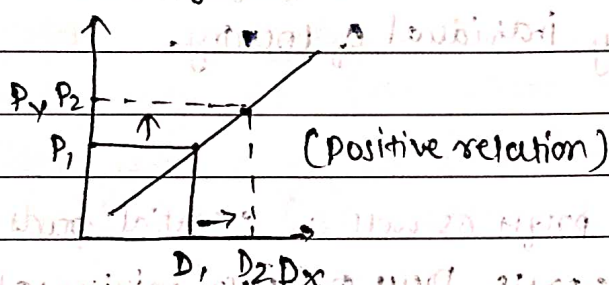


2. Theory of Demand & Supply

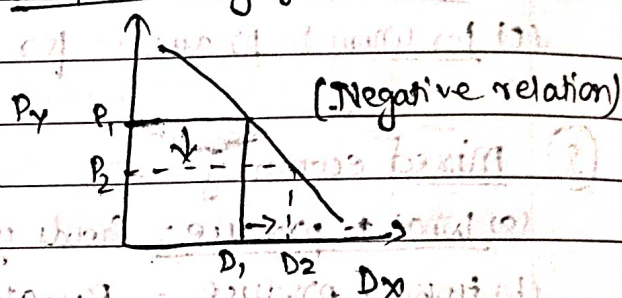
* Types of Goods:-

- (i) Substitute/Competing goods (eg. Tea and Coffee, Pepsi or Cola) Positive
- (ii) Complementary goods (eg. Car & Petrol, Mobile phone & Battery) Negative
- (iii) Normal goods (Income $\uparrow$, Demand $\uparrow$; Income $\downarrow$, Demand $\downarrow$)
- (iv) Inferior goods (Income $\uparrow$, Demand $\downarrow$; Income $\downarrow$, Demand $\uparrow$)
- (v) Giffen goods (Price $\uparrow$, Demand $\uparrow$; Price $\downarrow$, Demand $\downarrow$) direct relation with price
(Given by Robert Giffen)

(i) Substitute goods



(ii) Complementary goods



* Giffen Goods

- (i) Price - Positive relation
- (ii) Income - Negative relation

Unit I (Law of Demand and Elasticity of Demand)

* Demand $\rightarrow$ Desire + Ability + Willingness

Price	Demand
10	300
20	200
30	100

Demand
Schedule

- $\rightarrow$ Quantity of goods or service that buyers are willing and able to purchase at various prices during a given period.
- $\rightarrow$ more than just desire, it involves ability to pay and the willingness to use that means for a purchase.
- * Quantity demanded - Demand of quantity at a given price.

- Stock - exact time
- flow - per week, per month, per year

* Determinants of Demand (TIPPER A CNG)

- Price (negative relation)
- Price of related goods (Substitute +, Complementary -)
- Disposable Income (positive relation)
- Taste and Preference (modern ↑)
(demonstration, Bandwagon, snob effect)

* Demonstration effect (Jealousy)] Copy demand

* Bandwagon effect (गत्स-यात्रा)

* Snob effect (शीर्षा-भाव) (opposite) (function of consumption of others)

* Veblen effect (prestige items) (function of price)

↳ Thorstein Veblen

(v) Consumer expectations (future price, income and supply)

(vi) Other factors → population size, age distribution, national income, consumer credit facilities, govt. policies

* Demand Function → functional relationship b/w Demand and its determinants

$$D_x = f(P_x, Y, P_y, T, \text{etc.})$$

Dependent Variable

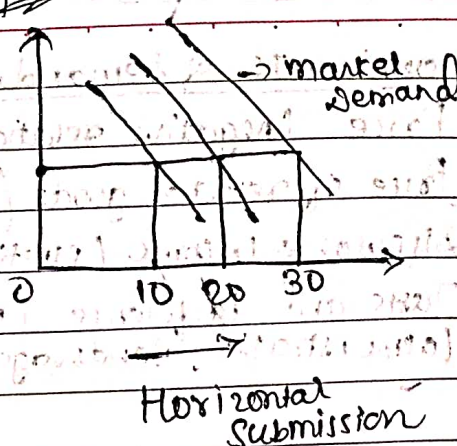
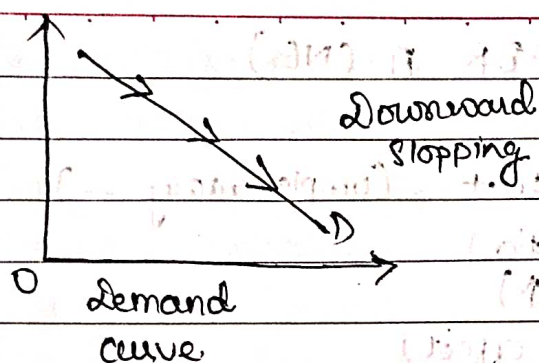
Independent variable

Demand

Individual Demand

Market Demand

• Law of Demand = PE + Substitution Eff
(by Hicks & Allen)



(Alfred Marshall)

* Law of Demand

→ Price ↑ & Demand ↓

Price ↓ & Demand ↑

(Inverse relation b/w Price and Demand)

(ceteris paribus) ⇒ other factors are held constant

Reasons for Law of Demand

- (i) Income effect (Price ↑, purchasing power ↓)
- (ii) Substitution effect (Price ↑, substitute is preferred as it will be relatively cheaper)
- (iii) Arrival of new consumers (Price ↓, attract new consumers)
- (iv) Different uses
- (v) Utility maximising behaviour of consumer

Exceptions of Law of Demand

- (i) Conspicuous goods (Veblen effect) (prestige items)
- (ii) Giffen goods
- (iii) Conspicuous necessities
- (iv) Future expectations about prices
- (v) Incomplete information and irrational behaviour
- (vi) Demand for necessities
- (vii) Speculative goods
- (viii) Other significant changes

- change in quantity demanded $\Rightarrow$ due to price of good
- change in demand $\Rightarrow$ due to factors other than price.

Movement along Demand Curve (Quantity demanded)

Contraction
(upward)

Expansion / Extension
(downward)

Shift in Demand curve

Increase
(rightward)

Decrease
(leftward)

* Price Elasticity of Demand

Determinants of Price Elasticity of Demand

- Availability of substitute (more substitute more elastic)
- Position of consumer budget (more fraction of income more elastic)
- Nature of need (necessities & luxury)
- Time period (Short term = inelastic, Long term = elastic)
- No. of use (more use = more elastic)
- Consumer habits (less elastic)
- Tied demand (inelastic)
- Price range (middle range goods = elastic)
- Minor complementary items (inelastic)

Type of Elasticity of Demand

(i) E_p

(ii) E_i

(iii) E_u

(iv) E_a

* Degree of Price elasticity

- Unit elastic ($E=1$)
- Elastic ($E>1$)
- Inelastic ($E<1$)
- Perfectly elastic ($E=\infty$)
- Perfectly inelastic ($E=0$)

• Methods of measuring elasticity

(1) Percentage method

(2) Point method

(3) Geometric method

(4) Arc method

(5) Total expenditure method

$$\text{Slope of Demand Curve} = \frac{\Delta P}{\Delta Q}$$

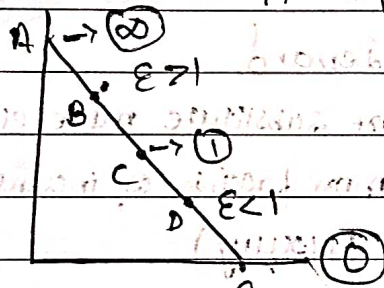
$$\text{Elasticity} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$$

$$\text{Elasticity} = \frac{1}{\text{Slope}} \times \frac{P}{Q}$$

$$\frac{\text{Percentage change in } Q}{\text{Percentage change in price}} = \frac{\Delta Q \times P}{\Delta P \times Q} = E_P \quad \text{Slope } \uparrow \rightarrow E_d \downarrow$$

$$\text{Point elasticity method} = E_D = -\frac{dQ}{dP} \times \frac{P}{Q}$$

Geometric method = $\frac{\text{Lower segment of demand curve}}{\text{Upper segment of demand curve}}$



$$\text{Arc method (midpoint method)} = \frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$$

Total expenditure method

$$TE = P \times Q$$

(i) $P \uparrow TE \uparrow$ (Direct relation) $E_P < 1$
 $P \downarrow TE \downarrow$

(ii) $P \downarrow TE \uparrow$ (Inverse relation) $E_P > 1$
 $P \uparrow TE \downarrow$

(iii) $TE = \text{constant} \Rightarrow E_P = 1$

* Income Elasticity of Demand

$$E_i = \frac{\% \Delta \text{ in } Q.D}{\% \Delta \text{ in income}} = \frac{\Delta Q}{Q} \times \frac{Y}{\Delta Y}$$

$E_i < 0$ → Negative (Inferior goods)

$E_i > 0$ → Positive (Normal goods)

$E_i = 0$ (Neutral goods)

Necessary
 $E_i = 0-1$

Luxury
 $E_i > 1$

Buyer ⇒ Income ⇒ proportion

If spent

Small

Significant

Constant

$E_y < 1$

$E_y > 1$

$E_y = 1$

* Cross price Elasticity of Demand

$$E_c = \frac{\% \Delta \text{ in } Q.D_x}{\% \Delta \text{ in } P.D_y} = \frac{\Delta Q_x}{Q_x} \times \frac{P_y}{\Delta P_y}$$

Elasticity → Negative ⇒ Complementary goods
→ Positive ⇒ Substitute goods
→ zero ⇒ no relation b/w goods

* Advertisement Elasticity of Demand

$$E_a = \frac{\% \Delta \text{ in } Q.D}{\% \Delta \text{ in Adv. Exp.}} = \frac{\Delta Q}{Q} \times \frac{A}{\Delta A}$$

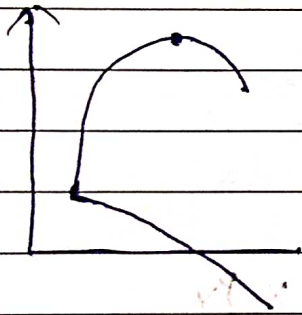
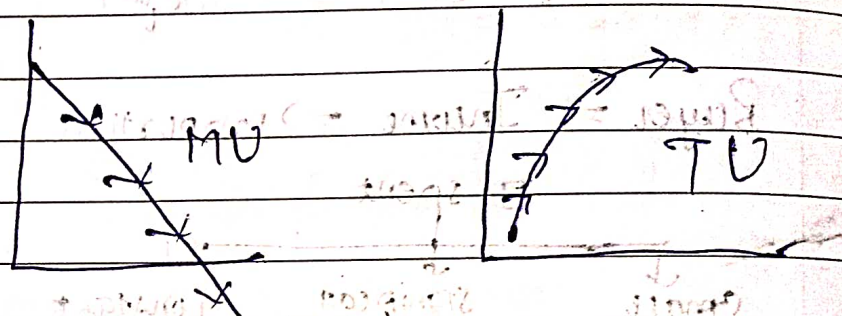
Unit II : Theory of Consumer Behaviour

- Utility → was satisfying power of a commodity
↳ measured in 'utils'

Q	MU	TU
1	10	10
2	8	18
3	6	24
4	4	28
5	0	28
6	-2	26

Alfred Marshall

↑ MU ↓ / Law of diminishing marginal utility



When $MU > 0$, TU increases
When $MU = 0$, TU is maximum
When $MU < 0$, TU starts decreasing

$$MU = \frac{TU_N - TU_{N-1}}{Q_N - Q_{N-1}} = \frac{\Delta TU}{\Delta Q}$$

Assumptions/Limitations of law of DMU:-

- Homogenous units
 - Standard unit of consumption
 - Continuous consumption
 - Law fails in case of prestigious goods
 - Case of related goods
- ↳ Based on unrealistic assumptions

• Want → Desire, taste and motives of human beings

Features of Wants:-

- unlimited in number
- Differ in intensity

• Classification of wants

- (i) Necessaries for life
- existence
 - efficiency
 - conventional

(ii) Comfort

(iii) Luxuries

Consumer Equilibrium

• maximises his utility

(i) Single commodity

(a) $MU \downarrow$

(b) $\frac{MU_x}{P_x} = MU_m$ (marginal utility of money) $\Rightarrow \boxed{MU_x = P_x}$

(ii) Double commodity

(a) $MU \downarrow$

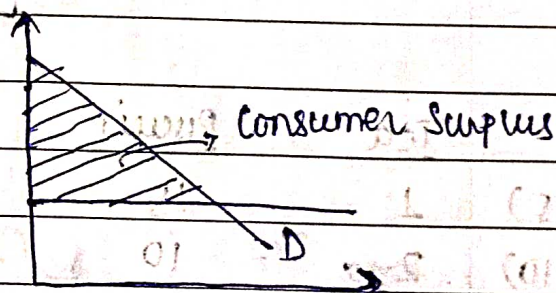
(b) $\boxed{\frac{MU_x}{P_x} = \frac{MU_y}{P_y} = MU_m}$

$1200 - 800 = 400$

Willingness to pay

actually paid

Consumer Surplus



• If price increase, Consumer Surplus decrease (Negative relation)

* Uses/Importance of Consumer Surplus

(i) Study of consumer behaviour to ensure repeated purchases

(ii) Helpful in price discrimination

(iii) Useful in investment decision

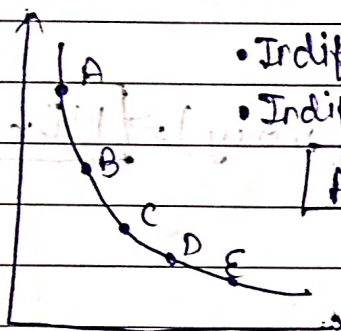
(iv) Useful in pricing decision

(v) Useful in deciding taxation policy

• Criticism of consumer Surplus :-

- Imaginary concept
- Cardinal measurement is not possible
- Ignores the interdependence b/w goods
- cannot be measured in terms of money
- not applicable to necessities ★
- not applicable to preimage

• Indifference Curve (Ordinal) → Hicks & Allen



- Indifference curves cannot intersect each other
- Indifference curve does not touch X or Y axis

$$A = B = C = D = E$$

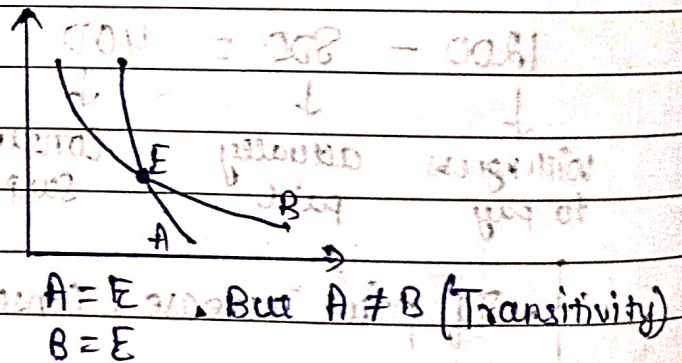
- Downward Sloping (negative relation of X and Y)
- Convex to origin (MRS is falling)

X ↑ then Y ↓

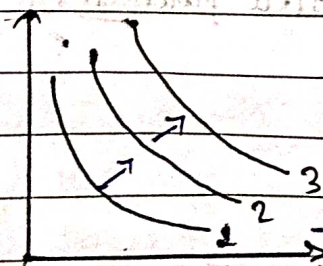
$$\text{Marginal Rate of substitution} = \frac{\Delta Y}{\Delta X}$$

↳ Slope name

	Tea	Biscuit	MRS
A(1,15)	1	15	—
B(2,10)	2	10	5:1
C(3,6)	3	6	4:1
D(4,3)	4	3	3:1
E(5,1)	5	1	2:1



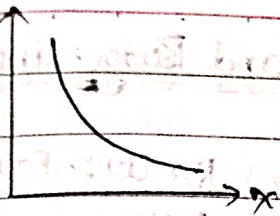
- If MRS is constant, Indifference curve is straight line
- If MRS starts rising, Indifference curve is concave to origin



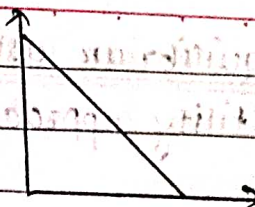
$$IC_3 > IC_2 > IC_1$$

Indifference Map
(family of Indifference curves)

Reason ⇒ monotonic preference (more is preferred)

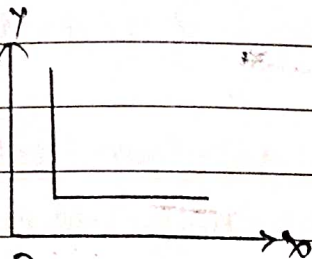


Imperfect Substitutes
(Convex)



Perfect Substitutes

(downward straight line as MRS is constant, 1:1)

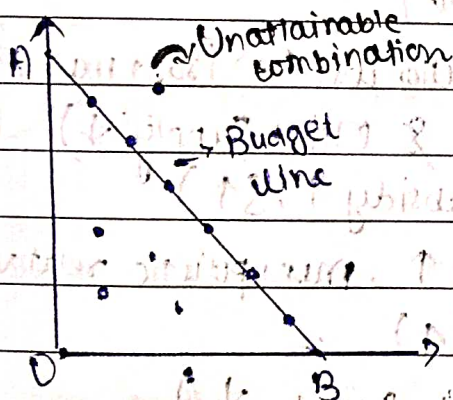


Perfect Complementary goods

* Budget Line / Price Line

money / income = 100

$P_x = 20$, $P_y = 20$



X	Y	
0	5	(0, 5)
1	4	(1, 4)
2	3	(2, 3)
3	2	(3, 2)
4	1	(4, 1)
5	0	(5, 0)

Budget Set

$$\text{Slope} = \text{Market Rate of exchange} = \text{Price ratio} = \frac{P_x}{P_y}$$

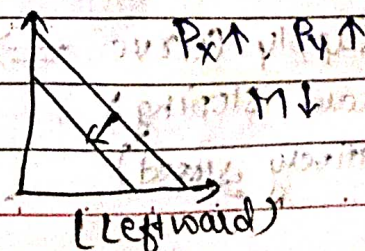
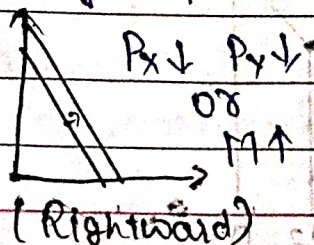
• market Rate of exchange is constant (1:1)

Equation $\Rightarrow P_x \cdot Q_x + P_y \cdot Q_y = \text{money income}$

• Causes of shift in Budget Line:-

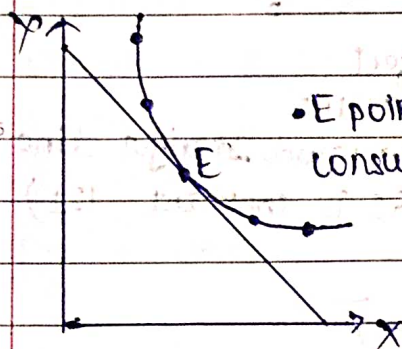
(a) Change in price

(b) Change in income



Date / /

• Consumer Equilibrium using Indifference Curve and Budget Line (Ordinal Utility approach)



* Conditions for Cons. Equilibrium:-

(a) IC is convex (MRS should be falling)

(b) BL must be tangent

Unit III = Supply

• Supply $\Rightarrow$ what a firm offers for sale, and not necessarily to what they succeed in selling.

(Supply is a flow concept)

• Determinants of Supply:-

(a) Price of good ($P \uparrow$, Supply $\uparrow$) $\Rightarrow$ positive relation

(b) Price of related goods ($P_y \uparrow$, $S_y \uparrow$ but $S_x \downarrow$)

(c) Price of factors of production ($P \uparrow \Rightarrow$ Production cost $\uparrow \Rightarrow$ Profit margin $\downarrow \Rightarrow$ Supply $\downarrow$)

(d) State of technology (Advance, Supply $\uparrow$ & Old, Supply $\downarrow$)

(e) Government policy (Tax $\uparrow$, $S \downarrow$ & Subsidy $\uparrow$, $S \uparrow$)

(f) Nature of competition (competitive, Supply $\uparrow$, monopolistic relatively $\downarrow$)

(g) No. of seller (No. of seller $\uparrow$, Supply $\uparrow$)

(h) Expectation (in future price $\uparrow$, current Supply $\downarrow$)

* Law of Supply

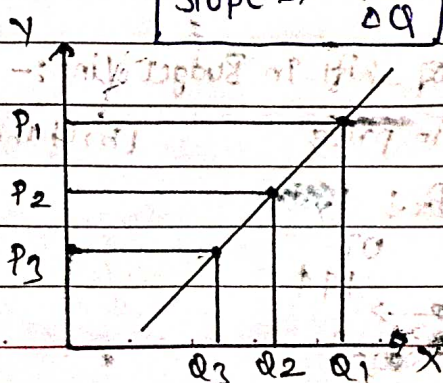
- Ceteris paribus, there is direct relation b/w price and quantity supplied.

Price $\uparrow$, Supply $\uparrow$

Price $\downarrow$, Supply $\downarrow$

$$\text{Slope} \Rightarrow \frac{\Delta P}{\Delta Q}$$

Supply Curve $\Rightarrow$
(upward sloping)
(positively sloped)



movement along supply curve (change in quantity supplied)

- (i) Expansion of supply curve $\Rightarrow P \uparrow, S \uparrow$ (upward movement)
- (ii) Contraction of supply curve $\Rightarrow P \downarrow, S \downarrow$ (downward movement)

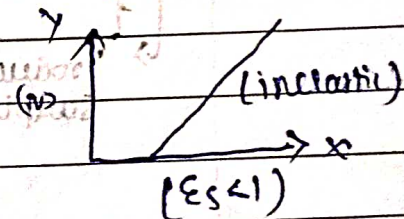
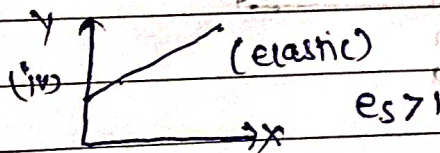
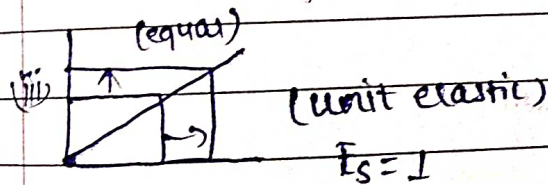
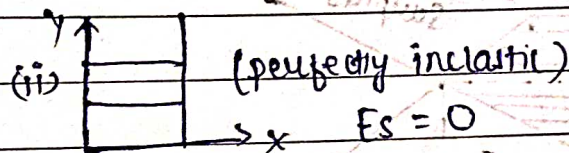
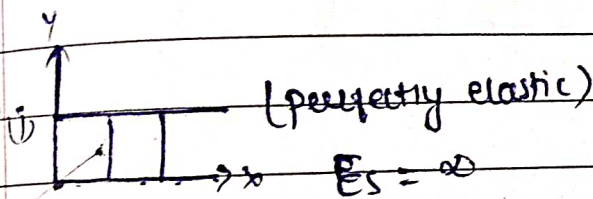
Shift in Supply Curve (change in supply)

- (a) Increase in Supply (Rightward shift)
- (b) Decrease in Supply (Leftward shift)

Elasticity of Supply $\Rightarrow$ Responsiveness of quantity supplied of a good to a change in its price

(a) Percentage method $\Rightarrow$
$$\text{Percentage change in quantity} = \frac{\Delta Q}{Q} \times P$$

$$\text{Percentage change in supply} = \frac{\Delta P}{P}$$



(b) point elasticity $\Rightarrow E_s = \frac{dq}{dp} \times \frac{P}{Q}$

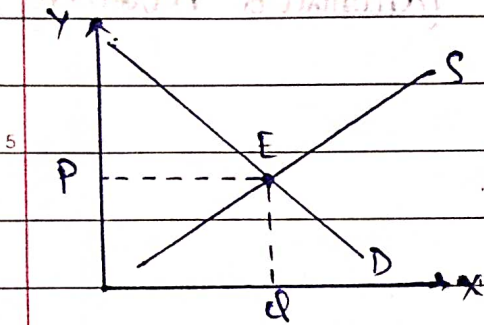
(c) Arc-method $\Rightarrow \frac{\Delta Q}{\Delta P} \times \frac{P_1 + P_2}{Q_1 + Q_2}$

Determinants of Elasticity of Supply :-

- (a) If increase in production, increase substantial cost, then elasticity $\downarrow$ and vice versa
- (b) Complex product $\Rightarrow$ elasticity $\downarrow$
- (c) more time to produce $\Rightarrow$ elasticity is greater
- (d) more producers, more competition $\Rightarrow$ elasticity $\uparrow$
- (e) underutilisation of resources $\Rightarrow$ elasticity $\uparrow$
- (f) Raw material (input) easily available $\Rightarrow$ elastic $\uparrow$

• Market Equilibrium

→ Demand = Supply (Buyer and seller both are satisfied)

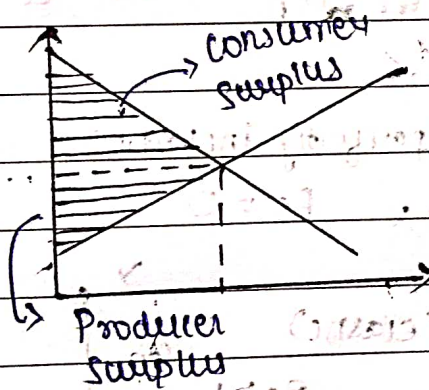


E is equilibrium point & P is the equilibrium price

• Equilibrium price is also called Market clearing price?

• Determination of market price is central theme of micro-economics analysis. Hence,

Microeconomic Theory is also called Price Theory



$Q = Q_D = Q_S$

$P = P_D = P_S$

→ Market clearing price

→ Market clearing price

→ Market clearing price

→ Market clearing price