

# **INDUSTRIAL ECONOMICS AND FOREIGN TRADE**

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# MODULE 1

Scarcity and choice - Basic economic problems- PPC – Firms and its objectives – types of firms – Utility – Law of diminishing marginal utility – Demand and its determinants – law of demand – elasticity of demand – measurement of elasticity and its applications – Supply, law of supply and determinants of supply – Equilibrium – Changes in demand and supply and its effects –Consumer surplus and producer surplus (Concepts) – Taxation and deadweight loss.

# INDUSTRIAL ECONOMICS ?

- Industrial economics is that branch of economics which deals with the economic problems of firms and industries and their relationship with society.
- There are 2 broad elements of industrial economics
- ✓ The first one , known as the **Descriptive element** is concerned with the information content of the subject.

It provides information to the industrialist or businessman regarding industrial organizations, natural resources, factors of production , industrial climate, trade and commercial policies of the government and the degree of competition in the business in which he operates.

- ✓ The second element of the subject is concerned with the business policy and **decision making**.

This is the analytical part dealing with topics such as **market analysis, pricing, choice of techniques, location of plant, investment planning, product diversification etc.**

# ECONOMICS ?

- ✓ According to *Adam Smith* Economics is "An Enquiry into the nature and causes of wealth of nations ". Classical economists defined economics as the *science of wealth*.
- ✓ Neo Classical Definition - "-- study of mankind in the ordinary business of life. It examine that part of individual and social action which is most closely connected with the attainment and with the use of material requisites of *wellbeing*".
- ✓ Scarcity definition - *Lionel Robbins* - "Economics is the study of human behavior as a relationship between ends and scarce means which have alternative uses".

In short, it can be said that, *economics study about the efficient utilization of limited resources to produce goods and services to satisfy unlimited wants of the people.*

# MACROECONOMICS AND MICROECONOMICS

- These are the two broad branches of economics.
- *Microeconomics is the study of individual economic units.* Microeconomics mainly deals with pricing of goods and factors of production and hence it is also called price theory
- *Macroeconomics is the study of the economy as a whole.* Since it deals with the determination of income and employment in an economy, it is also called ‘Theory of income and employment’.

## PROBLEM OF SCARCITY

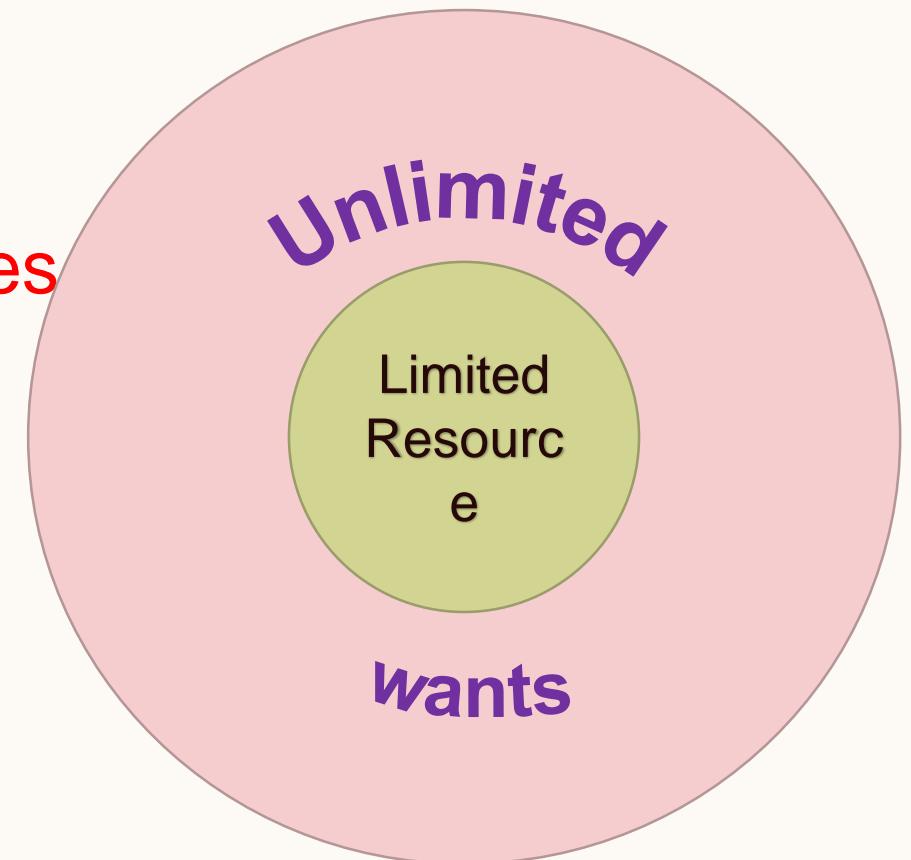
Human wants are unlimited; resources available to satisfy these wants are limited. At any one time, only a limited amount of goods and services can be produced. This is because the existing supplies of resources are extremely inadequate

## PROBLEM OF CHOICE

Society can produce only a small portion of goods and services that its people want. Scarcity of resources gives rise to the fundamental economic **problem of choice**. Decision to produce one kind of goods would mean producing less of another. E.g. roads or schools

# CENTRAL OR BASIC PROBLEMS OF AN ECONOMY

- ❖ The Problem of allocation of resources.
- ❖ The problem of fuller utilization of resources
- ❖ The problem of growth of resources.
- ❖ The problem of efficiency.

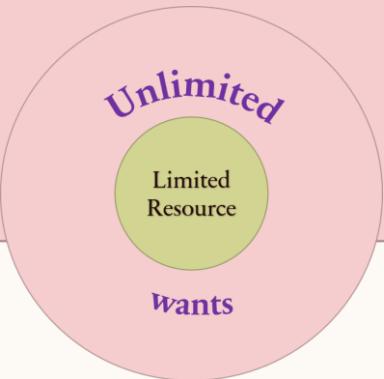


# THE PROBLEM OF ALLOCATION OF RESOURCES. BASIC ECONOMIC PROBLEM

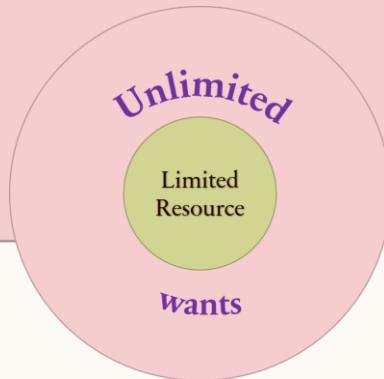
What to Produce ?



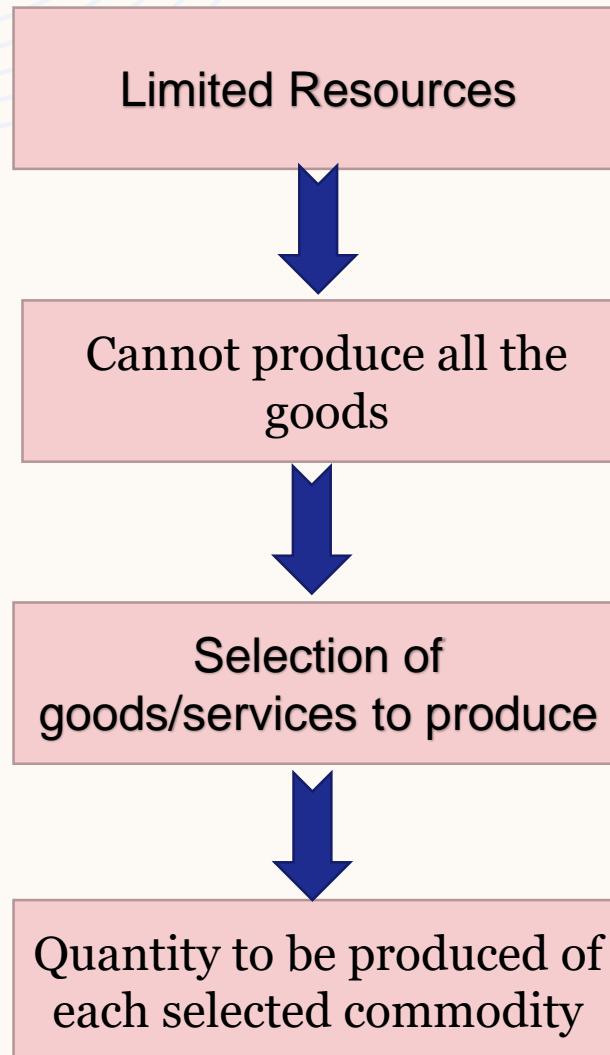
How to Produce ?



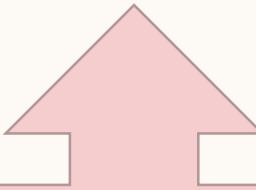
For Whom to Produce  
?



# WHAT TO PRODUCE?



More of one good or service usually means less of others.



1. *production of more sugar is possible only by reducing the production of other goods.*
2. *Production of more war goods is possible only by reducing the production of civil goods.*

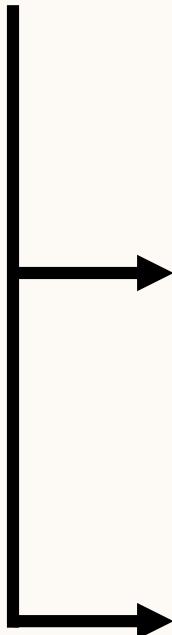
*An economy has to decide which goods **should** be produced and in what quantities*

# HOW TO PRODUCE ?

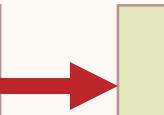
Technique Of Production



Maximize Output  
Minimize Cost

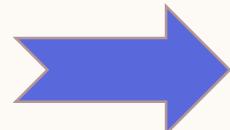


labour-intensive



More Labour  
Less Capital

eg. India



Producers  
must always  
produce  
efficiently by  
using the  
most efficient  
technology

Capital Intensive



More Capital  
Less Labour

eg. USA, England

# FOR WHOM TO PRODUCE ?

- This is the question of how to distribute the product among the various sections of the society.
- The guiding principle of this problem is output of the economy be distributed among different sections of the society in such a way that all of them get a minimum level of consumption.

*Deciding who is the end consumer of the goods or services that are produced.*

**CONTD...**

- *Every good produced is made for a specific section of society as every product cannot satisfy all the sections of society due to difference in the paying capacity of the consumer.*
- *Inequality in the distribution of income can be noticed in society because of which there is a difference in the **paying capacity of the consumer**.*
- *For example, the production of graded rice is for people with higher paying capacity and the production of non-graded rice is for lower-income people.*
- *Luxury goods and services are for people with high income.*

## **THE PROBLEM OF FULLER UTILIZATION OF RESOURCES**

*Fuller utilization of resources can be referred to the efficient as well as full utilization of all the resources in the production process of the goods and services in an economy so that **all the human wants are mostly satisfy.***

- **Optimum Usage Of Limited Resources**
- **No Wastage**
- **Maximum Productive Capacity**

## ECONOMIC GROWTH

- ✓ With discovery of new stock of resources or an advancement in technology, the productive capacity of an economy increases.
- ✓ Increases in capital goods, labor force, technology, and human capital can all contribute to economic growth.

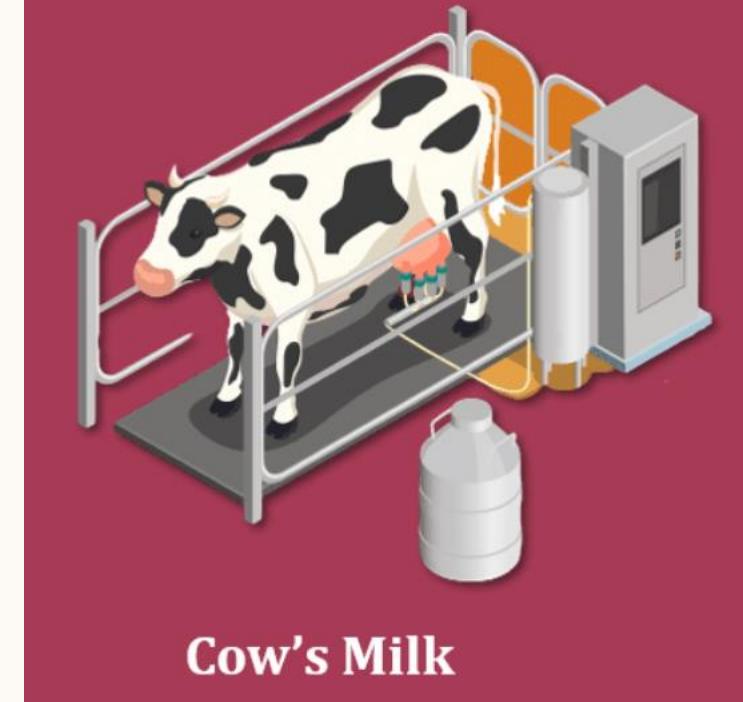
## ECONOMIC EFFICIENCY

- ✓ The aim of an economy, which wants to be economically efficient.
- ✓ when all goods and factors of production in an economy are distributed or allocated to their most valuable uses and waste is eliminated or minimized.

# PRODUCTION POSSIBILITY CURVE

- ✓ It is a curve which shows different combinations of the quantities of two goods that can be produced with a given amount of resources and with a given technology, when the resources are fully and efficiently utilized.
- ✓ Also called as Production possibility frontier or transformation curve.
- ✓ The resources can be used to produce various alternative goods which are called production possibilities and the curve showing the different production possibilities is called production possibility curve.

Available Resource :



Cow's Milk



Butter

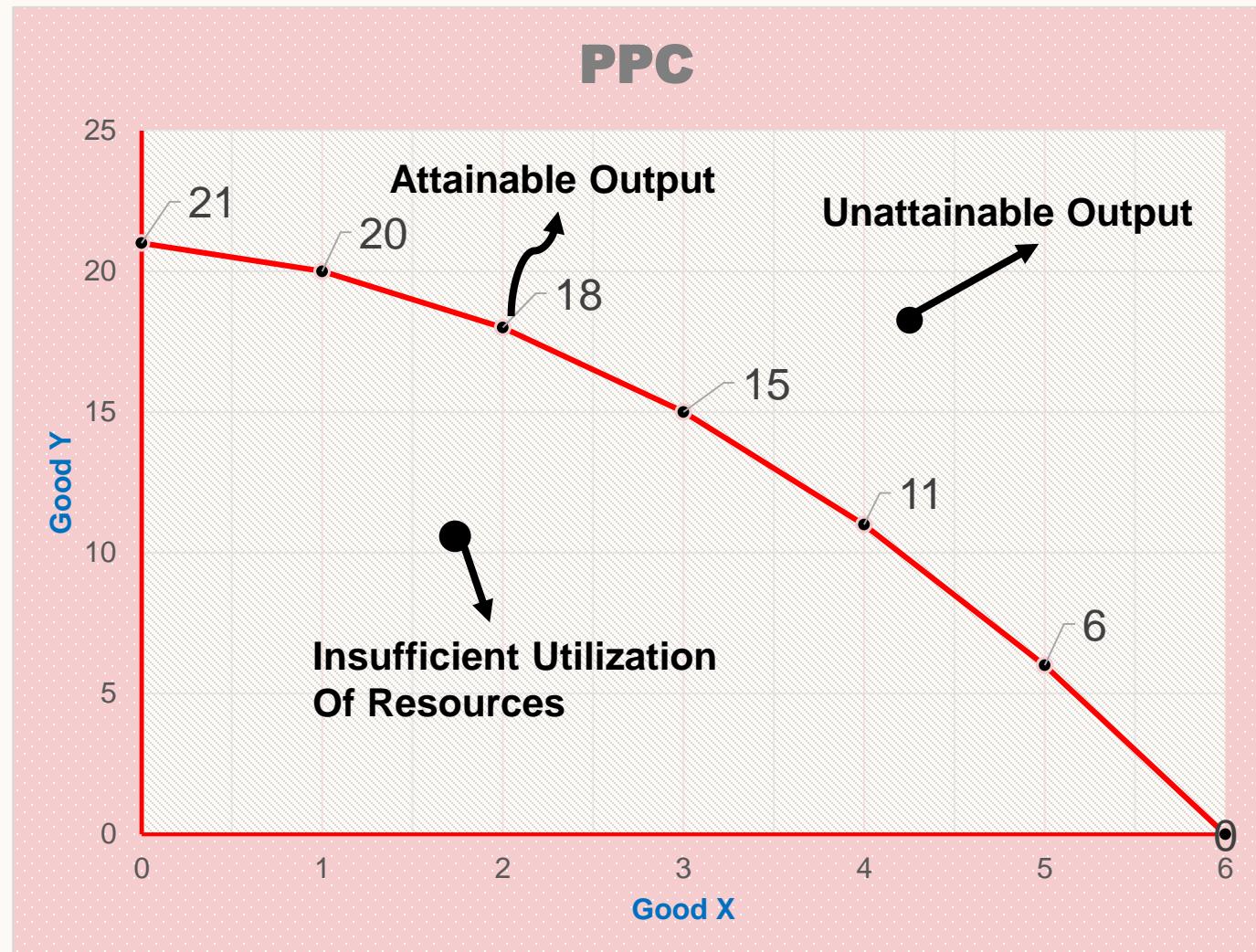


Mill Milk  
Shak Shake

## **APPC for an economy is drawn on the basis of the following assumptions**

- Only two commodities are produced in an economy
- Technology is given or constant
- There is full employment of resources

Production Possibility	Good X	Good Y
P	0	21
A	1	20
B	2	18
C	3	15
D	4	11
E	5	6
P'	6	0

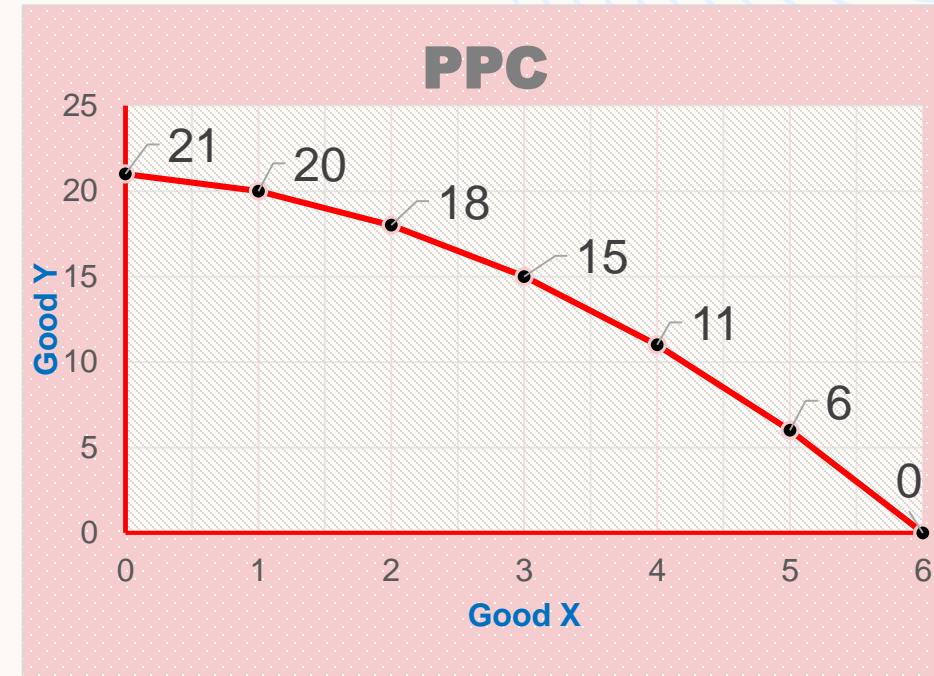


# OBSERVATIONS

- Any Point on PPC curve shows fuller utilization of resources.
- Any point above or beyond PPC shows unattainable due to lack of resources.
- Any point below the PPC shows under utilization of resources.
- PPC slopes downward - production of one good can be increased only after sacrificing production of some quantity of the other good
- PPC is concave to the origin - because of increasing marginal rate of transformation (MRT) or increasing marginal opportunity cost (MOC)

# SLOPE OF PPC

*Slope of PPC is defined as the quantity of good Y given up in exchange for additional unit of good X*

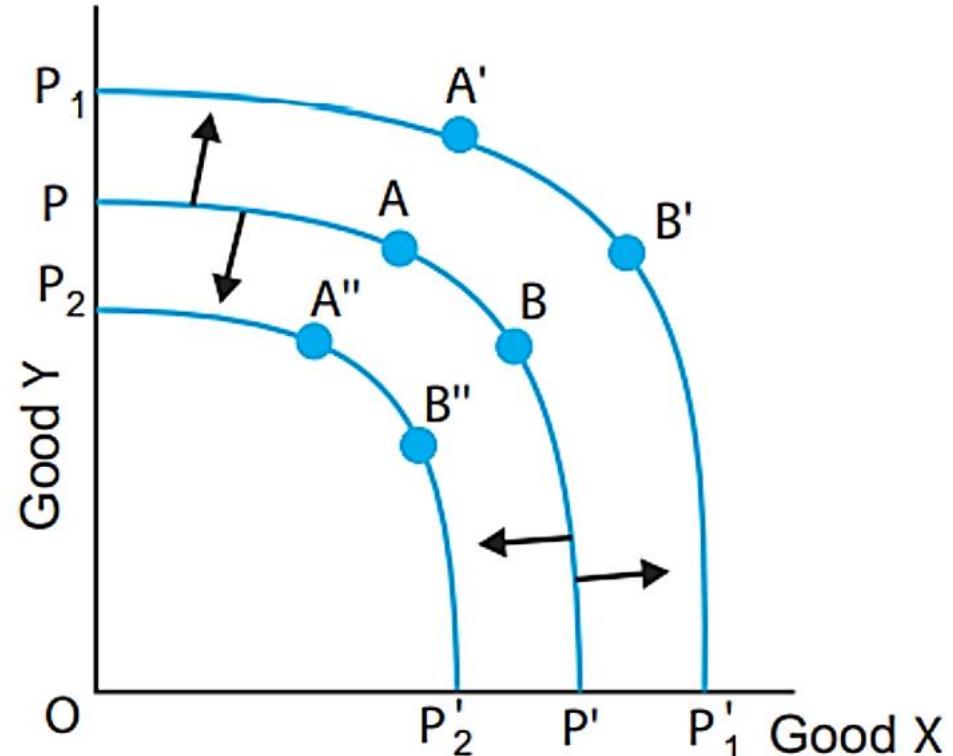


$$\begin{aligned} \text{Slope of Production Possibility curve} &= \frac{\Delta Y}{\Delta X} = \frac{\text{Amount of Good Y Lost}}{\text{Amount of Good X gained}} \\ &= \text{Marginal Opportunity Cost [MRT]} \end{aligned}$$

# SHIFTS IN PRODUCTION POSSIBILITY CURVE

PPC will shift to the left when

- a) Resources are destroyed because of national calamity like fire, earthquake, war, etc.
- b) There is use of outdated technology.



PPC will shift to the right if

- (a) new stock of is resources discovered.
- (b) There is in advancement in technology.

## OPPORTUNITY COST & MARGINAL OPPORTUNITY COST

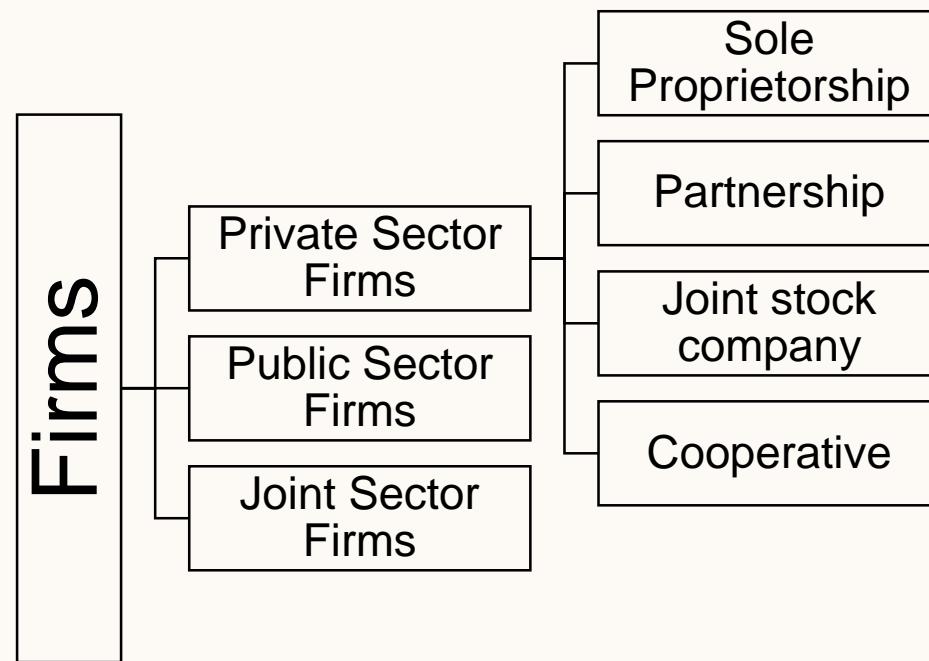
*Opportunity cost* is the value of the next best alternative foregone when the best when one is chosen.

- ✓ Suppose a farmer can cultivate either wheat or rice in his farm. If he decides to produce rice, the value of wheat given up is the opportunity cost of rice production.

*Marginal Opportunity cost* is the amount of one commodity sacrificed to produce an extra unit of the other commodity.

# FIRMS – TYPES AND ITS OBJECTIVES

- ✓ A firm is a commercial organization operating for profit. It is an entity that makes use of the services of factors of production and produces output through a process and with the help of technology.
- ✓ The output of a firm can be a product or service or both.



# SOLE PROPRIETORSHIP

The simplest and most common form of business ownership, sole proprietorship is a business owned and run by someone for their own benefit.

The business' existence is entirely dependent on the owner's decisions, so when the owner dies, so does the business.

## Advantages

- ✓ All Profits are subject to the owner.
- ✓ Easy to start or exit
- ✓ Owners have total flexibility when running the business
- ✓ Very few requirements for starting.
  - ✓ Confidentiality and maintenance of secrecy

## Disadvantages:

- ✓ Owner has unlimited liability
- ✓ Resources are limited
- ✓ Ownership of proprietorship is difficult to transfer
- ✓ No distinction between personal and business income

# PARTNERSHIP

*Partnership is a form of business in which two or more individuals decide to start common business.*

## Advantages

- ✓ Shared resources provides more capital for the business
- ✓ Each partner shares the total profits of the company
- ✓ Similar flexibility and simple design of a proprietorship
- ✓ Inexpensive to establish a business partnership, formal or informal.

## Disadvantages:

- ❑ Each partner is 100% responsible for debts and losses.
- ❑ Selling the business is difficult—requires finding new partner
- ❑ Partnership ends when any partner decides to end it

## **Joint Stock Company**

A joint stock company is a business organisation that is owned jointly by all its shareholders. Its scope and functions are governed by Memorandum of Association signed among members. The profit earned by the company is distributed among the shareholders in the form of dividends. A joint stock company is known as a limited company because the liability of a shareholder is limited to the proportion of shares held. A company can be a private limited company or public limited company. In the case of public limited company there is no limit on the maximum number of members but the minimum number is seven.

### **Features**

- 1. Independent Legal Entity:**
- 2. Limited Liability:**
- 3. Common seal:**
- 4. Transferability of Shares:**
- 5. Separation of Ownership and Management**
- 6. Perpetual Existence:**

### **Advantages**

- 1. Limited Liability**
- 2. Perpetual Existence**
- 3. Large funds:**
- 4. Independent Legal Entity:**
- 5. Transferability of Shares**

### **Disadvantages**

- 1. Complexity in formation**
- 2. Conflict of interest:**
- 3. Excessive government controls**
- 4. Lack of secrecy**
- 5. Delay in decisions**

A cooperative is a voluntary association of persons, who join together with the motive of welfare of the members.

It is to be registered under the Cooperative Society Act of 1912.

Capital raised from its members through issue of shares.

Two types-

**1.Consumer's cooperative societies**

**2.Producer's cooperative societies.**

# COOPERATIVE

## Advantages of a corporation:

- Equity in voting status
- Limited liability
- Stable existence
- Economy in operations
- Ease of formation

## Disadvantages:

- Limited resources
- Inefficiency in management
- Lack of secrecy
- Govt control
- Difference in opinion

## PUBLIC SECTOR

Under public sector, government is the investor or owner of a business. In India Public Sector Undertaking (PSU) is a term used to denote a government company. In such companies, government either own the entire shares of the company or majority of the shares (51 percent).

### Advantages

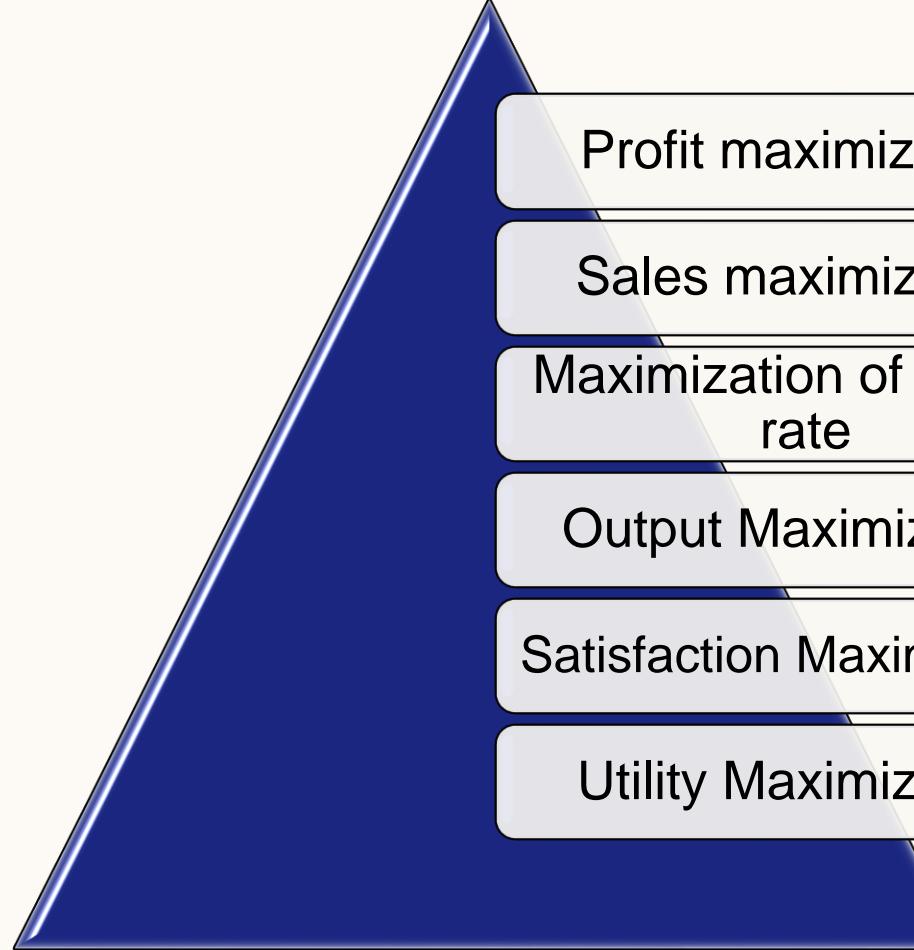
- 1. Balanced economic growth:**
- 2. Employment generation:**
- 3. Profits for public welfare:**

**Disadvantages - 1. Evils of bureaucracy:      2. Extravagance and inefficiency**

### JOINT SECTOR -

The Joint Sector is a kind of simple partnership between the private sector and the Government. In such firms, ownership and control are effectively shared between public sector agencies on the one hand and a private group on the other. An important advantage of joint sector is that the resources of the two sectors can be combined.

# THE MAIN OBJECTIVES OF FIRMS ARE:



- Profit maximization

- Sales maximization

- Maximization of growth rate

- Output Maximization

- Satisfaction Maximization

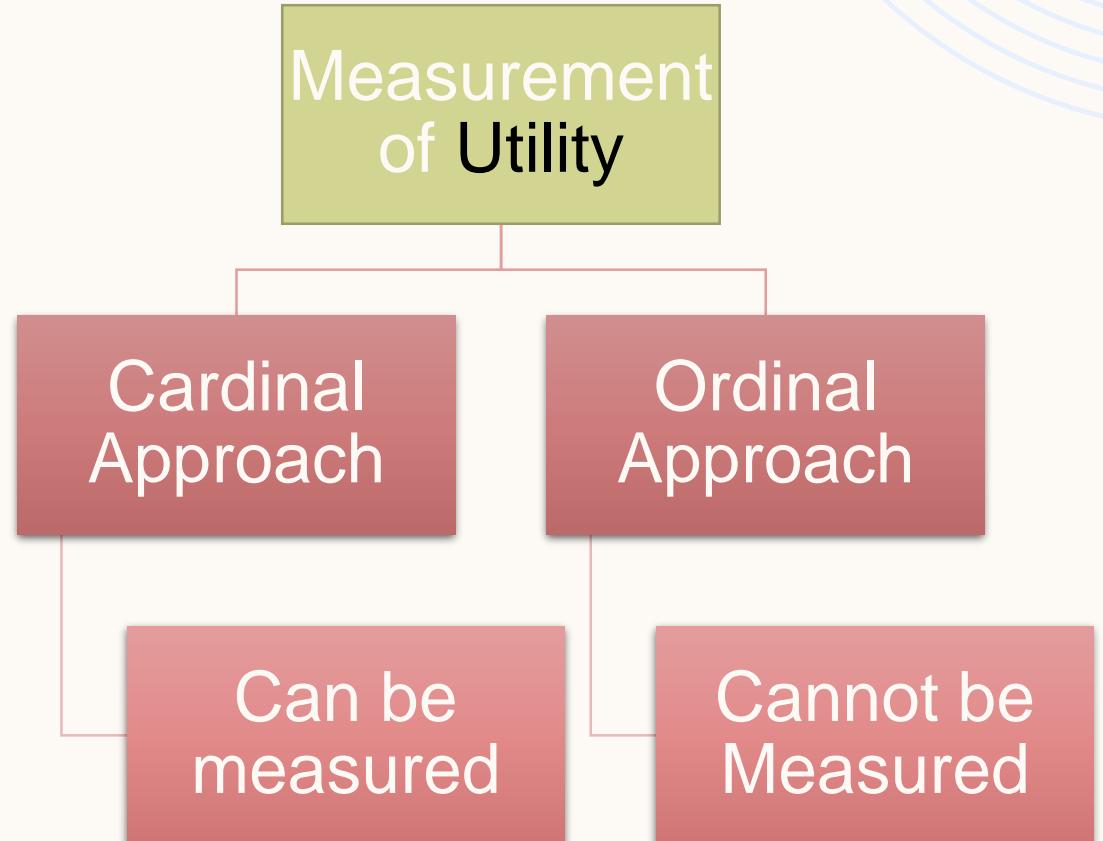
- Utility Maximization

# UTILITY

*The term utility refers to the want satisfying power of a commodity.*

- Utility is an economic theory that measures the value, happiness, or satisfaction that someone gets from consuming a product or service.
- People tend to purchase things because they want or need those things.
- Utility measures how much value those purchases provide
- Drinking purified water offers more utility than drinking dirty water because it satisfies your thirst without the potential to get you sick.
- A freshly cooked meal provides more value than a frozen, microwaved meal because it is more nutritious and generally tastes better.
- Utility can be very different for different types of products. For example, various food items might have different values because of the difference in the nutrition they provide. More nutritious foods often satisfy more of a consumer's need for food. At the same time, tastier meals, even if they're less healthy, may gain utility because they satisfy a want for food that tastes good.

- ❖ The cardinal analysis states that utility can be measured by monetary units.
- ❖ While the ordinal method argued that the utility cannot be measured but can be compared. It is possible for the consumer to rank various bundles of goods according to the satisfaction that each bundle gives him.
- ❖ The numbers 1,2,3,4 etc. are cardinal numbers.
- ❖ The cardinal number system permits addition and subtraction.
- ❖ On the other hand, the numbers 1st, 2nd, 3rd, 4th etc. are known as Ordinal Numbers. These numbers are ranked and numbered.



# CHARACTERISTICS OF UTILITY

## Form utility

- is the value that an item has based on the form that it takes. Individual car parts have value, but when someone assembles them into a functional vehicle, the utility the car offers is higher than the utility offered by each of its parts alone.

## Time utility

- is the satisfaction that a product offers to a consumer based on when they receive the product. A hungry consumer receives more pleasure from food than someone who just ate. If a consumer never encounters a product, even if it's high quality, they never receive its utility.

## Place utility

- is the value that a product offers based on where the product is. If you're hiking, a hiking backpack provides significant utility. If you're trying to bring your books to school, a hiking backpack works, but isn't quite as useful, offering less value. If you're staying at home for the next few weeks, the bag provides much less utility.

## Possession utility

- describes the utility that something offers based on who has that item. A DVD in a store has value, but it doesn't provide as much value as it would if it were in a consumer's DVD player, letting a group of people watch the movie. The DVD offers additional utility because someone who will use it possesses it.

# TOTAL UTILITY

*It is the total satisfaction derived from the consumption of different units of a commodity.*

*Suppose a consumer consumes 'n' units of a commodity, his total utility from this n units equals*

$$TU_n = U_1 + U_2 + U_3 + \dots + U_n$$

Where  $U_1, U_2, \dots$  are utility from respective units..

# MARGINAL UTILITY

It is the addition to the total utility when a consumer consumes an additional unit of a commodity.

In other words, if a consumer consumes n units of a commodity then MU is the utility derived from the nth unit. In simple words, MU is the utility from the last unit consumed. Mathematically it can be written as

$$\mathbf{MU_n = Tu_n - Tu_{n-1}}$$

Or in General

$$\mathbf{MU = dTU/dQ}$$

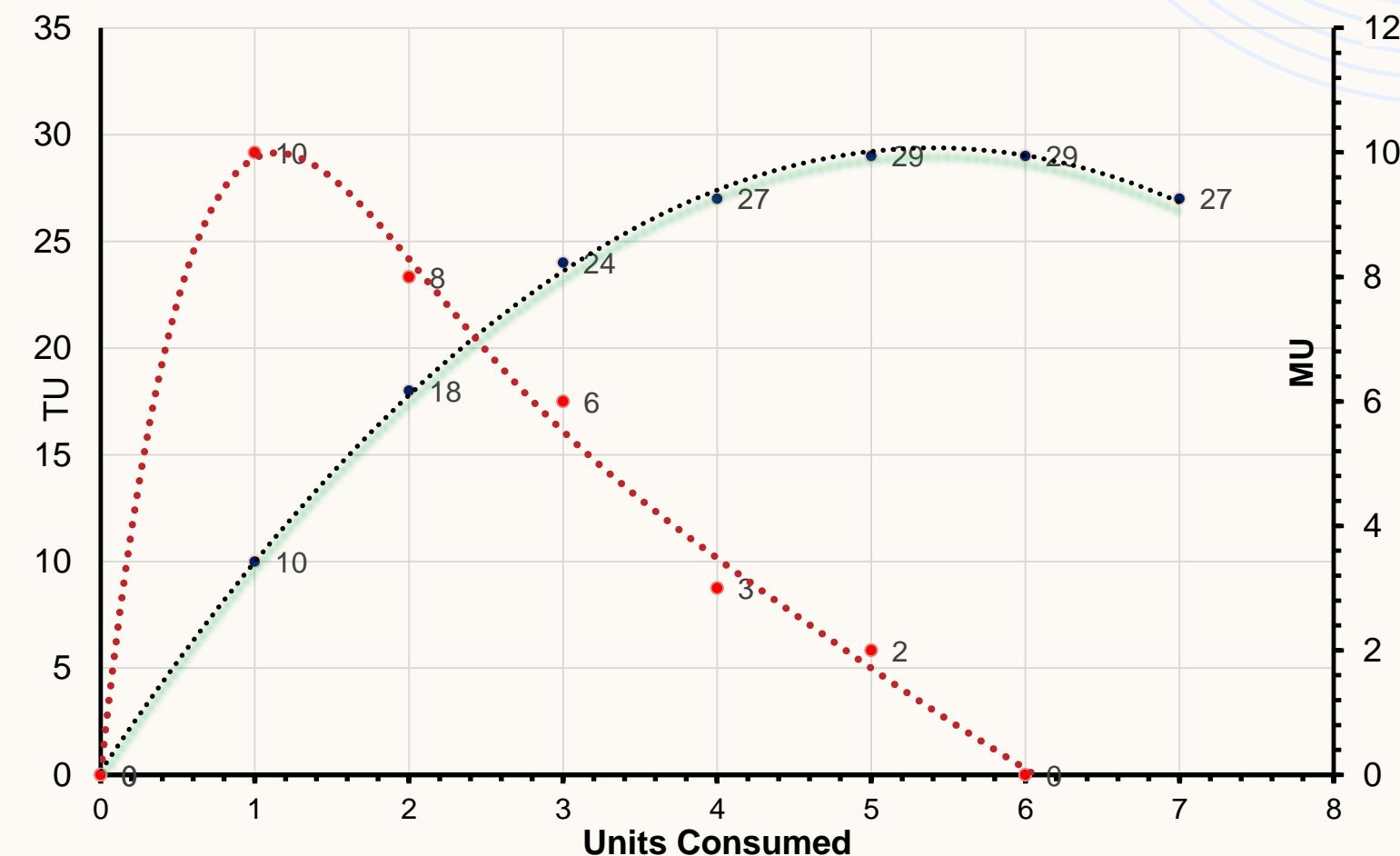
## LAW OF DIMINISHING MARGINAL UTILITY (DMU) / THEORY OF CONSUMER BEHAVIOR

As the consumer consumes more and more units of the same good, the additional utility (MU) from each additional unit goes on decreasing.

*developed by Prof. Alfred Marshall*

# RELATIONSHIP BETWEEN TU AND MU

Units Consumed	TU	MU
0	0	0
1	10	10
2	18	8
3	24	6
4	27	3
5	29	2
6	29	0
7	27	-2



## OBSERVATIONS

1. As the consumer has more of the good, the TU increases less than in proportion and the MU gradually declines but is positive.
2. When TU is maximum, called saturation point, MU is zero.
3. When TU falls, MU becomes negative.

A stage comes when marginal utility becomes zero. At this point total utility becomes maximum. If the consumer consumes beyond this stage, marginal utility becomes negative and total utility falls. It means that the consumer starts getting disutility i.e., dissatisfaction instead of getting satisfaction. Since economists believe that a consumer is a rational being, he wants to maximize his satisfaction. A consumer would not like to go beyond zero marginal utility.

## **Assumption of the Law**

1. Different units of the commodity consumed are identical and in standard size. If a thirsty person takes water in a small spoon MU may not decrease.
2. There is no time gap between the consumption of different units. If a person takes an ice cream today and the second one after one week there will not be any change in his MU.
3. Consumer's income remains constant.
4. Consumers taste and preferences remain constant. A change in taste may increase MU with additional consumption.
5. Marginal utility of money remains constant.
6. Consumer is rational or he is a normal person who wants to maximise utility.
7. Commodity consumed is a normal one. It is not an intoxicant like alcohol.
8. Utility can be measured

## **Importance of the law**

1. Basis of economic laws
2. Basis of the theory of taxation

**Law of demand, Demand curve,  
Elasticity of demand**

# Demand

*The desire backed by the ability and willingness to pay for a commodity*

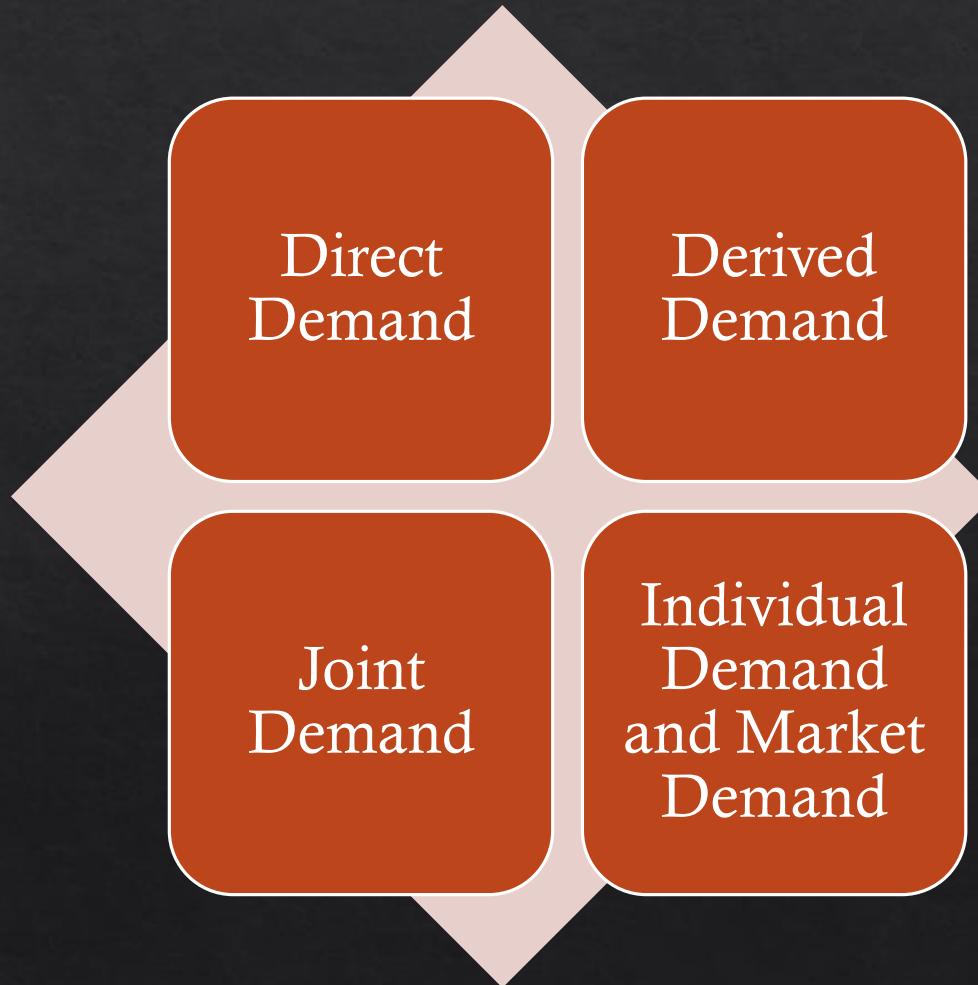
*Desire*

*Want*

*Need*

***Demand for a commodity is the quantity of that commodity a consumer is willing to buy at a given price in a given period of time.***

# Types Of Demand



# Demand function

- ✓ It shows the functional relationship between demand for a commodity and its determinants. It can be expressed as:

$$DX = f(PX, PZ, Y, T, E, N, Yd)$$

DX = Demand for commodity X ,

PX = Price of commodity X

PZ = Prices of related goods,

Y = Income of consumer

T = Taste and preferences of consumer,

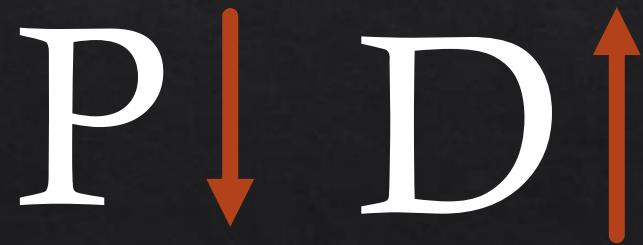
E = Future expectation

N = No. of consumers

Yd = Distribution of income

# Law of Demand

The law of demand states that if remaining things are constant then as the price of a commodity increases demand for the commodity decreases and as the price of a commodity decreases demand for the commodity increases.

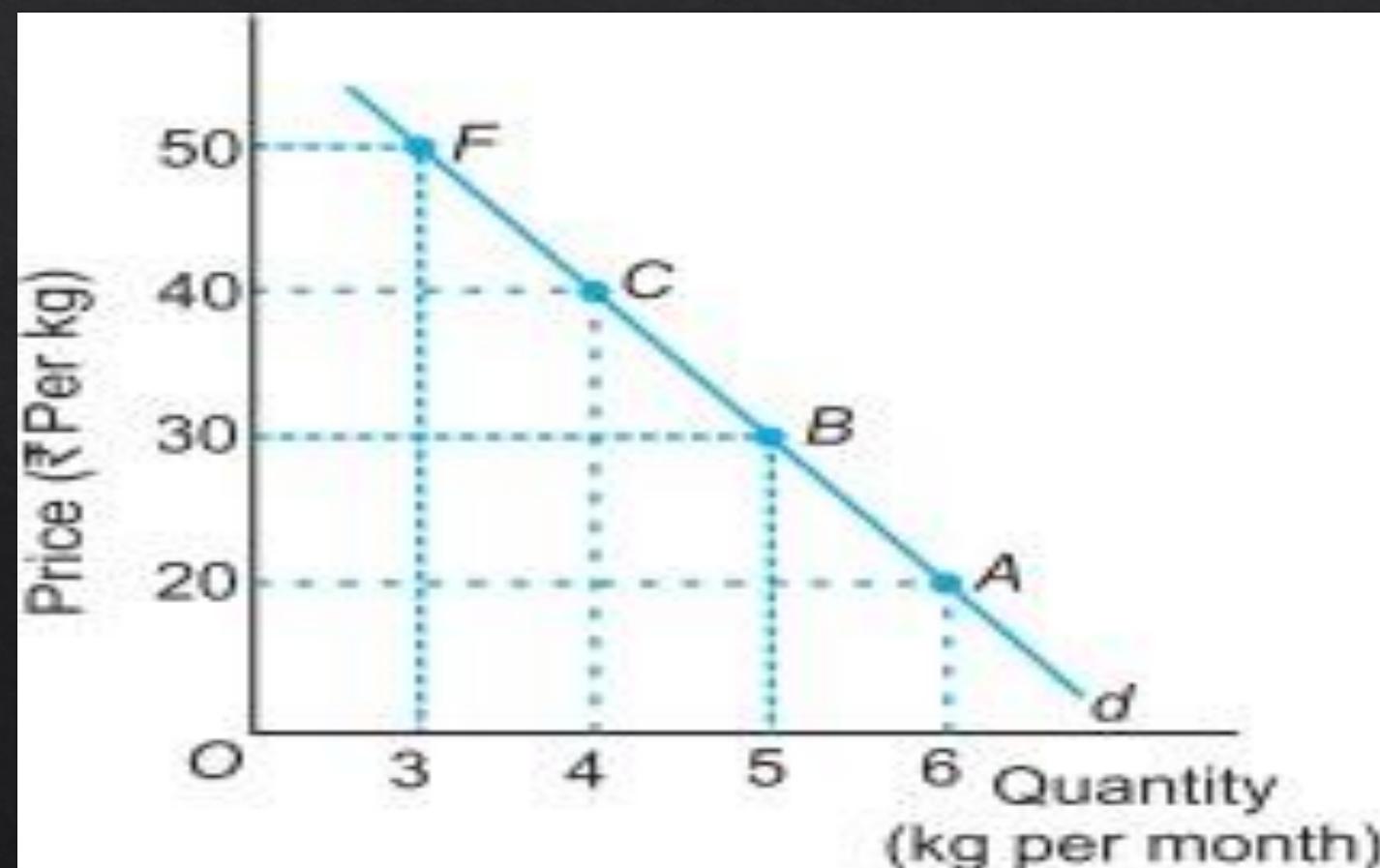


# The Demand Schedule and the Demand Curve

Demand Schedule is a tabular presentation showing the different quantities of a good that buyers of the good are willing to buy at different prices during a given period of time.

Demand Curve The graphical representation of the demand function is called a demand curve

Price ₹ per kg)	Quantity Demanded kg per month)	Reference Point (Fig. 3.6)
20	6	A
30	5	B
40	4	C
50	3	F



# Exceptions to Law of Demand

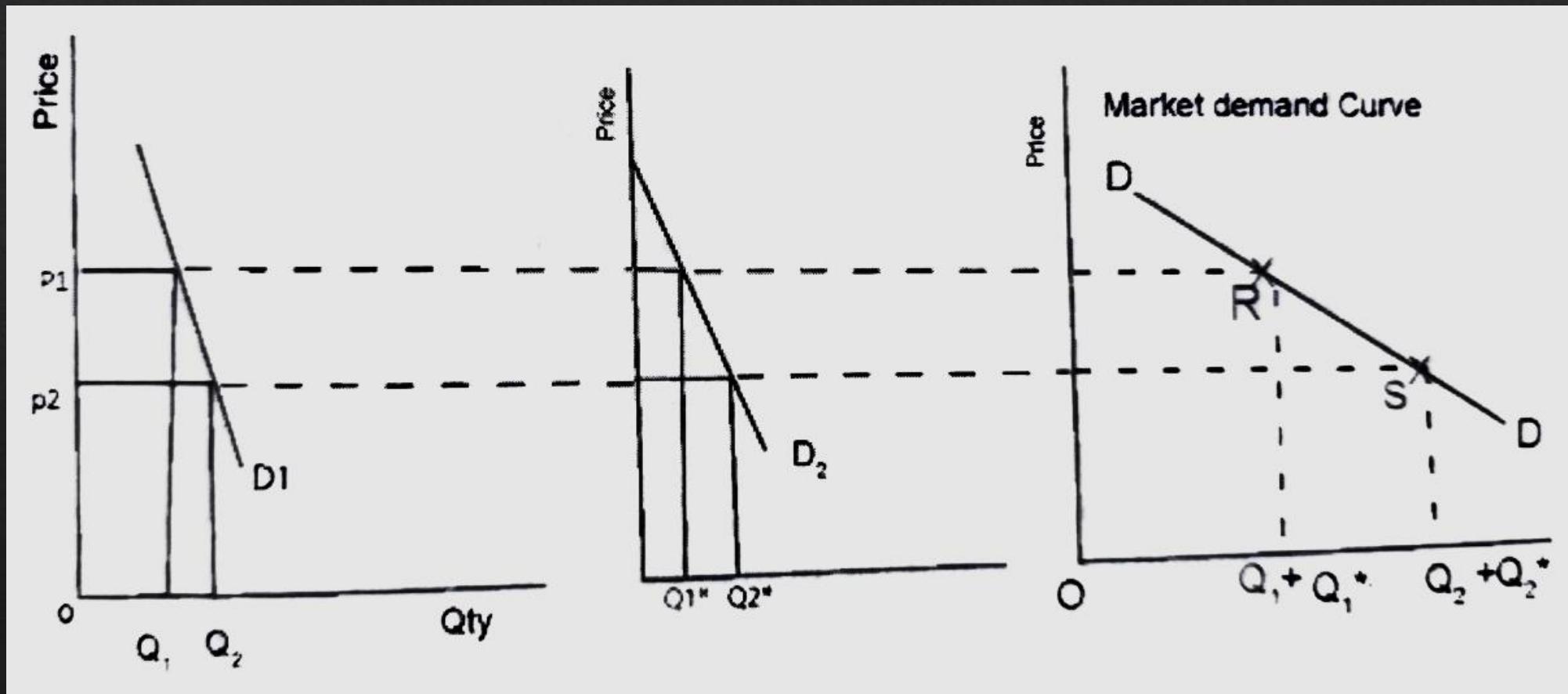
Veblen  
Goods

Giffen  
Goods

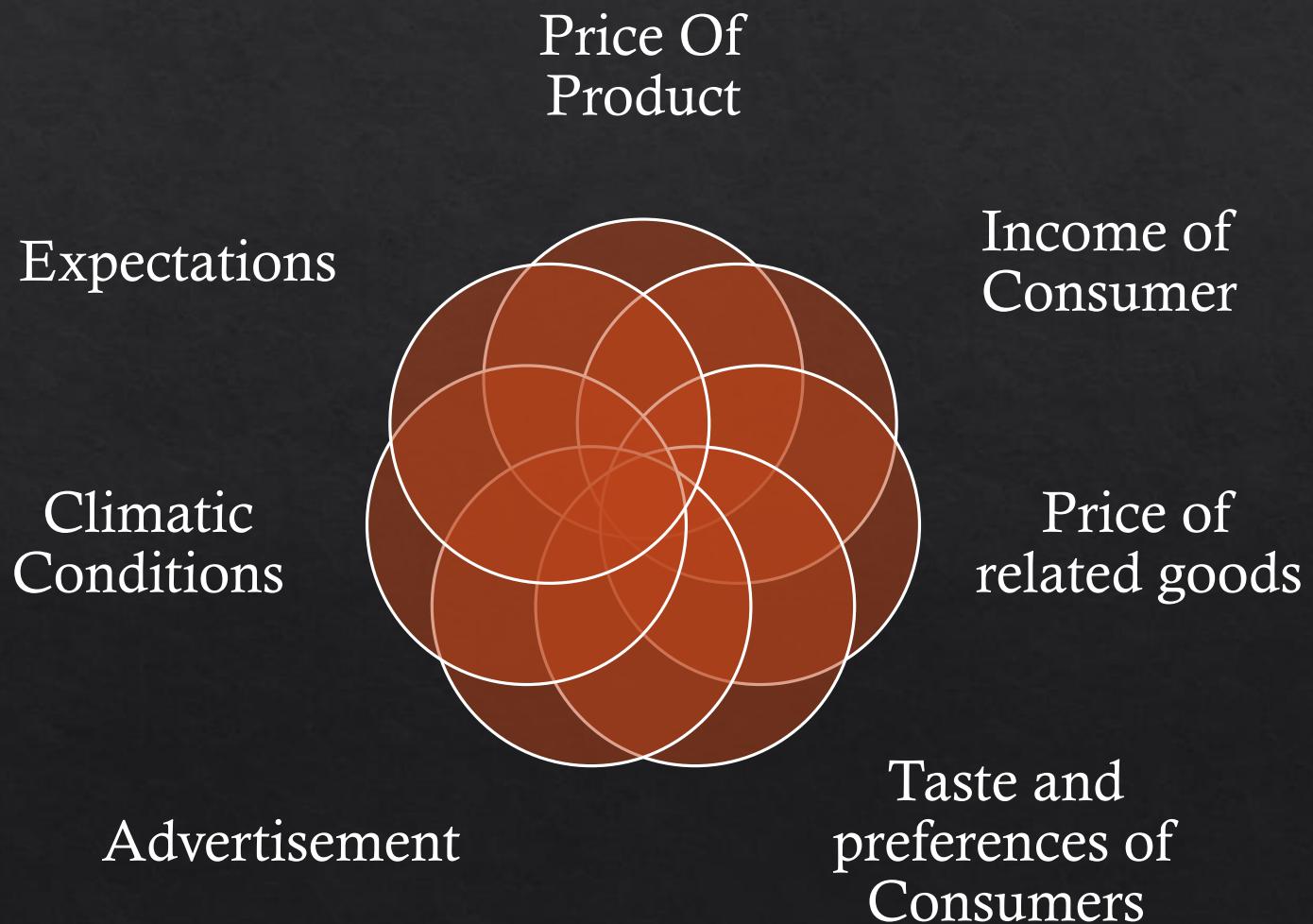
Speculative  
Goods

# Market Demand Curve

- It is the sum of quantity demanded by all the buyers in the Market



# Determinants of Demand / Factors determining Demand



# Changes in Demand

2 types of changes in demand

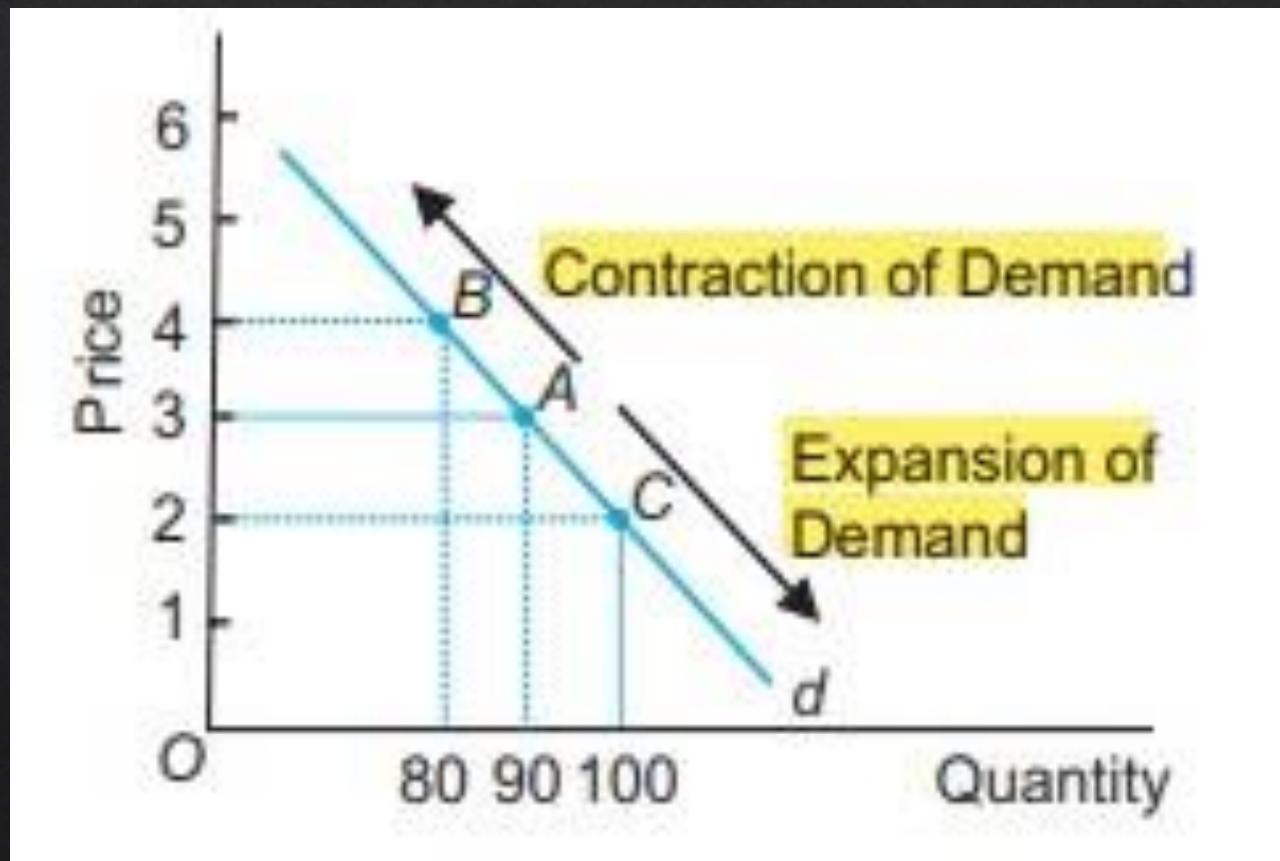
- ❖ Change in demand due to change in price – Expansion and Contraction of Demand – Movement along the demand curve
- ❖ Change in demand due to factors other than price – Increase and Decrease in demand [Shift in demand curve]

# Movement: Change in Quantity Demanded

- ❖ A movement along the demand curve is caused by a change in the price of the good, other things remaining constant. It is also called a change in quantity demanded of the commodity. Movement is always along the same demand curve, i.e., no new demand curve is drawn. Movement along a demand curve can bring about:
  - (a) Expansion of demand, or (b) Contraction of demand

# Expansion or Contraction of Demand

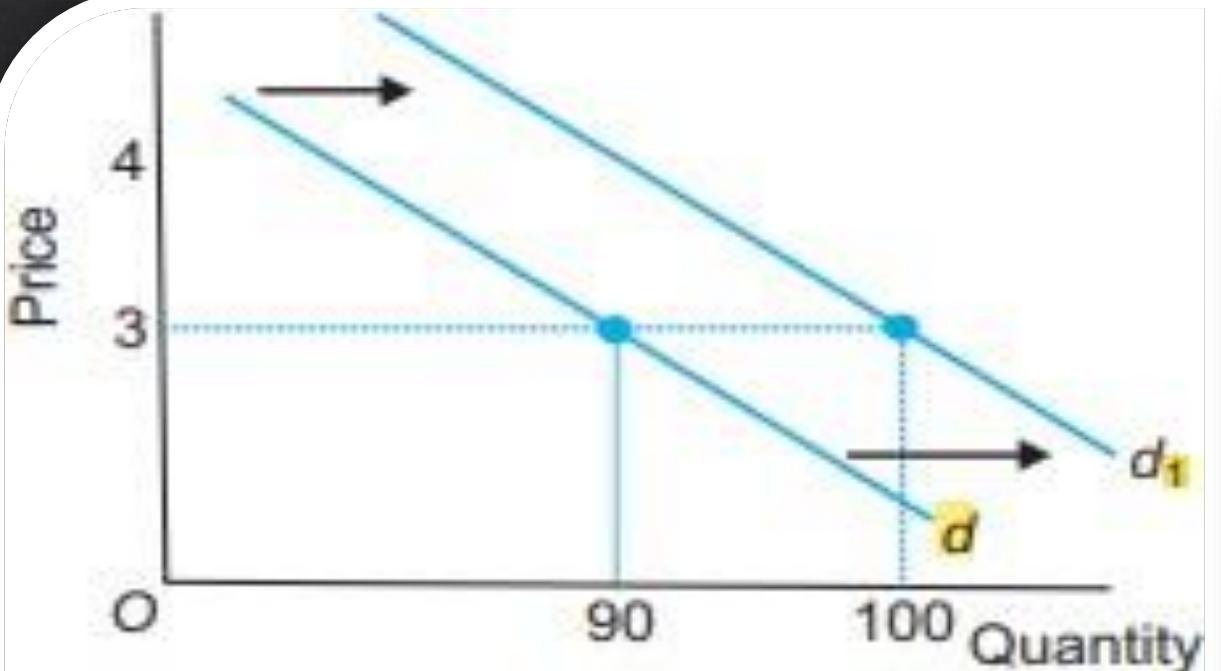
- Expansion or Extension of demand refers to rise in demand due to fall in the price of the good. Contraction of demand refers to fall in demand due to rise in the price of the good



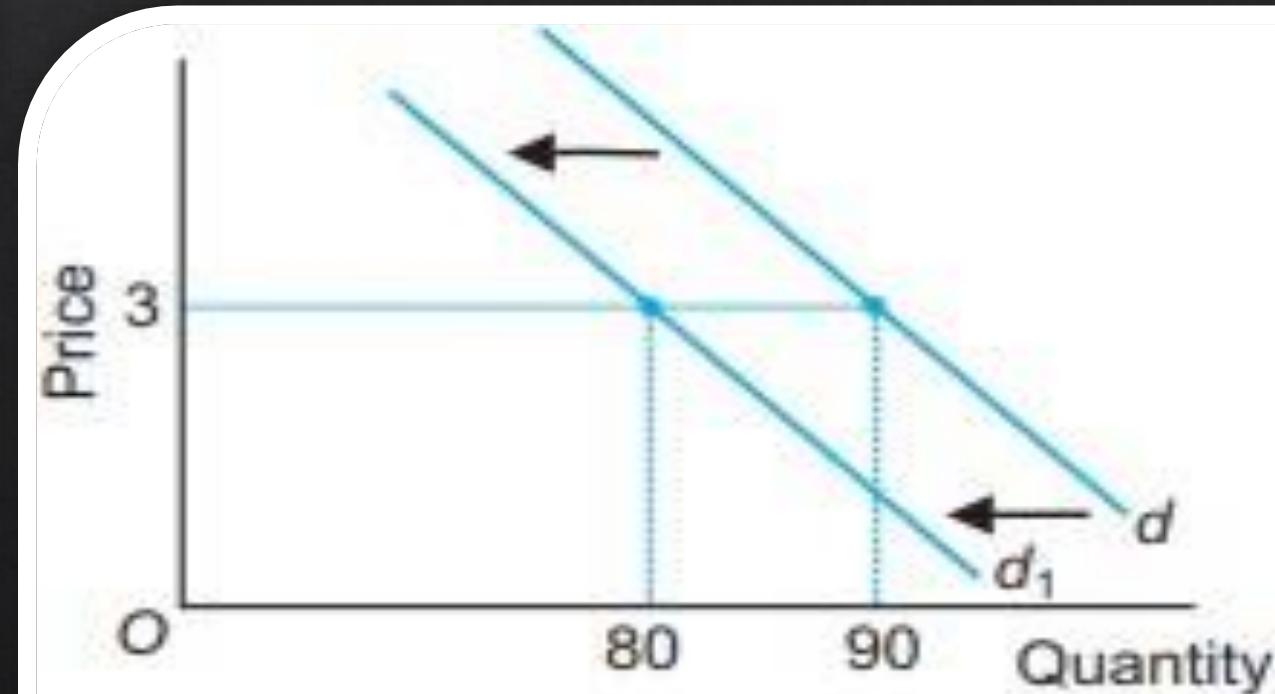
*Point A on the demand curve d is the original situation. An upward movement from point A to a point such as point B shows contraction or lesser quantity demanded at a higher price. Downward movement from point A to a point such as point C shows expansion or more quantity demanded at a lower price.*

# Increase and Decrease in Demand / Shift in Demand curve

- ❖ A shift of the demand curve is caused by changes in factors other than price of the good. A change in factors causes a shift in the demand curve. It is also called a change in demand. In a shift, a new demand curve is drawn. A shift of the demand curve can bring about: (a) Increase in demand, or (b) Decrease in demand.
- ❖ (a) Increase in Demand: It refers to more demand at a given price. The causes of the increase in demand are (i) Increase in the income of the consumers in the case of normal goods. (ii) Decrease in the income of the consumers in case of inferior goods. (iii) Increase in the price of substitute goods. (iv) Fall in the price of complementary goods. (v) Consumers' taste becoming stronger in favor of the good.
- ❖ (b) Decrease in Demand: It refers to less demand at the given price. It occurs due to unfavorable changes in factors other than the price of the good.



**Fig. 3.9** Shift in Demand Curve:  
Increase in Demand



**Fig. 3.10** Shift in Demand Curve:  
Decrease in Demand

# Elasticity of Demand

*It refers to the degree of responsiveness to change in qty demanded of a commodity due to a change in price or any other factors.*

- ✓ *It was put forward by Alfred Marshall*

*3 Types of elasticity  
of demand*

*Price Elasticity*

*Income  
Elasticity*

*Cross  
Elasticity*

# Measurement Of Price Elasticity

*Price elasticity of Demand ( $e_p$ ) =  $\frac{\text{Percentage change in quantity demanded of } X}{\text{Percentage change in price of } X}$*

$$e_p = \frac{(q_1 - q)/q}{(p_1 - p)/p}$$

$$e_p = \frac{p}{q} * \frac{\Delta q}{\Delta p}$$

p = initial price

q = initial quantity

p1 = changed price

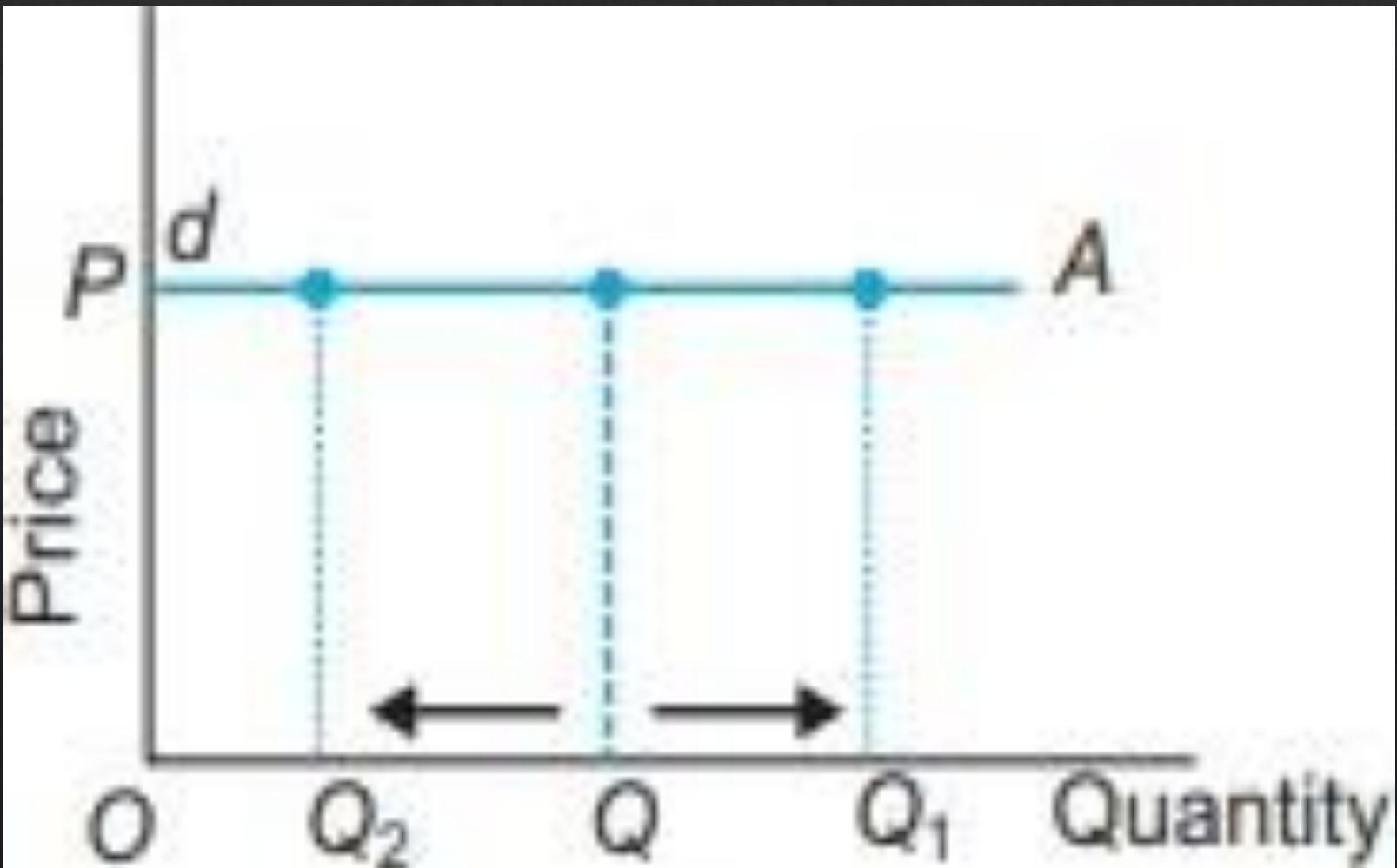
q1 = changed quantity

# Price elasticity of demand

- ❖ It measures the responsiveness of demand of a good to a change in its price. Types of price elasticities of Demand
  - 1. Perfectly elastic demand
  - 2. Perfectly inelastic demand
  - 3. Unit elastic demand / Unitary elastic demand
  - 4. Elastic demand / More elastic demand
  - 5. Inelastic demand / Less elastic demand

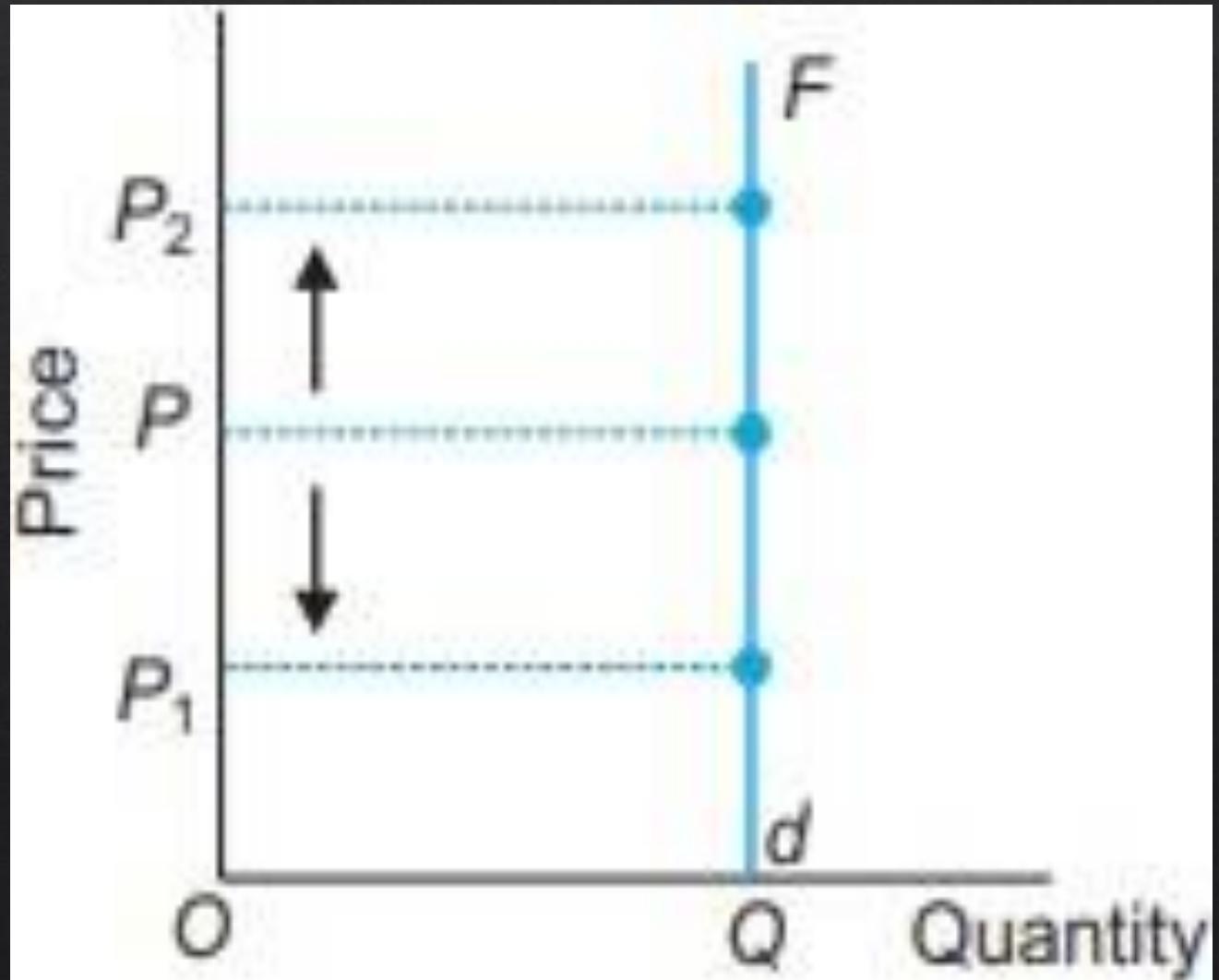
# 1. Perfectly Elastic Demand ( $e_p = \infty$ )

When the demand for a commodity rises or falls to any extent without any change in price, the demand for the commodity is said to be perfectly elastic. It is an ideal and imaginary situation.



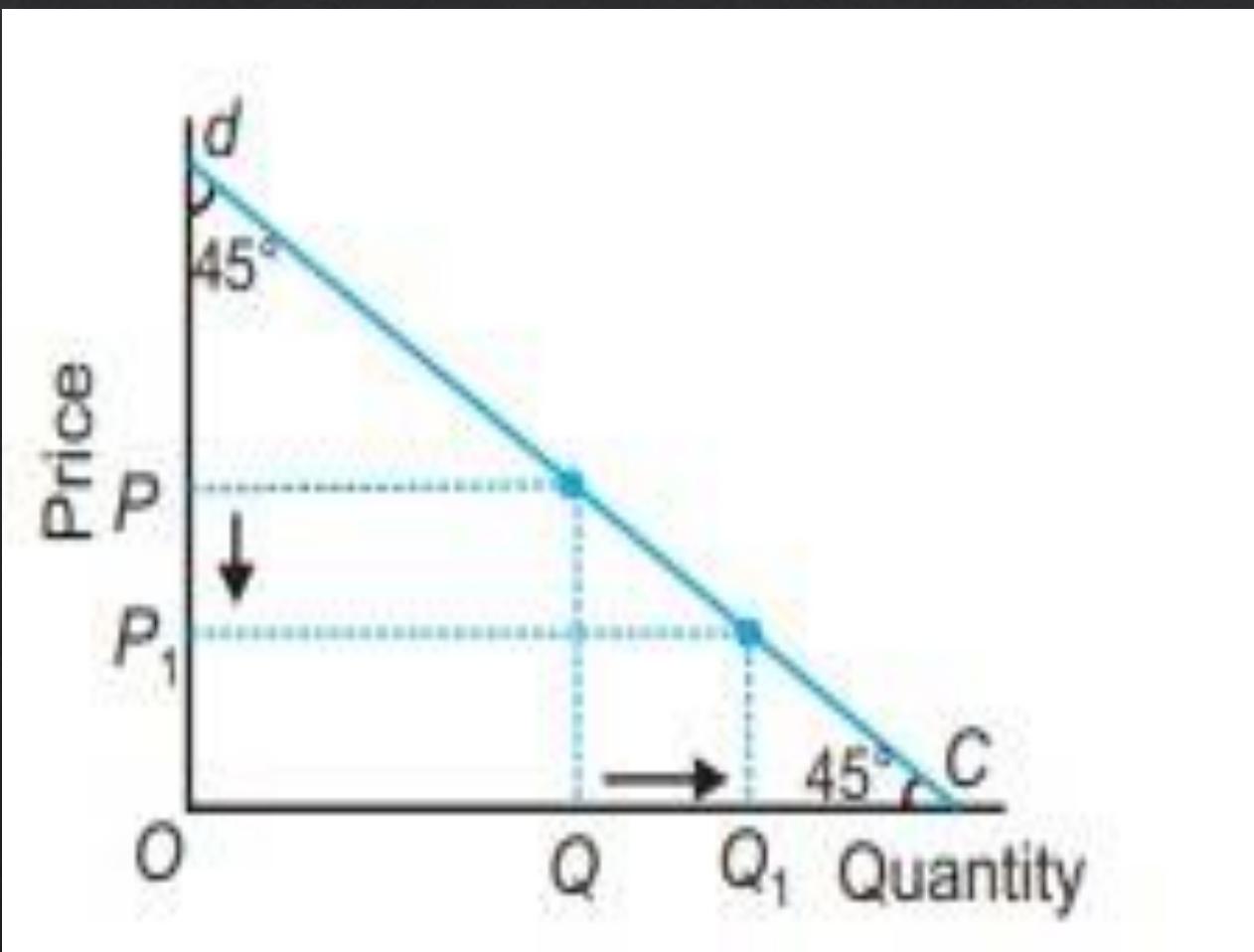
## 2. Perfectly Inelastic demand [ $e_P = 0$ ]

When the demand of a commodity does not change as a result of change in its price, the demand is said to be perfectly inelastic. The perfectly inelastic demand curve is a vertical line parallel to y-axis. As it is clear from the diagram, price may be OP or OP<sub>1</sub> or OP<sub>2</sub>, but the demand will be constant at OQ. In other words, there is no effect of changes in the price on the quantity demanded. It exists in case of essentials like life saving drugs.



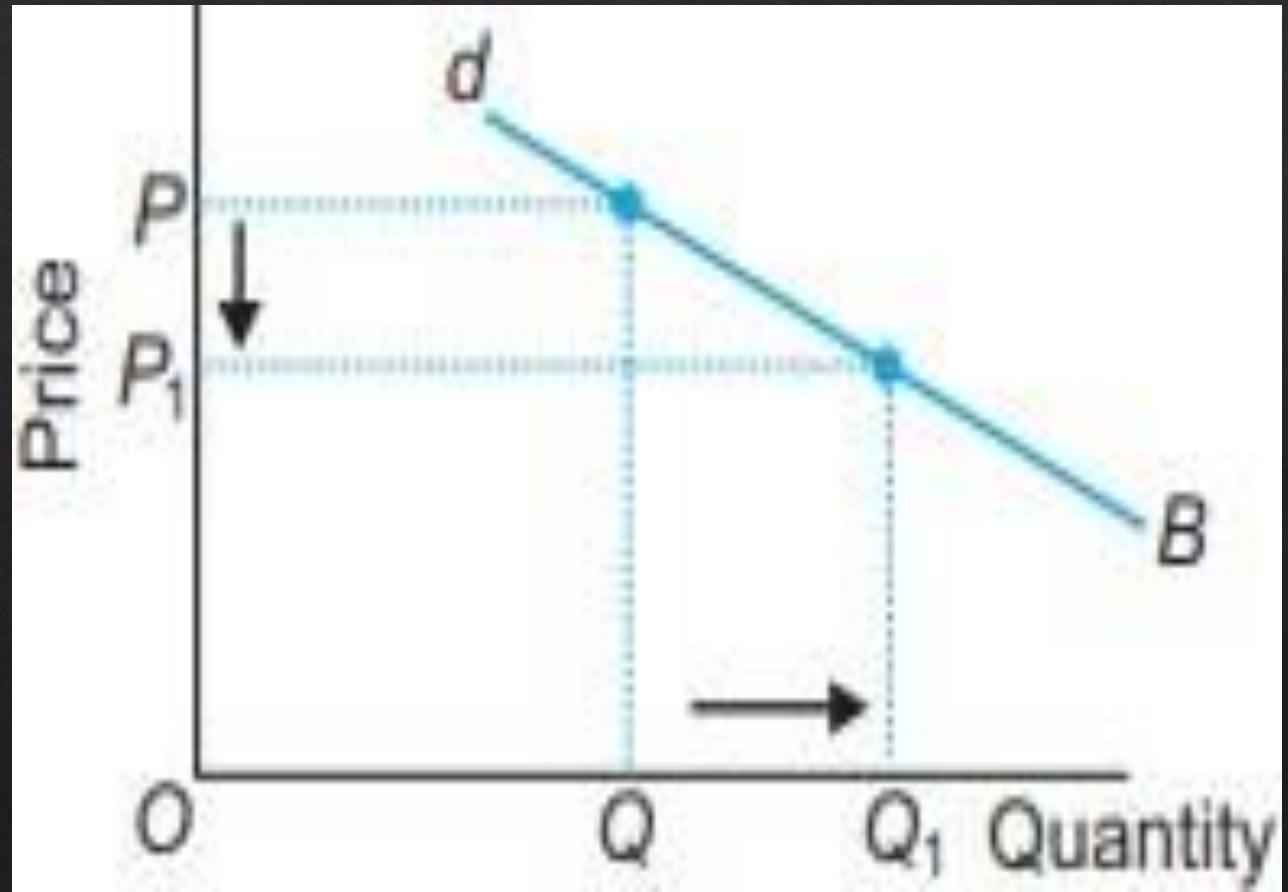
### 3. Unit Elastic Demand ( $e_p = 1$ )

When percentage change in demand is equal to the percentage change in price, the demand for the commodity is said to be unitary elastic. The unitary elastic demand curve shows that when price falls from  $OP$  to  $OP_1$ , demand rises from  $OQ$  to  $OQ_1$ . The change in demand ( $QQ_1$ ) is equal to the change in price ( $PP_1$ ). It exists in case of normal goods.



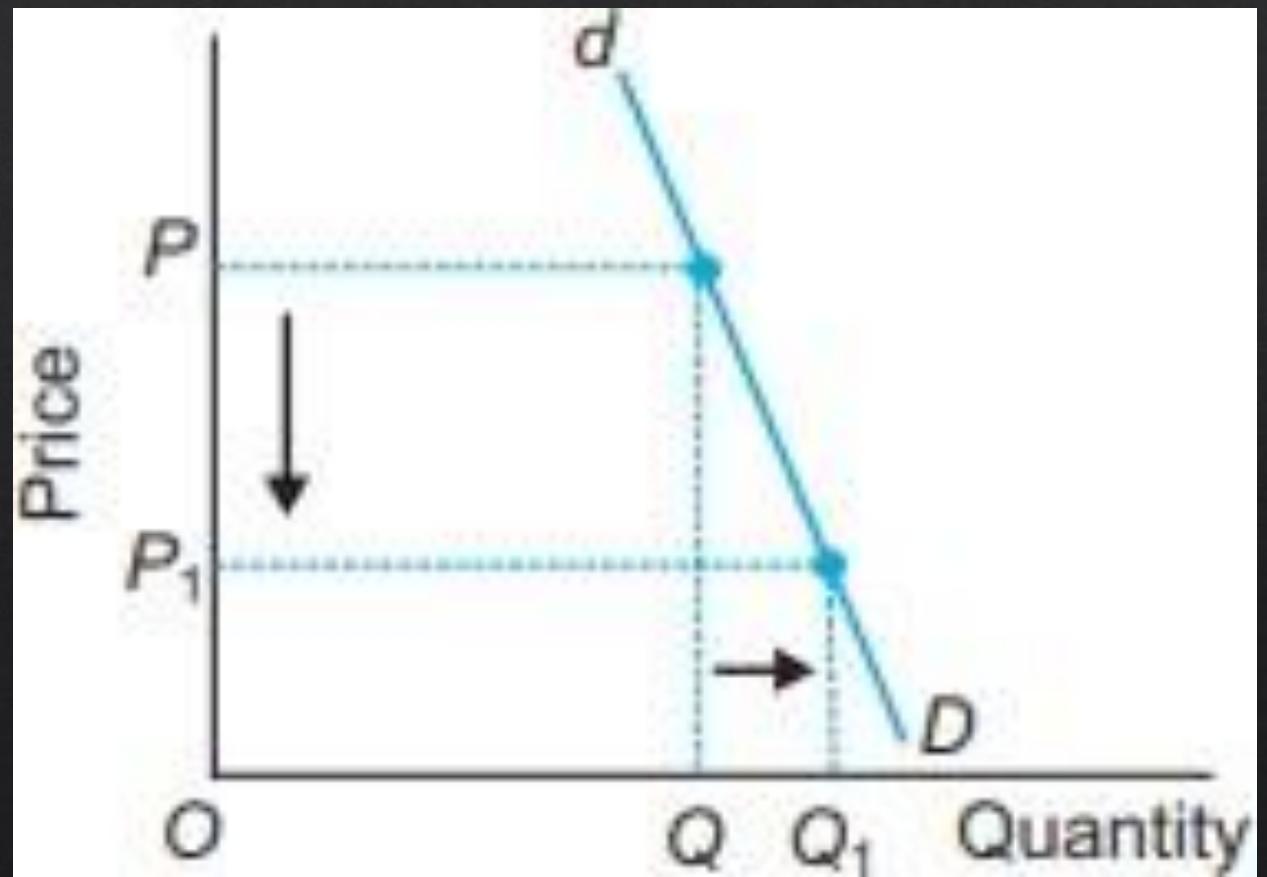
#### 4. Elastic (or more than unit elastic) Demand ( $1 < e_p < \infty$ )

When a change in price leads to a more than proportionate change in demand, the demand is said to be elastic or more than unit elastic. The elastic demand curve shows that when price falls from  $OP$  to  $OP_1$ , demand rises from  $OQ$  to  $OQ_1$ . The change in demand ( $QQ_1$ ) is more than the change in price ( $PP_1$ ). It exists in case of luxuries.



## 5. Inelastic (or less than unit elastic) Demand ( $0 < e_p < 1$ )

When a change in price leads to a less than proportionate change in the demand, the demand is said to be less elastic or inelastic. The inelastic demand curve shows that change in quantity demanded ( $Q_1 Q$ ) is less than change in price ( $P_1 P$ ). It exists in case of necessities like food, fuel, etc.



### Quick Recap – Coefficients of $E_d$

Type	Value	Description
Perfectly Elastic	$(E_d = \infty)$	Infinite demand at same price
Perfectly Inelastic	$(E_d = 0)$	Same demand at all prices
Highly Elastic	$(E_d > 1)$	% Δ in Demand > % Δ in Price
Less Elastic	$(E_d < 1)$	% Δ in Demand < % Δ in Price
Unitary Elastic	$(E_d = 1)$	% Δ in Demand = % Δ in Price

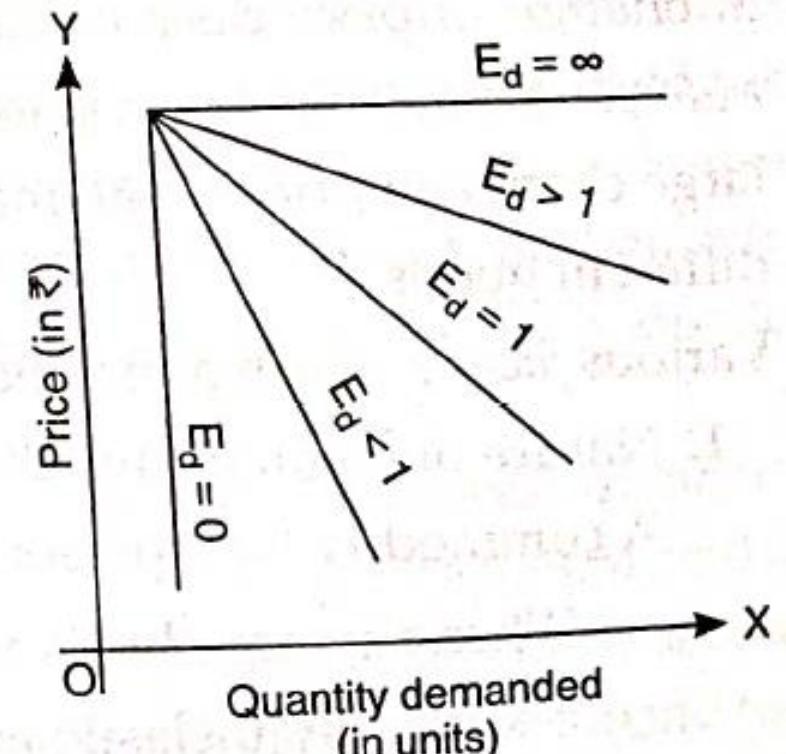


Fig. 4.6

- ✓ Calculate the price elasticity of demand if demand increases from 4 units to 5 units due to fall in price from Rs. 10 to Rs. 8
- ✓ A mobile manufacturing company sells its mobile phones at a price of Rs. 4500 per unit and in a year the company sells 10000 handsets. When they decrease the price to Rs. 4000 sales increases to 12000 units. What is the price elasticity of demand for this mobile phone?  
Suppose this company wants to increase its sales by 50%. To what percentage its price is to be reduced?
- ✓ The demand function of a commodity is given as  $Dx = 10 - 2P$ . What is the elasticity of demand of the product when price of the product is Rs. 4/-

1. A consumer spends 40 on a good at a price of 1 per unit and 60 at a price of 2 per unit. What is the price elasticity of demand? What kind of good it is? What shape its demand curve will take?

Ans: 0.25 (The good has an inelastic demand. It is a necessity like food, fuel etc. The demand curve for this good is steep.)

2. When the price of a commodity falls by 2 per unit, its quantity demanded increases by 10 units. Its price elasticity of demand is (-) 1. Calculate its quantity demanded at the price before change which was 10 per unit. Ans: 50 Units

3. The quantity demanded of a commodity falls by 5 units when its price rises by 1 per unit. Its price elasticity of demand is (-) 1.5. Calculate the price before change if at this price quantity demanded was 60 units. Ans 18 Rs

4. The market demand for a good at a price of 10 per unit is 100 units. When its price changes its market demand falls to 50 units. Find out the new price if the price elasticity of demand is (-)2. Ans: 12.50 Rs

5. If the elasticity of demand for salt is zero and a household demands 2 kg. of salt in a month at 5 per kg, how much will it demand at 7.50 per kg? Ans: 2 Kg

❖ *What should be the percentage change in price of a product if the sale is to be increased by 50 percent and its price elasticity of demand is 2?*



Supply Analysis,  
the law of supply, and  
determinants of supply

# Supply Analysis

Quantity of a commodity that a seller is willing to sell at a given price in a given period of time.

## Factors

Price of the Commodity

Price of Related Good

State of Technology

Prices of Inputs

Government Policy

# 1. Price of the Commodity

- ✓ At a higher price, the producer offers more quantity of the commodity for sale and at a lower price, less quantity of the commodity is offered for sale. There is a direct relationship between price and quantity supplied as shown by the law of supply.

# 2. Price of Related Goods

- ✓ If X and Y are related goods for a producer he can produce either X or Y with his resources. It is his choice. When the price of one commodity increases the supply of the other related commodity decreases because now it is profitable to produce the commodity for which the price has increased.

### 3. State of Technology

- ✓ If there is a change in the technique of production leading to a fall in the cost of production, the supply of commodities will increase.

### 4. Prices of Inputs

- ✓ When the price of factor inputs increases the cost of production also increases. Hence it may affect profitability and therefore supply comes down.

### 5. Government Policy

- ✓ Government policy also affects the supply of a commodity. If heavy excise taxes are imposed on a commodity, it will discourage producers and as a result, its supply will decrease.

# Supply function

- ▶ Supply function is a functional relationship between quantity supplied of a commodity and factors affecting it

$$S_x = f(P_x, P_z, T, C, GP)$$

where,

$S_x$  = Supply of commodity X       $f$  = function of

$P_x$  = Price of commodity X       $P_z$  = Price of related good,

$T$  = Technological changes

$C$  = Cost of production or price of inputs

$GP$  = Government policy or excise tax rate.

# The law of supply

The law of supply derives the relationship between price and quantity supplied. According to the law of supply, other things remaining the same, the quantity supplied of a commodity is directly related to the price of the commodity.

In other words, other things remain the same, when the price of a commodity rises, its quantity supplied increases and when the price falls, the quantity supplied also falls.

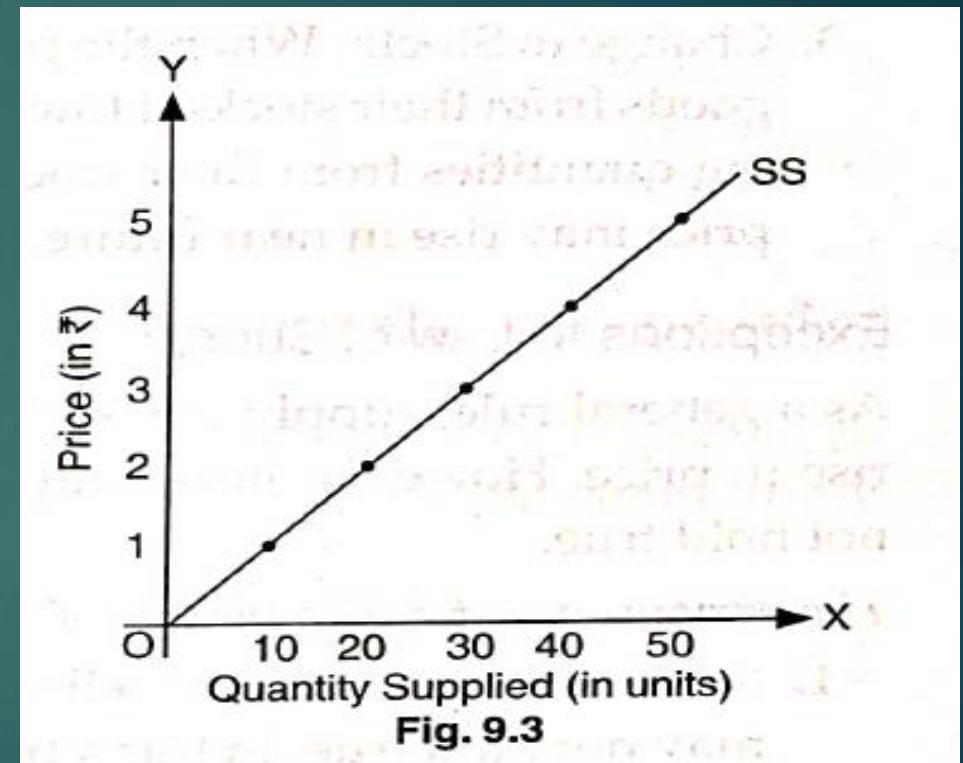
Symbolically, the law of supply is expressed as:  $S_x = f (P_x)$

# The Supply Schedule and the Supply Curve

- ▶ Supply schedule is a tabular statement that gives the law of supply, i.e., it gives the different quantities supplied of a commodity at different prices per unit of time.

Price (in ₹)	Quantity (in units)
1	10
2	20
3	30
4	40
5	50

Supply Schedule



Supply Curve

# Assumptions

## Assumptions of Law of Supply

While stating law of supply, the phrase '*keeping other factors constant or ceteris paribus*' are used. This phrase is used to cover the following assumptions on which the law is based:

1. Price of other goods is constant;
2. There is no change in the state of technology;
3. Prices of factors of production remain the same;
4. There is no change in the taxation policy;
5. Goals of the producer remain the same.

Law of supply can be better understood with the help of  
**Table 9.3 and Fig. 9.3:**

## Important Points about Law of Supply

1. It states the *positive relationship* between price and quantity supplied, assuming no changes in other factors.
2. It is a *qualitative statement*, as it indicates the direction of change in the quantity supplied, but it does not indicate the magnitude of change.
3. It does not establish any *proportional relationship* between change in price and the resultant change in quantity supplied.
4. Law is *one sided* as it explains only the effect of change in price on the supply, and not the effect of change in supply on the price.

# Changes in Supply

2 types of changes in Supply

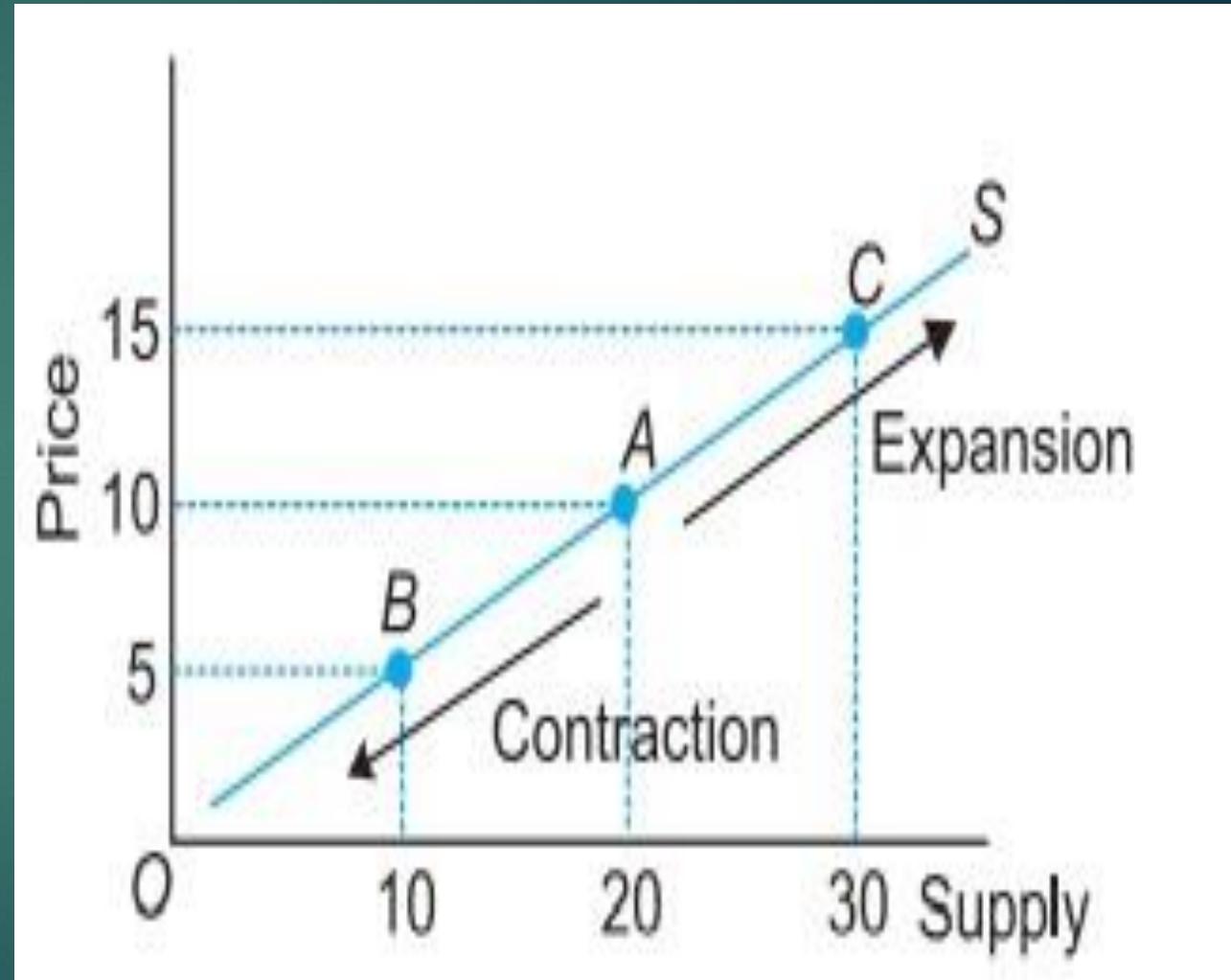
- ▶ Change in supply due to change in price – Expansion and Contraction of supply – Movement along the supply curve
- ▶ Change in supply due to factors other than price – Increase and Decrease in supply – Shift in supply curve

# Change in Quantity Supplied (Movement along the supply curve)

- ▶ A movement along the supply curve is caused by changes in the price of the good, other things remaining constant. It is also called change in quantity supplied of the commodity. In a movement, no new supply curve is drawn. Movement along a supply curve can bring about:
  - ▶ (a) Expansion or extension of supply refers to rise in supply due to rise in price of the good. Contraction of supply refers to fall in supply due to fall in price of the good.

# Expansion and contraction of Supply

Point A on the supply curve is the original situation. An upward movement from point A to a point such as C shows expansion or more supply at a higher price. A downward movement from point A to a point such as point B shows contraction or less supply at a lesser price



# Change in Supply (Shift in supply curve)

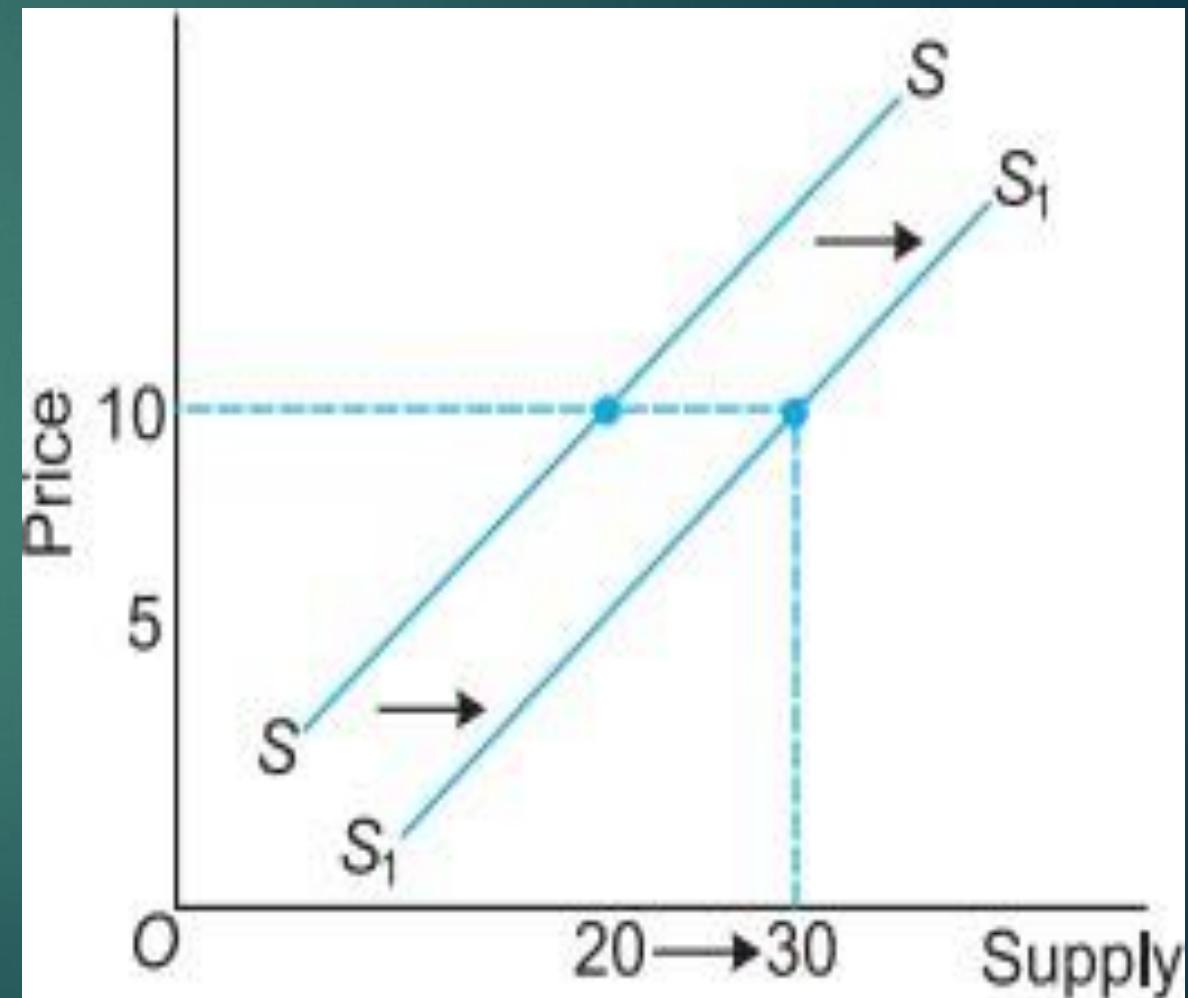
- ▶ A change (or shift) in supply curve is caused by changes in factors other than the price of the good. A change in many factors causes shift in the supply curve. It is also called change in supply. In a shift, a new supply curve is drawn.
- ▶ A shift of the supply curve can bring about: (a) Increase in supply, or (b) Decrease in supply.

# Change in Supply (Shift in supply curve)

## Increase in Supply (i.e., Rightward shift in supply curve)

When supply of a commodity rises due to favorable changes in factors other than price of the commodity, it is called increase in supply. Increase in supply means more quantity supplied at the same price. It also means that same quantity supplied at a lower price.

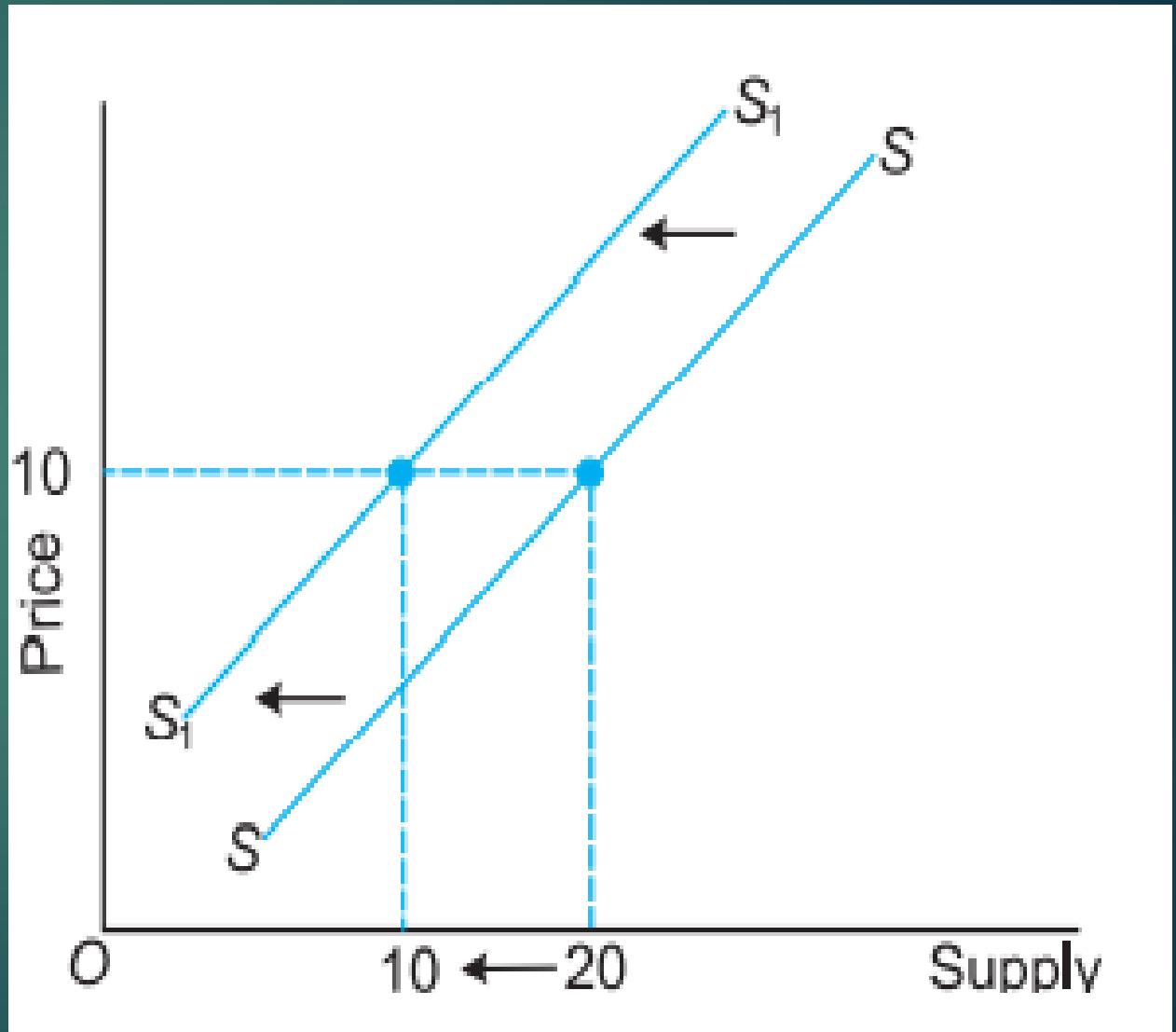
SS is the original supply curve. An increase in supply is shown by rightward shift of the supply curve from SS to S<sub>1</sub> S<sub>1</sub>



# Change in Supply (Shift in supply curve)

**Decrease in Supply**(i.e., leftward shift in supply curve)

- When the supply of a commodity falls due to unfavorable changes in factors other than its price, it is called a decrease in supply. Decrease in supply means less quantity is supplied at the same price. It also means that the same quantity is supplied at a higher price.
- In the figure, SS is the original supply curve. A decrease in supply is shown by a leftward shift of the supply curve from SS to S<sub>1</sub> S<sub>1</sub>.





Elasticity of supply,  
Equilibrium,  
Taxation

# Elasticity of supply

Alfred Marshall developed the concept of elasticity of supply. Price elasticity of supply is defined as the responsiveness of quantity supplied of a commodity to changes in its own price

$$e_s \text{ or } Es = \frac{\% \text{ change in quantity supplied}}{\% \text{ change in Price}}$$

$$e_s = \frac{P}{S} * \frac{\Delta S}{\Delta P}$$

P = initial Price

S = Initial Supply

P1 = Changed Price

S1 = Changed Supply

# Different types of elasticity of supply

Perfectly elastic supply

Perfectly inelastic supply

Unit elastic supply / Unitary elastic supply

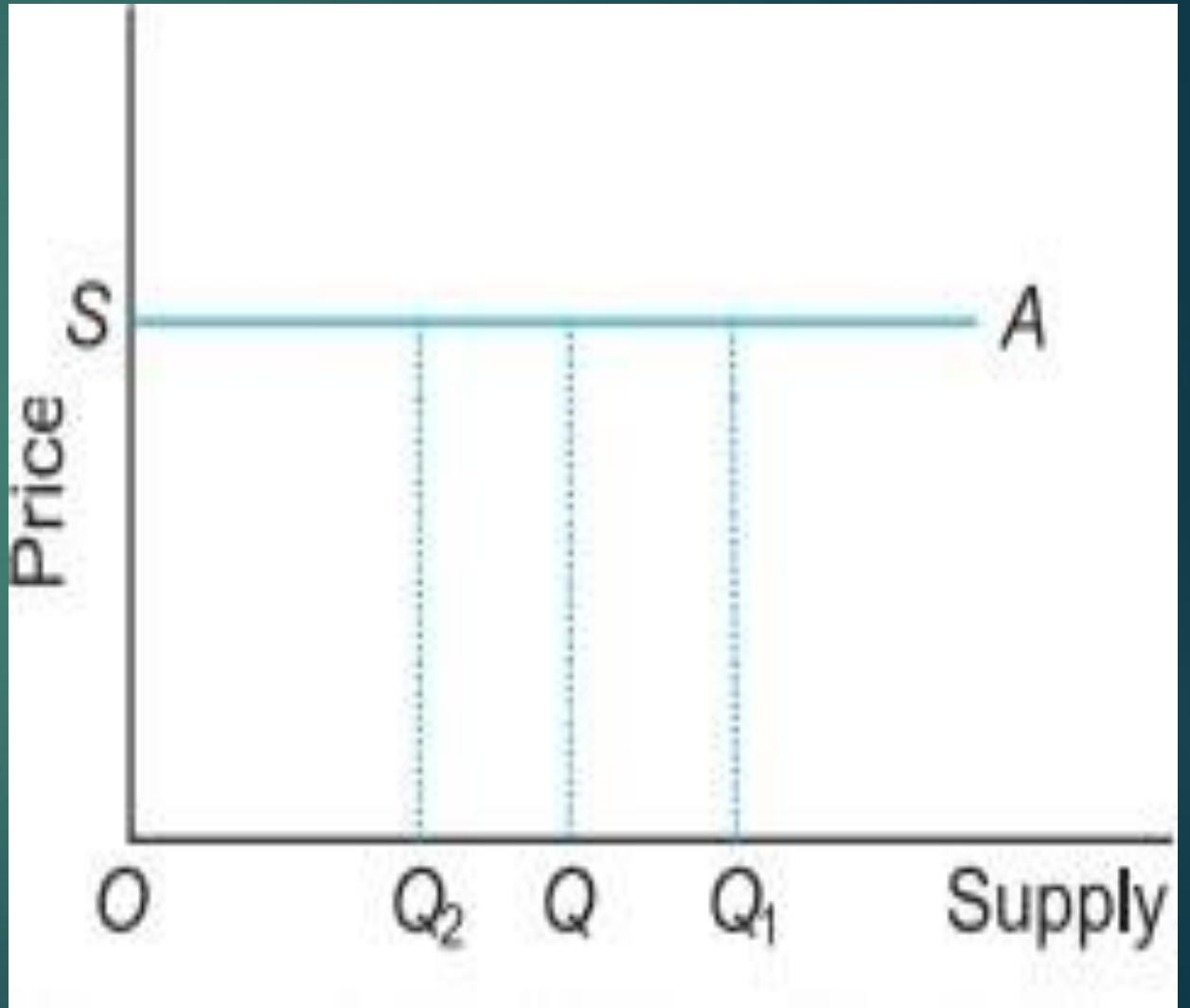
Elastic supply / More elastic supply

Inelastic supply / Less elastic supply

# Perfectly Elastic Supply ( $e_s = \infty$ ).

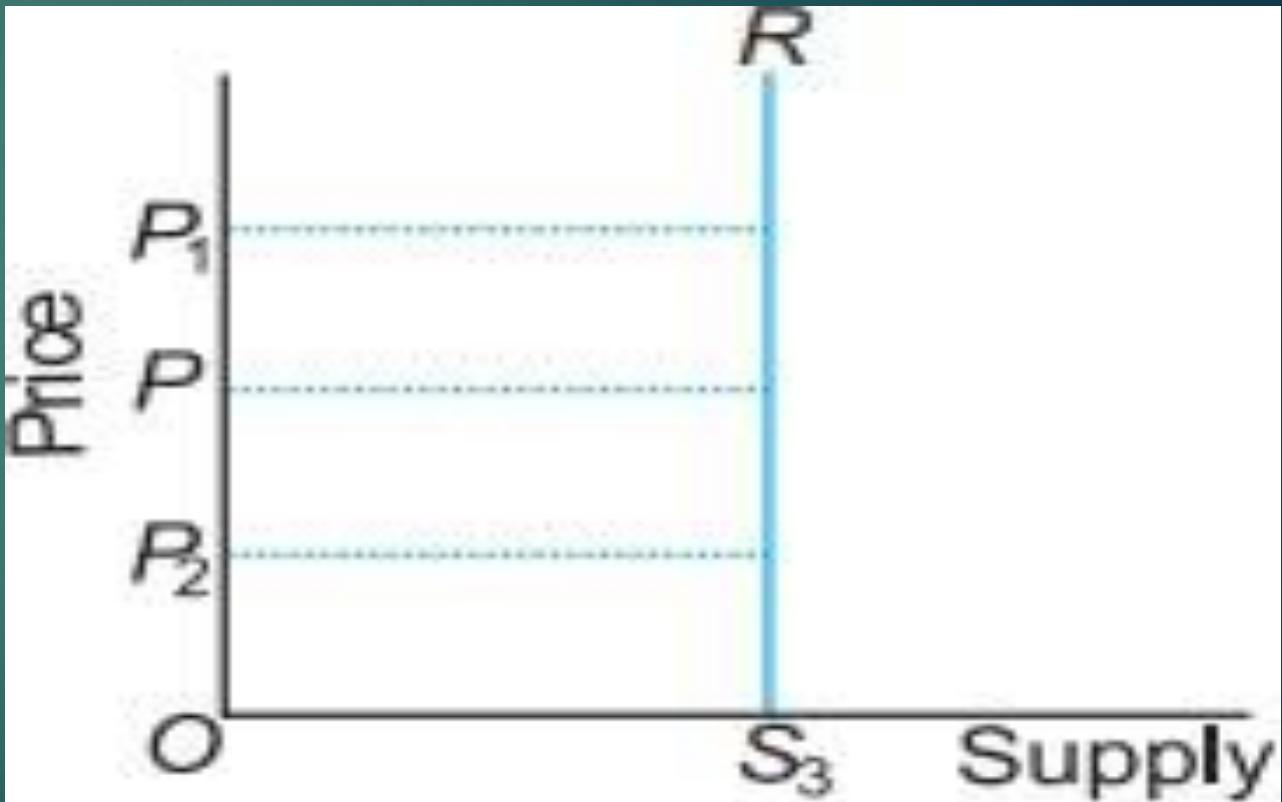
The supply of a commodity is said to be perfectly elastic when its supply expands (rises) or contracts (falls) to any extent without any change in the price.

The perfectly elastic supply curve is SA which is a horizontal line.



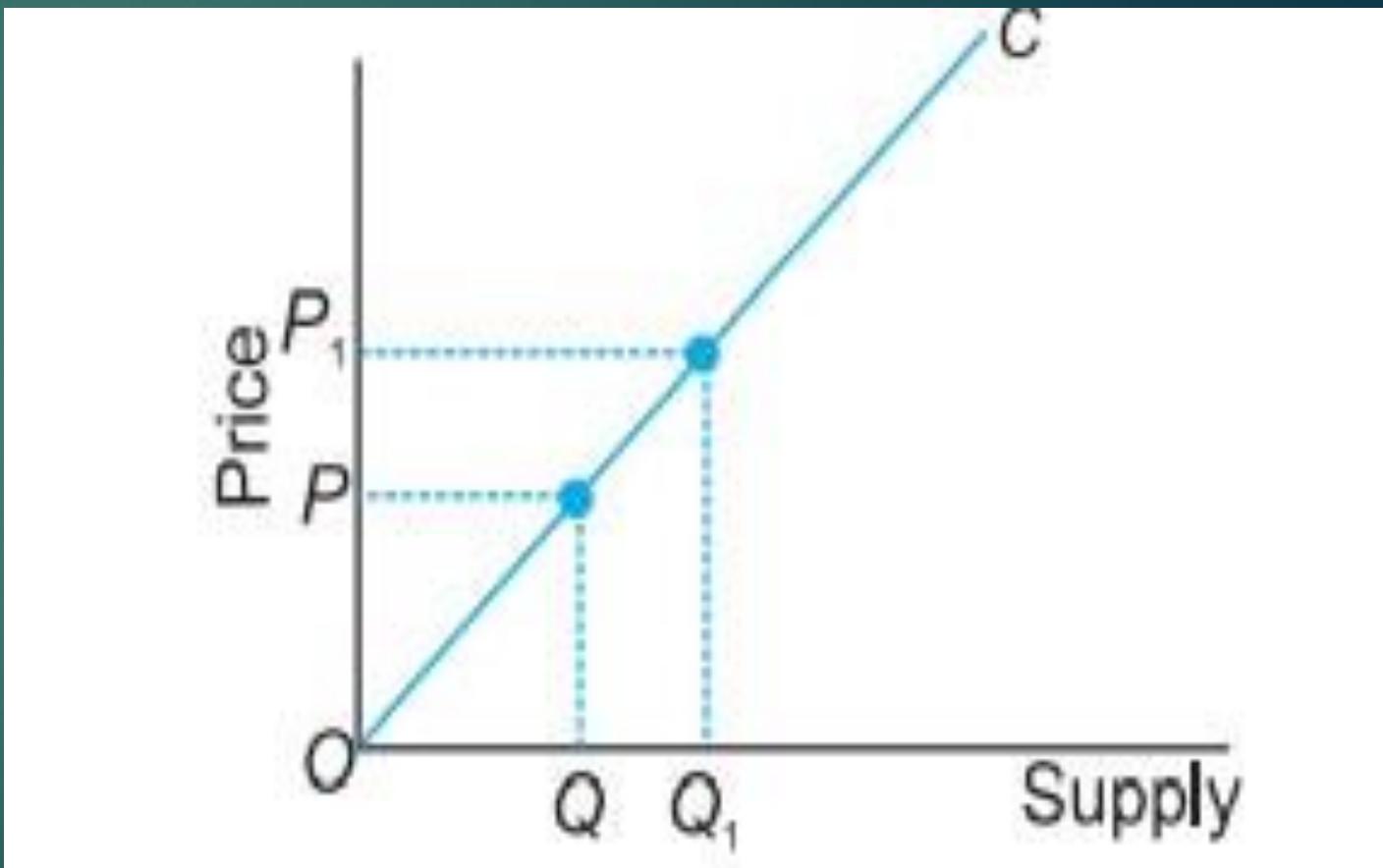
# Perfectly Inelastic Supply ( $e_s = 0$ ).

When the supply of a commodity does not change irrespective of any change in its price, it is called perfectly inelastic supply. The supply curve,  $S_3R$ , is a vertical line showing that the quantity supplied is fixed at  $OS_3$  units irrespective of the price.



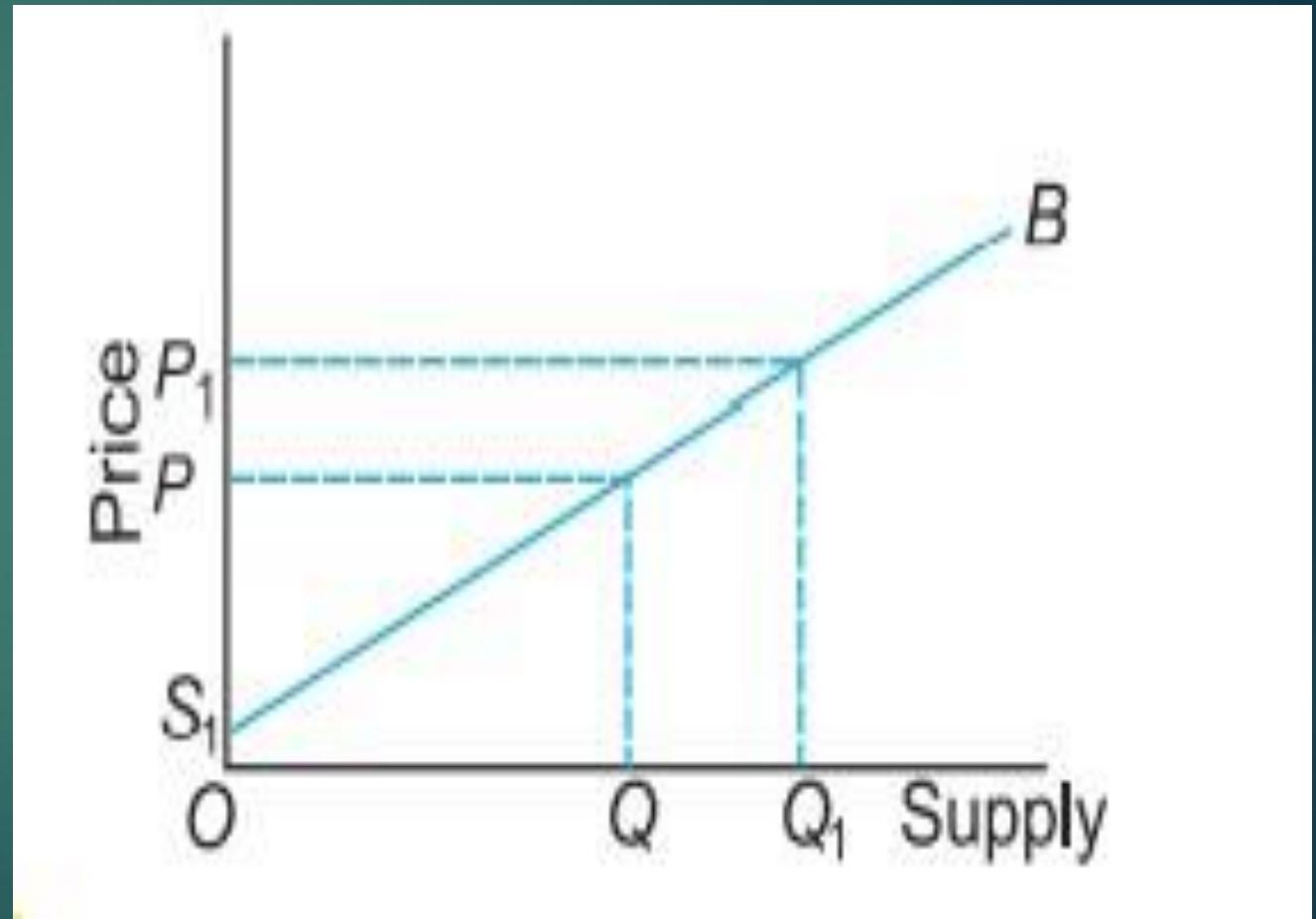
# Unitary Elastic Supply ( $e_s = 1$ )

Supply of a commodity is said to be unitary elastic if percentage change in supply equals the percentage change in price. In this case, the coefficient of  $e_s$  is equal to one. The unitary elastic supply curve is  $OC$  which is a straight positively sloping line from the origin.



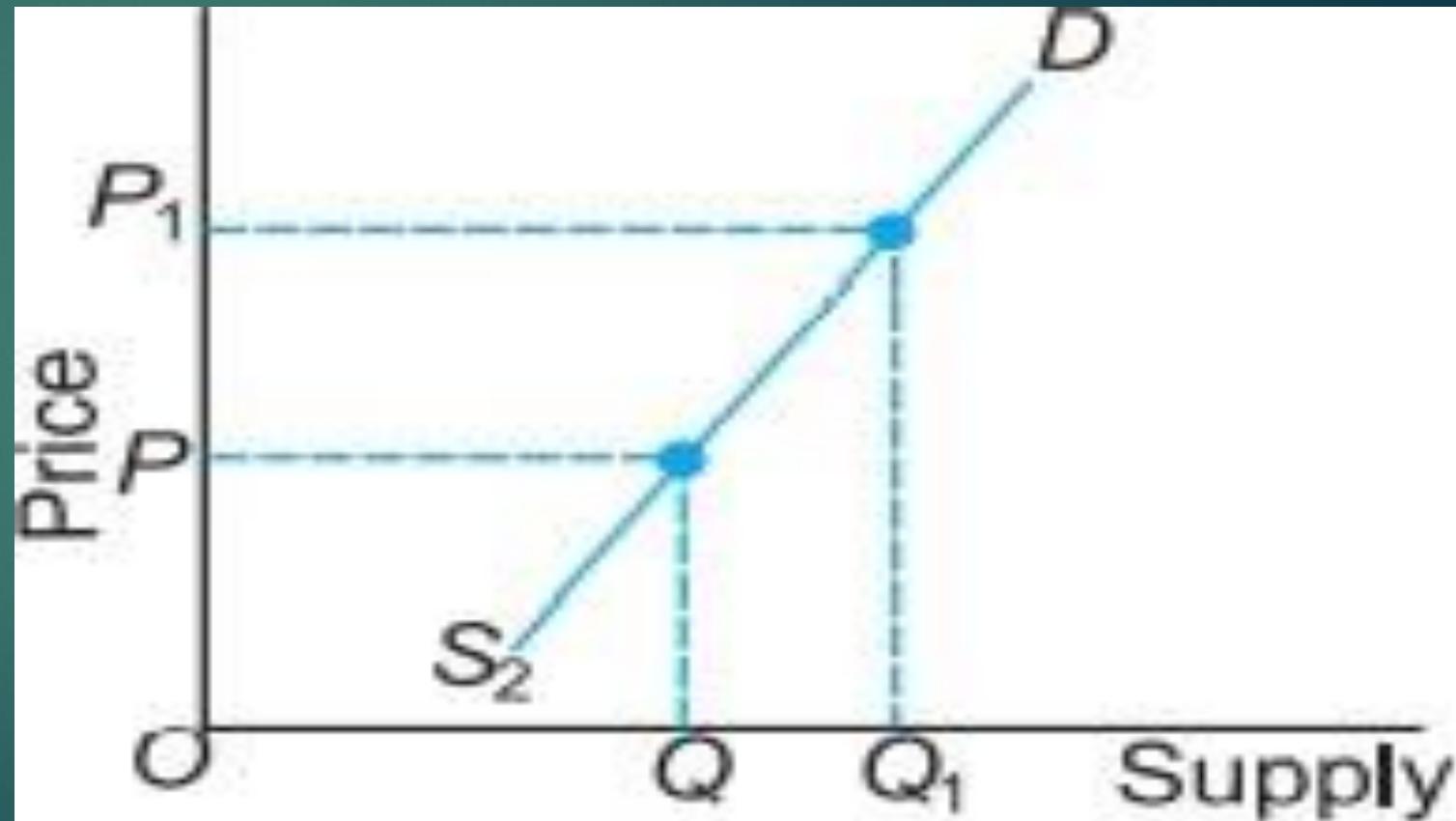
# Elastic Supply ( $1 < e_s < \infty$ )

When the percentage change in supply is more than the percentage change in price, supply is said to be elastic or more than unitary elastic. In this case, the value of the  $e_s$  is more than one.



# Inelastic Supply ( $0 < e_s < 1$ )

When percentage change in quantity supplied is less than percentage change in price, supply is said to be inelastic or less than unitary elastic



# Meaning of Equilibrium

- ✓ *The term equilibrium means the state in which there is no tendency on the part of consumers and producers to change.*
- ✓ *The two factors determining equilibrium price are demand and supply.*
- ✓ *Equilibrium price is the price at which the sellers of a good are willing to sell the same quantity that buyers of that good are willing to buy.*
- ✓ *Thus, the equilibrium price is the price at which demand and supply are equal to each other.*

# Market Equilibrium

*Equilibrium price is determined by the equality between demand and supply. At this price,*

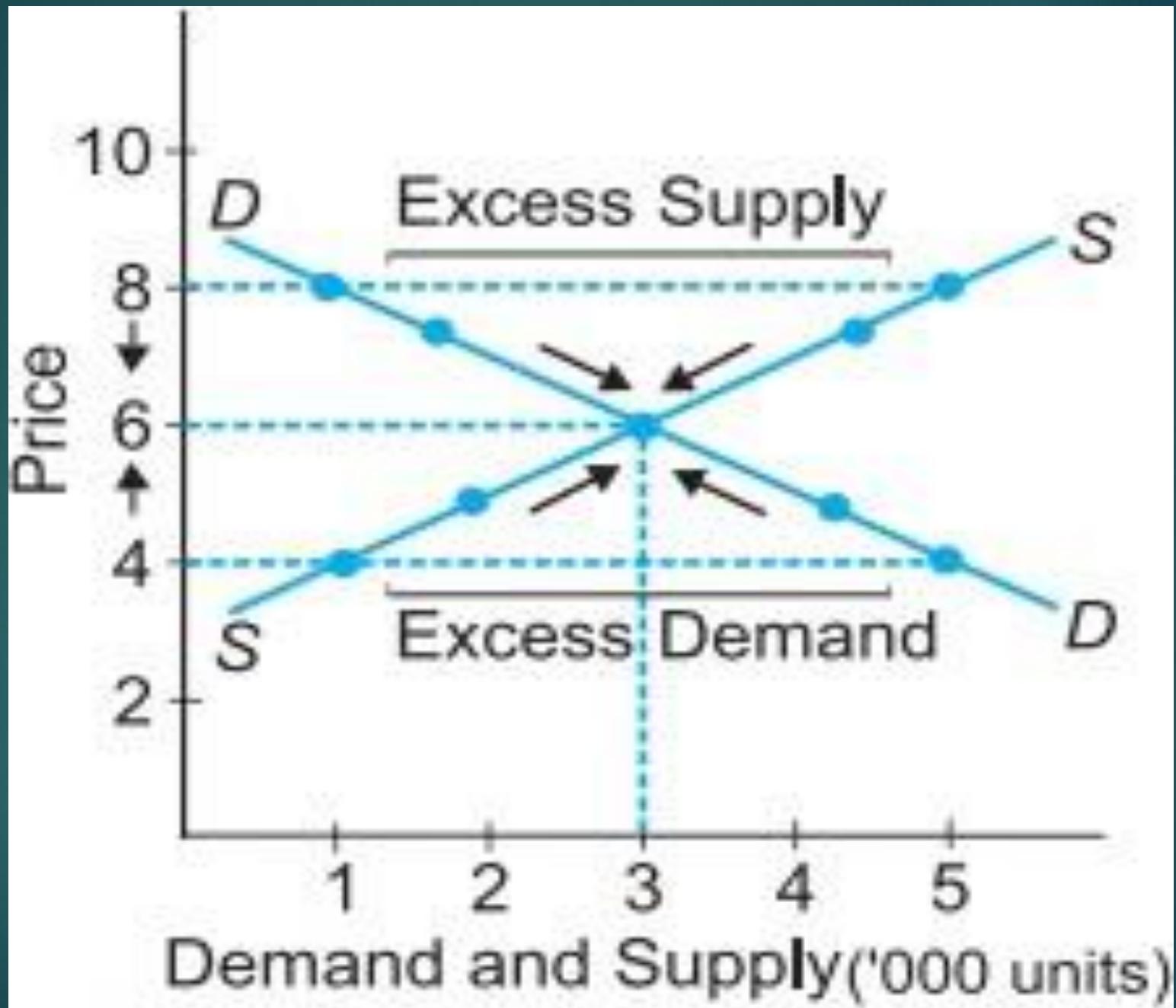
***Quantity demanded = Quantity supplied***

# Equilibrium between Demand and Supply

- ✓ *The forces of demand and supply determine the price of a commodity. Equilibrium price will be determined where quantity demanded is equal to quantity supplied. This is called market price.*
- ✓ *This price has a tendency to persist. If at a price the market demand is not equal to market supply there will be either excess demand or excess supply and the price will have tendency to change until it settles once again at a point where market demand equals market supply.*
- ✓ *A demand and supply schedule and curve will show the determination of equilibrium price.*

Price ₹	Market Demand (Units)	Market Supply (units)	Equilibrium
8	1000	5000	Excess Supply
7	2000	4000	Excess Supply
6	3000	3000	Market Equilibrium
5	4000	2000	Excess Demand
4	5000	1000	Excess Demand

## Demand and Supply Schedule



- ✓ In Table, demand and supply of the commodity at different prices are shown. The equilibrium price is fixed at 6 where the quantity demanded and the quantity supplied are equal, i.e., equal to 3000 units.
- ✓ From the figure, quantity demanded and supplied is measured on the x-axis and price on the y-axis. DD is the downward sloping demand curve and SS is the upward sloping supply curve.
- ✓ Both these curves intersect each other at point E which is the equilibrium point and it implies that at price of 6, demand is for 3000 units and supply is also of 3000 units.
- ✓ Thus, equilibrium price is 6. If price is 4, there will be an excess demand of 4000 units. There will be competition among buyers. It will push up the price. Rise in price will result in fall in market demand and rise in market supply. This reduces the excess demand.
- ✓ The changes continue till price settles at equilibrium level. If price is 7, there will be an excess supply of 2000 units. There will be competition among sellers. This will reduce the price.
- ✓ Fall in price will result in rise in demand and fall in supply. These changes continue till price settles at equilibrium price. Thus, market equilibrium is a situation of zero excess demand and zero excess supply.

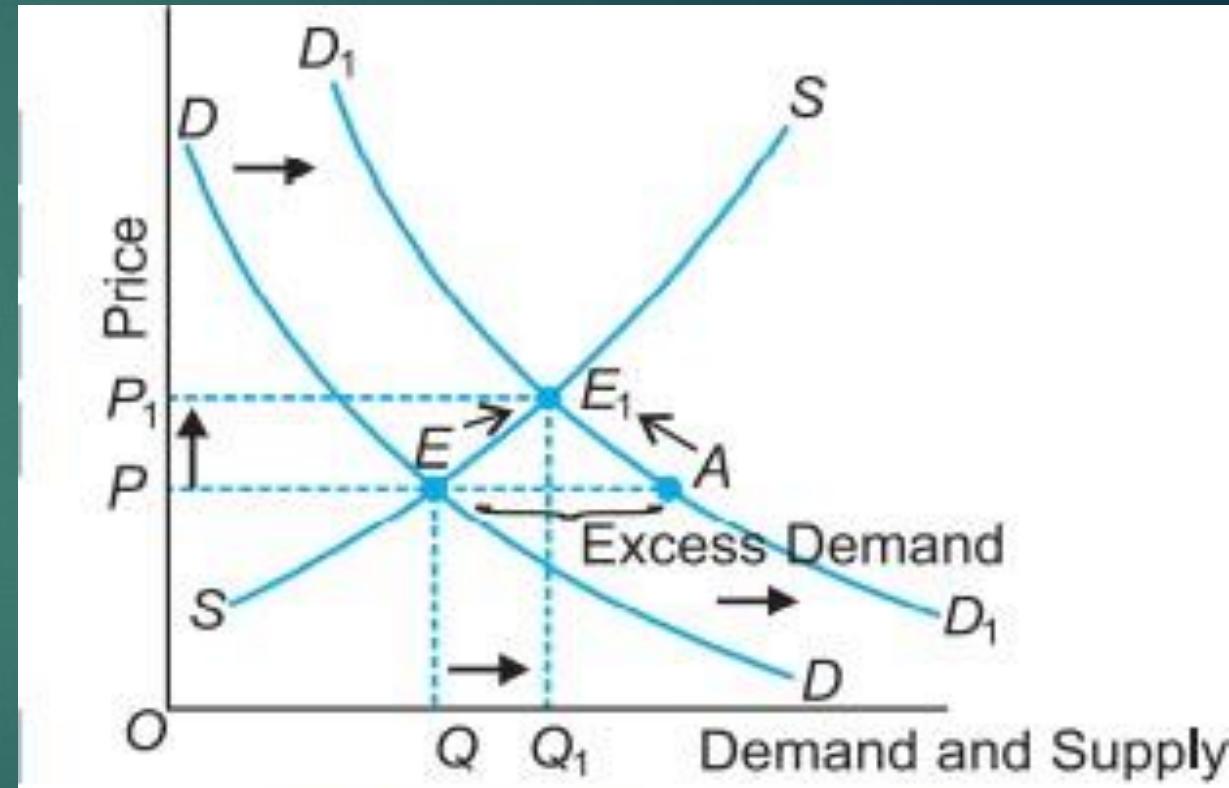
# Effects of changes in demand and supply on equilibrium price

## 1. Increase in Demand

When the demand of a commodity increase, while supply remains constant, the equilibrium price will increase. At the same time, the quantity sold and purchased will also increase.

Figure

- ✓ In the original situations, the DD and SS curves intersect at point E to give equilibrium price as OP and output as OQ.
- ✓ Chain Effects of Excess Demand: Keeping supply constant, if the demand increases, the demand curve shifts from DD to D<sub>1</sub>D<sub>1</sub>. This creates an excess demand of EA units at the given price, OP

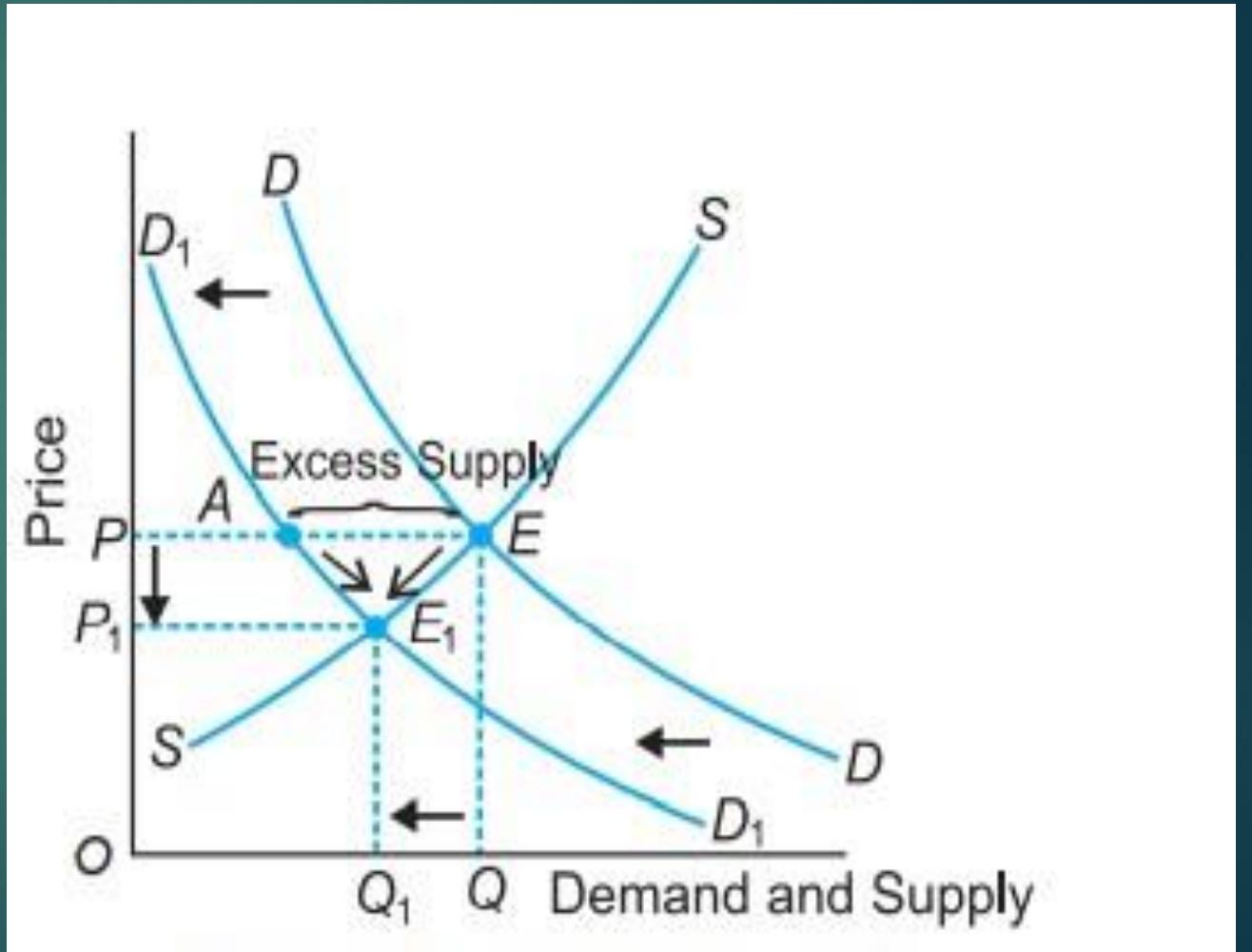


## 2. Decrease in Demand

If the demand of a commodity decreases, while supply remains constant, the equilibrium price and output will fall.

Figure

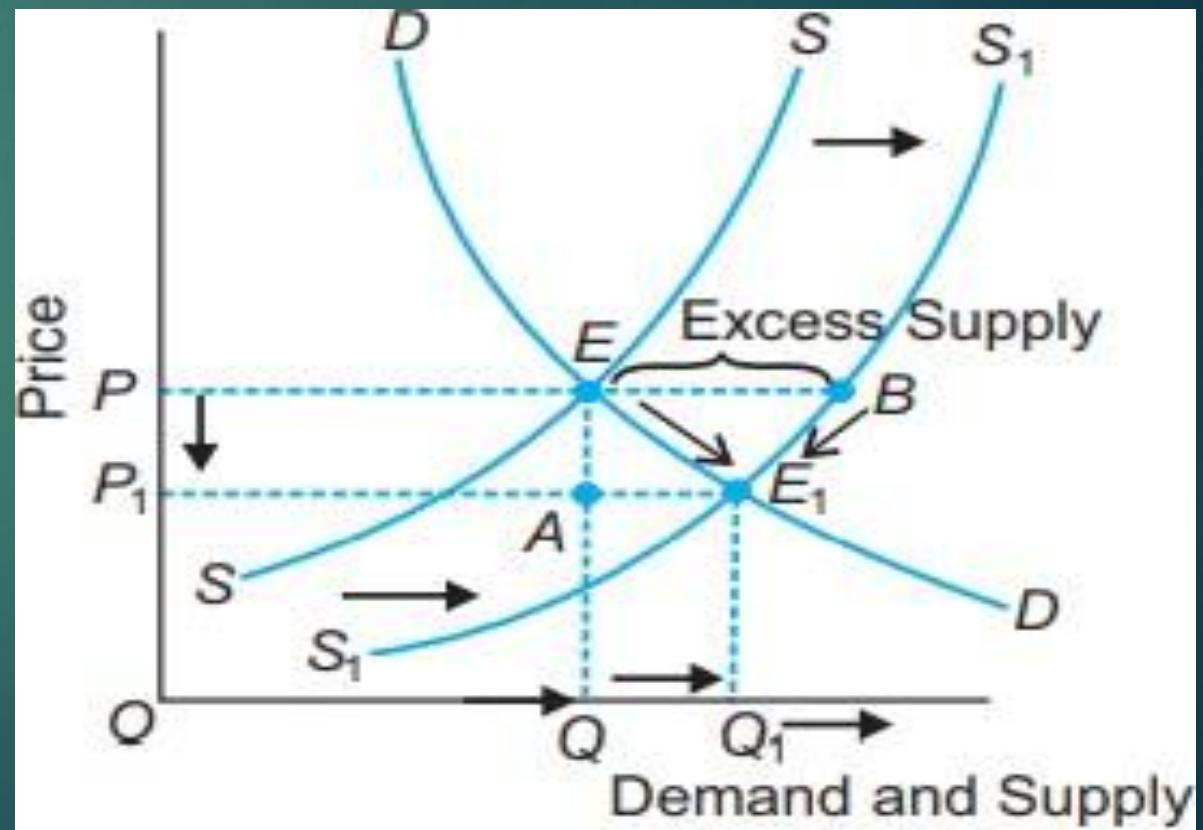
Quantity demanded and supplied is shown on the x-axis and price of commodity on the y-axis. DD is the original demand curve. SS is the original supply curve. E is the equilibrium point. Decrease in demand is given by leftward shift of DD curve to D<sub>1</sub> D<sub>1</sub>. This creates excess supply of AE units at price OP.



### 3. Increase in Supply

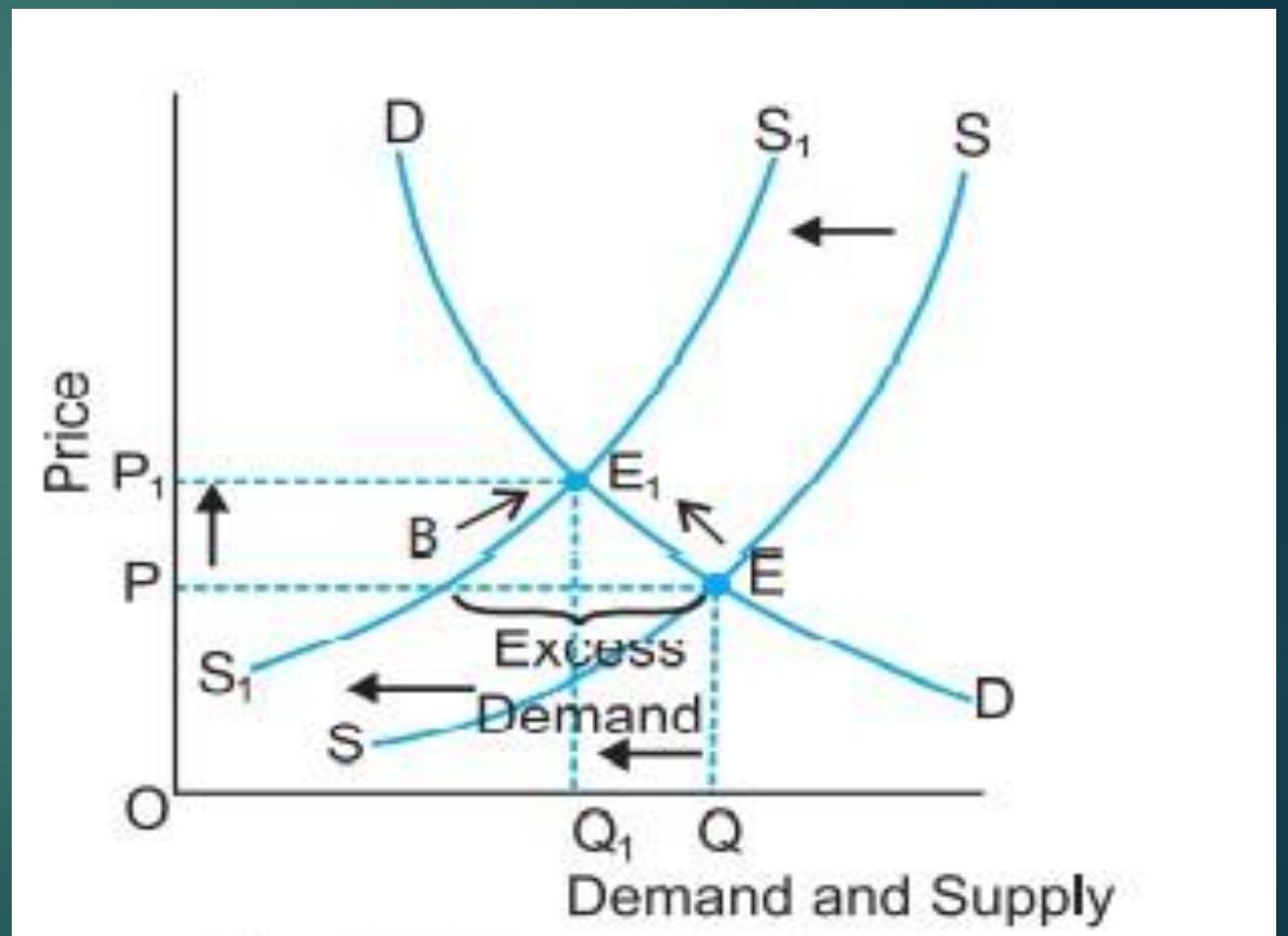
If the supply of a commodity increase, while demand remains constant, the equilibrium price will fall.

This is shown in Fig. 11.4. In the figure, quantity demanded and supplied is shown on the x-axis and price of commodity on the y-axis. DD is the original demand curve. SS is the original supply curve. E is the original equilibrium point. SS increases to S<sub>1</sub> S<sub>1</sub>. It creates excess supply of EB at the given price OP.



#### 4. Decrease in Supply

If the supply of a commodity decreases, while demand remains constant, equilibrium price will increase. There will be excess demand of  $EB$  units at price  $OP$



# Consumer Surplus

*Consumer surplus is defined as the difference between the consumers' willingness to pay for a commodity and the actual price paid by them.*

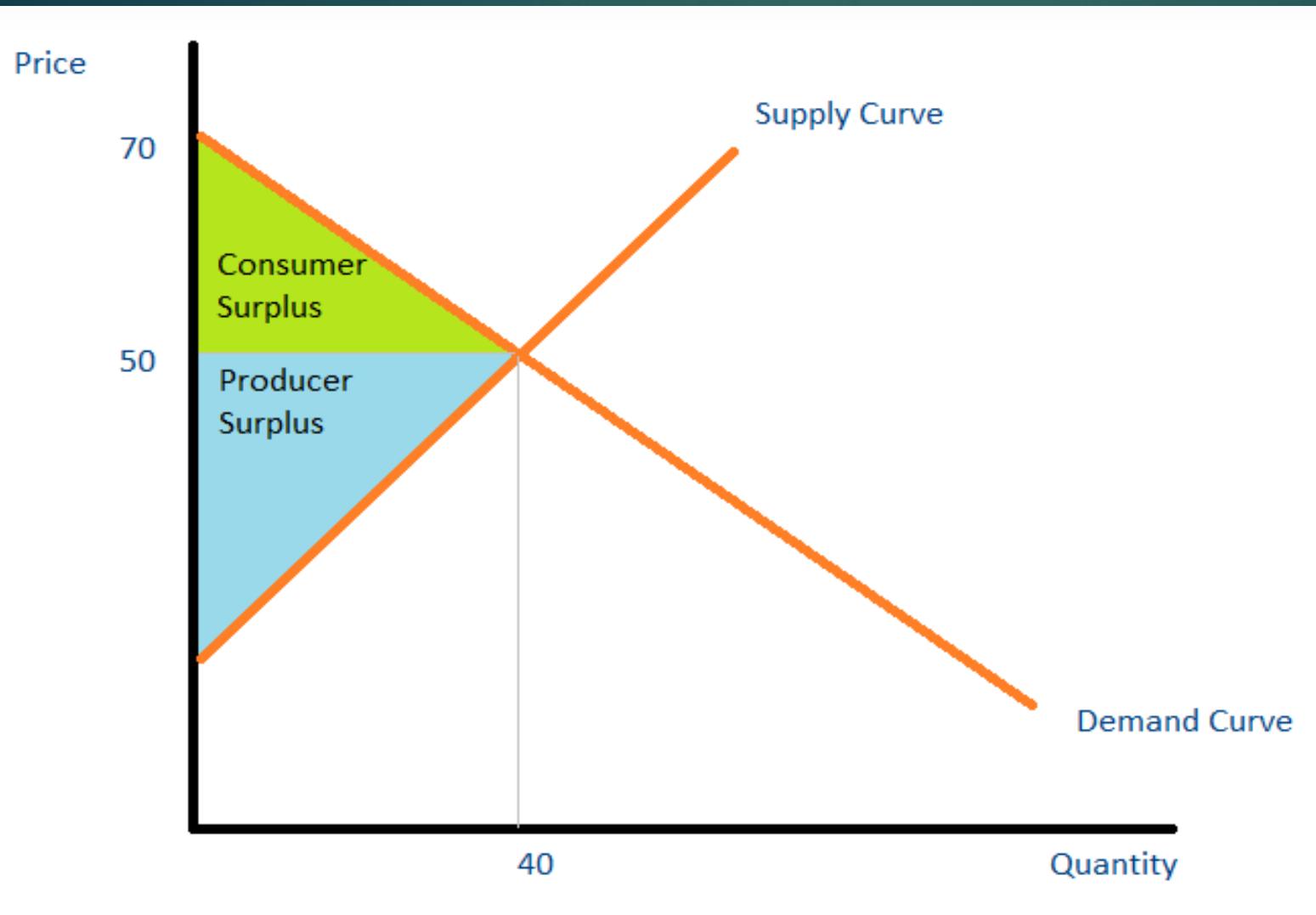
*A surplus occurs when the consumer's willingness to pay for a product is greater than its market price.*

*Consumer surplus always increases as the price of a good falls and decreases as the price of a good rises.*

# Producer Surplus

Producer surplus is the difference between how much a person would be willing to accept for a given quantity of a good versus how much they can receive by selling the good at the market price.

The difference or surplus amount is the benefit the producer receives for selling the good in the market



The point where the demand and supply meet is the equilibrium price. The area above the supply level and below the equilibrium price is called product surplus (PS), and the area below the demand level and above the equilibrium price is the consumer surplus (CS).

# Taxation

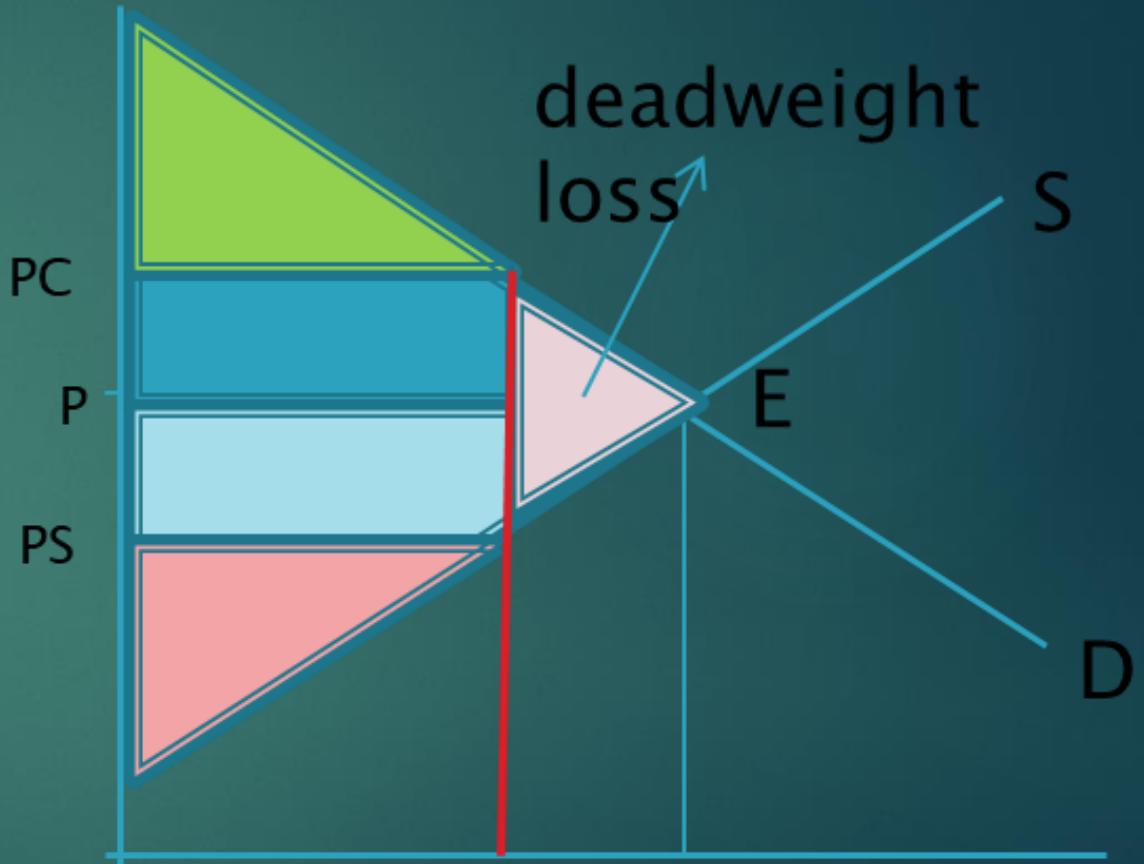
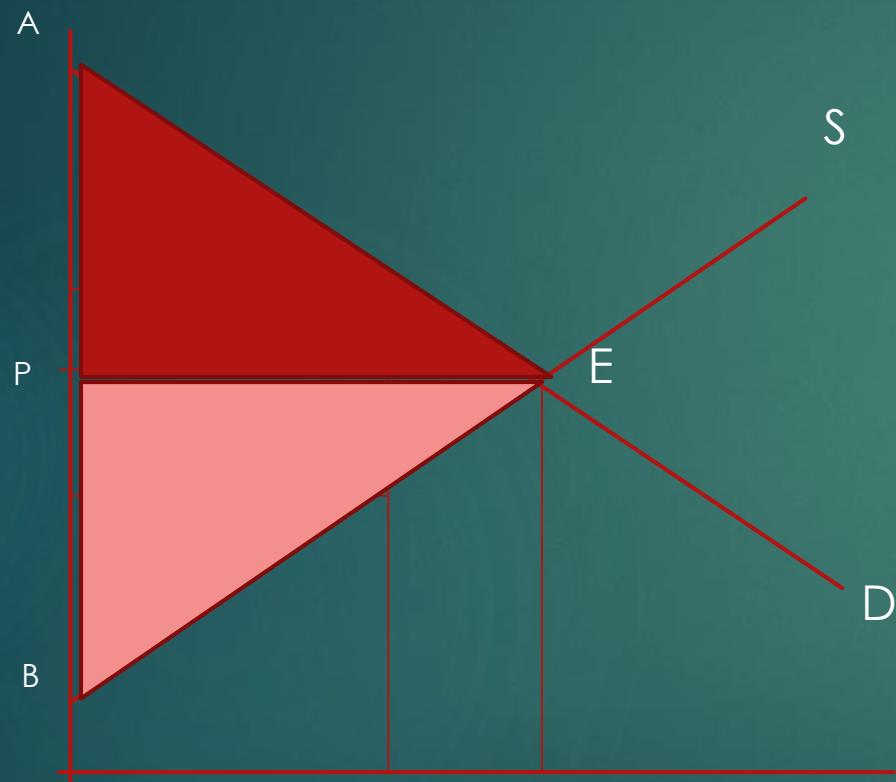
- *Taxation is the means by which a government or the taxing authority imposes or levies a tax on its citizens and business entities.*
- *Taxation refers to the practice of the government collecting money from its citizens to pay for public services.*
- *A tax is a mandatory fee or financial charge levied by any government on an individual or an organization to collect revenue for public works providing the best facilities and infrastructure.*

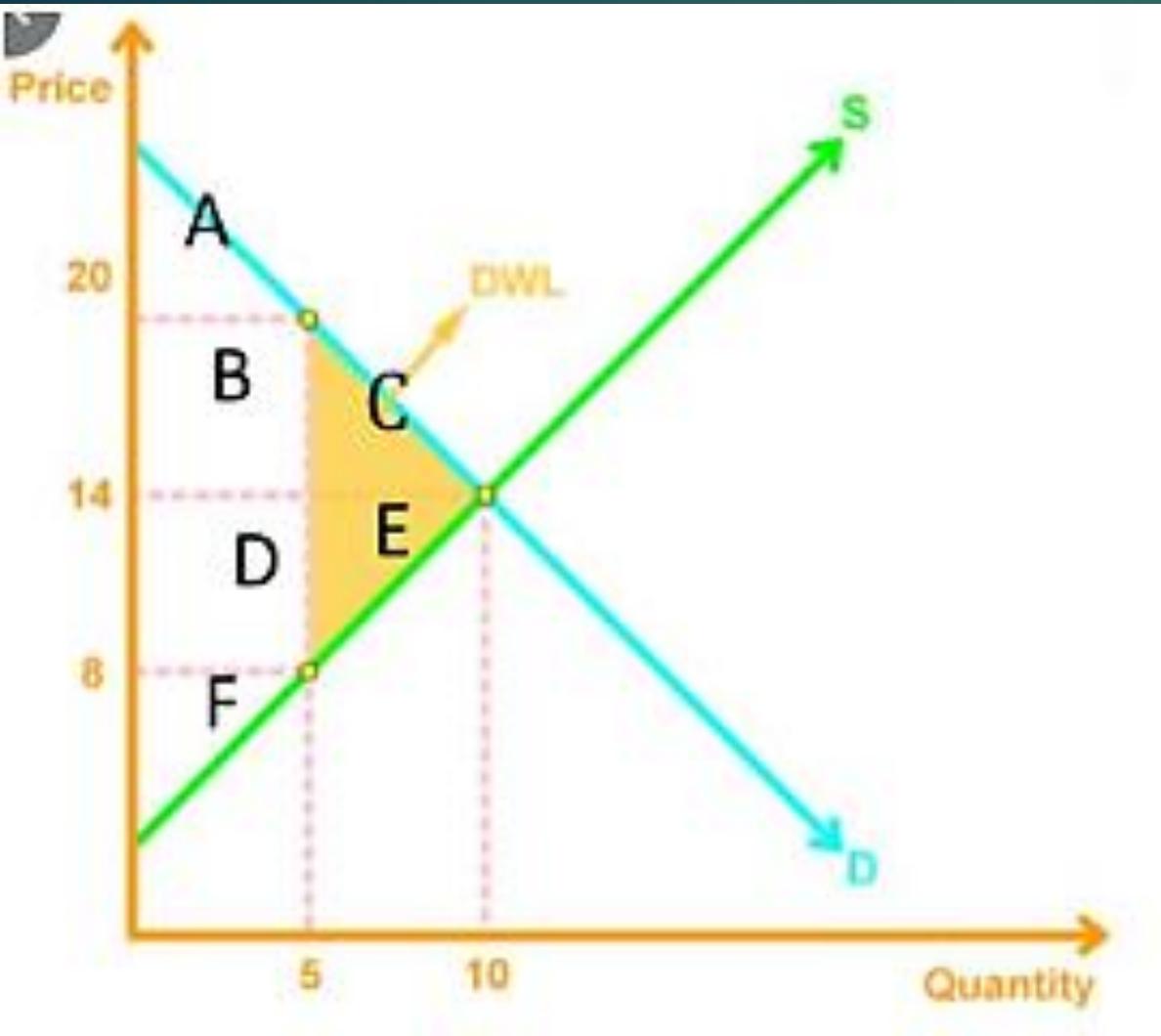
# Deadweight Loss

- *A deadweight loss is a cost to society created by market inefficiency, which occurs when supply and demand are out of equilibrium.*
- *A deadweight loss is an irrecoverable reduction in economic efficiency that occurs when free-market equilibrium is disturbed by a market intervention or other shock to supply and/or demand.*

# Example of Deadweight Loss

*A new sandwich shop opens in your neighborhood selling a sandwich for Rs10. You perceive the value of this sandwich to be Rs12 and, therefore, are happy to pay Rs10 for it. Now, assume the government imposes a new sales tax on food items which raises the cost of the sandwich to Rs15. At Rs15, you feel that the sandwich is overvalued and believe that the new cost is not a fair price and, therefore, are not willing to buy the sandwich at Rs15. Many consumers, but not all, feel this way about the sandwich and the sandwich shop sees a decrease in demand for its sandwich and a decline in revenues. The deadweight loss in this example is the unsold sandwiches as a result of the new Rs15 cost. If the decrease in demand is severe enough, the sandwich shop could go out of business, further increasing the negative economic effects of the new tax.*





In the figure, initially at the equilibrium point, price is Rs.14 and quantity is 10 units. The consumer surplus is shown by A+B+C while producer surplus is D+E+F. A new tax of Rs. 6 is introduced on the buyers and sellers. The effective price of the good is now Rs. 20. Due to the increase in price, the seller is able to sell only 5 units. The effective price received by the seller is now only Rs. 8 since he has to pay a tax of Rs.6. The tax reduces consumer surplus by the area B+C and producer surplus by the area D+E. The tax revenue of the government is given by B+D. Since the fall in producer and consumer surplus exceeds tax revenue, the tax is said to impose a deadweight loss, given by the area C+E.