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Subject -Business Economics

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Unit -1

Chapter -1

Price determination under Perfect competition

Chapter 1

PRICE DETERMINATION UNDER PERFECT COMPETITION

1. What is Perfect Competition?

Perfect competition is that situation of the market in which there are large number of buyers and sellers of homogeneous product. It is not possible to make any distinction between the units of the commodity being sold by different sellers. Under perfect competition, price of the commodity is determined by the industry. At the price so determined, all the firms can sell any number of units of the commodity. One price of the commodity tends to prevail in the market. As a result of the assumption of large number of sellers and homogeneous production, a firm operating under perfect competition is **a price-taker and not a price-maker**. In the words of **Prof. Bilas**, "*The perfect competition is characterised by the presence of many firms. They all sell identical products. The seller is a price-taker not price-maker.*"

Note: Under perfect competition, demand (DD) or average revenue (AR) curve, i.e., price curve is equal to marginal revenue (MR) curve. Therefore, DD curve is parallel to OX-axis which signifies that $AR = MR$.

5.1.1 Assumptions or Features of Perfect Competition

Price Determination Under Perfect Competition



Perfect Competitive Market

- *Perfectly Competitive Market is a situation where large number of buyers and sellers are engaged in the purchase and sale of identically similar commodities, who are in close contact with one another and who sell freely among themselves.*

Perfect Competitive Market

- Features
 - Free and perfect competition
 - Large number of sellers
 - Large number of buyers
 - Homogenous Product
 - Free entry and exit
 - Perfect Knowledge
 - Perfect mobility of factors of production

Price Determination Under Perfect Competition

- **Total Demand**
 - The amount which people are willing to buy at various prices.
- **Total Supply**
 - The amount which the producers are willing to put on the market at various prices.

Equilibrium between Demand & Supply Price

Table 1
Equilibrium between Demand and Supply

Price	Demand	Supply	Pressure on price
5	12	1	
10	10	2	D > S
15	8	4	Excess Demand
20	6	6	D = S
25	4	8	
30	2	10	D < S
35	1	12	Excess Supply

which aggregate demand for the commodity is equal to its aggregate supply. It is illustrated with the help of following Table 1 and Fig. 1.

Table 1. Price Under Perfect Competition

Supply of Good-X (in dozen)	Price per unit (₹)	Demand for Good-X in dozen)
50	5	10
40	4	20
30	3	30
20	2	40
10	1	50

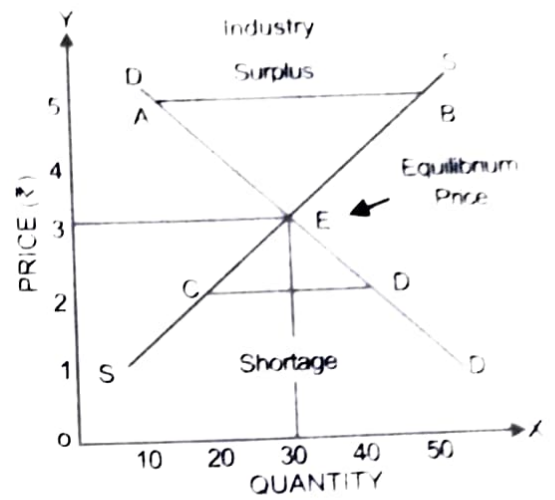


Figure 1

Table 1 indicates that when price of good-X is ₹5.00 per dozen, its supply is of 50 dozens and demand is for 10 dozens. Since supply is more than demand, there will be competition among the sellers of good-X. Due to this competition price of good-X will fall. Fall in price will contract supply but extend demand. When price falls to ₹3.00 per dozen, then demand becomes equal to supply. Thus, ₹3.00 per dozen is the **equilibrium price** of good-X. If due to certain reasons price falls to ₹2.00 per dozen, then demand will be more than supply. It will lead to competition among buyers. As a result, price will begin to rise till it reaches ₹3.00 per dozen. At this price, once again an equilibrium between demand and supply will be established.

In Fig. 1, units of good-X are shown on OX-axis and price on OY-axis. DD is the total demand curve. It slopes downward from left to right. SS is the supply curve of industry. It slopes upward from left to right. Supply curve (SS) and demand curve (DD) intersect each other at point E. In other words, supply and demand are equal (30 dozens) at point E. Thus, ₹3.00 will be the **equilibrium price** and point E will be equilibrium point.

If price rises to ₹5.00 per dozen then supply (50 dozens) will be more than demand (10 dozens). Fig 1 shows that at the price of ₹5.00 **excess supply** is equivalent to AB. In this situation, supply being more than demand, price will fall and once again be ₹3.00 per dozen. In case price falls to ₹2.00 per dozen, then supply (20 dozens) will be less than demand (40 dozens). In Fig. 1, CD shows **shortage of supply**. In this situation demand being more than supply, price will rise and once again be ₹3.00 per dozen.

Fig. 1 indicates that **price of good-X is determined by the industry at that point where demand is equal to supply**. Price of the good, under perfect competition is, therefore, determined by the industry and each firm has to sell its product at this very price. It is shown by Figs. 2(A) and 2(B).

In Fig. 2(A), total demand curve DD intersects industry's supply curve SS at point E. Thus, point E is the equilibrium point and OP is the **equilibrium price**. Fig. 2(B) refers to firm's demand curve

(1) Effect of Change in Demand on Price: Supply remaining unchanged, if demand increases price rises and if demand decreases price falls. In other words, price varies with demand. In Fig. 3, quantity demanded and supplied is shown on OX-axis and price on OY-axis. SS is the supply curve. DD is the original demand curve. The two intersect at point E. So, OP is the equilibrium price and OQ the equilibrium quantity of demand and supply. Supposing demand increases and assumes the form of D_1D_1 curve. This new demand curve (D_1D_1) intersects supply curve SS at point E_1 . It means that when demand increases to OQ_1 price also rises to OP_1 . On the contrary, when demand decreases and takes the form of D_2D_2 , it intersects supply curve SS at point E_2 which is the new equilibrium point. Correspondingly, OP_2 is the new equilibrium price. It signifies that when demand decreases to OQ_2 , price also falls to OP_2 .

(2) Effect of Change in Supply on Price: Demand remaining unchanged, if supply increases price falls and if supply decreases price rises. In other words, price varies inversely with supply. In Fig. 4,

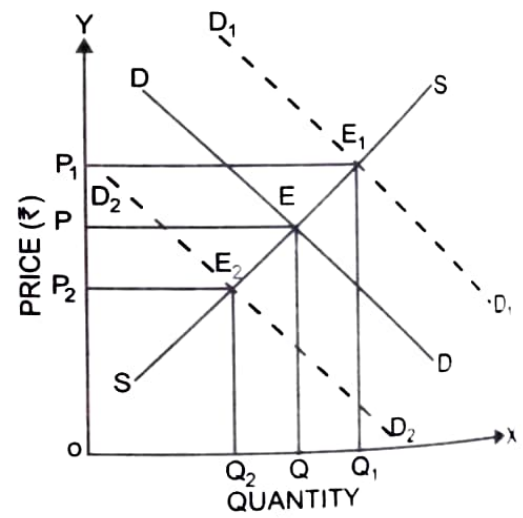


Figure 3

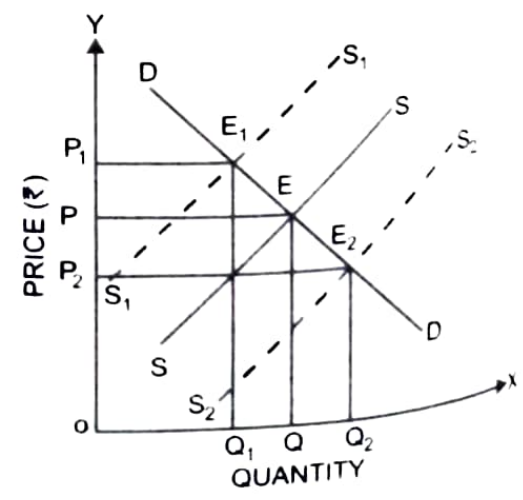


Figure 4

Effect of Simultaneous Change in Demand and Supply on Equilibrium Price

In order to simplify our study, we have confined ourselves to studying the effect of change in demand and change in supply independent of each other. However, there may be situations when supply and demand happen to change simultaneously. Let us study the effect of simultaneous changes in demand and supply with reference to Fig. 5(A, B, C). Fig. 27(A) relates to a situation when increase in demand is proportionately greater than the increase in supply. Fig. 27(B) relates to a situation when increase in demand and supply is proportionately equal to each other. And Fig. 27(C) relates to a situation when increase in supply is proportionately greater than the increase in demand.

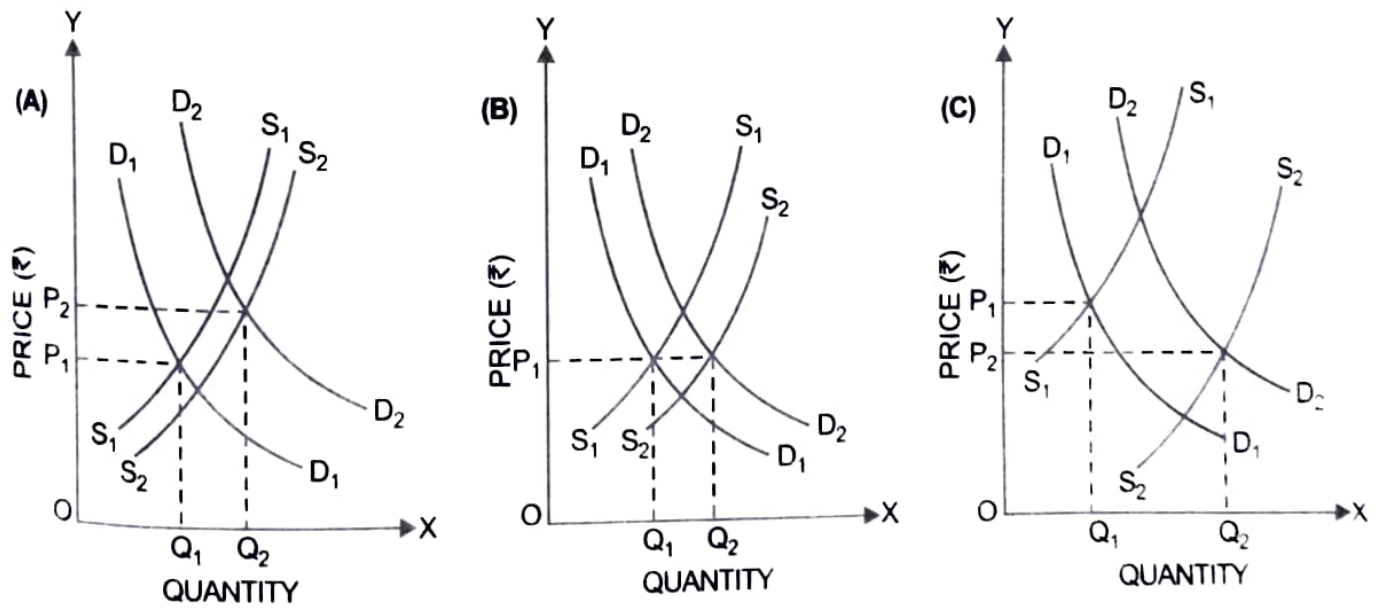
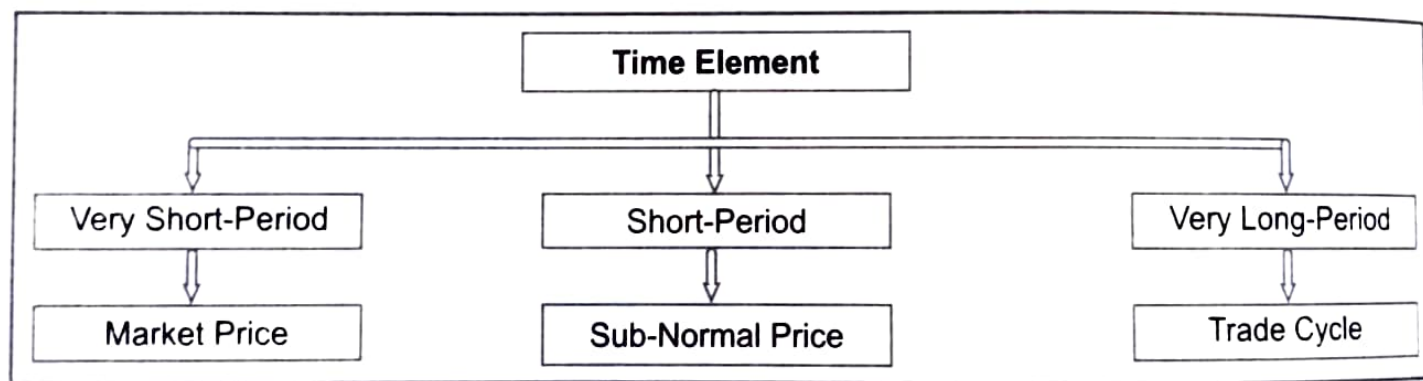


Figure 5

- (1) In Fig. 5(A), D_1D_1 is the initial demand curve and S_1S_1 the initial supply curve. OP_1 is equilibrium price and OQ_1 the equilibrium quantity. Due to increase in demand, demand curve shifts to D_2D_2 and due to increase in supply, supply curve shifts to S_2S_2 . However, it is a situation when increase in demand is proportionately greater than the increase in supply. Consequently, price increases to OP_2 and quantity to OQ_2 . Implying that when demand increases more than supply, price tends to rise along with a rise in equilibrium quantity.
- (2) In Fig. 5(B), increase in demand and supply is proportionate to each other. Consequently price remains unchanged at OP_1 even when equilibrium quantity increases from OQ_1 to OQ_2 .

■ 3. Importance of Time Element in the Determination of Value

It is evident from the above discussion that price of a good is determined at a point where its demand is equal to supply. It is our experience that once the wheat arrives at the market, supply of wheat becomes constant but price of wheat either rises or falls. The reason for this change in price is change in demand for wheat, supply being fixed. It means that price of wheat has been influenced more by its demand. Likewise, there are some goods whose price is influenced more by supply. Whether the price of a good will be influenced more by demand or supply depends on the time taken by demand and supply to adjust themselves. Importance of time element in the determination of value has been examined by **Marshall**. According to him, shorter the period, greater will be the influence of demand on price; and longer the period, greater will be the influence of supply in the determination of price. **Marshall** has divided time element necessary to bring about equilibrium between demand and supply into four periods:



(1) **Very Short-Period:** It refers to that time period in which supply of a commodity cannot be increased beyond its **existing stock**, if the demand has increased. The firm does not have time to increase its stock. Supposing your college canteen has a stock of 100 rasgullas at 10'o clock on Monday. But 200 rasgullas are demanded by the students for their party by 11'o clock. Obviously, the canteen contractor cannot prepare additional 100 rasgullas within one hour at his disposal. He is helpless. He can supply 100 rasgullas only of which he has the stock. In very short period supply can, at best, be increased upto the existing stock which consists of 100 rasgullas in this example. Since supply is fixed in the very short period, so demand plays greater role in the determination of price. The price that comes to prevail in the very short period is called **Market Price**.

(2) **Short-Period:** It refers to that time period in which supply of a commodity can be increased only up to its **existing production capacity**, if demand has increased. There is not enough time for a firm to install new machines nor for the new firms to enter the industry. Supposing you have a carpet manufacturing mill. If you run your mill for full 24 hours, you can produce 10 carpets at the most. Supposing demand for carpets increases to 20 carpets per day for two days only. You will be unable to meet this additional demand. Your maximum production capacity is limited to 10 carpets only. You do not have time to install new looms to increase your production. Thus, even in short-period, demand plays greater

■ 5. Difference between Short-Period and Long-Period

Distinction between short-period and long-period needs further elaboration. Following observations may be noted in this context.

- (1) In the short-period, supply can be changed only by varying the variable factors. The fixed factors cannot be changed. On the other hand, in the long-period all factors are variable. The supply can be changed according to demand.
- (2) In short-period, there is not enough time for new firms to enter the industry. The existing firms cannot install new plants. But in the long-period new firms can enter the industry and old firms can leave it.
- (3) In the short-period, supply can be increased upto the existing capacity but in the long-period supply can be increased or decreased, according to the demand.
- (4) In the short-period, demand exerts comparatively greater influence on the determination of price but with the passage of time the significance of supply tends to increase, and in the long-period both supply and demand are of equal significance.

■ 6. Price Determination in Very Short-Period (Market Price)

Price that is determined by the industry in very short period is called **Market Price**.

▲ Definition

➤ *Market Price is the price of a commodity which prevails in a market at a particular time*

● (1) Determination of Market Price

Market price is the price of a commodity prevailing at a given time. Supposing the market price of potatoes in the morning was ₹ 2.00 per kg. It is the price that comes to prevail in the market in very short-period when the supply of a commodity can be increased upto its stock only. Very short-period price is, therefore, influenced by the demand. If demand increases in the very short-period, then price also increases and if demand decreases then price also decreases. However, price will be determined at that point where demand for the commodity is equal to its supply. To study price determination in very short-period, goods are divided into two parts: (i) Perishable goods, and (ii) Durable goods.

● (i) Perishable Goods

Goods which perish very quickly are called perishable goods, for example, fresh vegetables, milk grapes, etc. Goods which go out of fashion shortly are also called perishable goods, for example, fashionable clothes, shoes, etc. Supply of such goods at any given time is fixed or perfectly inelastic. If demand increases, supply cannot be increased so readily and if demand decreases, supply cannot be decreased so quickly. So, it is demand that plays dominant role in the determination of price. Price rises with increase in demand and falls with decrease in demand. Determination of market price of perishable goods is explained with the help of Fig. 7.

In this figure, quantity of perishable good is shown on OX-axis and price on OY-axis. SS is very short-period supply curve of the industry. It is perfectly inelastic. It is a vertical line parallel to OY-axis signifying that in the very short-period supply remains fixed at OS level. DD is initial demand curve. It intersects supply curve SS at point E. So OP will be the market price. If in the very short-period demand increases, as shown by new demand curve D_1D_1 then the new equilibrium will be at point E_1 . It means that equilibrium price of the same quantity OS will rise from OP to OP_1 . If in the very short-period demand decreases as shown by the demand curve D_2D_2 then the new equilibrium will be at point E_2 and the new equilibrium price of the same quantity OS will fall from OP to OP_2 .

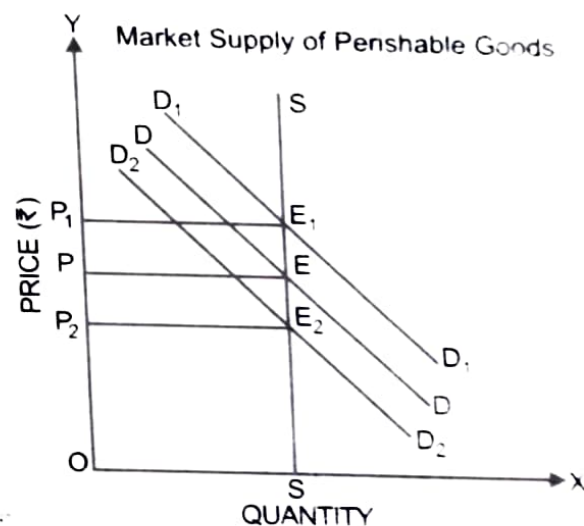


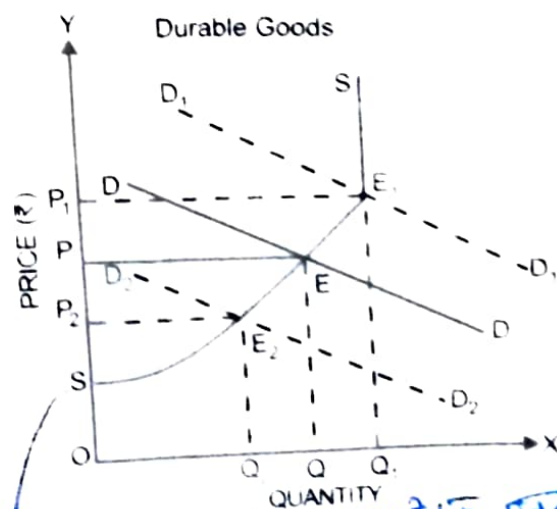
Figure 7

● (ii) Durable Goods

Some goods can be stored for a long time, for example, wheat, soap, oil, tea-leaves, etc. Firms selling such products have a minimum reserve price below which they will not sell these products. When price falls below this reserve price in the market, the sellers instead of selling these durable products at a loss put the same in the store and wait for the demand to increase and the price to rise. Thus, supply of durable goods can be increased or decreased upto a limit even in very short-period. It may however, be noted that supply can be increased only upto the **quantity lying in the stocks**. Market price of durable goods will be determined at a point where demand is equal to supply as shown in Table 2 and Fig. 8.

Table 2. Market Price of Durable Goods

Supply of Rice (Quintals)	Price per kg. (₹)	Demand for Rice (Quintals)
5	5	25
10	7	20
15	9	15
20	11	10
25	13	5
30	15	2



7. Price Determination in Short-Period

(i) Industry supply = Total of Firms supply

The sub-normal price is the price which is determined in the short-period. In short-period the industry can increase the supply upto existing production capacity of firms. Industry's supply curve in short-period is the summation of firms' supply curves. The short run supply curve of the firm is that portion of marginal cost curve which is above the average variable cost curve. In other words, the firms will continue to produce in the short period even when they cover their average variable costs by the prevailing price and suffer the loss of average fixed costs. It is because even if the firm shuts down or ceases to produce in the short-period it will continue to bear the fixed costs. Industry's short-run supply curve will be relatively more elastic than the very short-period supply curve. Fig. 9 shows the determination of sub-normal price. In Fig. 9, output is shown on OX-axis and price on OY-axis. SS is industry's short-run supply curve. It slopes upwards. DD is original demand curve. DD curve intersects short-run supply curve at point E. So OP will be the equilibrium price and OQ equilibrium output.

An increase in demand will increase equilibrium price and output in the short-run. For example suppose that demand curve shifts from DD to D_1D_1 in Fig. 9. The shift in the demand curve will cause a shortage at the old price OP with the result that the price will eventually be pushed upto OP_1 . At the same time, each firm will adjust its output rate upward so that its marginal cost will equal the higher price, with the result the industry's output will increase to OQ_1 as shown by equilibrium point E_1 . Conversely, due to decrease in demand, the demand curve will shift from DD to D_2D_2 . It will intersect the supply curve at point E_2 . At new equilibrium point E_2 , the price will fall to OP_2 and output to OQ_2 .

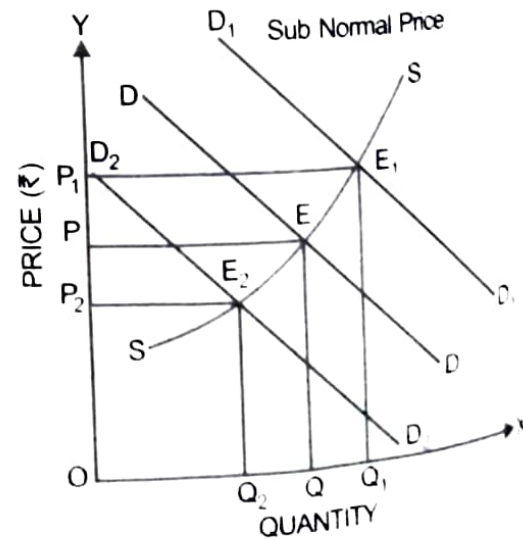


Figure 9

8. Price Determination in the Long-Period or Normal Price Determination

Normal price comes to prevail in the long period. It is also called long-period price. Normal price is influenced more by supply than demand.

Definition

- According to **Marshall**, "Normal Price is that price which tends to prevail in a market when full time is given to the forces of demand and supply to adjust themselves."

It is clear from this definition that normal price is one that tends to prevail in the long period. Under perfect competition, in the long-run, supply gets sufficient time to adjust itself to the changed conditions in demand. If supply is less than demand, price will rise and so will the profits of the producers. Rising profits will tempt new firms to enter the industry and existing firms to expand themselves. Thus total supply will increase and all the producers will get normal profits only. If supply is more than demand, price will fall and producers suffer losses. Some of the producers may leave the industry under pain of loss. Thus, total supply will decrease and once again price will rise to its normal level.

Determination of Normal Price

Determination of normal price is explained with the help of Fig. 10. In this figure, quantity of the product is shown on OX-axis and price on OY-axis. Total demand curve is DD and LS is the long-run supply curve. Demand and Supply curves intersect each other at point E. Normal price, therefore, is determined at OP. If due to some reasons industry raises price from OP to OP_1 then normal price again reverts back to OP. It is so because OP_1 is not the equilibrium price. At OP_1 price, demand is OQ_2 and supply is OM. Supply being more than demand, the industry will have to lower the price to OP. If, on the contrary, industry lowers the price from OP to OP_2 , then this price too will not stay for long. It is so because at OP_2 price, demand is OQ_1 and supply is ON, i.e., demand is more than supply. This will induce the industry to raise the price to OP where demand is equal to supply. **However, it may be noted that the long-run supply curve will not always be upward sloping. Its slope will depend upon the law of returns to scale or costs under which production takes place.**

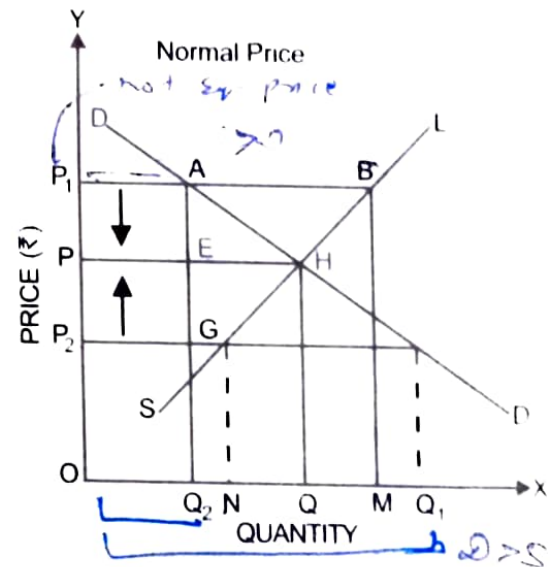


Figure 10
at P_1 $OQ_2 < OM$ or OQ_1

8.1 Long-Run Price or Normal Price and Returns to Scale

Normal price is influenced by the returns to scale. It may be noted that in the long-period supply curve of an industry corresponds to its marginal cost which in turn depends on law of returns to scale. As such, change in marginal costs causes change in normal price. In the long run, price is always equal to marginal and average costs. The proportion in which the marginal costs or supply will change as a result of increase in production depends upon the law of returns under which that production is obtained.