# NCERT Solutions for Class 12 Micro Economics

# Chapter 5 – Market Equilibrium

**1.**

**Explain market equilibrium.**

**Ans:** Market equilibrium denotes the condition in which supply equals demand. In a state of market equilibrium, the prevailing price remains constant unless influenced by an external factor that alters supply or demand. In a state of market equilibrium, the price at which a product is transacted is referred to as the equilibrium price.

**2.**

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

**Ans:** When consumer demand for a good or service outpaces supply at a specific price, excess demand is present. To put it another way, if manufacturers are prepared to provide less than what every customer wants at any price. We have an oversupply problem when the market has too much demand.

**3.**

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

**Ans:** When the supply of a commodity in the market exceeds the demand for that commodity at a particular price, this is known as an excess supply. To put it another way, we are going to have an excess supply issue if, at any given price level, all of the buyers want a quantity that is lower than what all of the suppliers supply.

**4.**

**What will happen if the price prevailing in the market is**

**(i) above the equilibrium price?**

**(ii) below the equilibrium price?**

**(i)** There will be more supply than demand of a good when the price already set in the market is higher than the average price. As long as the product can be sold for more than its market price, the company will make more of it, which will increase the supply. But there won't be much demand because the other companies will also make more and sell more, so there will be too much supply.

**(ii)** When the market price of a good is less than its average price, there will be less supply than demand. The company will make less of the product because it can only be sold at a price lower than the average price. This will lower the supply of the product. The other companies will do the same thing, so the supply won't be enough to meet the demand, which will lead to extra demand.

**5.**

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

**Ans:** The forces of market supply and demand determine the equilibrium price in a fully competitive market. The phrase "market demand" describes the entire quantity of desire for a good that all of the market's buyers express. Conversely, the entire quantity of a commodity that is accessible to all market participants is referred to as the supply of that commodity on the market. The point at which market supply and demand are equal, or where the market supply and demand curves intersect, is what we refer to 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?**

**Ans:** When the equilibrium price is higher than the firms' minimum average cost, more firms will join the market and make more of the good in question. This is because of the high profits that can be made because of the way the market is right now. Short-term, the rush will cause more items to be sold, which will cause the market price to go down. So, the price at which the market is in balance will go down, and profits will go back 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?**

**Ans:** Over time, all businesses generate either regular income or no monetary income as a result of the loose access and exit of businesses. They don't make regular money or incur unusual losses. Therefore, regardless of whether profits or losses are realized in the short term, the loose access and go out function ensures that the equilibrium charge will ultimately be equal to the minimum average value.

The point where the buyers' demand curve and the "P=min AC" line cross is the equilibrium. The quantity given by each enterprise is qe on the price (P) at equilibrium E.

**8.**

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

**Ans:** With unrestricted access and departure, the market price stabilizes at the minimum average cost. Companies will join or leave the market as a result. No enterprise will be motivated to enter the market for the provided commodity as producing it would not yield any profit. In such a market, the number of enterprises that constitute equilibrium is calculated in this way.

**9.**

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

**Ans: (a)** If people's income goes up, the average price is likely to go up too. People who have extra money will buy more of a certain good because they want it more, and more of that good will be made because of this.

**(b)** In the event that buyers' income goes down, the equilibrium price is likely to go down as well. People will buy less of a good because they have less money to spend. This means that the amount of that good that is made will also go down.

**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.**

**Ans:** Socks and shoes go well together and are often worn together. Consequently, the surge in shoe prices will deter the need for socks. As a result, the diminished demand for socks will cause the demand curve to shift leftward in parallel from D1D1 to D2D2. The delivery remains intact; at the equilibrium price, there is an excess supply of socks, which decreases the price of socks,

resulting in a new equilibrium at E2, with equilibrium price P2 and equilibrium quantity q2. the charge diminishes from P1 to P2 demand diminishes from qe to q2, resulting in a shift of the equilibrium factor from $E_1$ to $E_2$

**11.**

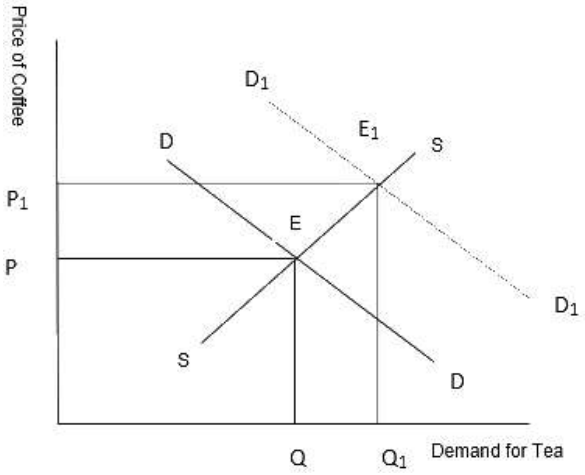
**How will a change in price of coffee affect the equilibrium price of tea? Explain the effect on equilibrium quantity also through a diagram.**

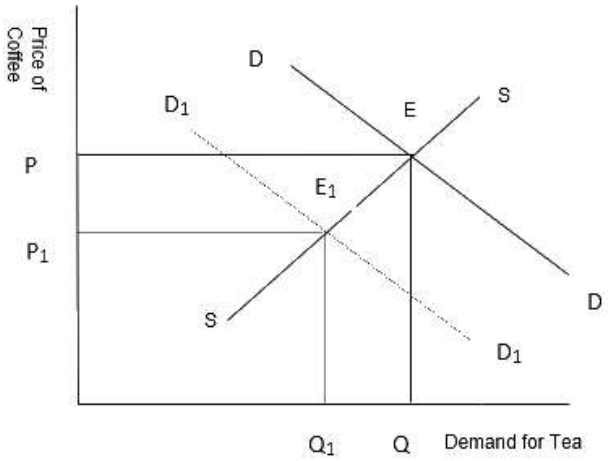
**Ans:** It's possible to use coffee or tea instead of each other because they are different things. Depending on whether the price of coffee goes up or down, the demand for tea will either go up or down.

The parent below shows how the tea market is balanced. The initial desire for tea is shown by D1D1 and the initial supply is shown by S1S1. The first equilibrium is at E1, where the equilibrium fee is Pe and the equilibrium amount is qe.

Now, if the price of espresso goes up, the demand for espresso goes down. This can cause a boom in the demand for tea, which is an equal substitute for espresso. The demand curve for tea will then move to the right, and the price of tea will go up. There may be too much desire for tea at the equilibrium price (Pe), so the price of tea will go up. At this point, a new equilibrium will be reached. The new equilibrium charge will rise from Pe to P2, and the new equilibrium output will be q2. Because of this, if the rate of espresso goes up, the balance charge of tea will also go up because of extra demand. Also, the rise in espresso may lead to a rise in desire for tea, since tea is made from the same ingredients as coffee.

Now, if the price of espresso goes down, the demand for coffee will go up while the demand for tea will go down. Along the line D2D2, the tea demand curve will move to the left. There could be an extra supply at the equilibrium price (Pe). As a result, the price of tea will go down if you want to create a new equilibrium at E2. The new equilibrium rate will drop from Pe to P2, and the new equilibrium output will drop from to. Because of this, if the price of coffee goes down, the price of tea will also go down, and fewer people will want tea because they will be drinking more coffee.




**12.**

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

**Ans:** Production costs of a commodity are influenced by variations in input prices. We will examine the two scenarios.

**(a)** An increase in input prices leads to a rise in production costs for a firm, resulting in a decrease in product supply and profit margins. This decline diminishes the firm's incentive to produce and supply the commodity. The marginal cost curve will shift leftward, resulting in a parallel leftward shift in the individual firm's supply curve, which will subsequently lead to a leftward shift in the market supply curve.

Assuming the demand curve remains constant, a new equilibrium will be established at $E_2$, characterized by an increased equilibrium price (P2) and a reduced output quantity (q2).

**(b)** A decrease in input prices leads to a reduction in manufacturing costs, an increase in product supply, and an enhancement of profit margins. The marginal cost curve will shift to the right, indicating a corresponding rightward shift in the firm's supply curve. The market supply curve will

shift rightward from S1S1 to S2S2 in a parallel manner. Assuming the demand curve remains constant, a new equilibrium will be established at $E_2$, characterized by a reduced equilibrium price (P2) and an increased output quantity (q2).

**13.**

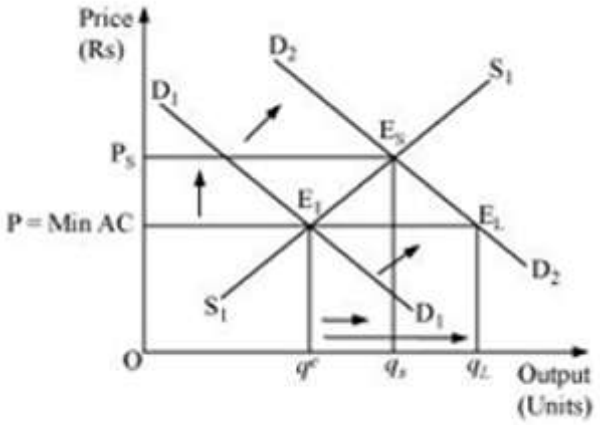
**If the price of a substitute(Y) of good X increases, what impact does it have on the equilibrium price and quantity of good X?**

**Ans:** Due to their substitutional nature, X and Y's prices will be immediately impacted by changes in the price of the substitute. In this instance, an increase in Y's price will raise demand for X, which in turn will raise the equilibrium price and the amount of output of the good X.

**14.**

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

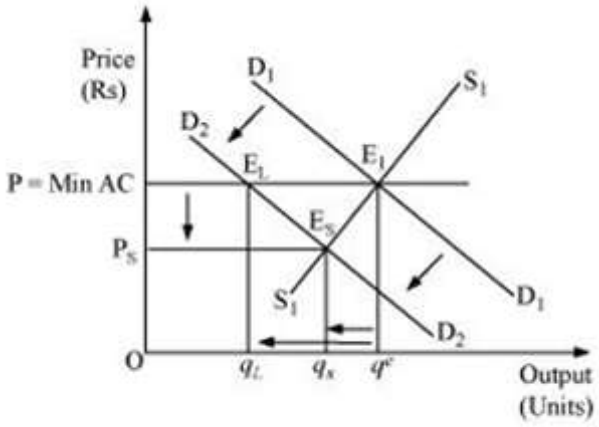
**Ans:**




Increase in demand when free entry and exit is allowed and when not allowed

The figure above illustrates the scenarios in which the number of firms is fixed in the short term and non-fixed in the long term. The long-term price line is denoted by 'P = min AC', while the short-term and long-term demands are represented by $D_1D_1$ and $D_2D_2$, respectively. The initial equilibrium is denoted by the point $E_1$, which is the intersection of the demand curve and the supply curve. Let us now assume that the demand curve shifts under the assumption that the number of firms remains constant. Consequently, the new equilibrium will be located at the intersection of the supply curve $S_1S_1$ and the new demand curve 2 $E_s$ (in the short run), where $D_2D_2$ intersects. The equilibrium quantity is $q_s$, while the equilibrium price is $P_s$. Let us now examine the situation with the supposition of unrestricted entry and exit. The demand curve will be shifted to the right by the increase in demand, resulting in an equilibrium point at $D_2D_2$. The

most recent version of the letter $E_2$. The equilibrium price (P) is equal to the minimum AC, and the equilibrium quantity is $q_1$. This is the long-term equilibrium. Consequently, in comparing the two scenarios, we observe that the equilibrium price remains constant and is lower than the short-run equilibrium price ($P_s$) of the short-run equilibrium (q). Conversely, the long-run equilibrium quantity ($q_l$) is greater than the short-run equilibrium price ($q_s$). In the same vein, the short-run equilibrium price ($P_s$) is lower than the long-run equilibrium price, and the short-run equilibrium quantity ($q_s$) is lower than the long-run equilibrium quantity ($q_l$) for a leftward demand shift.




Decrease in Demand when free entry and exit is allowed and when not allowed

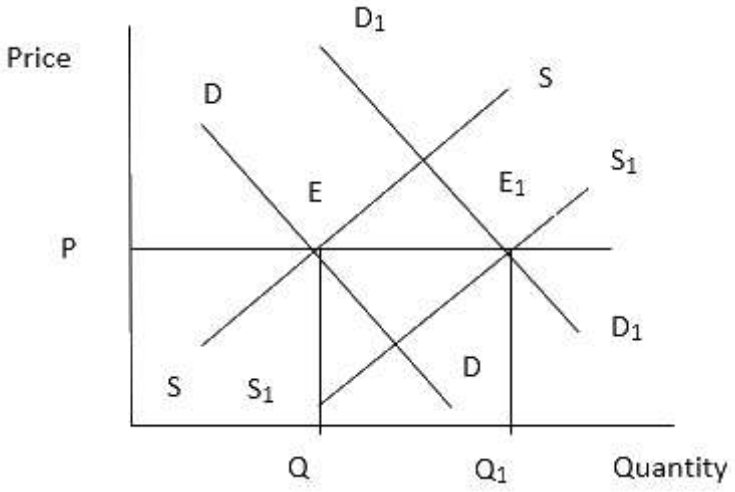
**15.**

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

**Ans:** Three circumstances, which are described below, can cause the supply and demand curves to shift to the right:

1. Although the equilibrium point will shift, the equilibrium price will remain unchanged when the supply and demand curves grow equally.

Here is a diagram that illustrates this:




2. A higher equilibrium price and higher output result when the demand curve grows more quickly than the supply curve.

3. If the demand curve goes up more slowly than the supply curve, the equilibrium price will go down and output will go up.

**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?**

**Ans: (a)**

| 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 equals 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)**

| Conditions | Equilibrium Price | Equilibrium Quantity |
|---|---|---|
| 1) Increase in demand equals decrease in supply | Increases | 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?

**Ans:** The following are some ways that the supply and demand curves in the labor market and the goods market are different:
1) While families or customers make the demand for commodities in a goods market, businesses make the demand for labor in a labor market.

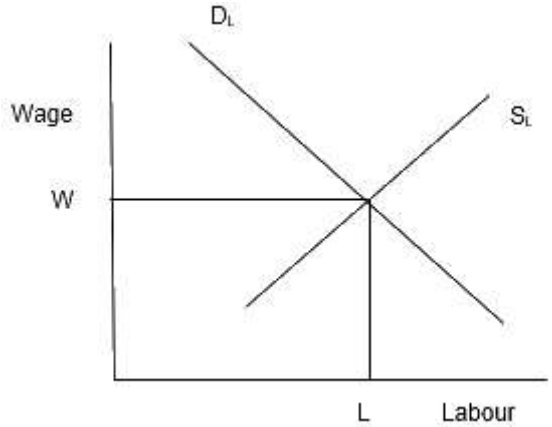
2) Businesses create the supply of commodities in a goods market, whereas households create the supply of labor in a labor market. Therefore, businesses are suppliers in a goods market, while households are suppliers in a labor market.

**18.**

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

**Ans:** The ideal quantity of labor in a market with perfect competition is established by weighing the advantages and disadvantages of hiring more workers. The company will continue to hire workers until the costs of hiring more workers equal the advantages of doing so. The pay rate is then equal to the marginal revenue product, or the marginal cost of labor is equal to the marginal benefit of labor.

The following is a representation of it:




$W = VMP_L$

Where,

W = Wage rate

$VMP_L$ = Value of Marginal Product of Labour

**19.**

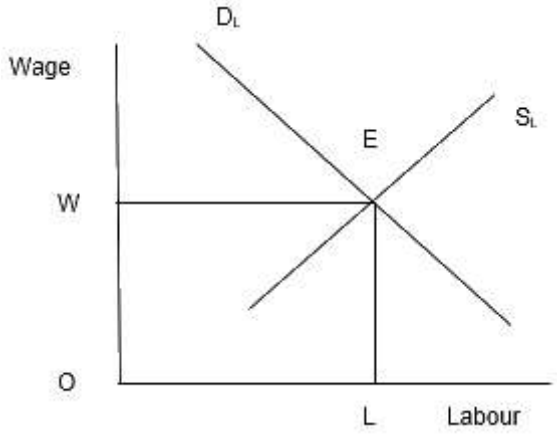
## How is the wage rate determined in a perfectly competitive labour market?

**Ans:** Similar to a goods marketplace, the compensation in a labor market is determined by the intersection of labor demand and supply. The price at which the demand for a good matches its supply is referred to as the equilibrium price. In the labor market, hours of labor are both required and supplied at the equilibrium wage rate. The demand for labor is contingent upon the value of the marginal product of labor ($VMP_L$). A particular corporation will employ labor until the marginal cost of the final unit employed matches the marginal gain derived from that unit.

Labor is provided by households that must balance working hours with leisure time. The supply of labor is a positive function of wages up to a certain point, beyond which the supply curve becomes backward-bending.

The diagram below illustrates the junction of the demand for labor and the supply of labor occurring at the pay rate.

The equilibrium occurs at point E, where DLDL equals SLSL, and the equilibrium quantity of labor supplied and demanded is L.




**20.**

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

**Ans:** In India, the government has established price ceilings on several items to ensure their accessibility for individuals living below the poverty line (BPL). The commodities include kerosene, sugar, wheat, and rice. The subsequent are the ramifications of a price ceiling:

**1) Excess demand –** The imposition of an artificially low price, below the equilibrium price, results in the phenomenon of excess demand.

**2) Fixed Quota –** Each consumer receives a predetermined quantity of goods according to the established quota. The number frequently fails to satisfy the individual's needs. This thus results in a shortage, leaving the consumer dissatisfied.

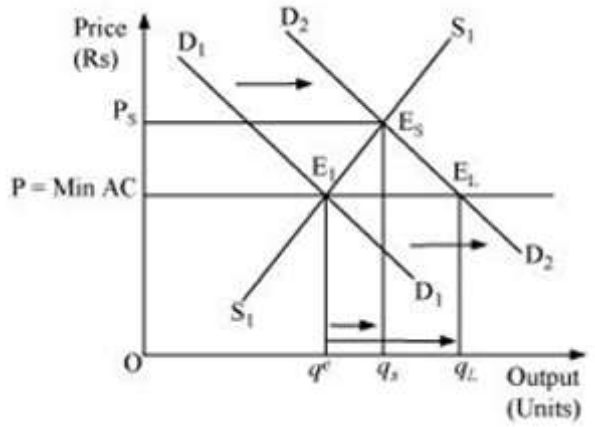
**3) Inferior goods –** It is frequently observed that rationed commodities are typically inferior and often contaminated.

**4) Black marketing –** Consumer needs remain unmet according to the government's established quota. As a result, some dissatisfied consumers are willing to pay a premium for the increased quantity. This results in illicit market activities and an artificial scarcity in the marketplace.

**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.**

**Ans:**




In the short term, the number of firms remains constant, however in the long term, there are no limitations on the number of firms, allowing for unrestricted entry and exit. An inference can be drawn from the scenario in which the market operates with a fixed number of firms (short run).

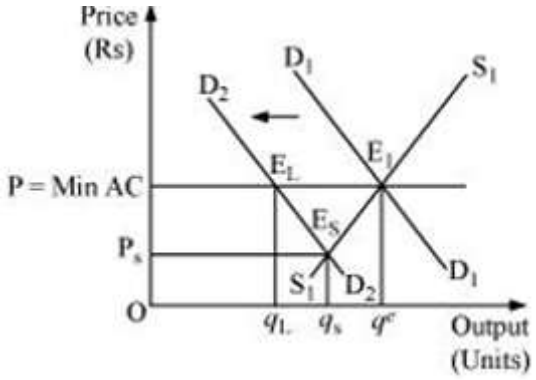
1. An rise in demand elevates both the equilibrium price and quantity.

2. A decrease in demand results in a decline in both equilibrium price and quantity.

The market condition during the long run, characterized by unrestricted entry and exit of enterprises, is as follows:

1. An increase in demand results in no alteration of the equilibrium price, although the output rises.

2. When demand diminishes, the equilibrium price remains unchanged, while the production quantity is decreased.




**22.**

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

$$q^D = 700 - p$$

$$q^S = 500 + 3p \text{ for } p \geq 15$$

$$= 0 \text{ for } 0 \leq p < 15$$

**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?**

**Ans:**

It is given that;

$$q_d = 700 - P$$

$$q_s = 500 + 3p \text{ for } p > \text{Rs } 15$$

$$= 0 \text{ for } 0 \leq p < 15$$

The market supply is non-existent at any price ranging from Rs 0 to Rs 15, as no individual firm will produce a positive production level within this price range, given that the price is below the minimum average variable cost (AVC). As a result, the market supply curve will be non-existent.

At equilibrium $q_d = q_s$

$700 - p = 500 + 3p$

$-p - 3p = 500 - 700$

$-4p = -200$

$p = 50$

Equilibrium price is Rs 50.

Quantity $= q_s = 500 + 3p$

$= 500 + 3\,(50)$

$= 500 + 150$

$= 650$

Therefore, the equilibrium quantity 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**

$$q^{s}{}_{f} = 8 + 3p \text{ for } p \geq 20$$
$$= 0 \quad \text{for } 0 \leq p < 20$$

**(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.**

**Ans: (a)**

$q_s{}^f = 8 + 3p$ for $p \geq$ Rs 200
$= 0$ for $0 \leq p <$ Rs 20.
$q_d = 700 - p$

Since 0 to 20 is below the Long-Run Average Cost, no firm will create anything. This price line represents the minimal Long-Run Average Cost at Rs 20.

**(b)** The equilibrium price and minimum average variable cost (AVC) are Rs 20 due to corporate entry and exit freedom. All firms earn zero economic profit in the long run, hence Rs 20 is the equilibrium price. Any price below Rs 20 forces the firm to leave the market. The equilibrium price is Rs 20.

**(C)** Quantity supplied $= q_s = 8 + 3p$
$= 8 + 3(20)$
$q_s = 68$ units
Quantity demanded $q_d = 700 - p$
$= 700 - 20$
$q_d = 680$
Number of firms (n)$= \frac{q_d}{q_s{}^f}$
$n = \frac{680}{68}$
$n = 10$ firms
Therefore, the number of firms in the market is 10 and the equilibrium quantity is 680 units.

**24.**

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

$$q^D = 1{,}000 - p \qquad q^S = 700 + 2p$$

**(a) Find the equilibrium price and quantity.**
**(b) Now suppose that the price of an input 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 of salt. How does it affect the equilibrium price and quantity?**

**Ans:**

**(a) At equilibrium price and quantity will be:**
$1000 - p = 700 + 2p$
$300 = 3p$
$100 = p$
$P = Rs\ 100$
$= 1000 - 100$ (Substituting the value of p in equation (1)) dq
$= 900$ units
So, the equilibrium price is Rs 100 and equilibrium quantity is 900 units.

**(b) New quantity supplied q's**
$q's = 400 + 2p$
At equilibrium $q_d$ =q's 1000
$600 = 3p$
$200 = p$
$P = Rs\ 200$

The equilibrium price was one hundred rupees before the input rate boom, and it is now two hundred rupees following the input rate bubble.

The equilibrium charge is thus one hundred rupees (200 – 100).

= 4000 – 200 (Subtitling the value of p in equation (1)) dq

= 800 gadgets The amount of one hundred devices is the trade in the equilibrium quantity, which is equal to 900 minus 800 devices.
Yes, this transformation is clear because the price of the input has changed, which has resulted in an increase in the price of producing salt. This has occurred as a means of shifting the marginal fee curve to the left and passing the supply curve to the left. A shift to the left inside the supply curve causes an increase in the equilibrium charge and a decrease in the equilibrium quantity. This is because the equilibrium price gets pushed upward.

**(c)** The implementation of a tax of three rupees per unit of salt sold will result in an increase in the cost of producing salt. The supply curve can move to the left as a result of this, and the equation for the amount supplied will change.
develop into

$Y^s = 700 + 2\,(p\text{-}3)$
At equilibrium
$y^d = y^s$
$1000 - p = 700 + 2\,(p - 3)$
$1000 - p = 700 + 2p - 6$
$306 = 3p$
$360/3 = p$
$P = \text{Rs } 102$
Substituting the value of p in equation (1)
$y^d = 1000 - p$
$y^d = 1000 - 102$
$y^d = 898 \text{ units}$

The implementation of a tax of Rs three per unit of salt sold will lead to an increase in the price of salt from Rs 100 to Rs 102. The equilibrium quantity decreases from 900 devices to 898 gadgets.

**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?**

**Ans:** Prices will go down because the government is getting involved in the apartment market by controlling rent. Since prices are going down, more people will want to buy units. With a price ceiling in place, more people who would not have been able to buy an apartment before will be

able to. This will also make some makers do things on the black market.

**Market Equilibrium –** Market equilibrium means that the amount of demand for a good is equal to the amount of supply.
**Equilibrium Price-** The equilibrium price of an item is the amount at which market demand and supply are equal.
**Equilibrium Quality-** This refers to the most fair price in the market.