NCERT Solution for Class 12 Microeconomics Chapter 5 - Market Equilibrium

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1. Explain market equilibrium.

It is referred to as that state in the market where supply is equal to demand. When a market is at equilibrium, the corresponding price will not change unless there is an external factor which is instrumental in changing the supply or the demand. Under the condition of market equilibrium, the price at which a product is sold is known as the equilibrium price.

2. When do we say there is excess demand for a commodity in the market?

When the market demand for a product/commodity is greater than the market supply, it can be understood that there is an excess demand for that commodity in the market.

3. When do we say there is excess supply for a commodity in the market?

When the market supply for a commodity is greater than the market demand, it can be understood that there is an excess supply for that commodity in the market.

4. What will happen if the price prevailing in the market is (i) above the equilibrium price? (ii) below the equilibrium price?

i) When the price of a product prevailing in the market is above the equilibrium price, supply will be more than demand. Since the product can be sold at a price greater than the equilibrium price, the firm will produce more quantities of the given product and increase the supply. But the demand will be low since the competing firms will also increase their production and supply creating excess supply.

ii) When the price of a product prevailing in the market is below the equilibrium price, supply will be less than the demand. Since the product can only be sold at a price lower than the equilibrium price, the firm will produce fewer quantities of the given product and decrease the supply. The competing firms will also do the same and therefore the supply will not adequately meet the demand creating excess demand.

5. Explain how price is determined in a perfectly competitive market with fixed number of firms.

In a perfectly competitive market with a fixed number of firms, the price will be determined by the supply and demand that exists in the market. Since the demand and supply will be the same, the price of any commodity will be at equilibrium. This is known as the equilibrium price.

6. Suppose the price at which equilibrium is attained in exercise 5 is above the minimum average cost of the firms constituting the market. Now if we allow for free entry and exit of firms, how will the market price adjust to it?

When the equilibrium price is greater than the minimum average cost of the firms, more firms will enter the market and produce more quantities of the given commodity. This is due to the high-profit levels that can be gained due to the market's condition. But in the longer run, the market price will start to fall because of the rise in supply caused by the rush. Therefore, the market equilibrium price will decline and the profit levels will return to normal.

7. At what level of price do the firms in a perfectly competitive market supply when free entry and exit is allowed in the market? How is equilibrium quantity determined in such a market?

In a perfectly competitive market when free entry and exit is allowed, the equilibrium price will be the same as the minimum average cost in the long run. All the firms will earn zero to normal economic profit.

8. How is the equilibrium number of firms determined in a market where entry and exit is permitted?

When free entry and exit is permitted, the market price will remain the same as the minimum average cost. Therefore, firms will enter or exit the market. Since there is no profit to be gained by producing the given commodity, no company will be incentivized to enter the market. This is how an equilibrium number of firms is determined in such a market.

9. How are equilibrium price and quantity affected when income of the consumers (a) increase? (b) decrease?

(a) An increase in the income of the consumers is likely to increase the equilibrium price. Since the consumers have more money to spend, the demand for a given commodity will increase and the quantity of the product produced will also increase.

(b) A decrease in the income of the consumers is likely to decrease the equilibrium price. Since the consumers have less money to spend, the demand for a given commodity will decrease and the quantity of the product produced will also decrease.

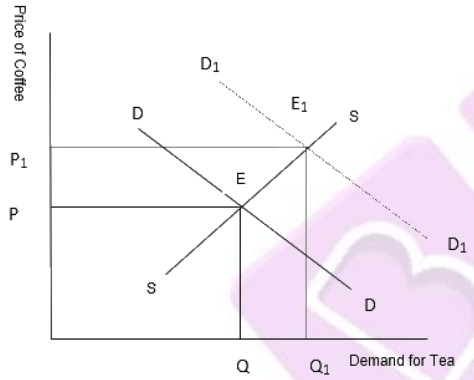
10. Using supply and demand curves, show how an increase in the price of shoes affects the price of a pair of socks and the number of pairs of socks bought and sold.

Shoes and Socks are complementary goods and a change in one product's price will affect how the other product's supply. Since shoes and socks are usually bought together, when there is an increase in the price of shoes, the demand for socks will face a decline. Due to the decline in demand for shoes and socks, the number of socks sold and bought will decrease.

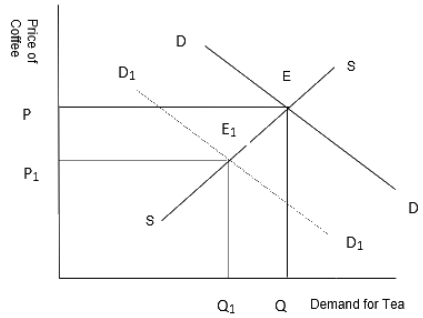
11. How will a change in price of coffee affect the equilibrium price of tea? Explain the effect on equilibrium quantity also through a diagram.

Coffee and tea are regarded as substitutes of each other and therefore any price change in coffee will result in changing the demand for the tea. It can be said that when coffee price increases it will increase the demand for the tea and when the coffee price decreases the demand for tea is reduced.

Diagrammatically it can be represented as:



In the above diagram, when price of coffee increases (from P to P1) the demand for tea increases which is shown by (Q to Q1).



In the above diagram, when price of coffee decreases from (P to P1) there is a decrease in demand for tea (Q to Q1)

12. How do the equilibrium price and the quantity of a commodity change when price of input used in its production changes?

Change in input price brings about changes in equilibrium price and quantity of commodity produced in following ways:

1. When input price is increased: In case a firm increases the input price, the cost of production will increase, this will result in decline in profit and hence supply will take a hit. Supply curve will move left while demand curve will remain same. Equilibrium price will increase with reduced output.

2. When input price is decreased: In case a firm decreases the input price, the cost of production will reduce which will encourage firm to produce more and increase supply. This will result in supply curve moving right with demand curve remaining still. The equilibrium price will be lower with increased output.

13. If the price of a substitute Y of good X increases, what impact does it have on the equilibrium price and quantity of good X?

As X and Y are substitutes of each other, therefore any change in the price of the substitute will have an immediate effect on the price of the other. In this case if price of Y increases then it will result in increase in demand for X and due to this increase in demand there will be a rise in equilibrium price and the quantity of output of the good X.

14. Compare the effect of shift in the demand curve on the equilibrium when the number of firms in the market is fixed with the situation when entry-exit is permitted.

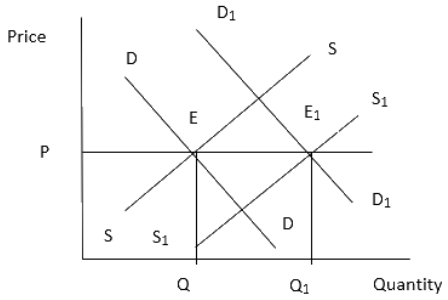
When the number of firms is fixed in a market, an increase in demand will result in increased equilibrium price and increased output. Similarly if entry exit is allowed then there will be a decrease in equilibrium price. There will be more entry of firms as all will be looking to earn super normal profit. But entry of more firms causes decrease in profit and all firms will start earning normal profit.

15. Explain through a diagram the effect of a rightward shift of both the demand and supply curves on equilibrium price and quantity.

Rightward shift in both demand and supply curve can occur in three situations as discussed below:

1. When demand and supply curve both increase equally then there will be no change in equilibrium price although there will be change in equilibrium point.

This can be depicted with a diagram as:



2. When demand curve increases at a faster rate than supply curve there will be higher equilibrium price and higher output

3. When demand curve increases at a slower rate than supply curve there will be fall in equilibrium price and rise in output.

16. How are the equilibrium price and quantity affected when

(a) both demand and supply curves shift in the same direction?

(b) demand and supply curves shift in opposite directions?

(a) both demand and supply curves shift in the same direction

Conditions	Equilibrium Price	Equilibrium Quantity
1) Increase in demand equals increase in supply	No change	Increases
2) Increase in demand more than increase in supply	Increases	Increases
3) Increase in demand less than increase in supply	Falls	Increases
4) Decrease in demand equal to decrease in supply	No change	Falls
5) Decrease in demand more than decrease in supply	Falls	Falls
6) Decrease in demand less than decrease in supply	Increases	Falls

(b) demand and supply curves shift in opposite direction

Conditions	Equilibrium Price	Equilibrium Quantity
1. Increase in demand equals to decrease in supply	Increase	Unchanged
2. Decrease in demand equals to increase in supply	Unchanged	Increases
3. Decrease in demand less than increase in supply	Decreases	Increases
4. Decrease in demand more than increase in supply	Decreases	Decreases
5. Increase in demand less than decrease in supply	Increases	Decreases
6. Increase in demand more than decrease in supply	Increases	Increases

17. In what respect do the supply and demand curves in the labour market differ from those in the goods market?

The points of differentiation between labour market and goods market are:

1. In a goods market, consumers make the demand for goods whereas in a labour market, firms make the demands.

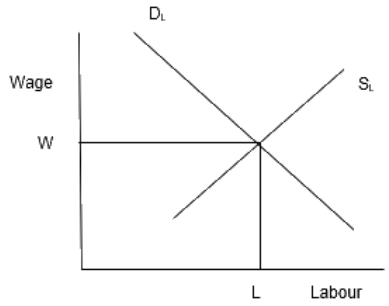
2. In a goods market, firms perform the supply of goods, whereas in a labour market households provide the supply of labour.

3. Firms acts as suppliers in a goods market whereas households act as suppliers in labour market.

18. How is the optimal amount of labour determined in a perfectly competitive market?

In a perfectly competitive market the optimal amount of labour is determined by considering the cost and benefit that is obtained by employing the additional labour. A firm will hire laborers till that point where the cost of employing additional labour becomes equal to the benefits derived from it. At that point it can be said that marginal cost of labour is equal to marginal benefit by labour or the wage rate is equal to the marginal revenue product.

It can be represented as



$W = VMP_L$

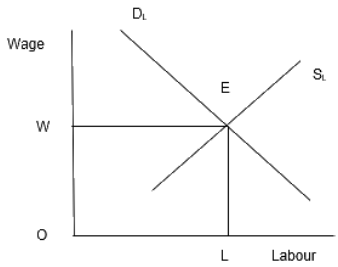
Where,

W = Wage rate

VMP_L = Value of Marginal Product of Labour

19. How is the wage rate determined in a perfectly competitive labour market?

In a perfectly competitive labour market the wage rate will be determined by the point of intersection of the demand and supply of labour. The demand for labour is determined by the marginal product of labour. Rate at which demand equals supply is called as equilibrium wage rate.



20. Can you think of any commodity on which price ceiling is imposed in India? What may be the consequence of price-ceiling?

Price ceiling refers to the act of lowering prices as compared to the prevailing market price. This is done to help families below poverty line to survive with essential items. In India price ceiling is implemented on various food items such as wheat, rice and sugar and on fuels such as kerosene oil.

Consequences of price ceiling can be as follows:

1. As the price is artificially imposed by the government, it will lead to excess demand for the goods.

2. The amount of goods allotted is fixed per individual and it may not be sufficient to meet the requirement. Shortage is detected which makes the consumer dissatisfied.

3. It has been often seen that the quality of goods that are sent for supply is not fit for consumption due to adulteration.

4. Due to unfulfilled requirements from the allotted quota, people get ready to pay more for additional goods which leads to black marketing leading to man-made shortage in the market.

21. A shift in demand curve has a larger effect on price and smaller effect on quantity when the number of firms is fixed compared to the situation when free entry and exit is permitted. Explain.

In short run the number of firms are fixed while in the long run there are no restriction on number of firms and free entry exit is permitted. The following inference can be made from the situation when market is running with fixed number of companies (short run).

1. When demand increases both equilibrium price and quantity is raised

2. When demand decreases there is a fall in equilibrium price and quantity

Market situation when long run is taking place with free entry and exit of firms:

1. When demand increases there is no change in equilibrium price but the output increases.

2. When demand decreases there is no change in equilibrium price but the production quantity is reduced (less).

22. Suppose the demand and supply curve of commodity X in a perfectly competitive market are given by:

$q^d = 700 - p$

$q^s = 500 + 3p$ for $p \geq 15$

= 0 or $0 \leq p$ 15

Assume that the market consists of identical firms. Identify the reason behind the market supply of commodity X being zero at any price less than Rs 15. What will be the equilibrium price for this commodity? At equilibrium, what quantity of X will be produced?

From the question we can see that

$q^d = 700 - p$

$q^s = 500 + 3p$ for $p \geq 15$

= 0 or $0 \leq p$ 15

It can be inferred from the given data that market supply is 0 as the price range defined is less than minimum average variable cost. There will not be any output and supply curve becomes 0.

Now when equilibrium state is known

$q^d = q^s$ (At equilibrium)

700 - p= 500+ 3p

3p + p = 200

4p= 200

Or p= 50 (equilibrium price)

Now, equilibrium quantity can be calculated as qS

q^s= 500 + 3P

= 500+ 3x 50

= 500+ 150

= 650

The total equilibrium quantity produced is 650 units.

23. Considering the same demand curve as in exercise 22, now let us allow for free entry and exit of the firms producing commodity X. Also assume the market consists of identical firms producing commodity X. Let the supply curve of a single firm be explained as

$q^s_f = 8 + 3p$ for $p \geq 20$

= 0 for $0 \leq p < 20$

(a) What is the significance of $p = 20$?

(b) At what price will the market for X be in equilibrium? State the reason for your answer.

(c) Calculate the equilibrium quantity and number of firms.

As per the question

$q^s_f = 8 + 3\ p$ for $p \geq$ Rs 200

= 0 for $0 \leq p <$ Rs 20.

$q^d = 700 - p$ (Keeping the same value as previous question)

(a) No firm is going to produce any output for the price range of 0 to 20 as this is below the minimum of average variable cost. Losses will be incurred if any output is done at the price range 0-20. At the price of Rs.20, the price line will be equal to the minimum of average variable cost.

(b) In long run the firms will be earning zero profit and also there is the freedom of entry and exit of firms. So the minimum price for which market will be in equilibrium for X will 20 as it is the minimum average variable cost and any price lower to that will result in exit of the firm.

(c) The equilibrium price is Rs.20 as established. Now equilibrium quantity will be calculated

As per question

$q_s = 8 + 3p$

$= 8 + 3(20)$

$= 68$

Therefore, 68 units are supplied.

We have

$q^d = 700 – p$

$= 700 - 20$

$= 680$

So, the number of firms can be calculated as

No. of Firms = q^d / q^s

$= 680/68$

$= 10$

24. Suppose the demand and supply curves of salt are given by:

$q^d = 1,000 - p$ $q^S = 700 + 2p$

(a) Find the equilibrium price and quantity.

(b) Now, suppose that the price of an input that used to produce salt has increased so, that the new supply curve is $q^s = 400 + 2p$

How does the equilibrium price and quantity change? Does the change conform to your expectation?

(c) Suppose the government has imposed a tax of Rs 3 per unit of sale on salt. How does it affect the equilibrium rice quantity?

(a) As per the question

$q^d = 1,000 - p$

$q^s = 700 + 2p$

At equilibrium point $q^d = q^s$

1000- p = 700 + 2p

3p = 300

p= 300/3

= 100

Equilibrium price = Rs.100

Now q^d = 1000- p

= 1000-100

= 900

Equilibrium quantity = 900 units

(b) As per question

$q^s = 400 + 2p$

We know at equilibrium $q^d = q^s$

Therefore

1000-p = 400+2p

3p = 600

p = 200

Equilibrium price is Rs.200

$q^s = 400 + 2p$

$= 400 + 2(200)$

$= 400+ 400$

$= 800$

Equilibrium units = 800

The equilibrium quantity reduced as cost of production increased and it moves supply curve to the left. This shift brings about increase in equilibrium price and reduction in equilibrium quantity.

(c) As per the question

$q^s= 700 + 2 (p - 3)$ As tax of Rs.3 added to salt production

At equilibrium point $q^d = q^s$

$1000 – p = 700 + 2 (p – 3)$

$1000 – p = 700 + 2p - 6$

$3p = 1000 – 694$

$p = 102$

Hence, equilibrium price = 102

$q^d = 1000 – p$

$= 1000 – 102$

$= 898$

Hence, equilibrium quantity = 898 units

25. Suppose the market determined rent for apartments is too high for common people to afford. If the government comes forward to help those seeking apartments on rent by imposing control on rent, what impact will it have on the market for apartments?

When the Government intervenes in the market for apartments and imposes control on rent, it will bring down the prices. Due to the drop in prices, the demand for apartments will grow. The imposition of a price ceiling will facilitate more people to afford an apartment who would not otherwise be able to pay the rent. It will also make some builders to indulge in black marketing.