



## Revision Notes

### Class - 12 Economics (Introductory Microeconomics)

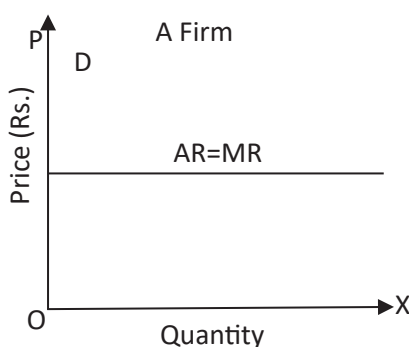
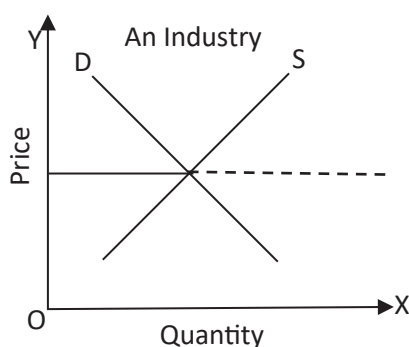
#### Chapter 4 - The Theory of the Firm under Perfect Competition

##### Market:

It is a mechanism or arrangement that brings buyers and sellers of a commodity or service together and allows them to complete the act of selling and buying the commodity or service at mutually agreed prices.

##### Perfect competition:

- It is a market structure in which a large number of buyers and sellers compete for the same products at the same price, with firms free to enter and exit and no government control.
- Since price remains constant in the presence of perfect competition, the average and marginal revenue curves coincide, i.e., they become equal and parallel to the x-axis.
- Price is determined by the industry under perfect competition based on market forces of demand and supply.
- No single company can influence the product's price.
- A company can only make decisions about output. As a result, the industry sets the price, and the firm accepts the price.



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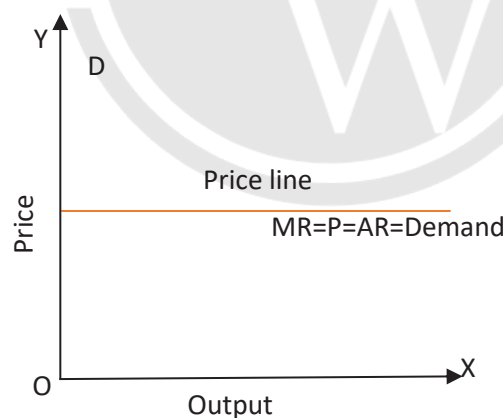
## Features of Perfect Competition:

- **Large number of sellers.** In a perfectly competitive market, there are a large number of small sellers selling homogeneous products to its buyers. The number of sellers are so large, that no single firm can influence the overall market price or market supply. Hence no individual seller by altering its sale or supply can impact the overall market supply or market price.
- **Homogeneous Products:** Each company creates and sells a uniform product. i.e., one firm's product cannot be distinguished from the product of any other firm.
- **Price Taker:** This form of market, the firm is a price taker, and not price maker, as the share of each firm in the market is so insignificant to impact the price of the commodity. Firms have the freedom to enter and quit the market at any time.
- **Perfect knowledge about the markets:** It implies that the consumers and producers have all the relevant market related information. Producers will not be ready to sell at any price below the market price while consumers will not be ready to buy at any price above the existing market price. This eliminates the price differences in the market and helps in quickly achieving the equilibrium level of price level.
- **Free entry:** Free Entry means that there are no obstacles in the entry of new firms in the market. When the existing businesses are earning abnormal profits, the new firms are influenced due to the profit and they enter the industry. This increases market supply which leads to fall in market price and furthermore profits.
- **Free exit:** Freedom to exit means that there are no obstacles which stop the existing firms from stepping down from the market. The firms attempt to quit when they are dealing with losses. As the firms start to exit, market supply drops, which begins to rise in market price and consequently decreases in losses. The firms do not stop to leave till the losses are eliminated and each remaining firm will be earning just the normal profits.

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- **Perfect Mobility:** In a perfectly competitive markets, the factors of production are perfectly mobile, and hence can be easily transferred from one firm to the other.

### Price Line In Perfect Competition

- The price line and demand curve for an individual firm in a completely competitive market are the same.
- The line denotes that a company's goods and services may be sold at the current price.
- The price line in such a market is a horizontal straight line which depicts that the firm can sell any quantity of a product only at a certain price. If the firm tries to change the price, the overall demand falls to zero, because as there are a large number of small firms, no firm is capable enough to impact the overall price or supply.
- The price line is shown as below:



### Revenue

- It is the revenue received by a company from the sale of a product or service to its clients.

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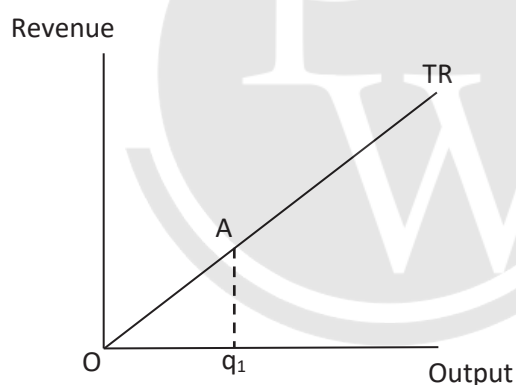
## Total Revenue (TR)

- The price (p) of the commodity is multiplied by the amount produced and sold to determine revenue (q).
- Total revenue (TR) is defined as

$TR = p \times q$  in algebraic form.

## Total Revenue Curve

- The relationship between the total revenue earned by a firm for selling its output and the quantity of output sold is visually represented by a curve.
- To determine economic profit and the profit-maximizing level of production, it is paired with a firm's total cost curve.



## Average Revenue:

- The income earned per unit of output is referred to as average revenue.
- In other words, it is the profit earned by the seller on each unit of the commodity sold.
- The average revenue of a company is calculated by dividing total revenue by total output.

$$AR = \frac{TR}{q} = \frac{p \times q}{q} = p$$

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## Marginal Revenue:

- The revenue generated by selling an additional unit of a commodity is known as marginal revenue.
- When an additional unit of a commodity is sold on the market, it results in a change in overall revenue.
- The following equations can be used to describe the link between market price and marginal revenue:

$$MR = \frac{\Delta TR}{\Delta Q}$$

$$MR_n = TR_n - TR_{n-1}$$

Where

TR = Total Revenue

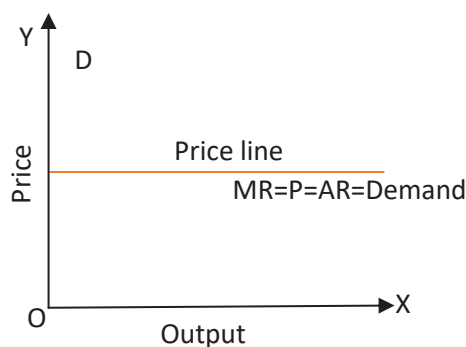
MR = Marginal Revenue

Q = Quantity

- In a perfectly competitive market, the price equals marginal revenue, according to the preceding equation.

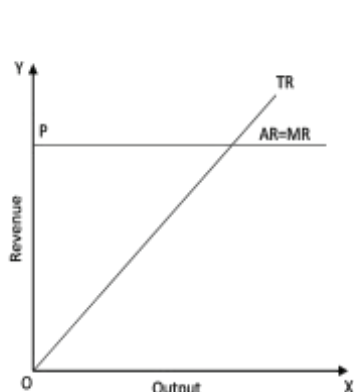
$$MR = PQ_n - PQ_n$$

- The relationship between marginal revenue and pricing is depicted graphically as follows:



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## TR, MR and AR curves in Perfectly Competitive Market



### Profit

- The difference between revenue and expense is profit.
- Profit is calculated as:

$$\text{Profit} = \text{Revenue} - \text{Cost}$$

### Break Even Point

- When a company reaches break even, it has covered all of its manufacturing costs.
- As a result, a break-even point is defined as a condition in which TR- TC or AR- AC are equal. In this case, the company only makes standard earnings.

### Shutdown Point

- It occurs when a company's variable costs are barely covered, resulting in a loss of fixed costs of production.
- As a result, a shutdown point is defined as when TR= TVC or AR= AVC.

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## **Profit Maximisation or Profit equilibrium**

- When a producer maximizes earnings or minimizes losses, he is considered to be in equilibrium.
- Profit maximisation condition:
  - MR Equals MC.
  - MC is rising, or MC should cut MR from below.

## **Supply:**

- The amount of a commodity that enterprises are able and willing to sell in the market in a particular period and at a specific price is referred to as supply.

## **Supply Schedule:**

- A supply schedule is a table that shows the amounts sold by a company at various prices while keeping technology and factor prices constant.

## **Supply Curve:**

- The supply curve of a firm depicts the amounts of output that the firm chooses to create in response to varied market price values while maintaining technology and factor prices constant.

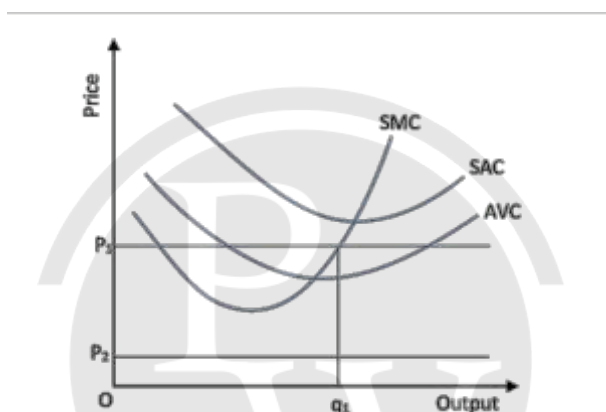
## **Short-run Supply Curve of a Firm:**

- The supply curve of a firm informs us how much of a product a profit-maximizing firm is willing to produce at each price point.
- In this, a firm's supply curve is less elastic because it cannot shift in response to changes in demand for goods and services.

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### Case 1: Price is greater than or equal to the minimum AVC

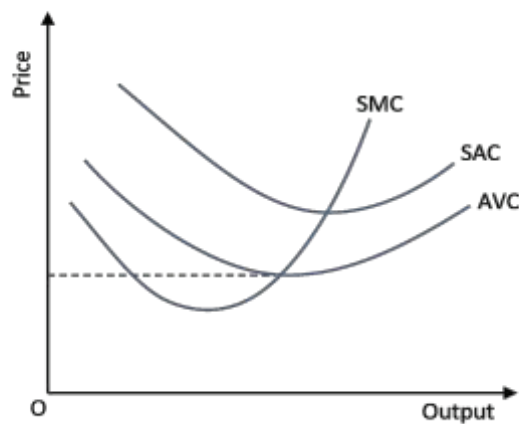
- Assume the market cost price is  $P_1$ , which is greater than the minimum AVC. To begin, we equalise  $P_1$  with SMC on the increasing part of the SMC curve, yielding the output degree  $Q_1$ . It is also worth noting that the AVC in  $Q_1$  does not exceed the market cost price,  $P_1$ .
- As a result, at  $Q_1$ , all three conditions in section 3 are satisfied. In the short run, the enterprise's output degree is equal to  $Q_1$  when the market cost price is  $P_1$ .



### Case 2: Price is less than the minimum AVC

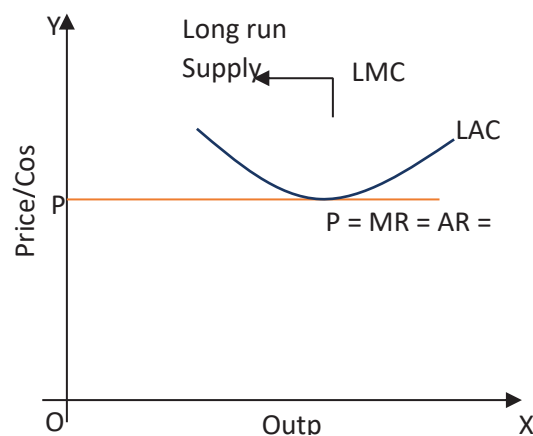
- Presume the market cost price is  $P_2$ , which is lower than the AVC minimum.
- If a profit-maximizing firm produces a positive output in the short run, the market cost price,  $P_2$ , has to be higher than or equal to the AVC at that output level.
- The AVC clearly outperforms  $P_2$  in the image.
- To put it another way, the company is unable to generate a profit. As a result, if the market price is  $P_2$ , the enterprise produces no output.





### Long-run Supply Curve of a firm:

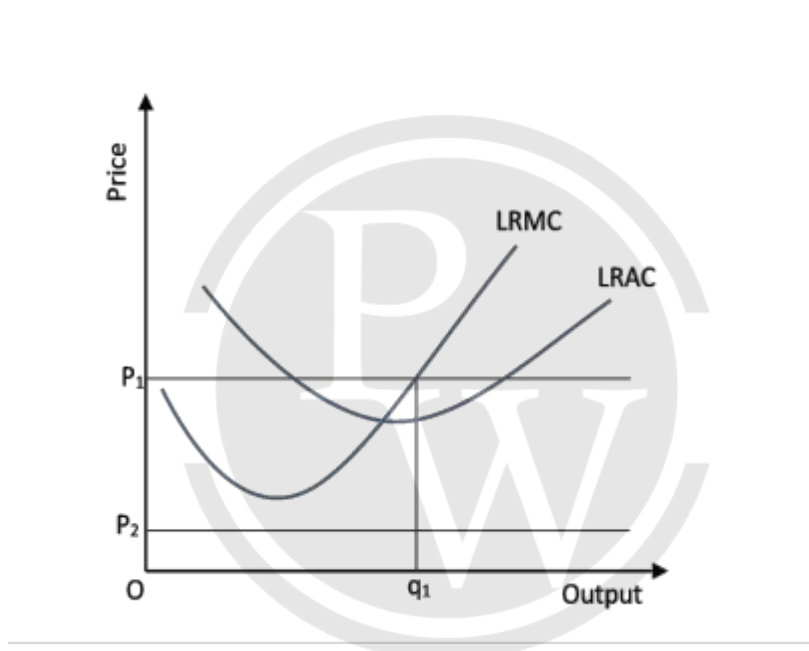
- When all inputs are variable, the long-run supply is the supply of commodities available.
- The supply curve, in the long run, is always more elastic than the supply curve in the short run.
- In a u-shaped curve, the long-run average cost curve encompasses the short-run average cost curves.
- With the addition of increasing long-run marginal cost curves, the supply curve is upward sloping.



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### Case 1: Price greater than or equal to the minimum LRAC

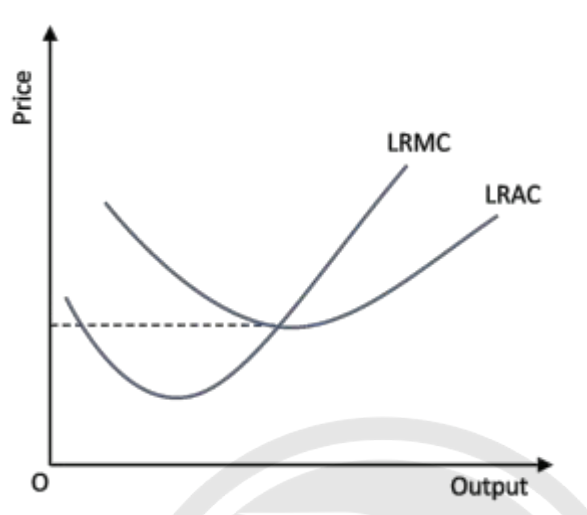
- Presume the market cost price is  $P_1$ , which is greater than the minimum LRAC. We obtain the output degree  $Q_1$  by equating  $P_1$  with LRMC on the increasing part of the LRMC curve.
- It's also worth noting that the LRAC in  $Q_1$  does not exceed the market cost price,  $P_1$ .
- As a result, at  $Q_1$ , all three of the conditions are met. When the market cost price is  $P_1$ , the firm's supplies are equal to  $Q_1$  in the long run.



### Case 2: Price less than the minimum LRAC

- Assuming the market cost price is  $P_2$ , which is lower than the LRAC minimum.
- If a profit-maximizing firm produces a positive output over time, the market cost price,  $P_2$ , must be larger than or equal to the LRAC at that production level.
- In other words, the firm is unable to produce a positive result. As a result, when the market cost price is  $P_2$ , the firm produces nothing. We reach an important conclusion by combining Cases 1 and 2.

- The long-run supply curve of a business is the increasing section of the LRMC curve from and above the minimum LRAC, as well as the zero production for all cost prices less than the minimum LRAC.

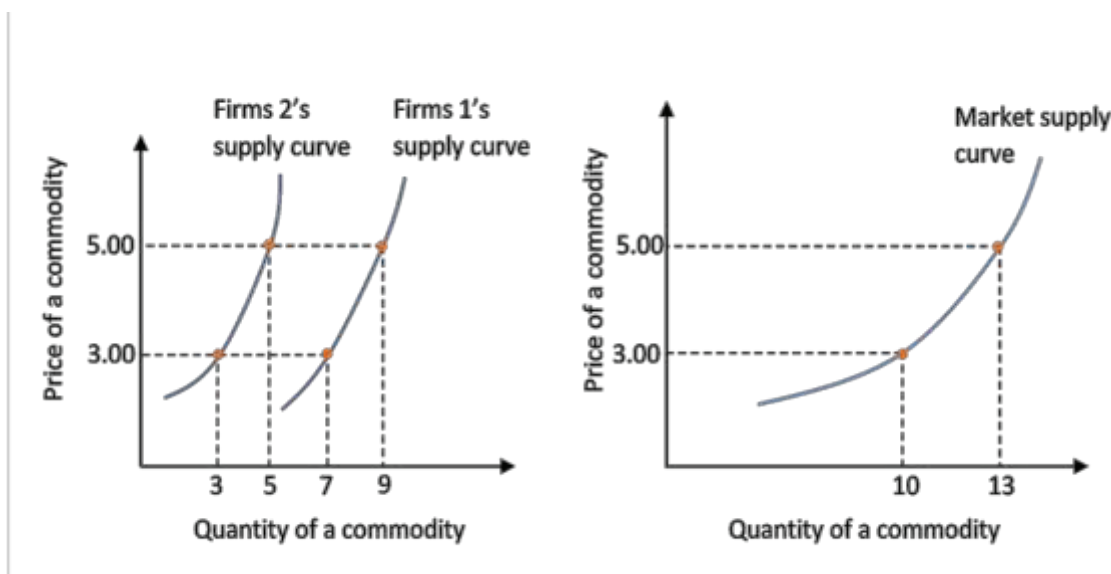


### Determinants of Supply Curve:

- **Cost of production:** Since profit maximisation is the primary purpose of most private businesses. Higher production costs reduce profit, limiting supply. Input prices, salary rates, government regulation and taxes, and so on are all factors that influence production costs.
- **Technology:** Technological advancements assist in lowering production costs and increasing profit, resulting in increased supply.
- **The number of vendors:** The market supply grows as more sellers enter the market.
- **Price expectations for the future:** If producers foresee future prices to be higher, they will want to hang onto their inventory and sell the products later, allowing them to profit from the higher price.

### Market Supply Curve:

- The market supply bend estimates the connection between total output and the normal peripheral cost of producing this output.



### Price Elasticity of Supply:

- The price elasticity of supply is a measurement of how sensitive a given good's quantity is to a change in price.

### Measurement of Price Elasticity of Supply:

- Price elasticity of supply curve,

$$e_s = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

$$\frac{\frac{\Delta Q}{Q} \times 100}{\frac{\Delta P}{P} \times 100} = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

Where

$\Delta Q$  = change in quantity of the good supplied to the market as market

$\Delta P$  = change in price of the good

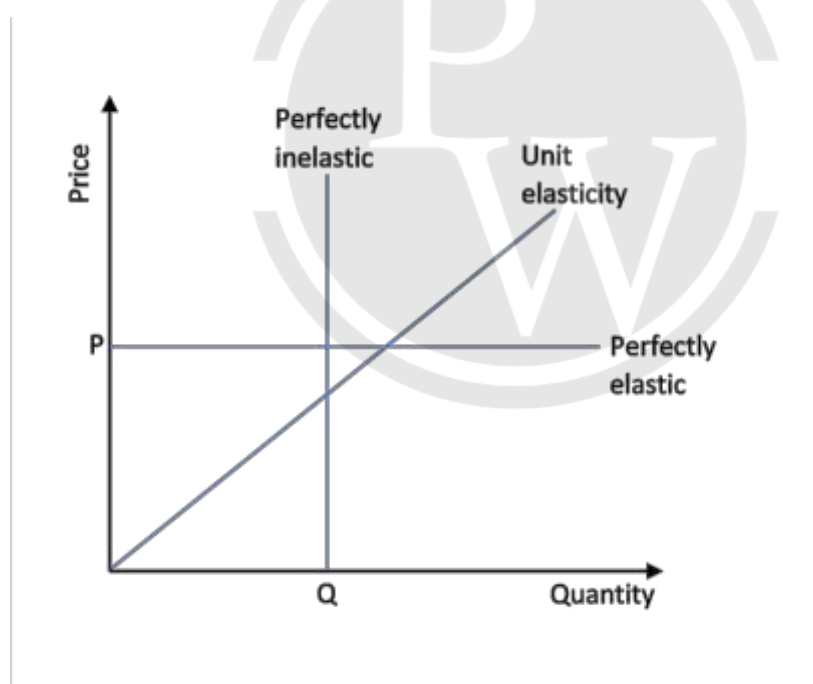
## Extreme Cases of Price Elasticity of Supply:

- **Perfect elasticity supply ( $e_s = \infty$ ) :**

The extreme case of perfect elasticity is when the demanded quantity ( $Q_d$ ) or the supplied quantity ( $Q_s$ ) changes by an enormous amount in response to any change in price. The supply and demand curves are both horizontal in both instances.

- **Perfect inelasticity supply ( $e_s = 0$ ):**

If a given quantity of a service or commodity can be supplied at any price, it has a perfectly inelastic supply. The supply elasticity of such a service or commodity is zero. A straight line parallel to the Y-axis is a perfectly inelastic supply curve. This illustrates how supply remains constant regardless of price.



## Equilibrium Price:

- It is the point at which the supply of commodities equals the demand.
- When a major index undergoes a period of consolidation or sideways motion, the forces of supply and demand are considered to be relatively equal, and the market is said to be in a condition of equilibrium.

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### Equilibrium Quantity:

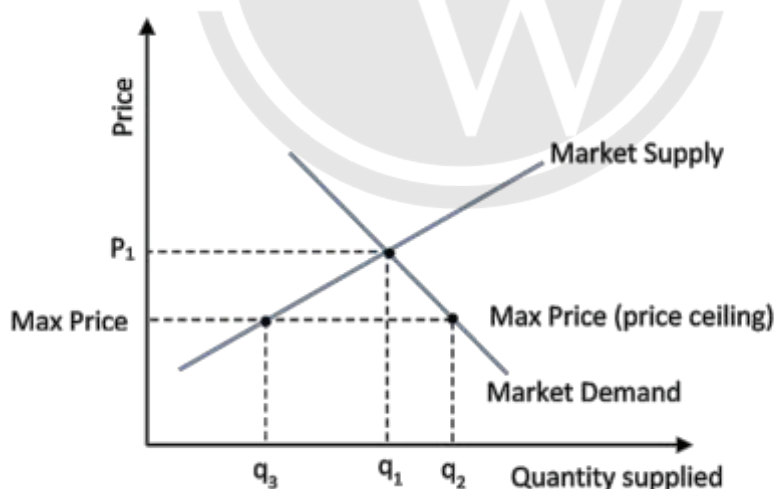
- When there is no scarcity or excess of a product on the market, it is said to be in equilibrium quantity.
- When supply and demand meet, the quantity of an item that customers want to buy equals the quantity that producers are willing to produce.

### Application of Demand Supply:

- **Maximum Price Ceiling:**

This refers to the lowest price that sellers are permitted to charge in comparison to the equilibrium market price. When the demand for necessary products exceeds the supply, the government imposes a ceiling.

That is, when there are shortages among consumers and the equilibrium price is excessively high. It is done by the government in the benefit of consumers. Rationing and dual marketing may be used to meet excess demand.

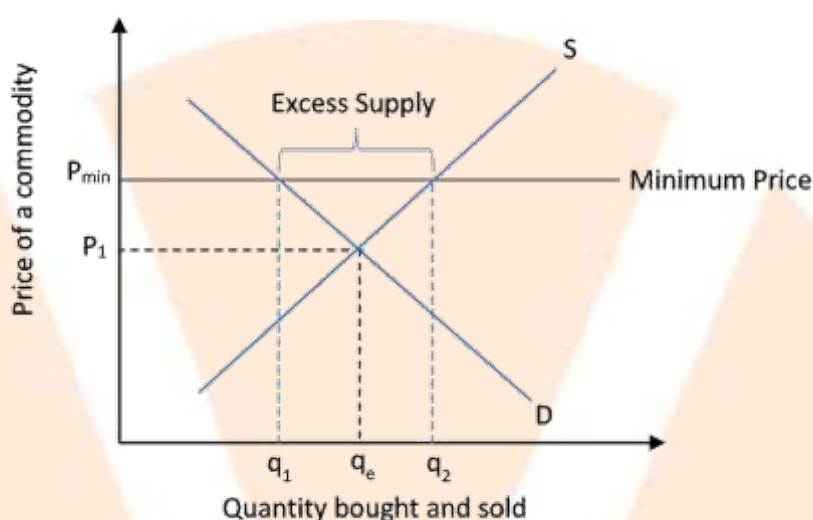


- **Minimum Price Ceiling:**

This means that producers are not allowed to sell their goods below the price set by the government. If the government determines that the

equilibrium price is too low for the produce it sets a price ceiling higher than the equilibrium price to protect producers from potential losses.

The price is also known as the minimum support price or the floor price. In most cases, the government purchases the extra supply at this price.



### Technological Advancement on Supply Curve:

- The marginal cost of production is reduced as technology advances. With the help of accessible factors of production, producers can generate significantly more goods and services.
- The supply curve is anticipated to shift rightward and the marginal cost curve downward because of this circumstance.
- Supply and technical growth have a beneficial relationship.
- Technological advancements frequently result in lower production costs, allowing manufacturers to produce and sell more goods and services at the same price.
- As a result, technological advancement is expected to boost supply, leading the supply curve to shift to the right.