, monopoly, monopolistic competition and oligopoly. Output is supplied by individual firms on the basis of market demand and their cost and revenue functions. However, the existence of different forms of market structure leads to differences in demand and revenue functions of the firms. Therefore, supplies offered at different prices by the firm would vary significantly depending upon the market forms. We start our analysis with perfect competition.

**3.0 PERFECT COMPETITION****3.0.0 Features**

Suppose you go to a vegetable market and enquire about the price of potatoes from a shopkeeper. He says potatoes are for ₹ 5 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 :

- (i) There are large number of buyers and sellers in the potatoes market.
- (ii) All the shopkeepers are selling potatoes at ₹ 5.
- (iii) Product homogeneity i.e. all the sellers are selling almost the same quality of potatoes in the sense that you cannot judge by seeing the potatoes from which farmer's field do they come from.

Such type of market is known as perfectly competitive market. In general, it has the following characteristics :

- (i) There are large number of buyers and sellers who compete among themselves and their number is so large that no buyer or seller is in a position to influence the demand or supply in the market.
- (ii) The commodity dealt in it is homogeneous, in the sense that the goods produced by different firms are identical in nature.
- (iii) Every firm is free to enter the market or to go out of it.

If the above three conditions alone are fulfilled, then it is called pure competition. The essential feature of the pure competition is the absence of monopolistic element. The number of producers is large, the commodity is the same and everyone has the liberty to enter the industry. So, monopolistic combinations are not possible.

In addition to the above stated three features of pure competition, some more conditions are attached to the perfect competition. They are:



- (iv) There is a perfect knowledge on the part of buyers and sellers, of the quantities of stock of goods in the market, market conditions and the prices at which transactions of purchase and sale are being entered into.
- (v) Facilities exist for the movement of goods from one centre to another. Also, buyers have no preference as between different sellers and as between different units of commodity offered for sale; also sellers are quite indifferent as to whom they sell.
- (vi) The commodity or the goods are sold at a uniform price throughout the market at any given point of time. In other words, all firms individually are price takers, they have to accept the price determined by the market forces of total demand and total supply.

The last mentioned is a consequence of the conditions prevailing in a market operating under conditions of perfect competition, for when there is perfect knowledge and perfect mobility, if any seller tries to raise his price above that charged by others, he would lose his customers.

While there are few examples of perfect competition which is regarded as a myth by many, the grain or stock markets approach the condition of perfect competition.

### 3.0.1 Price determination under perfect competition

**Equilibrium of the Industry :** An industry in economic terminology consists of a large number of independent firms, each having a number of factories, farms or mines under its control. Each such unit in the industry produces a homogeneous product so that there is competition amongst goods produced by different units called firms. 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, whereas a firm is said to be in equilibrium when it 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 7.

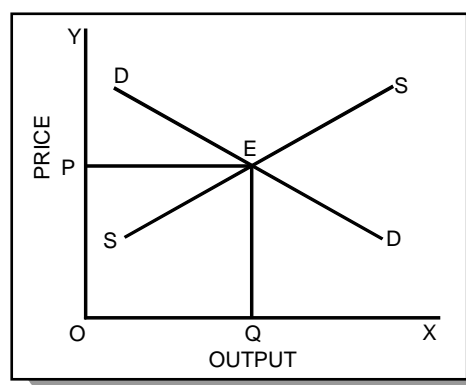


Fig. 7 : Equilibrium of a competitive industry

In Fig. 7, 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 not be

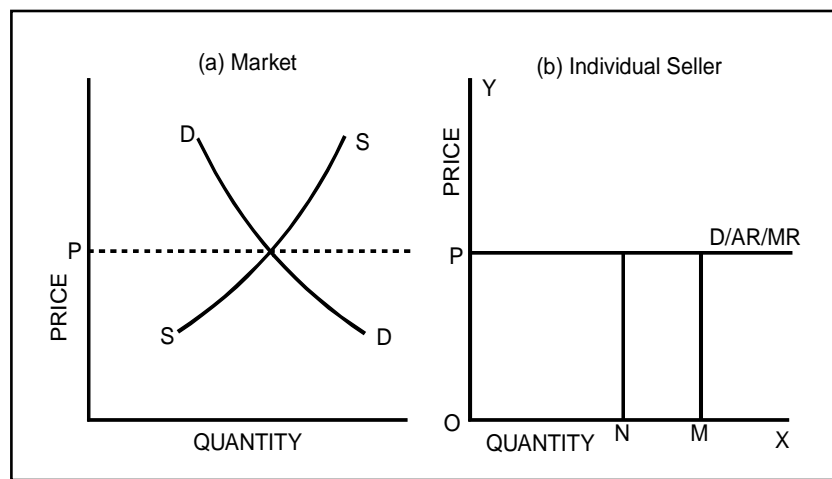
## PRICE DETERMINATION IN DIFFERENT MARKETS

an equilibrium in the market. Likewise, if the quantities of goods were greater or smaller than the demand, there would not be an equilibrium.

**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. Since it is the maximum profit giving output which only gives no incentive to the firm to increase or decrease it, so it is in equilibrium when it gets maximum profit.

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 fixed (through interaction of total demand and total supply) by the industry as a whole.

See the following figure :



**Fig. 8 : The firm's demand curve under perfect competition**

Industry 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 OP individually because of the fear of losing 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. Thus the demand curve facing an individual firm in a perfectly competitive market is a horizontal one at the level of market price set by the industry and firms have to choose that level of output which yields maximum profit. Let us continue our example on page 161 in which demand and supply schedules for the industry were as follows :



**Table – 3 : Equilibrium price for industry**

<i>Price (₹)</i>	<i>Demand (units)</i>	<i>Supply (units)</i>
1	60	5
2	35	35
3	20	45
4	15	55
5	10	65

Equilibrium price for the industry thus fixed through the interaction of the 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 4 :

**Table – 4 : Trends of Revenue for the Firm**

<i>Price (₹)</i>	<i>Quantity Sold</i>	<i>Total Revenue</i>	<i>Average Revenue</i>	<i>Marginal Revenue</i>
2	8	16	2	2
2	10	20	2	2
2	12	24	2	2
2	14	28	2	2
2	16	32	2	2

Firm X's price, average revenue and marginal revenue are equal to ₹ 2. Thus, we see that in a perfectly competitive market a firm's  $AR = MR = \text{price}$ .

**Conditions for equilibrium of a firm :** As discussed earlier, a firm, in order to attain the equilibrium position, has to satisfy two conditions :

- (i) 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 sale of 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  $MR = MC$ .
- (ii) The MC curve should cut MR curve from below. In other words, MC should have a positive slope.

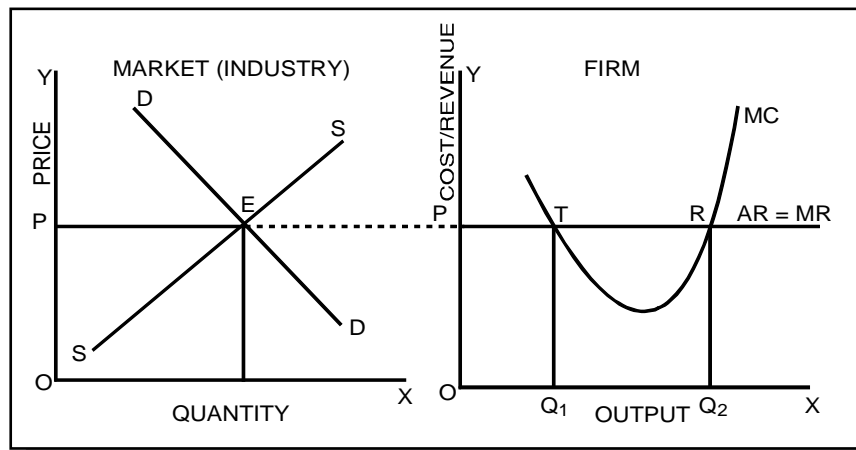


Fig. 9 : Equilibrium position of a firm under perfect competition

In figure 9, DD and SS are the industry demand and supply curves which equilibrate 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.

**3.0.2 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 example.

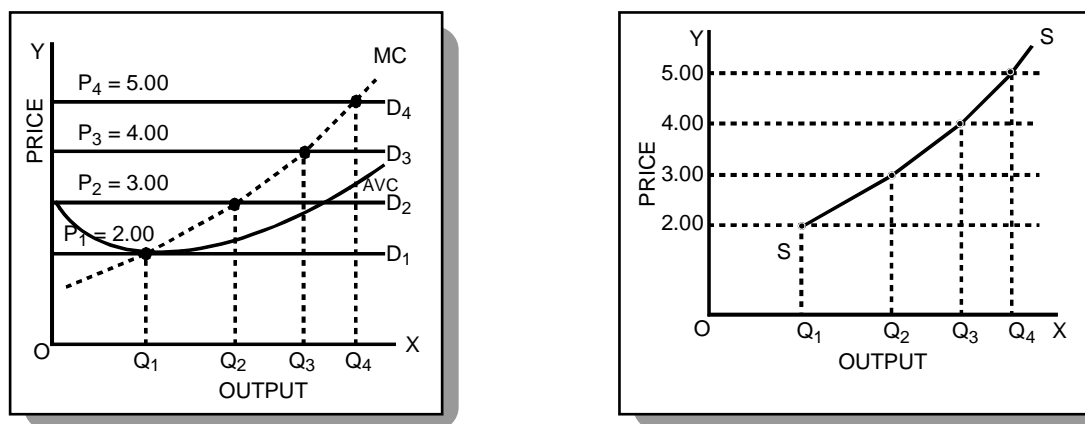


Fig. 10 : Marginal cost and supply curves for a price-taking firm



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 at  $D_3$  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 here 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. 10, at price ₹ 2, the  $AVC$  of the firm is covered and therefore, the firm need not shut down.

Thus, in perfect competition, the firm's marginal cost curve above  $AVC$  has the identical shape of the firm's supply curve.

**3.0.3 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.

**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, it earns normal 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 normal rate of return in the market is 10 per cent. Thus the entrepreneur must earn at least ₹ 5,000 (10% of 50,000) in this particular business. This ₹ 5,000 will be shown as a part of cost. 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.

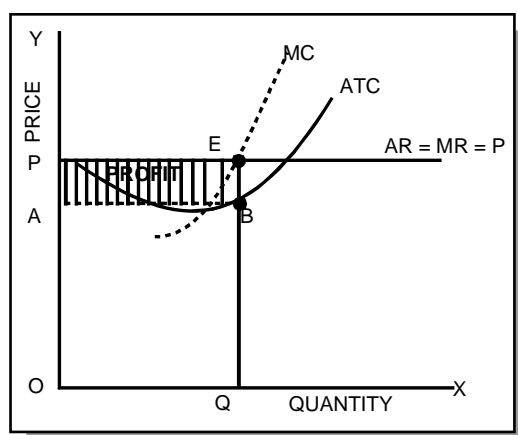
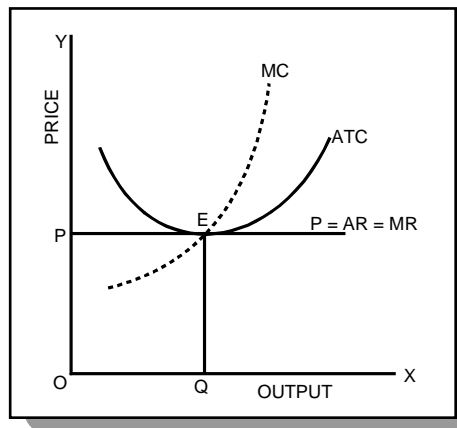


Fig. 11 : Short run equilibrium : Supernormal profits of a competitive firm

Figure 11 shows how a firm can earn supernormal profits in the short run.

The diagram shows that in order to attain equilibrium, the firm tries to equate marginal revenue with marginal cost. 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. At E,  $MR = MC$ . OQ is the equilibrium output for the firm. The firm's profit per unit is EB (AR-ATC), AR is EQ and ATC is BQ. Total profits are ABEP.

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

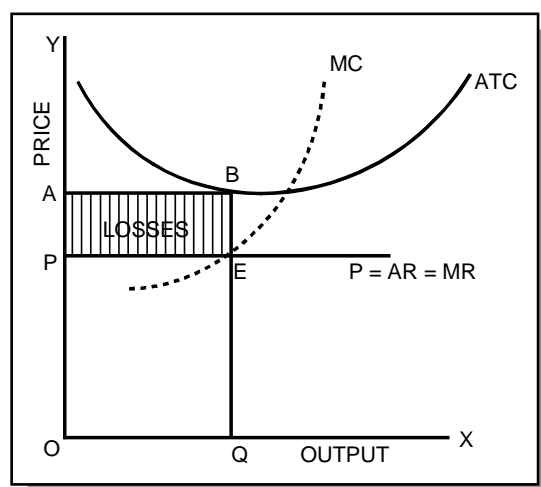


**Fig. 12 : Short run equilibrium of a competitive firm : Normal profits**

The figure shows that  $MR = MC$  at E. The equilibrium output is OQ. Since  $AR = ATC$  or  $OP = EQ$ , the firm is just earning normal profits.

**Losses :** The firm can be in an equilibrium position and still makes losses. This is the position when the firm is minimising losses. 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 shut down.





**Fig. 13 : Short run equilibrium of a competitive firm : Losses**

In figure 13, E is the equilibrium point and at this point  $AR = EQ$  and  $ATC = BQ$  since  $BQ > EQ$ , the firm is earning BE per unit loss and the total loss is ABEP.

**3.0.4 Long Run Equilibrium of the Firm :** In the long run, firms are in equilibrium when they have adjusted their plant so as to produce at the minimum point of their long run AC 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 the normal rate of profit.

In Fig. 14, we show how firms adjust to their long run equilibrium position. If the price is OP, the firm is making super-normal profits working with the plant whose cost is denoted by  $SAC_1$ . It will, therefore, have an 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 14a) at which the firms and the industry are in long run equilibrium.

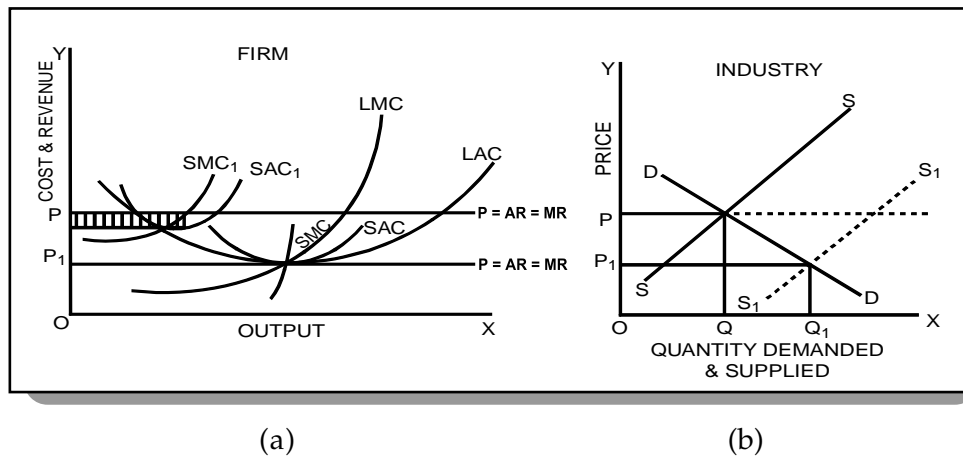


Fig. 14 : Long run equilibrium of the firm in a perfectly competitive market

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

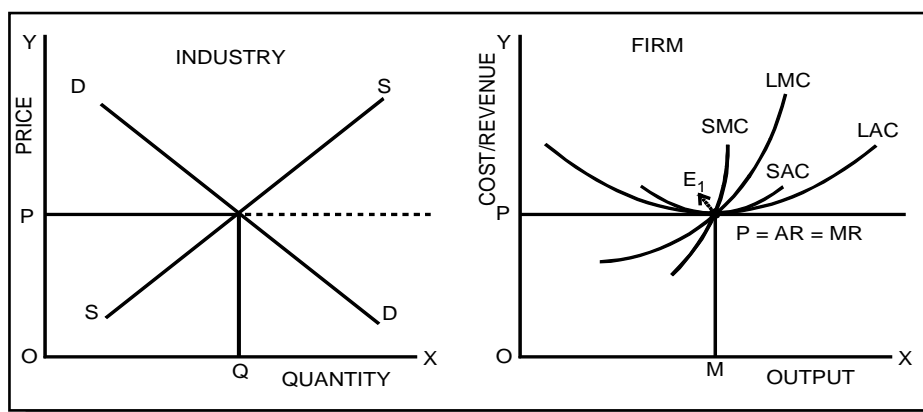
i.e.  $LMC = LAC = P$

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.

**3.0.5 Long run equilibrium of the industry :** A perfectly competitive industry is in long run equilibrium when (i) all the firms are earning normal profits only i.e. all the firms are in equilibrium (ii) there is no further entry or exit from the market.



**Fig. 15 : Long run equilibrium of a competitive industry and its firms**

Figure 15 shows that in the long-run  $AR = MR = LAC = LMC$  at  $E_1$ . 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. All the firms under perfect competition, in long run, are optimum firms having optimum size and these firms charge minimum possible price which just covers their marginal cost.

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

- The output is produced at the minimum feasible cost.
- Consumers pay the minimum possible price which just covers the marginal cost i.e.  $MC = AR$ .
- Plants are used at full capacity in the long run, so that there is no wastage of resources i.e.  $MC = AC$ .
- Firms earn only normal profits i.e.  $AC = AR$ .
- Firms maximize profits (i.e.  $MC=MR$ ), but the level of profits will be just normal.

In other words, in the long run,

$LAR = LMR = P = LMC = LAC$  and there will be optimum allocation of resources.

But 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.

### 3.1 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.

**3.1.0 Features of Monopoly Market :** The following are the major features of the monopoly market :

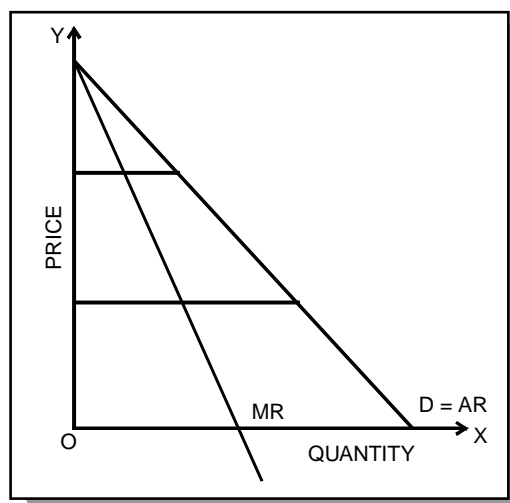
- (1) **Single seller of the product :** In a monopoly market, there is only one firm producing or supplying a product. This single firm constitutes the industry and as such there is no distinction between firm and industry in a monopolistic market.
- (2) **Restrictions to Entry :** In a monopolistic market, there are strong barriers to entry. The barriers to entry could be economic, institutional, legal or artificial.
- (3) **No close-substitutes :** 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.

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.

The monopolist may use his monopolistic power in any manner in order to realize maximum revenue. He may also adopt price discrimination.

In real life, complete monopoly is seldom found. But, one producer may dominate the supply of a good or group of goods. In public utilities, e.g. transport, water, electricity generation etc. monopolistic markets may exist so as to reap the benefits of large scale production.

**3.1.1 Monopolist's Revenue Curves :** 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. 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.



**Fig. 16 : A monopolist's demand curve and marginal revenue curve**



Suppose the straight line in Fig. 16 is the market demand curve for a particular product 'A'. Suppose Mr. 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.

We have tabulated selected values of price and quantity from this demand curve in Table 5 and computed the amounts of average, total and marginal revenue corresponding to these levels.

**Table – 5**

**Average revenue, Total revenue and Marginal revenue for a Monopolist**

<i>Quantity sold</i>	<i>Average Revenue (AR = P)</i>	<i>Total Revenue (TR)</i>	<i>Marginal Revenue (MR)</i>
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

If the seller wishes to charge ₹ 10, he cannot sell any unit, alternatively, if he wishes to sell 10 units, his price cannot be higher than ₹ 5. Because the seller charges a single price for all units he sells, average revenue per unit is identical with price, and thus the market demand curve is the average revenue curve for the monopolist.

In perfect competition, average and marginal revenue are identical, but this is not the case in a monopoly since the monopolist knows that if he wishes to increase his sales he will have to reduce the price of the product. Consider the example given. If the seller wishes to sell 3 units, he will have to reduce the price from ₹ 9 to ₹ 8.50. The third unit is sold for ₹ 8.50 only. This adds ₹ 8.50 to the firm's revenue. But, in order to sell the 3rd unit, the firm had to lower the price of all 3 units from ₹ 9 to ₹ 8.50. It thus receives ₹ .50 less on each of the 2 units it could have sold for ₹ 9. The marginal revenue over the interval from 2 to 3 units is thus ₹ 7.50 only. Again, if he wishes to sell 4 units, he will have to reduce the price from ₹ 8.50 to ₹ 8. The marginal revenue here will be ₹ 6.50 only. Marginal revenue is less than the price, because the firm had to lower the price in order to sell an extra unit. The relationship between AR and MR of a monopoly firm can be stated as follows :

- (i) AR and MR are both negatively by sloped (downward sloping) curves.
- (ii) MR curve lies half-way between the AR curve and the Y axis. i.e. it cuts the horizontal line between Y axis and AR into two equal parts.
- (iii) AR cannot be zero, but MR can be zero or even negative.

**3.1.2 Profit maximisation in a monopolised market : Equilibrium of the monopoly firm :**

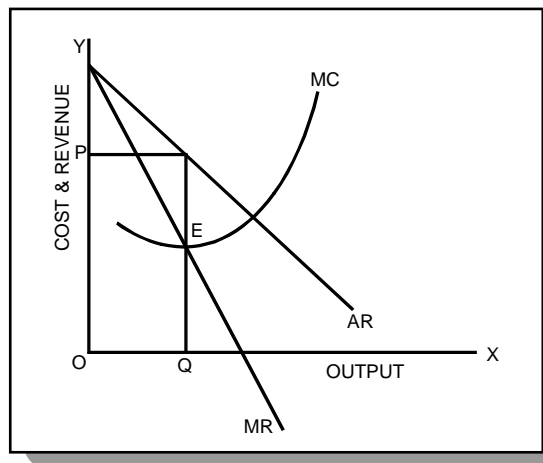
Firms in a perfectly competitive market are price-takers so that they are only concerned about determination of output. But this is not the case with a monopolist. A monopolist has to determine not only his output but also the price of his product. Since he faces a downward sloping demand curve, if he raises the price of his product, his sales will go down. On the other hand, if he wants to improve his sales volume, he will have to be content with lower price. He will try to reach that level of output at which profits are maximum i.e. he will try to attain the equilibrium level of output. How he attains this level can be found out as is shown below.

**Short run Equilibrium**

**Conditions for equilibrium :** The twin conditions for equilibrium in a monopoly market are the same as discussed earlier.

- (i)  $MC = MR$
- (ii) MC curve must cut MR curve from below.

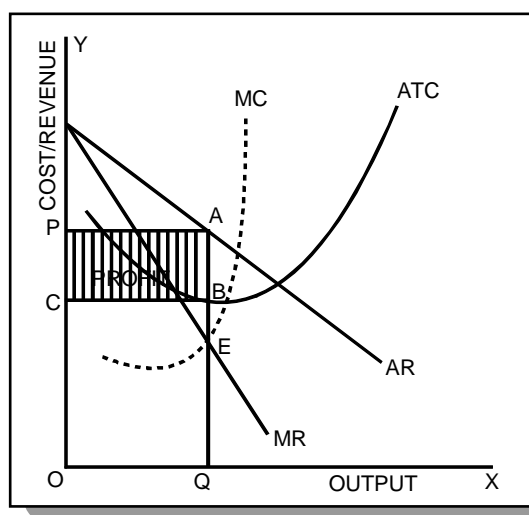
Graphically, we can depict these conditions in figure 17.



**Fig. 17 : Equilibrium of a monopolist (Short run)**

The figure shows that MC curve cuts MR curve at E. That means, at E, the equilibrium price is OP and the equilibrium output is OQ.

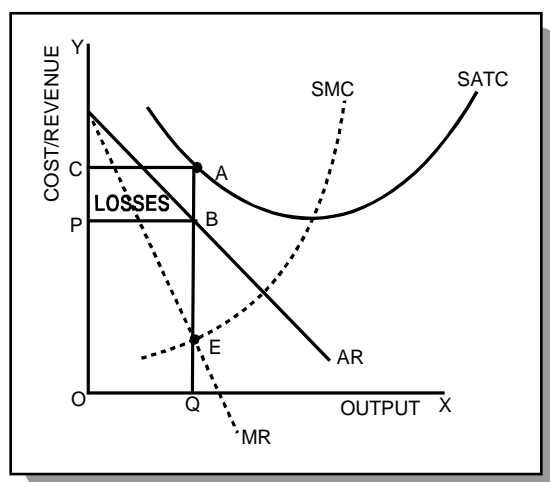
In order to know whether the monopolist is making profits or losses in the short run, we need to introduce the average total cost curve. The following figure shows two possibilities for a monopolist firm in the short run.



**Fig. 18 : Firm's equilibrium under monopoly : maximisation of profits**

Figure 18 shows that MC cuts MR at E to give equilibrium output as OQ. At OQ, the price charged is OP (we find this by extending line EQ till it touches AR or demand curve). Also at OQ, the cost per unit is BQ. Therefore, profit per unit is AB or total profit is ABCP.

*Can a monopolist incur losses?* One of the misconceptions about a monopolist is that he always makes profits. It is to be noted that nothing guarantees that a monopolist makes profits. It all depends upon his demand and cost conditions. If he faces a very low demand for his product and his cost conditions are such that  $ATC > AR$ , he will not be making profits, rather, he will incur losses. Figure 19 depicts this position.

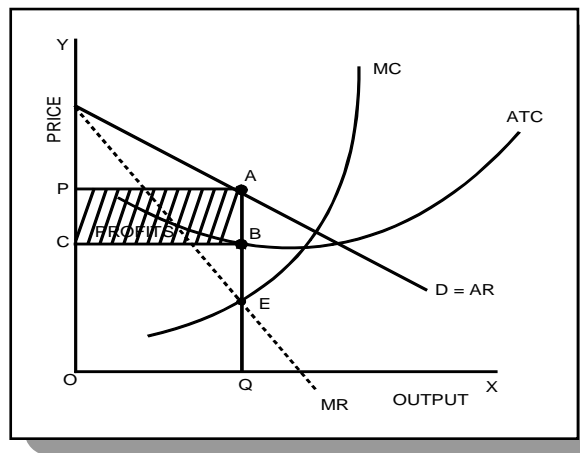


**Fig. 19 : Equilibrium of the monopolist : Losses in the short run**

In the above figure, MC cuts MR at E. Here E is the point of loss minimisation. At E, the equilibrium output is OQ and the equilibrium price is OP. The average total cost (SATC) corresponding to OQ is QA. Cost per unit of output i.e. QA is greater than revenue per unit

which is BQ. Thus, 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 his average variable cost even, he will shut down.

*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 sub-optimal scale also. In other words, he need not reach the minimum of LAC curve, he can stop at any place where his profits are maximum.



**Fig. 20 : Long run equilibrium of a monopolist**

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.

**3.1.3 Price Discrimination** : Consider the following examples.

The family doctor in your neighbourhood charges a higher fees from a rich patient compared to the fees 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?

The above cases are examples of price discrimination. What is price discrimination? 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 the monopolist in order to earn abnormal profits. It refers to the practices of charging different prices for different units of the same commodity.





Further examples :

- (a) Railways separate high-value or relatively small-bulk commodities which can bear higher freight charges from other categories of goods.
- (b) Some countries dump goods at low prices in foreign markets to capture them.
- (c) Some universities charge higher tuition fees from evening class students than from other scholars.
- (d) A lower subscription is charged from student readers in case of certain journals.
- (e) A higher price for vegetables may be charged in posh localities inhabited by the rich than in other localities.

Price discrimination cannot persist under perfect competition because the seller has no influence over market determined rate. Price discrimination requires an element of monopoly so that the seller can influence the price of his product.

**Conditions for price discrimination :** Price discrimination is possible only under the following conditions :

- (i) The seller should have some control over the supply of his product i.e. monopoly power in some form is necessary (not sufficient) to discriminate price.
- (ii) The seller should be able to divide his market into two or more sub-markets.
- (iii) The price-elasticity of the product should be different in different sub-markets. The monopolist fixes a high price for his product for those buyers whose price elasticity of demand for the product is less than one. This implies that, when the monopolist charges a higher price from them, they do not significantly reduce their purchases in response to high price.
- (iv) It should not be possible for the buyers of low-priced market to resell the product to the buyers of high-priced market.

Thus, we note that a discriminating monopolist charges a higher price in a market which has a relatively inelastic demand. The market which is highly responsive to price changes is charged less. On the whole, the monopolist benefits from such discrimination.

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,

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

$$\text{MR in market B} = AR_B \left( \frac{e-1}{e} \right)$$

$$= 30 \left( \frac{5-1}{5} \right)$$

$$= 24$$

It is thus clear that the marginal revenues in the two markets are different when elasticities of demand at the single price are different. Further, we see that the marginal revenue in the market in which elasticity is high is greater than the marginal revenue in the market where elasticity is low. Now, 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 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 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:**

- a. to earn maximum profit
- b. to dispose off surplus stock
- c. to enjoy economies of scale
- d. to capture foreign markets
- e. 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 will fix a price which will take away the entire consumer's surplus. Under the second degree price discrimination, he will take away only a part of the consumers' surplus. Here price varies according to the quantity sold. Larger quantities are available at lower unit price. 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. E.g. Dumping.

**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. First of all, the monopolist has to divide his total market into various sub-markets on the basis of differences



in elasticity of demand. For the sake of making our analysis simple we shall explain a case where the total market is divided into two sub-markets.

In order to reach the equilibrium position, the discriminating monopolist has to take three decisions: 1. how much total output should he produce; and 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 same marginal principle will guide his decision to produce a total output as that which guides a perfect competitor or a simple monopolist. In other words, 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.

In figure 21,  $MR_a$  is the marginal revenue curve in sub-market A corresponding to the demand curve  $D_a$ . Similarly,  $MR_b$  is the marginal revenue in sub-market B corresponding to the demand curve  $D_b$ . Now, the aggregate marginal revenue curve AMR, which has been shown in Panel (iii) of figure 21 has been derived by adding up laterally  $MR_a$  and  $MR_b$ . Marginal cost curve of the monopolist is shown by the curve MC in Panel (iii) of figure 21.

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.

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.

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. Equality of marginal revenues in the two markets with marginal cost of the whole output ensures that the amount sold in the two sub-markets will together be equal to the whole output OM which has been fixed by equalizing aggregate marginal revenue with marginal cost. It will be seen from figure (iii) that at equilibrium output OM, marginal cost is ME.

Now, the output OM has to be distributed in the two markets in such a way that the marginal revenue from them should be equal to the marginal cost (ME) of the whole output. It is clear from the diagram (i) that  $OM_1$  must be sold in the sub-market A, because marginal revenue

## PRICE DETERMINATION IN DIFFERENT MARKETS

$M_1E_1$  at amount  $OM_1$  is equal to marginal cost  $ME$ . Similarly,  $OM_2$  must be sold in sub-market B, since marginal revenue  $M_2E_2$  of amount  $OM_2$  is equal to the marginal cost  $ME$  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 carefully 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 the 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  $OP_2$ .

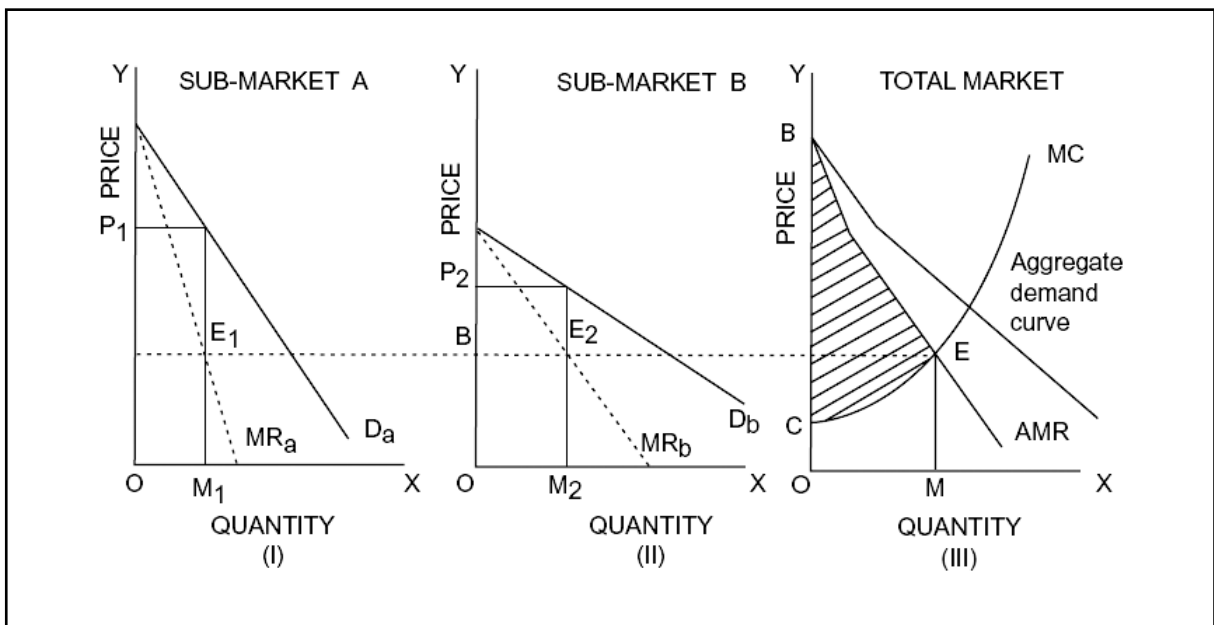


Fig. 21: Fixation of total output and price in the two sub-markets by the discriminating monopolist

## 3.2 IMPERFECT COMPETITION-MONOPOLISTIC COMPETITION

Consider the market for soaps and detergents. Among the well known brands on sale are Lux, Fiama, Cinthol, Dettol, Liril, Pears, Lifebuoy Plus, Dove etc. Is this market an example of perfect competition? Since all the soaps are almost similar, this appears to be an example of perfect competition. But, on a close inspection we find that each seller has at least some variation between his product and those of his competitors. For example, whereas Lux is exhibited to be a beauty soap, Liril is more associated with freshness. Dettol soap is placed as antiseptic and

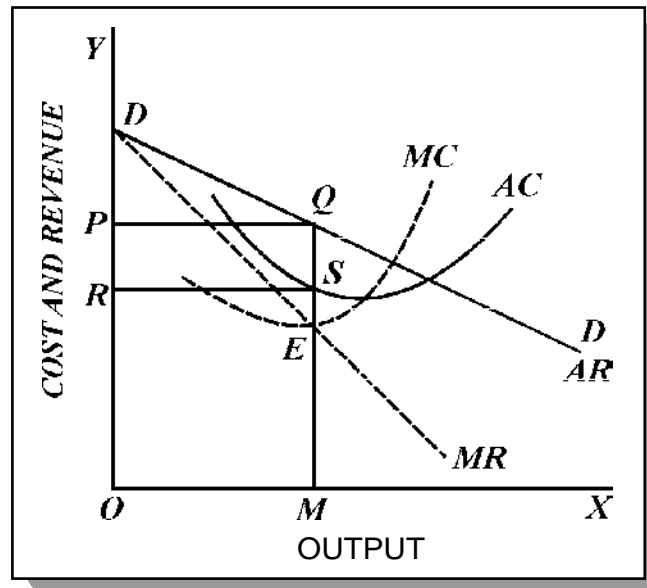


Dove claims to ensure for young smooth skin. The practice of product and service differentiation gives each seller a chance to attract business to himself on some basis other than price. This is the monopolistic part of market the situation. Thus, this market contains features of both the markets discussed earlier – 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 manufacturers of women's dresses, and hundreds of grocery shops in a medium sized or large city.

### 3.2.0 Features of Monopolistic Competition :

- (i) **Large number of sellers** : In a monopolistically competitive market, there are a large number of sellers who individually have a small share in the market.
- (ii) **Product differentiation** : In a monopolistic competitive market, the products of different sellers are differentiated on the basis of brands. These brands are generally so much advertised that a consumer starts associating the brand with a particular manufacturer and a type of brand loyalty is developed. Product differentiation gives rise to an element of monopoly to the producer over the competing product. As such, the producer of an individual brand can raise the price of his product knowing that he will not lose all the customers to other brands because of absence of perfect substitutability. Since, however, all the brands are close substitutes of one another, the seller will who increases the price of the product lose some of his customers to his competitors. Thus, this market is a blend of monopoly and perfect competition.
- (iii) **Freedom of entry or exit** : New firms are free to enter into the market and existing firms are free to quit it.
- (iv) **Non-price competition** : In a monopolistically competitive market, sellers try to compete on bases other than price, as for example aggressive advertising, product development, better distribution arrangements, efficient after-sales service, and so on. A key base of non-price competition is a deliberate policy of product differentiation. 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.

**3.2.1 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 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.



**Fig. 22 : Short run equilibrium of a firm under monopolistic competition : Super-normal profits**

The firm depicted in figure 22 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 :

- (i)  $MC = MR$
- (ii) MC curve must cut MR curve from below.

Figure 22 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 super-normal profit (i.e. price-cost) is QS (or PR) and the total super-normal profit is PQSR.

It is also possible that a monopolistically competitive firm may incur losses in the short run. This is shown in fig. 23.

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 industry? If the firms in a monopolistically competitive industry earn super-normal 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 the profits are wiped away and all the firms earn only normal profits. Thus in the long run all the firms will earn only normal profits.

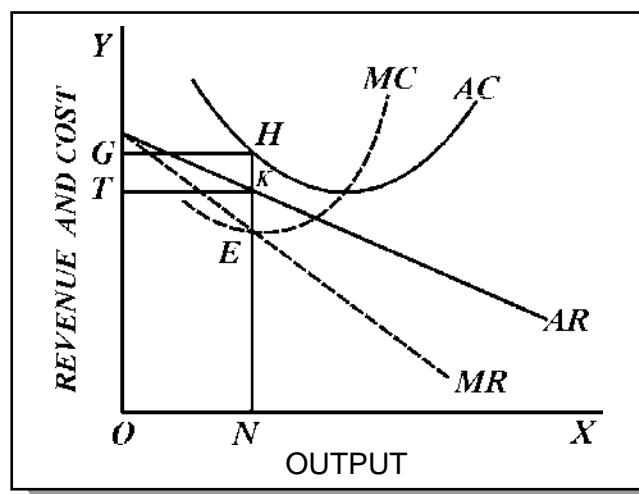


Fig. 23 : Short run equilibrium of a firm under Monopolistic Competition – With losses

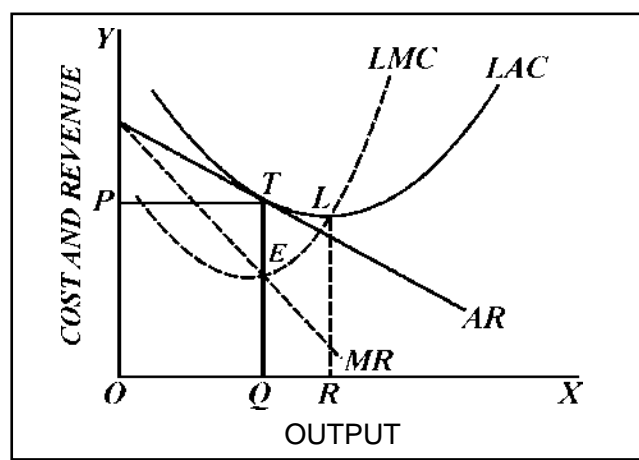


Fig. 24 : The long-term equilibrium of a firm in monopolistic competition

Figure 24 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 supernormal profits or just normal profits.

In case of losses in the short 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, is in the long run is in equilibrium position 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 24 could expand its output from Q to R and reduce average costs. But it does not do so because to do so would be to reduce average revenue to minimum more than average costs. It implies that, firms in monopolistic competition are not of optimum size and there exists excess capacity (Q R in our example above) of production with each firm.

### 3.3 OLIGOPOLY

We have studied price and output determination under three market forms, namely, perfect competition, monopoly and monopolistic competition. However, in the real world economies we find that many of the industries are oligopolistic. Oligopoly is an important form of imperfect competition. Oligopoly is often described as 'competition among the few'. In other words, when there are few (two to ten) sellers in a market selling homogeneous or differentiated products, oligopoly is said to exist. Consider the example of cold drinks industry or automobile industry. There are a handful firms manufacturing cold drinks in India. Similarly there are a few members of automobile industry in India. These industries exhibit some special features which are discussed in the following paragraphs. Prof. Stigler defines oligopoly as that "situation in which a firm bases its market policy, in part, on the expected behavior of a few close rivals".

#### Types of Oligopoly:

**Pure oligopoly or perfect oligopoly** occurs when the product is homogeneous in nature, e.g. Aluminum industry. **Differentiated or imperfect oligopoly** is based on product differentiation, e.g. Talcum powder.

**Open and closed oligopoly:** In an open oligopoly market new firms can enter the market and compete with the existing firms. But, in closed oligopoly entry is restricted.

**Collusive and Competitive oligopoly:** When few firms of the oligopolist market come to a common understanding or act in collusion with each other in fixing price and output, it is collusive oligopoly. When there is a absence of such understanding among the firms and they compete with each other, it is called competitive oligopoly.

**Partial or full oligopoly:** Oligopoly is partial 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. 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 sell their products through a centralized syndicate. Organized oligopoly refers to the situation where the firms organize themselves into a central association for fixing prices, output, quotas, etc.

#### 3.3.0 Characteristics of Oligopoly Market :

- (i) **Interdependence :** The most important feature of oligopoly is interdependence in decision-making of the few firms which comprise the industry. This is because when the number of competitors is few, any change in price, output or product by a firm it will have direct effect on the fortunes of the rivals, who will then retaliate by changing their own prices, output or advertising technique as the case may be. It is, therefore, clear that an oligopolistic firm must consider not only the market demand for its product, but also the reactions of other firms in the industry to any major decision it takes.
- (ii) **Importance of advertising and selling costs :** A direct effect of interdependence of oligopolists is that the firms have to employ various aggressive and defensive marketing weapons to gain a greater share in the market or to maintain their share. For this, firms have to incur a good deal of costs on advertising and other measures of sales promotion.





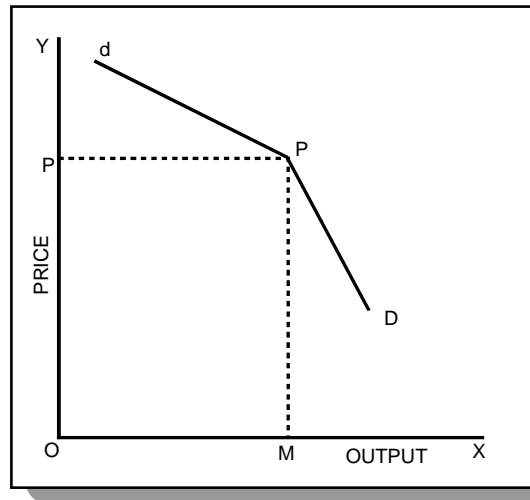
Therefore, there is great importance for advertising and selling costs in an oligopoly market. It is to be noted that firms in such type of market avoid price cutting and try to compete on non-price basis because if they start under cutting one another, a type of price-war will emerge which will drive a few of them out of the market as customers will try to buy from the seller selling at the cheapest price.

- (iii) **Group behaviour** : The theory of oligopoly is a theory of group behaviour, not of mass or individual behaviour and to assume profit maximising behaviour on oligopolist's part may not be very valid. There is no generally accepted theory of group behaviour. Do the members of a group agree to pull together in promotion of common interest or will they fight to promote their individual interests? Does the group possess any leader? If so, how does he get the others to follow him? These are some of the questions that need to be answered by the theory of group behaviour. But one thing is certain. Each oligopolist closely watches the business behaviour of the other oligopolists in the industry and designs his moves on the basis of some assumptions of how they behave or are likely to behave.

**3.3.1 Price and output decisions in an oligopolistic market** : Because of interdependence, an oligopolistic firm cannot assume that its rival firms will keep their prices and quantities constant, when it makes changes in its price and/or quantity. When an oligopolistic firm changes its price, its rival firms will retaliate or react and change their prices which in turn would affect the demand of the former firm. Therefore, an oligopolistic firm cannot have sure and definite demand curve, since it 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.

**3.3.2 Kinked Demand Curve** : It has been observed that in many oligopolistic industries prices remain sticky or inflexible for a long time. They tend to change infrequently, even in the face of declining costs. 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. The kink is formed at the prevailing price level. 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. 25.



**Fig. 25 : Kinked Demand Curve under oligopoly**

The prevailing price level is  $MP$  and the firm produces and sells output  $OM$ . Now the upper segment  $dP$  of the demand curve  $dD$  is relatively elastic and the lower segment  $PD$  is relatively inelastic. This difference in elasticities is due to the particular competitive reaction pattern assumed by the kinked demand curve hypothesis. This assumed pattern is :

Each oligopolist believes that if it lowers the price below the prevailing level its competitors will follow him and will accordingly lower prices, whereas if it raises the price above the prevailing level, its competitors will not follow its increase in price.

This is because when an oligopolist lowers the price of its product, its competitors will feel that if they do not follow the price cut, their customers will run away and buy from the firm which has lowered the price. Thus in order to maintain their customers they will also lower their prices. The lower portion of the demand curve  $PD$  is price inelastic showing that very little increase in sales can be obtained by a reduction in price by an oligopolist. On the other hand, if a firm increases the price of its product, there will a substantial reduction in its sales because as a result of the rise in its price, its customers will withdraw from it and go to its competitors which will welcome the new customers and will gain in sales. These happy competitors will have therefore no motivation to match the price rise. The oligopolist who raises its price will lose a great deal and will therefore refrain from increasing price. This behaviour of the oligopolists explains the elastic upper portion of the demand curve ( $dp$ ) showing a large fall in sales if a producer raises his price.

Each oligopolist will, thus, adhere to the prevailing price seeing no gain in changing it and a kink will be formed at the prevailing price. Thus, rigid or sticky prices are explained according to the kinked demand curve theory.



## SUMMARY

The features of various types of market form are summarised in the table give below:

### Classification of Market Forms

Form of Market Structure	Number of Firms	Nature of product	Price Elasticity of Demand of a firm	Degree of Control Control over price
(a) Perfect competition	Large number of firms	Homogeneous	Infinite	None
(b) Monopoly	One	Unique product without close substitute	Small	Very Considerable
(c) Imperfect Competition				
i) Monopolistic Competition	Large number of firms	Differentiated products	Large	Some
ii) Oligopoly	Few Firms	Homogeneous or differentiated product	Small	Some

#### ➤ Perfect Competition

- A market is said to be perfectly competitive if it possesses the following characteristics large number of buyers and sellers, homogeneous product, free entry and exit, perfect mobility of factors of production, perfect knowledge about the market conditions, absence of transport cost, no government interference and absence of collusion.
- A firm is in equilibrium when its  $MC = MR$  and  $MC$  curve cuts the  $MR$  curve from below.
- In the short –run firms may be earning supernormal profits or earning losses at the equilibrium price.
- In the long-run all the supernormal profits or losses get wiped away with entry or exit of the firms from the industry and all firms earn only normal profit.

#### ➤ Monopoly

- Monopoly is an extreme form of imperfect competition with a single seller of a product which has no close substitute.
- Monopolist has a considerable control over the price of his product.
- The short-run equilibrium of the monopolist is at the point where  $MC=MR$ .
- In the long-run the supernormal profit will be continued because entry is restricted.
- One of the important features of monopoly is price discrimination, i.e. charging different prices for the same product from different consumers.

#### ➤ Imperfect Competition

- Imperfect competition is an important category wherein the individual firm exercises control over the price to a smaller or larger degree depending upon the degree of imperfection present.

#### ➤ Monopolistic Competition

- It refers to the market situation in which many producers produce goods which are close substitutes of one another.

## PRICE DETERMINATION IN DIFFERENT MARKETS

- The essential feature of monopolistic competition is the existence of large number of firms, product differentiation, selling costs and freedom of entry and exit of firms.
- In monopolistic competition, the features of monopoly and perfect competition are partially present.
- Demand curve is highly elastic and a firm enjoys some control over the price.

### ➤ Oligopolistic Competition

- Oligopoly is also referred to as 'competition among the few' as a few big firms produce and compete in this market
- There are different types of oligopoly like pure and differentiated oligopoly, open and closed oligopoly, collusive and competitive oligopoly, partial and full oligopoly and syndicated and organized oligopoly.
- The main characteristics of oligopoly are interdependence, importance of advertising and selling cost and group behavior.
- The price will be kept unchanged for a long time due to fear of retaliation and price tend to be sticky and inflexible. The sticky price is explained by the kinked demand curve.

## 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)  $\text{Marginal Revenue} = \text{Price}$
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. Suppose that the supply of cameras increases due to an increase in imports. Which of the following will most likely occur?
- (a) the equilibrium price of cameras will increase.
  - (b) the equilibrium quantity of cameras exchanged will decrease.
  - (c) the equilibrium price of camera film will decrease.
  - (d) the equilibrium quantity of camera film exchanged will increase.
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 homogenous product.
21. All of the following are characteristics of a monopoly except :
- (a) there is a single firm.
  - (b) the firm is a price taker.
  - (c) the firm produces a unique product.
  - (d) the existence of some advertising.
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 lakh.
  - (d) The individual firm is unable to affect market price through its output decisions.
24. For 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.





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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. A monopolist is able to maximise his profits when :
- (a) his output is maximum.
  - (b) he charges a high price.
  - (c) his average cost is minimum.
  - (d) his marginal cost is equal to marginal revenue.
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:
- (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 to a price increase is less than the response to a price decrease.  
(b) the response 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 monopolistic can earn 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 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?
- There are many buyers and sellers in the market.
  - The goods offered for sales are largely the same.
  - Firms generate small but positive super normal profits in the long run.
  - 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?
- Electricity
  - Cable television
  - Cola
  - Milk
53. The competitive firm maximizes profit when it produces output up to the point where
- price equals average variable cost
  - marginal revenue equals average revenue
  - marginal cost equals total revenue
  - marginal cost equals marginal revenue
54. The market for hand tools (such as hammers and screwdrivers) is dominated by Draper, Stanley, and Craftsman. This market is best described as
- Monopolistically competitive
  - a monopoly
  - an oligopoly
  - perfectly competitive
55. A market structure in which many firms sell products that are similar but not identical is known as
- monopolistic competition
  - monopoly
  - perfect competition
  - oligopoly
56. When an oligopolist individually chooses its level of production to maximize its profits, it charges a price that is
- more than the price charged by either monopoly or a competitive market
  - less than the price charged by either monopoly or a competitive market
  - more than the price charged by a monopoly and less than the price charged by a competitive market
  - less than the price charged by a monopoly and more than the price charged by a competitive market.



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57. In the long-run equilibrium of a competitive market, firms operate at
- the intersection of the marginal cost and marginal revenue
  - their efficient scale
  - zero economic profit
  - all of these answers are correct
58. Which of the following is not a characteristic of a monopolistically competitive market?
- Free entry and exit
  - Abnormal profits in the longrun
  - Many sellers
  - Differentiated products
59. In a very short period market :
- the supply is fixed
  - the demand is fixed
  - demand and supply are fixed
  - none of the above
60. Time element was conceived by
- Adam Smith
  - Alfred Marshall
  - Pigou
  - Lionel Robinson
61. Total revenue =
- price  $\times$  quantity
  - price  $\times$  income
  - income  $\times$  quantity
  - none of the above
62. Average revenue is the revenue earned
- per unit of input
  - per unit of output
  - different units of input
  - different units of output
63. AR can be symbolically written as:
- $MR / Q$
  - price  $\times$  quantity
  - $TR / Q$
  - none of the above

64. AR is also known as:
- price
  - income
  - revenue
  - none of the above
65. Marginal revenue can be defined as the change in total revenue resulting from the:
- purchase of an additional unit of a commodity
  - sales of an additional unit of a commodity
  - sale of subsequent units of a product
  - none of the above
66. When  $e > 1$  then MR is
- zero
  - negative
  - positive
  - one
67. When  $e = 1$  then MR is
- positive
  - zero
  - one
  - negative
68. When  $e < 1$  then MR is
- negative
  - zero
  - positive
  - one
69. The term 'market' refers to a:
- place where buyer and seller bargain a product or service for a price
  - place where buyer does not bargain
  - place where seller does not bargain
  - none of the above
70. Under perfect competition a firm is the \_\_\_\_\_
- price maker and not price taker
  - price taker and not price maker





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- c. neither price maker nor price taker  
d. none of the above
71. A Monopolist is a price  
a. maker  
b. taker  
c. 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. Durable goods and industrial items generally have a  
a. local market  
b. regional market  
c. national market  
d. secular market
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

## PRICE DETERMINATION IN DIFFERENT MARKETS

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- 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. homogenous product
  - c. both (a) and (b)
  - d. large number of buyer and seller, homogenous 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.



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84. Under \_\_\_\_\_ the monopolist will fix a price which will take away the entire consumers' surplus.
- second degree of price discrimination
  - first degree of price discrimination
  - third degree of price discrimination
  - none of the above.
85. Price discrimination is related to
- time
  - size of the purchase
  - income
  - any of the above
86. The firm and the industry are one and the same in \_\_\_\_\_
- Perfect competition
  - Monopolistic competition
  - Duopoly
  - Monopoly
87. The demand curve of a monopoly firm will be \_\_\_\_\_
- Upward sloping
  - Downward sloping
  - Horizontal
  - Vertical
88. If the average cost is higher than the average revenue then the firm incurs \_\_\_\_\_
- Normal profit
  - Abnormal profit
  - Loss
  - No profit, no loss
89. Which of the following statements is correct?
- Price rigidity is an important features of monopoly.
  - Selling costs are possible under perfect competition.
  - Under perfect competition factors of production do not move freely as there are legal restrictions.
  - An industry consist of many firms.

## PRICE DETERMINATION IN DIFFERENT MARKETS

90. Which of the following statements is incorrect?

- a. Under monopoly there is no difference between a firm and an industry.
- b. A monopolist may restrict the output and raises the price.
- c. Commodities offered for sale under a perfect competition will be heterogeneous.
- d. Product differentiation is peculiar to monopolistic competition.

## ANSWERS

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.	b	22.	a	23.	d	24.	b
25.	a	26.	c	27.	d	28.	a	29.	b	30.	d
31.	d	32.	b	33.	b	34.	b	35.	c	36.	c
37.	a	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.	c	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.	d	89.	d	90.	c