17
PRICE DETERMINATION

17:1 INTRODUCTION

In lesson No. 15 you have studied the factors that affect demand of a commodity and in particular how changes in price of a commodity affect its demand. In lesson No. 16 a similar study was done about the supply of a commodity. In fact the demand and supply of a commodity are both affected by the price of a commodity. But another interesting feature is that the demand and supply of a commodity both also influence the price of a commodity. How the demand and supply of a commodity influence its price, is the subject matter of this lesson. You will study how the price of a commodity is determined and how changes in demand and supply of a commodity affect its price. You should keep in mind that such a study does not cover those commodities whose prices are determined by the government, such as in India the price of petrol, diesel etc. The price of commodities fixed by the government are called administered prices.

17.2 OBJECTIVES

After going through this lesson you will be able to :

- explain how the price of a commodity is determined by the demand and supply of that commodity;
- explain the meaning of equilibrium price;
- explain the concept of excess demand and excess supply;
- explain the effects of excess demand and excess supply on the price of a commodity;
- explain the effects of changes in demand and supply of a commodity on its price.

17.3 MEANING OF EQUILIBRIUM PRICE

You have learnt that the buyers of a commodity demand more of it at lower price and less

of it at a higher price whereas the sellers of the commodity supply more of it at higher price and less of it at a lower price. These behaviours of buyers and sellers are explained by the law of demand and the law of supply. There can be a price of a commodity at which its quantity demanded and quantity supplied will be equal. This price of the commodity is called the equilibrium price. Thus equilibrium price of a commodity is the price at which its quantity demanded and supplied are equal.

17.4 PROCESS OF ARRIVING AT EQUILIBRIUM PRICE

Sellers are unaware of the intentions of the buyers. Similarly the buyers are also unaware of the intentions of the sellers. In other words neither the sellers know the market demand schedule of their commodity nor the buyers know the market supply schedule. Their decisions about the quantity demanded and supplied at a price are independent decisions. Therefore, in the market when the sellers fix a price of the commodity, they know the quantity to be sold at that price. It may be a coincidence that the demand by buyers of the commodity at that price may just be equal to the supply. If that happens the equilibrium price is instantaneously determined. At this price the quantity demanded and supplied are equal.

As stated earlier it may be a concidence. But in practical life, it may rarely happen. Actually at the price fixed by the sellers, the market supply may be greater or lesser than the market demand at that price. It means that at this price market demand and market supply are not equal. So it is not the equilibrium price. What will happen now? In other words, how the equilibrium price will be arrived at. Suppose at the price quoted in the market by the sellers the supply is greater than demand i.e. the buyers are willing to buy less than what the sellers are ready to sell at that price. In this situation not finding enough customers the sellers will reduce the price in order to sell the quantity they wish to sell. You know that as price falls quantity demanded rises and quantity supplied falls. So as the price is reduced the demand increases and supply falls. This will reduce the original gap between supply and demand. This process of fall in price, rise in demand and fall in supply will continue till a price is reached at which the quantity demanded and the quantity supplied are equal. Thus the equilibrium price is reached. Let us take an example. The table 17.1 contains the market demand schedule and the market supply schedule of potatoes.

Table 17.1

Price per kg. (Rs.) (1)	Market Demand per day (kg.) (2)	Market Supply per day (kg.) (3)
6	10	30
5	15	25
4	20	20
3	25	15
2	30	10

Column (1) shows the different prices of potatoes. Column (2) shows the market demand of potatoes at different prices and column (3) shows the market supply of potatoes at different prices. Let us read the table carefully. When the price of potatoes is Rs. 6 per kg., its supply is 30 kg. but its demand is for 10 kg. As the price falls from Rs. 6 per kg. to Rs.2 per kg., the demand rises but supply falls. Suppose the sellers fix the price at Rs. 6 per kg. At this price the supply is 30 kg. but demand is for only 10 kg. This means that at this price only 10 kg., of potatoes can be sold. This would result in a fall in the price of potatoes. Suppose the price falls to Rs. 5 per kg. At this price the demand for potatoes has risen from 10 kg. to 15 kg. and the supply has fallen from 30 kg. to 25 kg. But still the supply is greater than demand. So the price will further fall and when it falls to Rs. 4 per kg., we find that the demand and supply are both equal. Buyers are willing to buy 20 kg. of potatoes and sellers are willing to sell 20 kg. of potatoes at this price. This is the equilibrium price.

Let us take another situation where initially the price quoted by the sellers is such that the market demand at that price is greater than the market supply. In such a situation how is the equilibrium price reached? Suppose the price of potatoes quoted by the sellers is Rs. 2 per kg. and the supply is 10 kg. as shown in table 17.1. At this price the demand for potatoes is for 30 kg. Obviously the demand is more than supply. This would result in a competition among the buyers for buying the quantity each one intends to buy. This would lead to a rise in price. Suppose the price rises from Rs. 2 to Rs. 3 per kg. Now at this price the demand for potatoes falls from 30 kg. to 25 kg., but its supply increases from 10 kg. to 15 kg. Still the demand is greater than the supply though the gap between the two is reduced. This would lead to a further rise in price and when the price rises to Rs. 4 per kg., we find that the demand and supply are equal, each is equal to 20 kg. Rs. 4 per kg. is thus the equilibrium price at which the demand and the supply of potatoes are equal. You must have now understood the process by which the equilibrium price of a commodity is reached.

Now let us show the determination of equilibrium price with the help of a demand curve and a supply curve. We plot the market demand schedule and market supply schedule given in table 17.1 on a graph paper and get the figure 17.1.

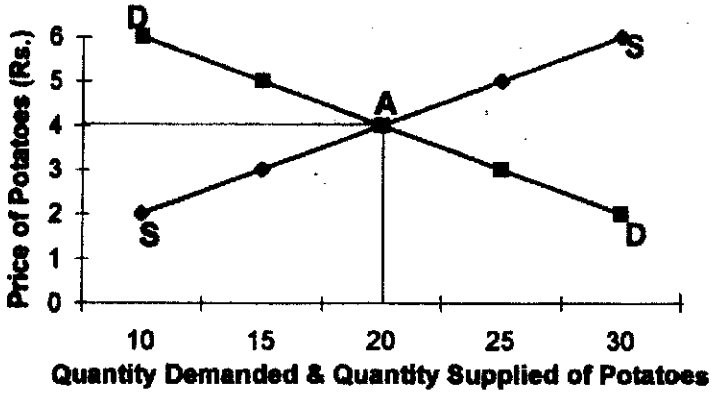

Fig. 17.1 : Equilibrium Price

In the figure17.1 DD is the demand curve and SS is the supply curve. Demand curve is downward falling from left to right showing the inverse relationship between price of potatoes and its quantity demanded. Supply curve is upward rising from left to right showing the direct relationship between the price of potatoes and its quantity supplied. The demand curve and the supply curve intersect at point A. As a point on demand curve point A shows that at the price of Rs. 4 per kg. the quantity demanded is 20 kg. As a point on the supply curve point A shows that at the price of Rs. 4 per kg. the quantity supplied is 20 kg. So at the price of Rs. 4 per kg., the quantity demanded and the quantity supplied are equal. Thus point A indicates the equilibrium price and the equilibrium quantity (when quantity demanded and quantity supplied are same at a price then it is called equilibrium quantity).

Thus we can say that equilibrium price of a commodity is determined by the point of intersection of the demand curve and the supply curve of the commodity.

POINTS TO REMEMBER

- Equilibrium price of a commodity is the price at which its quantity demanded and quantity supplied are equal.
- If at a given price of the commodity its quantity demanded and quantity supplied are not equal, then price, demand and supply change till the equilibrium price is reached.
- Diagrammatically equilibrium price is determined by the point of intersection of demand curve and supply curve.

INTEXT QUESTIONS 17.1

Tick (✓) the correct answers :

(i) Equilibrium price of a commodity is the price at which :
- (a) supply is maximum
- (b) demand is maximum
- (c) demand and supply are equal
- (d) demand and supply both rise.

(ii) Point of intersection of demand curve and supply curve shows :
- (a) the equilibrium quantity
- (b) the equilibrium price
- (c) both (a) and (b)
- (d) neither (a) nor (b)

(iii) If at a given price of a commodity its quantity demanded is greater than its quantity supplied then :
- (a) price starts rising
- (b) demand starts falling
- (c) supply starts rising
- (d) All of the above happen

17.5 EXCESS DEMAND AND EXCESS SUPPLY

(a) Excess Demand

When at a price of the commodity its quantity demanded exceeds its quantity supplied then it is a situation of excess demand. For example in table 17.1 at a price of Rs. 2 per kg. the quantity demanded of potatoes is 30 kg. whereas its quantity supplied is 10 kg., therefore, we say that at price of Rs. 2 per kg. there is excess demand of potatoes.

(b) Effect of Excess Demand on the Price and Quantity Demanded and Supplied

Excess demand results in the following changes :

(i) Price of the commodity starts rising because of the competition among its buyers.
(ii) As the price starts rising, its quantity demanded starts falling as the buyers demand less when price rises.
(iii) As the price starts rising, its quantity supplied starts rising as the sellers sell more when price rises.
(iv) The rise in the price of the commodity causes contraction of demand and expansion of supply which continues till price reaches a level at which the quantity demanded and quantity supplied are equal.
(v) This is the equilibrium price which also determines the equilibrium quantity.

In this way excess demand is wiped out. Let us now explain the concept of excess demand and the process by which it is wiped out withthehelp of a diagram. Let us redraw fig. 17.1

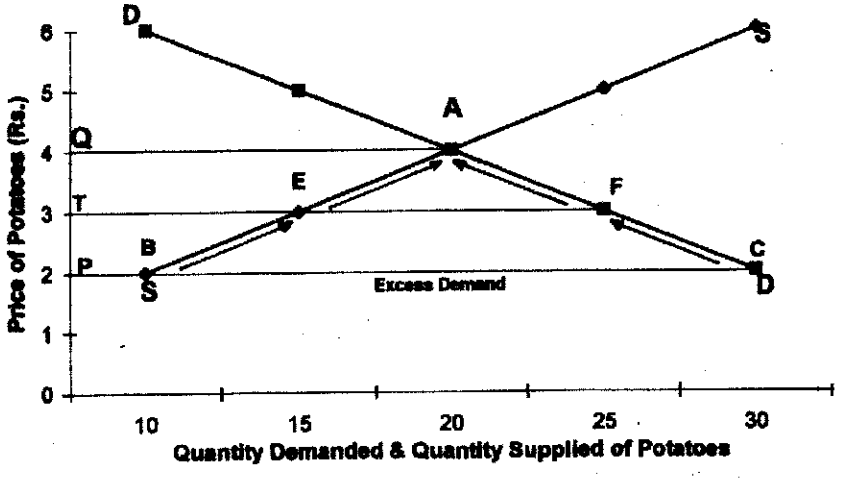

Fig. 17.2 Excess Demand

At the price of Rs. 2 per kg. the quantity demanded and supplied of potatoes are 30 kg. (or PC) and 10 Kg. (or PB) respectively. Thus there is an excess demand of 20 kg. (or BC). The buyers will obviously compete to buy the quantity of potatoes they want to buy at this price. This will lead to a rise in price. Suppose the price rises to Rs. 3 per kg. At this price the quantity supplied and quantity demanded are 15 kg . (or TE) and 25 kg. (or TF) respectively. Notice the movements along the demand and supply curves as the price rises. There is an expansion of supply shown by an upward movement along the supply curve from point B to point E and contraction of demand shown by an upward movement along the demand curve from the point C to point F. These movements are shown by the arrows. Still there is excess demand equal to 10 kg. (or EF). This further increases the price and the price rises to Rs. 4 per kg. Notice again the movements along the demand curve and supply curve. The demand contracts as shown by shift from point F to point A and supply expands as shown by shift from point E to point A. At this price i.e. Rs. 4 per kg. the quantity demanded is equal to 20 kg. (orQA) and the quantity supplied is also 20 kg (orQA). Both are equal. So Rs. 4 per kg. is the equilibrium price and 20 kg. is the equilibrium quantity and there is no excess demand.

(c) Excess Supply

If at a given price the quantity supplied of a commodity exceeds its quantity demanded then it is a situation of excess supply. Again refer to table 17.1. When the price of potatoes is Rs. 6 per kg., its supply is 30 kg. and demand is for 10 kg. Thus there is excess supply equal to 20 kg.

(d) Effects of Excess Supply on the Price and Quantity Demanded and Supplied

Whenever there is excess supply of a commodity the following changes take place :

(i) As supply exceeds demand, all sellers will not be able to sell the total quantities they want to sell at this price. So there will be competition among sellers. This will reduce the price.

(ii) As the price starts falling, expansion of demand and contraction of supply will take place. This will reduce the excess supply.

(iii) These changes i.e. fall in price, expansion of demand and contraction of supply will continue till the price reaches that level at which demand and supply are equal.

(iv) Thus the excess supply is wiped out and equilibrium price and equilibrium quantity are established.

As was done in case of excess demand let us explain with the help of a diagram the concept of excess supply and the changes that take place in price, demand and supply due to excess supply. Let us redraw figure 17.1.

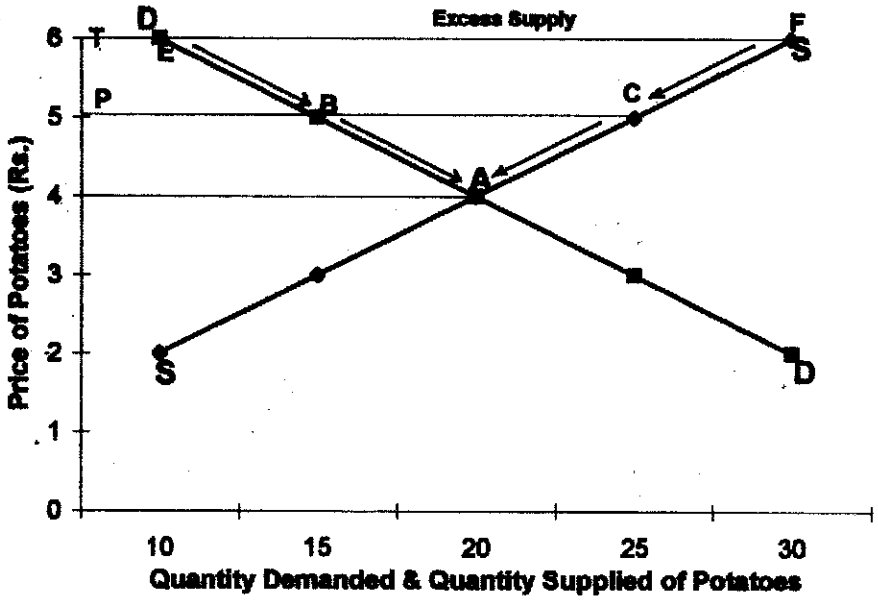

Fig. 17.3 : Excess Supply

When the price is Rs. 6 per kg. the quantity supplied is 30 kg. (or TF) and quantity demanded is only 10 kg. (or TE). So there is an excess supply equal to 20 kgs (or EF). Competition among sellers reduces the price, say, to Rs. 5 per kg. As the price has fallen from Rs. 6 to Rs. 5 there is expansion of demand and it is shown by a downward movement along the demand curve from point E to point B. And there is contraction of supply due to fall in price. This is shown by downward movement along the supply curve from point F to point C.

At the price of Rs. 5 per kg. there is still excess supply equal to 10 kg. (or BC). This will again initiate a fall in price, expansion of demand and contraction of supply as shown by arrows. Further downward movement along the supply curve (contraction of supply) takes us to point A and further downward movement along the demand curve (expansion of demand) takes us to point A. Point A gives the equilibrium price (Rs. 4 per kg.) and equilibrium quantity (20 kg.).

Thus in a situation of excess demand or excess supply, the price starts rising or falling, the demand starts contracting or expanding, the supply starts expanding or contracting. Through these changes excess demand or excess supply is wiped out.

You should also notice that when there is excess demand, the equilibrium price will be higher than the price at which there was excess demand. Similarly the equilibrium price would be lower than the price at which there is excess supply.

POINTS TO REMEMBER

- Excess demand means more demand than supply at a given price.
- Excess supply means more supply than demand at a given price.
- Excess demand/excess supply causes a rise/fall in price. A rise/fall in price leads to contraction/expansion of demand and expansion/contraction of supply.
- These changes lead to an equilibrium price and equilibrium quantity.

INTEXT QUESTIONS 17.2

State whether the following statements are true or false:

(i) Excess demand means more demand than supply at a given price.
(ii) Excess supply reduces the price of the commodity.
(iii) When there is excess demand, price starts rising and demand starts expanding while supply starts contracting.
(iv) When there is excess supply, equilibrium price would be lower than the price at which there is excess supply.
(v) Excess demand raises the price and the demand contracts while supply expands.
(vi) Equilibrium price is always greater than the price at which there is excess demand.
(vii) Excess supply means supply is more than demand at a given price.

17.6 EFFECTS OF CHANGES IN DEMAND AND SUPPLY ON PRICE

In this section we will study the effects of increase/decrease in demand on price of the commodity, supply remaining the same; the effects of increase/decrease in supply on price, demand remaining the same and lastly effects on price of simultaneously changes in both demand and supply of a commodity. You should recollect why the demand and supply increase or decrease.

You were explained in lesson No. 15 that increase or decrease in demand means a rise or fall in demand at the same price. This increase or decrease takes place due to changes in other factors such as prices of related commodities, incomes of the buyers, changes in tastes and preferences of the buyers etc. Similarly supply increases or decreases at the same price due to changes in other factors such as prices of other commodities, prices of factors of production, objectives of producers and state of production technology etc. Let us study the effects of these changes in demand and supply on the price one by one.

(i) Effect of Increase in Demand on Price :

When at the same price there is greater demand of a commodity, it is called increase in demand. If supply schedule remains the same then an increase in demand raises the equilibrium price of the commodity. Let us explain with the help of a diagram the effect of increase in demand on price, supply schedule remaining the same.

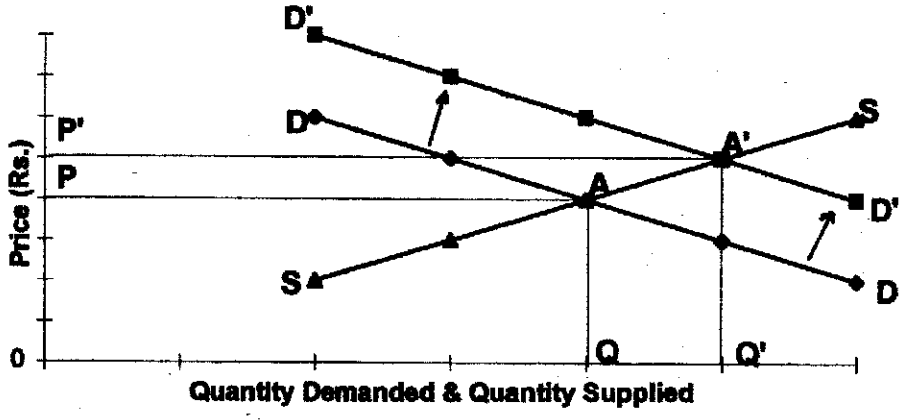

Fig. 17.4 : Effect of Increase in Demand on price

DD and SS are the original demand and supply curve respectively. They intersect at point A. So equilibrium price is OP and equilibrium quantity is OQ. When demand increases, the demand curve shifts rightward as shown by demand curve D^1D^1. Supply curve remains the same. The point of intersection of the new demand curve and the given supply curve is A^1. Point A^1 shows the new equilibrium price which is OP^1 and the new equilibrium quantity which is OQ^1. Thus we see that increase in demand raises the equilibrium price (from OP to OP^1) and also increases the equilibrium quantity (from OQ to OQ^1).

(ii) Effect of Decrease in Demand on Price :

Decrease in demand means lesser demand at the same price. Decrease in demand means a leftward shift in demand curve as shown in the following figure 17.5.

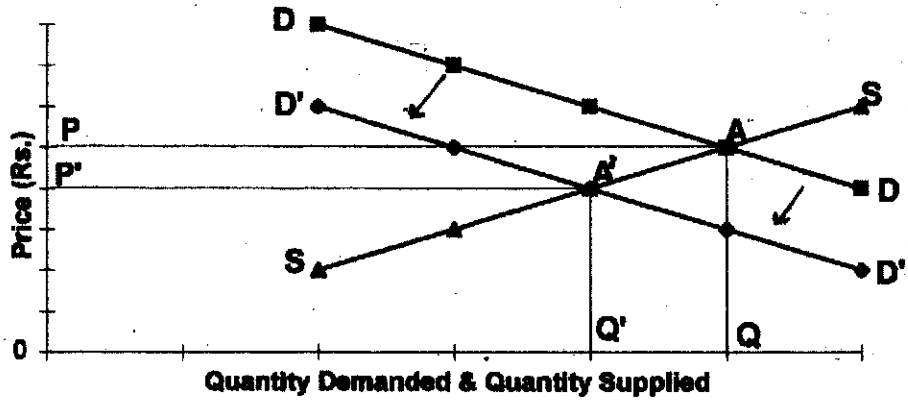

Fig. 17.5 : Effect of Decrease in Demand on Price

The original equilibrium price is OP and equilibrium quantity is OQ. A decrease in demand is shown by a leftward shift in demand curve. The new demand curve is D^1D^1. The point

of intersection of new demand curve D^1D^1 and the unchanged supply curve is A^1. Point A^1 shows the new equilibrium price which is OP^1 and the new equilibrium quantity is OQ^1. Thus we find that when demand decreases, the equilibrium price and the equilibrium quantity both fall. Equilibrium price has fallen from OP to OP^1 and equilibrium quantity has fallen from OQ to OQ^1.

(iii) Effect of Increase in Supply on Price :

When at the same price the supply of a commodity rises, it is called increase in supply. An increase in supply results in a rightward shift of supply curve. Demand schedule or demand curve remaining the same, it will reduce the equilibrium price. In the figure 17.6, A is the point of intersection of original demand and supply curves. An increase in supply results in the righward shift of supply curve from SS to S^1S^1. The new point of intersection of the demand curve and new supply curve is B^1, which shows that the new equilibrium price is OP^1 which is lower than the original price (OP). It also shows new equilibrium quantity (OQ^1) which is greater than original quantity (OQ). Thus an increase in supply of a commodity demand schedule remaining the same, results in a fall in its equilibrium price and an increase in equilibrium quantity.

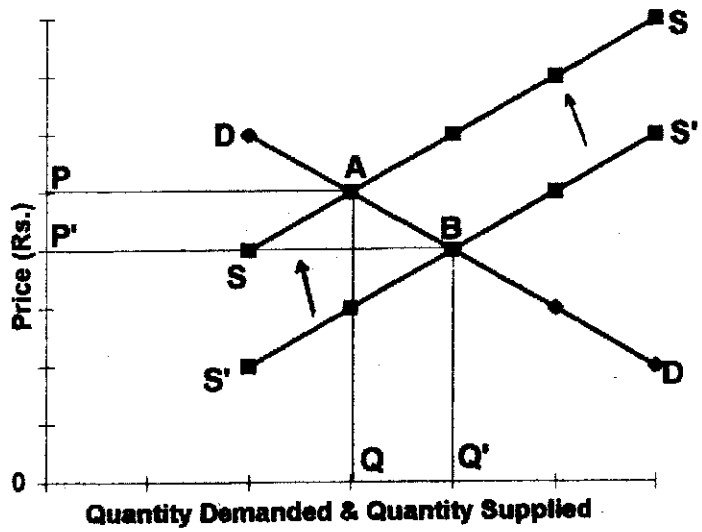

Fig. 17.6 : Effect of Increase in Supply on Price

(iv) Effect of Decrease in Supply on Price :

Decrease in supply means a leftward shift in supply curve as shown in figure 17.7. This results in a new equilibrium price OP^1. This new price is greater than the original equilibrium price, which was OP. The new equilibrium quantity is OQ^1 which is less than the original equilibrium quantity OQ.

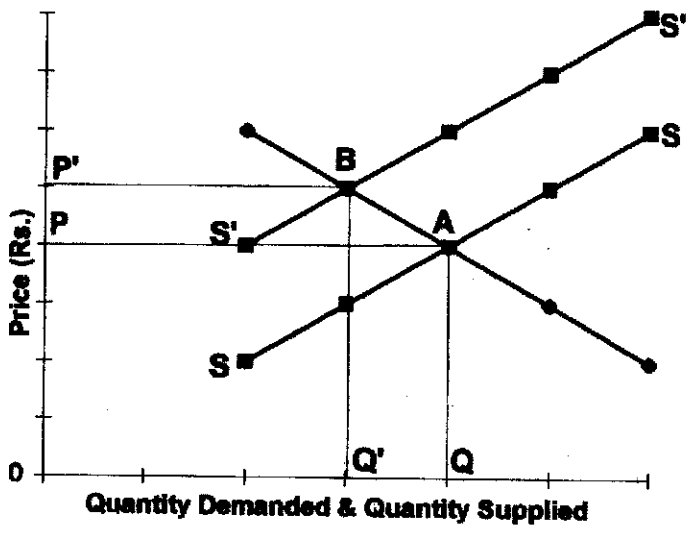

Fig. 17.7 : Effect of Decrease in Supply on Price

Thus a decrease in supply, demand schedule remaining the same raises the price of the commodity.

(v) Effect of simultaneous changes in Demand and Supply on Price :

Generally both the supply and the demand of a commodity keep on changing. There can be various possibilities of such changes. Let us study them one by one.

(a) When both demand and supply decrease or increase :

You have already studied that a decrease in demand reduces the price and a decrease in supply raises the price of the commodity. However, when both these changes take place simultaneously then the effect on price of such changes will depend upon the relative decreases in the two.

We calculate the percentage increase in demand and the percentage increase in supply. If the percentage increase in demand is less than the percentage increase in supply then we say that the increase in demand is relatively less than the increase in supply. When the relative increase in the two is equal then there would be no change in price (see fig. 17.8). If the relative increase in demand is more than the relative increase in supply, price will rise (see fig. 17.9). If the relative increase in demand is less than the relative increase in supply, the price will fall (see fig. 17.10).

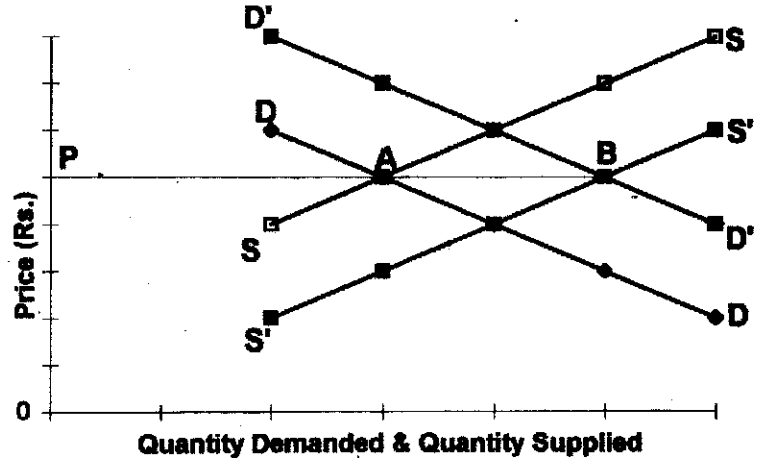

Fig. 17.8 : Relative increases in demand and supply are equal

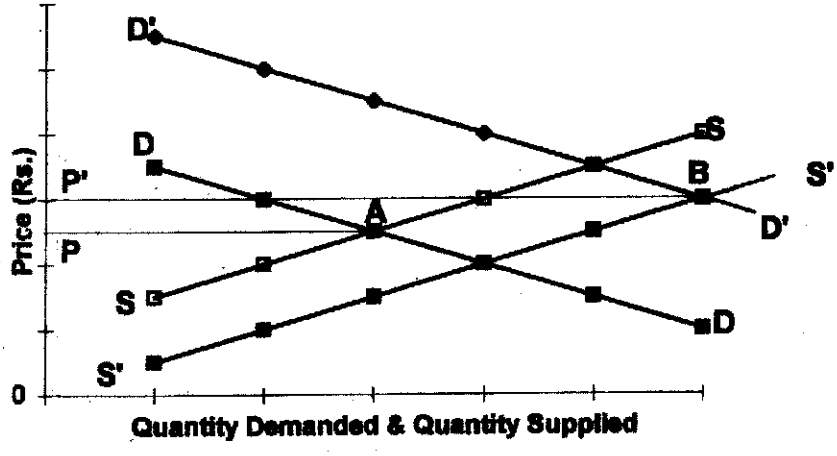

Fig. 17.9 : Relative increase in demand > relative increase in supply

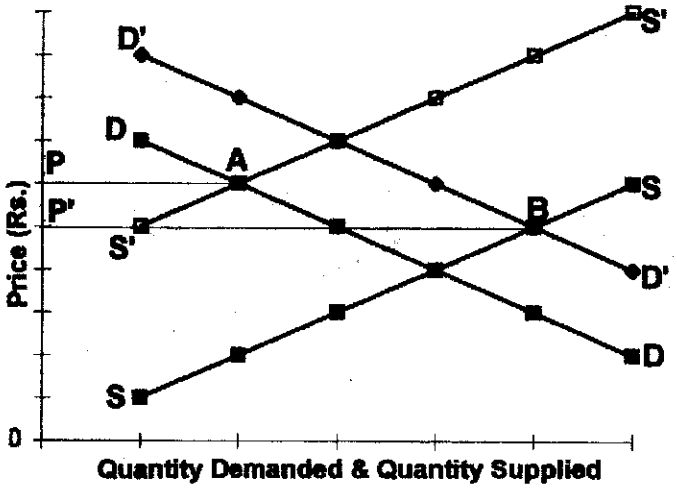

Fig. 17.10 : Relative increase in supply > relative increase in demand

Similarly, when the demand and supply both decrease, the price may remain same, fall or rise. This will depend upon the relative decreases in demand and supply. (You can now yourself draw three diagrams, as were drawn when both demand and supply increase.).

(b) When demand decreases (increases) and supply increases (decreases)

When demand decreases and supply increases then the price of the commodity is bound to fall as each of these changes reduces the price. Similarly if demand increases and supply decreases the price of the commodity is bound to rise.

These effects are shown in figures 17.11 and 17.12.

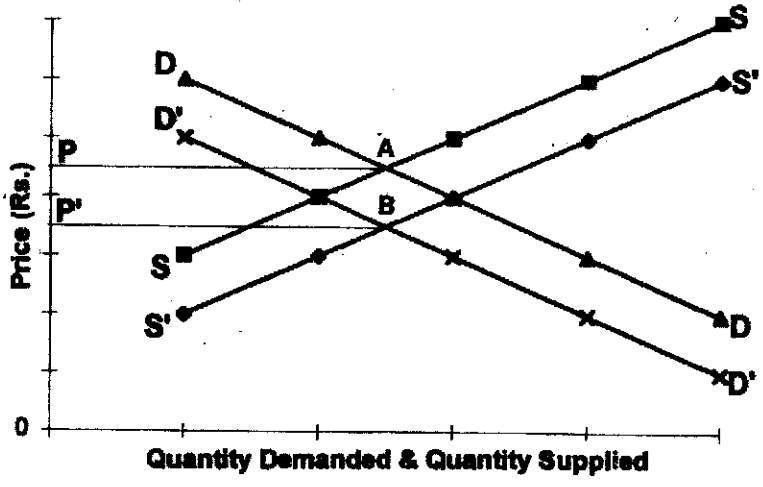

Fig. 17.11 : Decrease in Demand and Increase in Supply

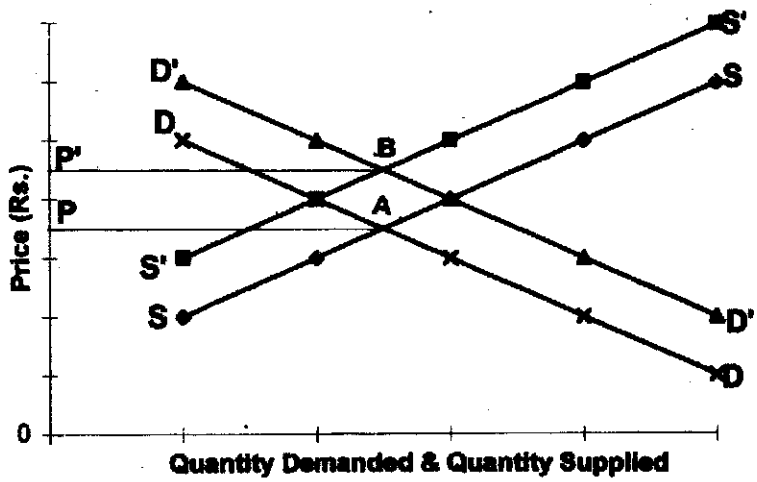

Fig. 17.12 : Increase in Demand and Decrease in Supply

Thus changes in either demand or in supply or in both lead to a new equilibrium price which may be equal to, greater than or less than the old equilibrium price depending upon the nature of changes that take place in demand and supply.

POINTS TO REMEMBER

- Changes in demand and supply of a commodity affect its equilibrium price. The effect on price will depend upon the nature of changes in demand and supply.
- If demand increases (decreases) supply schedule remaining the same, the equilibrium price will rise (fall).
- If supply increases (decreases), demand schedule remaining the same, the equilibrium price will fall (rise).
- If demand and supply both increase (decrease) their effect on equilibrium price will depend upon their relative increases (decreases). If relative increase (decrease) in demand is greater than relative increase (decrease) in supply, the equilibrium price will rise (fall). If relative increase (decrease) in demand is less than the relative increase (decrease) in supply, the equilibrium price will fall (rise).
- If supply increases (decreases) and demand decreases (increases), the equilibrium price will fall (rise).

INTEXT QUESTIONS 17.3

Fill in the blanks :

(i) When demand increases, supply schedule remaining the same, the price will .....

(ii) Price of a commodity will ..... if its demand increases and supply decreases.

(iii) If the proportionate decrease in demand is less than the proportionate decrease in supply, price will .....

(iv) The demand and supply of a commodity are always equal at .....

(v) Equilibrium price is determined by ..... and .....

TERMINAL EXERCISE

1. What do you mean by excess supply ? Explain with the help of the diagram as to what will be the effect of an excess supply on the price of the commodity ?
2. What do you mean by excess demand ? What will be the effect of an excess demand for a commodity on its price ? Show with the help of an example.
3. How is the equilibrium price of a commodity determined through demand curve and supply curve? Explain with the help of the diagram.
4. Equilibrium price of a commodity is determined at a level where market demand is equal to the market supply. What will happen if the price is lower or higher than this equilibrium price ?
5. Market demand and supply schedules of mangoes (per day) are given below :

Price (per kg.)	Quantity demanded (in Kg. per day)	Quantity supplied (in Kg. per day)
9	4	14
7	6	11
5	8	8
3	10	5
1	12	3

On the basis of the above table answer the following :

(i) What will be the equilibrium price of the mangoes?

(ii) What will be the quantity demanded and supplied at this price?

(iii) What changes will take place if the price is higher than the equilibrium price?

(iv) What changes will take place if the price is less than the equilibrium price?

6. Explain briefly with the help of the diagrams the effects of changes in demand and supply of a commodity on its equilibrium price.

ANSWERS

Intext Questions 17.1

(i) (c), (ii) (c), (iii) (d)

Intext Questions 17.2

(i) True (ii) True (iii) False (iv) True (v) True (vi) True (vii) True

Intext Questions 17.3

(i) Rise (ii) rise (iii) fall (iv) equilibrium price (v) demand, supply

Hints to Terminal Exercise

1. Read section 17.5 (c & d)
2. Read section 17.5 (a & b)
3. Read section 17.3 & 17.4
4. Read section 17.3 & 17.4
5. Read section 17.3 & 17.4
6. Read section 17.6