

Unit-1 Law of demand and elasticity of demand

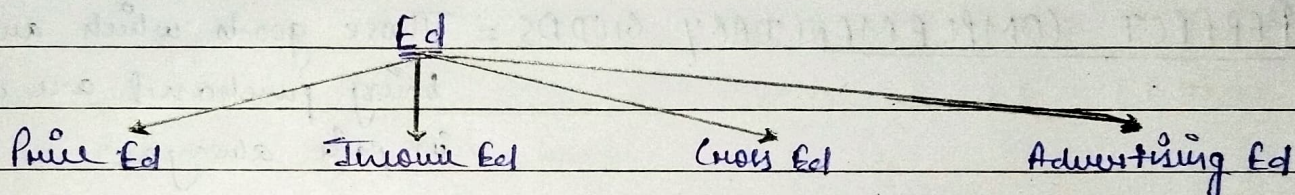
• Father of Economics :- Adam Smith

• Father of micro economics :- Adam Smith

• Father of macro economics :- John Maynard Keynes (1929)

• Demand, supply & Market (theory & numericals) :- Alfred Marshall

• Ed [Elasticity of demand]



• $\uparrow\uparrow$ Direct & positive Relationship
 $\downarrow\downarrow$ { Upward graph }

• $\uparrow\downarrow$ Inverse or negative Relationship
 $\downarrow\uparrow$ { downward graph }

• X-axis :- Horizontal or quantity axis

• Y-axis :- Vertical or price axis

• Cross Ed :- (i) Complementary goods (ii) Substitute goods

Teacher's Signature : _____

• Income El 8- (i) Normal Goods (ii) Inferior goods

★ Substitute = Different - different category

eg (i) Petrol on diesel

(ii) Tea on coffee

★ Perfect (close) Substitute = Same category

eg (i) HP Petrol on Indian Petrol

(ii) Nescafe coffee on Blue coffee

★ Complementary goods = Two or more than two different goods used jointly to satisfy a particular want.

eg :- (i) car and fuel

(ii) Phone and charger

(iii) Pen and refill

PERFECT COMPLEMENTARY GOODS = Those goods which are being purchased are used in pair always

eg:- (i) Socks

(ii) Shoes

(iii) Skates

★ GIFFEN GOODS

Sir Robert Giffen (British)

Myth / Misunderstanding

Price $\uparrow$ Quality $\uparrow$ Demand $\uparrow$

Price $\downarrow$ Quality $\downarrow$ Demand $\downarrow$

eg Towar, bajra, almond, groundnut, teacher, doctor

• Price Ed Methods / Measurement.

- 1) Percentage :-
 - (i) Proportionate
 - (ii) Mathematical
 - (iii) Flux. method (economist)
- 2) Geometrical :-
 - (i) Graphical
 - (ii) Straight line
 - (iii) Point
 - (iv) linear method (No economist)
- 3) • Total expenditure
 - Total outlay
 - Total spending
 - Total Revenue (Alfred Marshall)
- 4) • Arc
 - Mid - point
 - Average (No economist)

• Price Ed

1) Arc / Average / Mid - point method

$$\bullet \frac{Q_1 - Q_2}{Q_1 + Q_2} \times \frac{P_1 + P_2}{P_1 - P_2} \quad [OR] \quad \bullet \frac{Q_1 - Q_2}{Q_1 + Q_2} \div \frac{P_1 - P_2}{P_1 + P_2}$$

<u>Ques</u>	<u>Price</u>	<u>Demand</u>
	$P_1 = 10$	$d_1 = 100$
	$P_2 = 20$	$d_2 = 80$

Sol

$$\frac{100 - 80}{100 + 80} \times \frac{10 + 20}{10 - 20}$$

$$\Rightarrow \frac{20}{180} \times \frac{30}{-10} = \frac{3}{-9} \Rightarrow -0.33$$

2) Total expenditure, Total outlay, Total spending, Total Revenue
(Agnes Marshall)

- Direct $\rightarrow$ Less than 1
- Inverse $\rightarrow$ More than 1
- Constant $\rightarrow Ed = 1$

• {Geometrie (Mayer Chapter)}

<u>Ques. 1</u>	<u>P</u>	<u>D</u>	<u>exp.</u>
	10	100	1000
$\uparrow$	20	70	1400

$\uparrow$ Direct less than 1
 $Ed < 1$

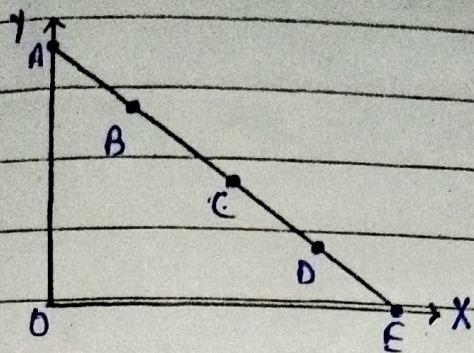
<u>P</u>	<u>D</u>	<u>exp.</u>
10	100	1000
$\uparrow$ 20	30	600

Inverse more than 1
 $Ed > 1$

<u>P</u>	<u>D</u>	<u>exp.</u>
10	60	600
$\uparrow$ 20	30	600

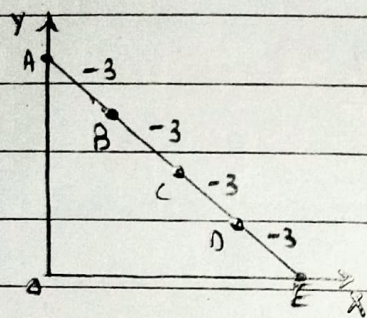
Constant
 $Ed = 1$

3. Geometric / Graphical / point / straight line / linear method



- Note - In this method, a downward straight line demand curve is to be divided into four equal parts.

$$E_d = \frac{\text{lower segment (part)}}{\text{upper segment (part)}}$$



$$E_d \text{ at } A = \frac{AE}{O} = \frac{12}{0} = \infty$$

$$E_d \text{ at } B = \frac{BE}{BA} = \frac{9}{3} = 3$$

$$E_d \text{ at } C = \frac{CE}{CA} = \frac{6}{6} = 1$$

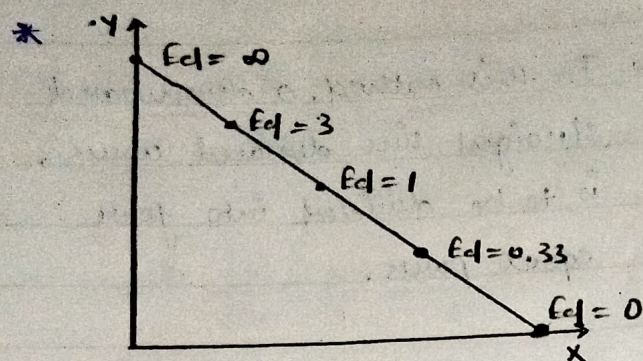
$$E_d \text{ at } D = \frac{DE}{DA} = \frac{3}{9} = 0.33$$

$$E_d \text{ at } E = \frac{0}{EA} = \frac{0}{12} = 0$$

• Trick

(always $\infty, 3, 1, 0.33, 0$)

These are values as answers



0. Starting = initial = original

4. Percentage / Proportionate / Mathematical / Flux method

$$Ed = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}}$$

$$\% = \frac{\text{change}}{\text{starting}} \times 100$$

$$Ed = \frac{\frac{\text{change in demand}}{\text{starting demand}} \times 100}{\frac{\% \text{ change in price}}{\text{starting price}} \times 100}$$

$$Ed = \frac{\frac{\text{change in demand}}{\text{starting demand}}}{\frac{\text{change in price}}{\text{starting price}}}$$

$$Ed = \frac{\text{change in demand}}{\text{starting demand}} \times \frac{\text{starting price}}{\text{change in price}}$$

$$Ed = \frac{\Delta q}{q} \times \frac{P}{\Delta P}$$

$$Ed = \frac{\Delta q}{\Delta P} \times \frac{P}{q}$$

• Factors affecting / Factors influencing / Factors determining / determinants.

<u>Factors meaning demand</u>	<u>Factors meaning Ed</u>
Demand ↑ Demand ↓	Demand ↑ Demand ↓ Demand constant (=)
Elastic ↑ ↓	Inelastic constant (=)

1. Income substitute is there - eg. car, cold-drink elastic demand (option hota hai)
2. No substitute - eg. school, school uniforms inelastic demand (option nahi hai)
3. Large expenditure - eg. car, property elastic demand
4. Small expenditure - eg. shoe polish, newspapers inelastic demand.

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5. Habit (good sense) - eg milk, newspapers inelastic demand
6. Addiction (bad sense) - eg liquor, smoking inelastic demand
- No habit No Addiction (occasionally) - eg movie, tour elastic demand.

- Luxury - 5 star hotel, exports magazines elastic demand
- Necessity - eg - food, school bags inelastic demand
- Short period / Market period (1 day) - Inelastic demand
- Long period / Time horizon / secular period (1 year) - elastic demand
- Single use goods - eg soap, All out nylon inelastic demand.
- Multiple use goods - eg. milk, elasticity elastic demand
- High price Range - eg. car, property price inelastic, demand elastic
- Low price Range - eg salt, newspaper inelastic demand.
- Middle price Range - eg. petrol, electricity elastic demand

Note - Heading is imp. and not example, Rough work is paper with only pencil.

Decrease in demand	Increase in demand	Increase in quantity demand	Decrease in quantity demand
$P = D \uparrow$ Within price is constant and $D \uparrow$	$P = D \downarrow$ Within price constant $D \downarrow$	$P \downarrow D \uparrow$ price and demand $\uparrow$	$P \uparrow D \downarrow$ price and demand $\downarrow$
No other Name	No other Name	Expansion or extension	Contraction
No exception to law of demand	No exception to law of demand	Law of demand applicable	Law of demand applicable
Other than price eg: Income, seasons	Other than prices eg: Income, seasons	Price is reason Other factor constant	Other factor constant price is reason.

Note:- Simple Graph (original line)
 New graph (Dotted line)
 Draw arrow (IMP)

General Terms

one
 Table
 Graph
 Equation

Economic Terms

Unitary
 Schedule
 Curve
 function

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Demand Rise to give shift
ek bad second fall movement

(other ↑ or ↓ Rotation)

• Demand Schedule

P	D
10	100
10	200

= ↑

P	D
10	100
8	200

↓ ↑

P	D
10	100
10	80

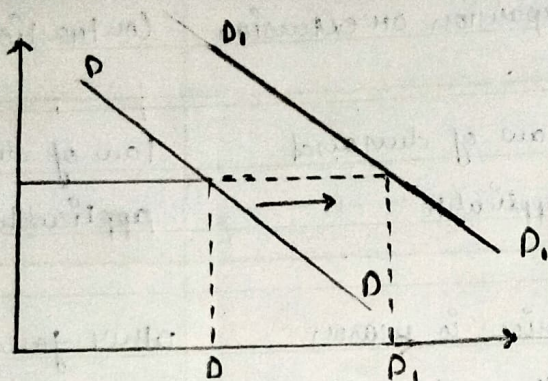
= ↓

P	D
10	100
20	80

↑ ↓

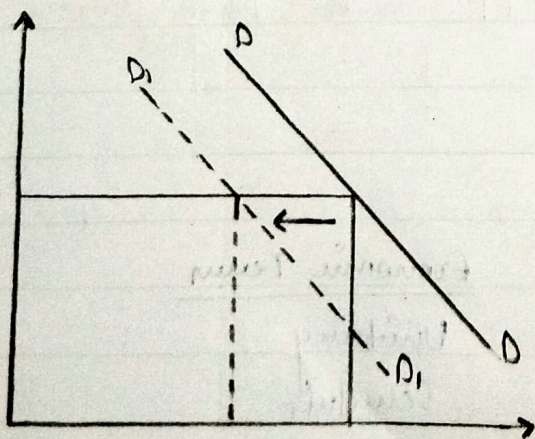
• Demand Curve (DD) ÷ By Marshall

Increase in demand



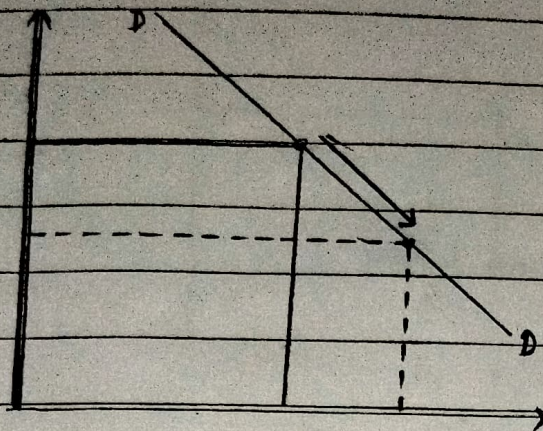
Rightward Shift

Decrease in demand



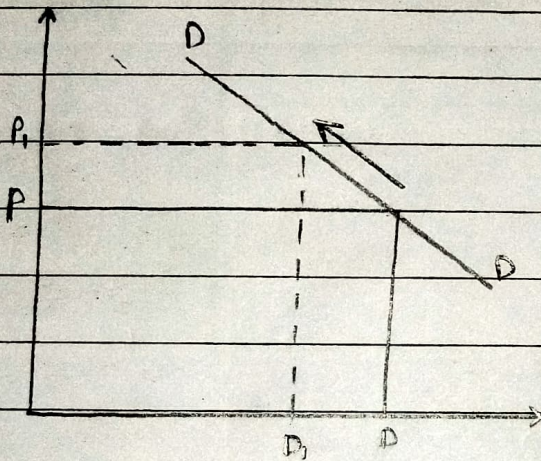
Leftward Shift

Increase in quantity demanded



Downward Movement

Decrease in quantity demanded



Upward Movement

• Theory Names

$E_d = 1 \rightarrow$ Unitary elastic demand

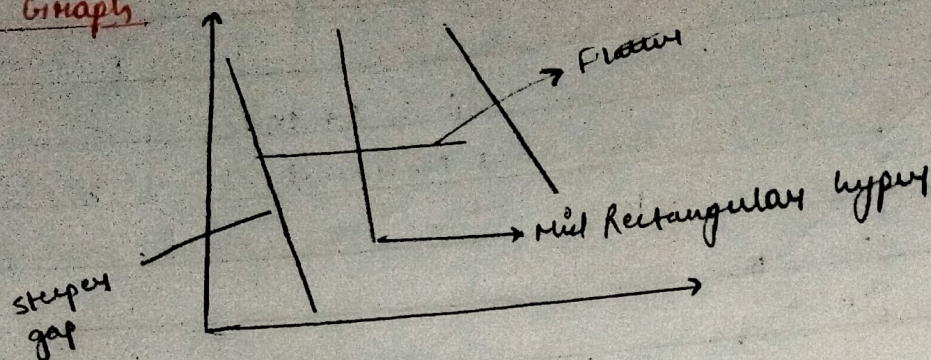
$E_d > 1 \rightarrow$ More than unitary elastic or relatively more elastic or elastic demand.

$E_d < 1 \rightarrow$ Less than unitary elastic or relatively less elastic or inelastic demand.

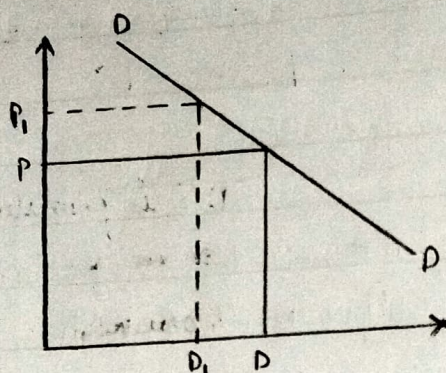
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$E_d = 0 \rightarrow$ Perfectly inelastic demand
 $E_d = \infty \rightarrow$ Perfectly elastic demand

In Graph

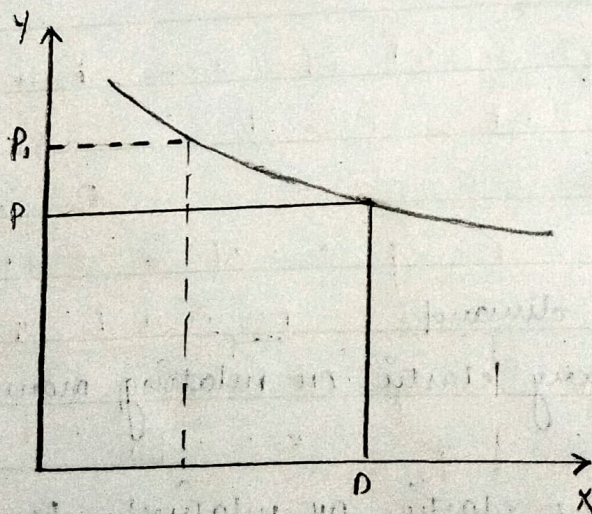


$E_d = 1$



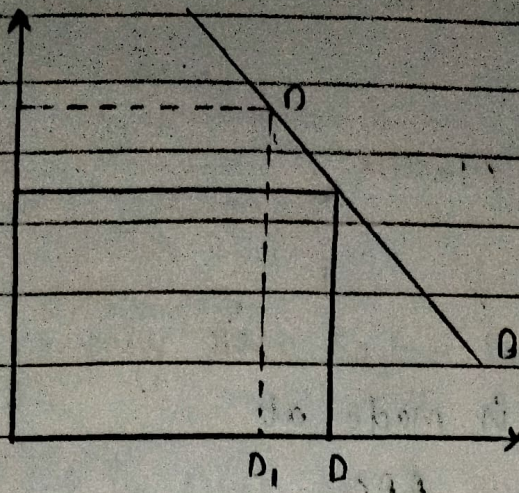
DD is a rectangular hyperbola

$E_d > 1$



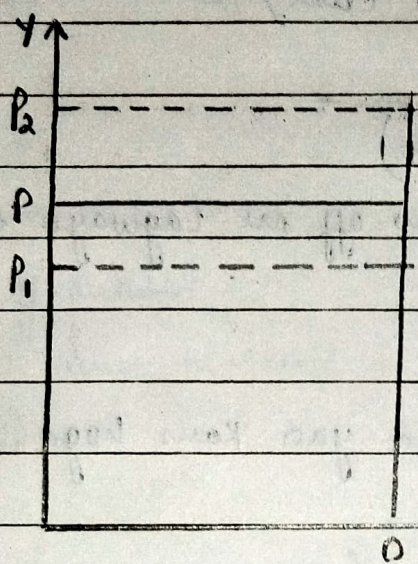
DD is flatter

$$E_d < 1$$



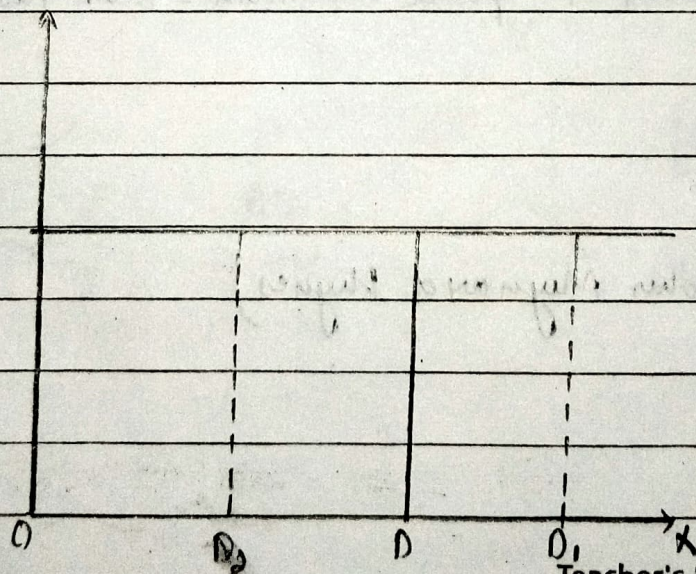
DD is steeply

$$E_d = 0$$



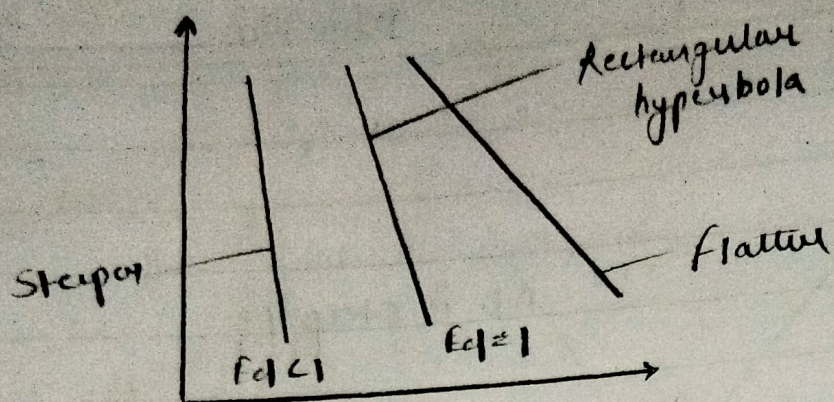
DD is parallel to y axis
short period on market
period

$$E_d = \infty$$



DD is parallel to x axis
long period / time
horizontal / secular

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Rectangular hyperbola is made at $E_d = 1$ AFC

Exception (per abnormal case)

- 1) Conspicuous : show off (Told by Veblen)
- 2) Conspicuous necessity : To Hamir show off me lagwaye ab jamrat ban gaya.
- 3) Enigence on Emergency :- eg War
- 4) Future price expectation :- Price badega yaor kam hoga.
- 5) International :- Talti bazi kamra

- Ignorant consumer :- Price nahi pata
- Speculation :- Bina niyat ke price kamana - own Risk
- Giffen goods :-
- Other

• Effective Demand (By John Maynard Keynes)

1st Feb - Budget
Govt. Policy - Fiscal budget-

8th Feb - RBI - Fiscal Policy

RBI - Monetary / credit policy
increasing 2 months

Nikar job company rate badati hai use capital bolte hai.

Always ignore (-) in price Ed in answers

[Income cross] - ignore nahi karna
Advance

• Income Ed

↓

Possibility of answer

• If $y \uparrow$ $y \downarrow$ are demand $\pm$ (Same)
so Ed $y = 0$

• If $y = 0$ (same number)
Ed $y = 1$

They are normal goods, No saving break even point.

Y
10%
100%

D
8%
99%

Ed < 1

Necessity goods

Y	D
100	500
1000	5000

$$|E_d| > 1$$

Luxury goods

Y ↑ D ↓ $E_d (-)$ inferior goods

• Cross E_d

$E_{dc} = 0$ Unrelated goods
 $E_{dc} = (-)$ Complementary goods
 $E_{dc} = \infty$ Perfect substitute
 $E_{dc} = +$ $E_d > 1$ Substitute

$P_x \uparrow P_y \downarrow$
 (same category)
 (different category)

UNIT-2: Theory of consumer behaviour

• Dictionary	Cardinal	Ordinal
• Other Name	Marginal utility ON Utility	Indifference curve
• Father	Alfred Marshall ↓ Satisfaction in utils	J.R. Hicks + Alan ↓ Satisfaction in Ranked

- Total utility : Other Name → Full Satisfy
- Average utility :- No other name
- Marginal utility : Other Name → Additional satisfy

- Total utility : All units satisfaction
- Average utility :- One unit's satisfaction
- Marginal utility $\uparrow$ TU $\uparrow$ increase
 $\downarrow$ TU $\downarrow$ decrease

- Total satisfaction from all good - TU
- Satisfaction from per unit / per price - AU
- Satisfaction from each unit / last unit - MU

OR

- Additional satisfaction from Addition units - MU

■ FORMULA

1) Revenue :-

(i) $TR = P \times Q$

(ii) $TR = AR \times Q$

(iii) $TR = \sum MR$

(iv) $AR = \frac{TR}{Q}$

(v) $AR = P_{n-1}$

(vi) $MR = \frac{\Delta TR}{\Delta Q}$

(vii) $MR = TR_N^I - TR_{N-1}^{II}$

2) Cost :-

(i) $TC = AC \times Q$

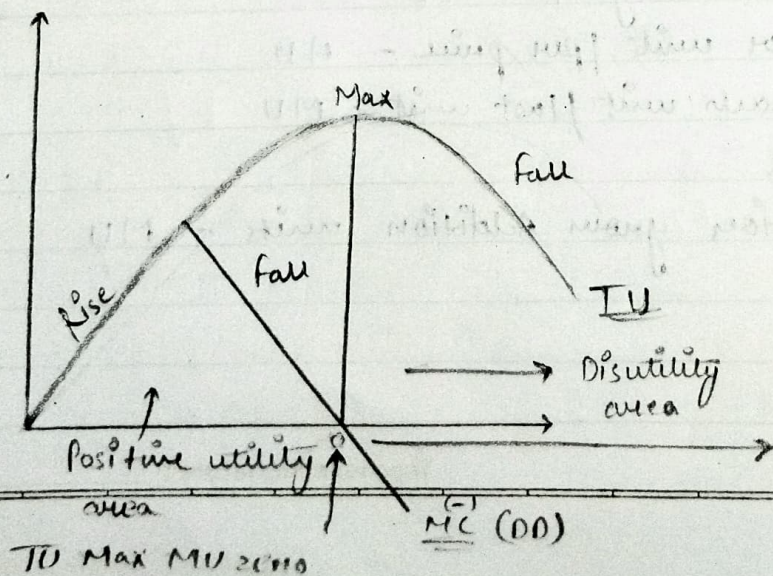
(ii) $TC = \sum MC$

(iii) $AC = \frac{TC}{Q}$

(iv) $MC = \frac{\Delta TC}{\Delta Q}$

(v) $MC = TC_N^I - TC_{N-1}^{II}$

TRICK :- Same for TV & Production TP.



- 1) Consumer equilibrium
- 2) Saturation point
- 3) Maximum satisfaction
- 4) Maximum utility
- 5) Satisfy point

Other Name

Diminishing marginal utility

$P = MU$ - Price equilibrium

$P < MU$ - Surplus

$P > MU$ - Deficit consumer

<u>Qty.</u>	<u>MU</u>	<u>TU</u>	<u>ΣMU</u>
1.	10	10	} +ve utility
2.	5	15	
3.	2	17	
4.	0	17	□ Consumer Equilibrium
5.	-2	15	□ Dis. utility

• Cardinal / MU / utility / Marshall's Assumption

1. Cardinal measurement is "utils".
2. MU (value of money) constant.
3. Money is the measuring Rod of utility (satisfaction)
4. Money $\rightarrow$ Demand $\rightarrow$ Satisfaction
5. Two studied (Price; MU) all other factors unchanged
6. Continuous consumption
7. Standard goods to be used (not inferior)
8. Homogeneous / identical / some goods
9. $\Sigma MU_1 + MU_2 + MU_3 = TU$ is called independent utility

$$TU = \Sigma MU_1 + MU_2 + MU_3 + \dots + MU_n$$

↓
{ Individual }
Benefit

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• The law of diminishing marginal utility

→ By Alfred Marshall

→ Consumption ↑ Successive

MU = ↓

MU = 0

MU = (-)

MU = satisfaction = utility

Qty.	MU	TU	ΣMU
1	100	100	+ve utility
2	80	180	
3	50	230	Constant (equilibrium)
4	0	230	
5	-10	220	-ve (Disutility)

• Exceptions to diminishing marginal utility

- 1) Money
 - 2) Hobbies
 - 3) Fan - music
- Subsequently MUs
- MU ↑
- Initially

• Limitations / failures of diminishing marginal utility :-

- 1) Homogenous / Identical / same products
Income, habit, taste, treatment - unchanged
- 2) Standard / superior goods / no inferior goods
- 3) Continuous consumption

- 4) Gold, Ruby, Diamond etc. $\rightarrow$ DMU does not apply.
 5) Substitute goods complementary good:

<u>Affect</u> <u>Substitute</u> • DMU MU $\downarrow$	$\rightarrow$	• DMU • Better Substitute • Exception MU $\uparrow$
--	---------------	--

all complementary goods MU $\uparrow$
anyone complementary missing MU $\downarrow$

- Consumer Surplus :- Proposed by Marshall

Formula :- What a consumer
 is ready to pay
 = 1200

(-) What he actually pays
 = £ 1000

$\Rightarrow$ £ 200 [Consumer Surplus]

eg Auction good, VIP No. car, Bike, phone.

- Consumer Equilibrium

$$P = MU$$

- Consumer Surplus

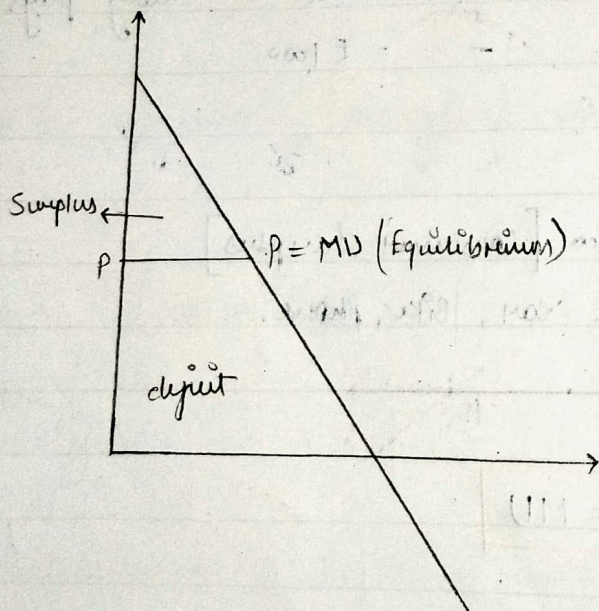
$$P > MU$$

• Consumer Deficit

$$P > MU$$

Quantity	Price	MU	Conditions
1	100	500	Surplus
2	100	400	Surplus
3	100	100	consumer equilibrium
4	100	0	Deficit
5	100	-200	Deficit

- 1) Cardinal = Approach
 - 2) DMU = Law
 - 3) Consumer Surplus
- } Perfect competition market because uniform price



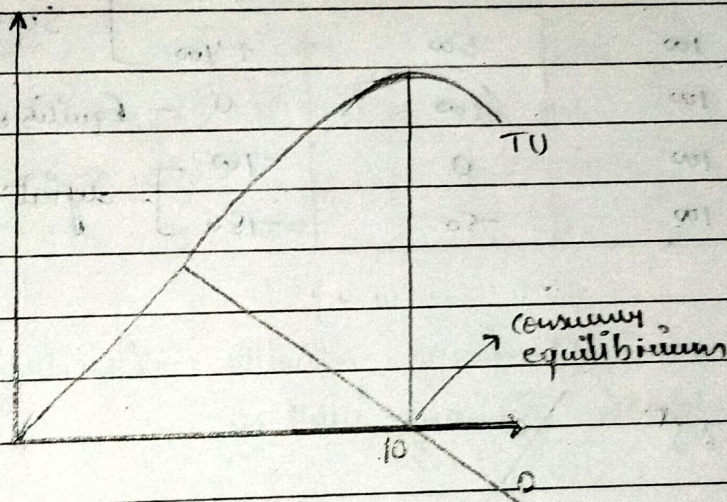
• Limitations / Failure of consumer surplus :

- 1) Extra money is measurable. Its benefit (MU / Equilibrium / satisfaction) not measurable.

- 2) Necessities / emergency consumer surplus is ∞ infinite.
- 3) Conspicuous goods consumer surplus is infinite.
- 4) MU (value of money is constant)
- 5) Substitute consumer surplus $\rightarrow$ yes No x
Better Substitute consumer surplus $\rightarrow$ yes
- 6) Money is the measuring rod of utility (satisfaction)

• Consumer Equilibrium

- A consumer incurs two goods (substitute)
- Maximum utility
- $Q =$ no income OR decrease (it is consumer equilibrium)



• Consumer Equilibrium / cardinal / MU / utility / Marshall

Simple commodity

- Condition
- Table
- Graph

More than one commodity

OR
Law of equilibrium - MU

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• Consumer Equilibrium single commodity

- 1) $P_{\text{price}} > MU$ (Benefit) Deficit
- 2) $P_{\text{price}} < MU$ (Benefit) Surplus
- 3) $P_{\text{price}} = MU$ consumer equilibrium

• One — Unit / unitary

graph — Curve

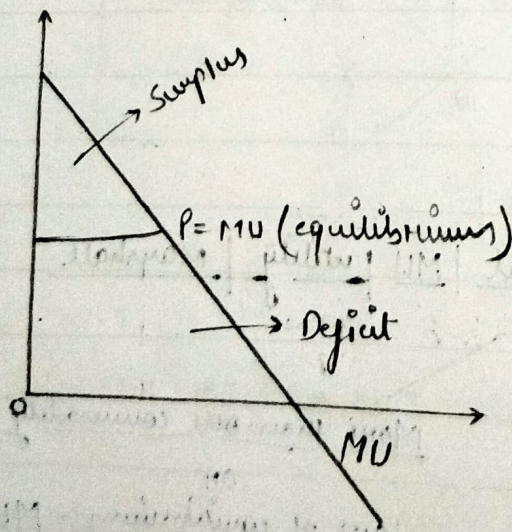
Schedule — Table

equation — function

• Schedule :

Quantity	P	MU	Condition
1	100	1000	+900
2	100	500	+400
3	100	100	0 — Equilibrium
4	100	0	-100
5	100	-50	-150

• Curve :



- Two commodity OH law of Equilibrium - MU:

Condition

$$\frac{MU_a}{MU_b} = \frac{P_a}{P_b}$$

OR

$$\frac{MU_a}{P_a} = \frac{MU_b}{P_b}$$

- Schedule:

Quantity	MU_a / P_a	MU_b / P_b
1	100	50
2	80	40
3	50	100
4	10	50
5	5	10

Working Note :-

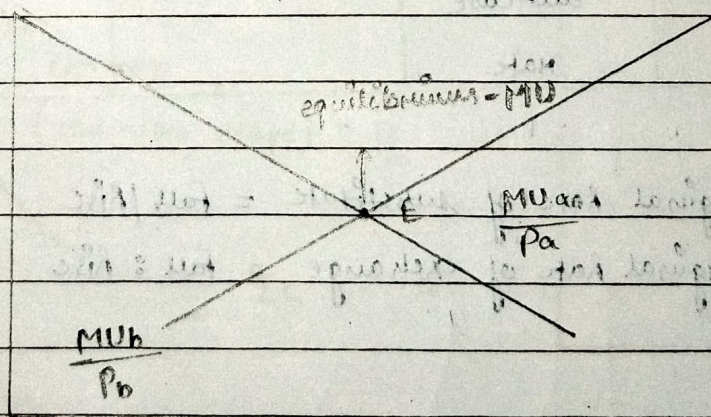
$$100 = 1 + 3 = 4$$

$$50 = 3 + 4 = 7$$

$$10 = 4 + 5 = 9$$

10 is the
equilibrium

(monotonic preference) → Quantity consumed 10 is the equilibrium point as these quantity is highest



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• Assumption of Ordinal :-

- 1) Rational consumer (Have basic knowledge)
- 2) Monotonic preference (more is better)
- 3) Consistent Ranking (fixed rank)
- 4) Capable of Ranking (different)
- 5) $A > B > C > D$ (Transitivity)

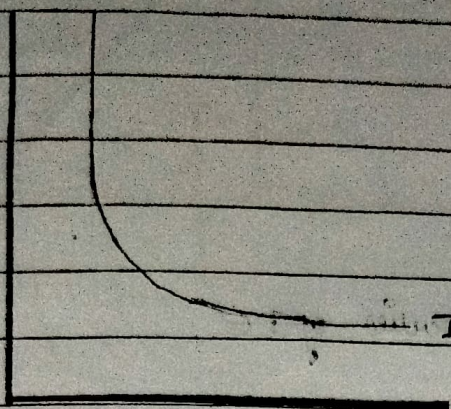
• Indifference Curve :-

- Two goods
- Same level of satisfaction
- We cannot say which is better or worse
- Homogenous goods (same same)

X	Y	MRS (Fall / Rise)	MRE
1	500	—	—
2	400	100 / 1	100 : 1
3	350	50 / 1	50 : 1
4	310	40 / 1	40 : 1
5	305	5 / 1	5 : 1
+ 1 unit	decrease		
↓ always	rate		

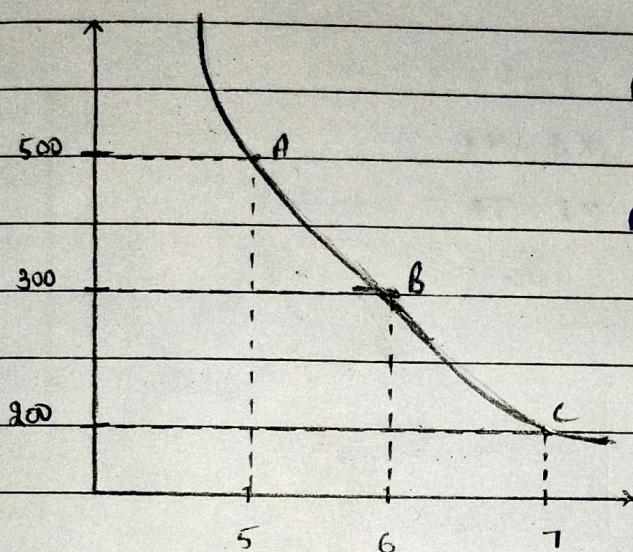
MRS = Marginal Rate of substitute = Fall / Rise

MRE = Marginal Rate of exchange = Fall : Rise



IC slope is called MRS

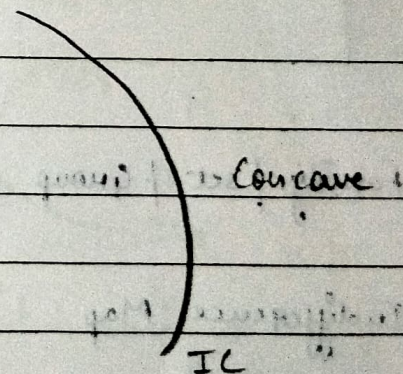
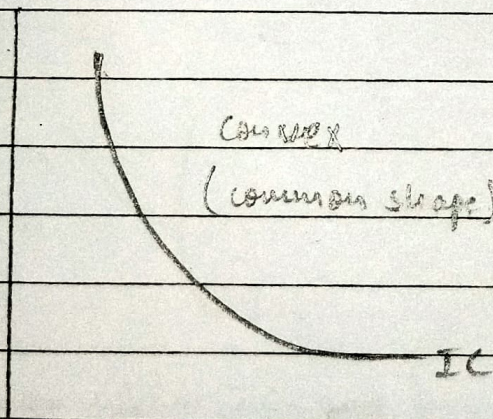
IC



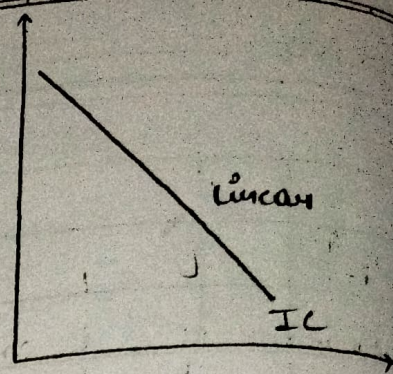
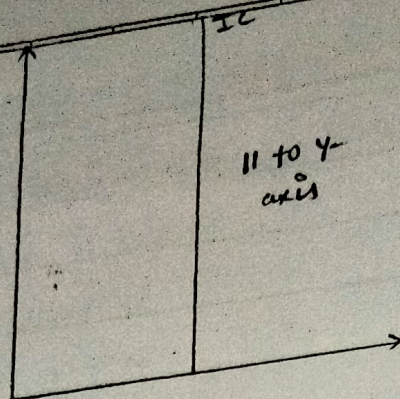
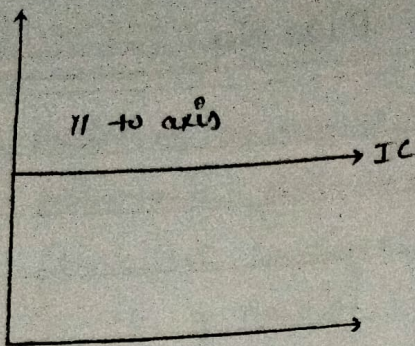
$$A \text{ to } B = \frac{\text{fall}}{\text{rise}} = \frac{200}{1} = 200 = 1$$

$$B \text{ to } C = \frac{100}{1} = 100 \neq 1$$

• TRICK 6

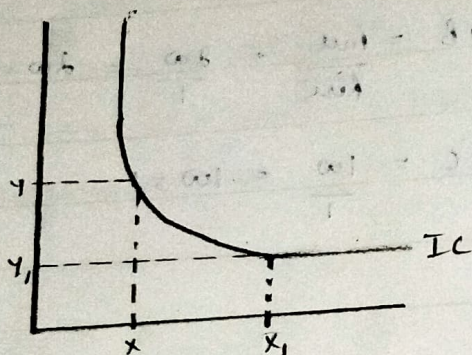


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• Nature | Features | characteristics | Attributes | properties of IC

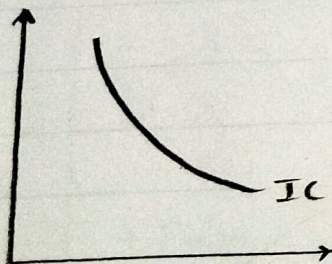
→ Downward or Negatively sloped - IC



$x \uparrow \quad y \downarrow$

$x \downarrow \quad y \uparrow$

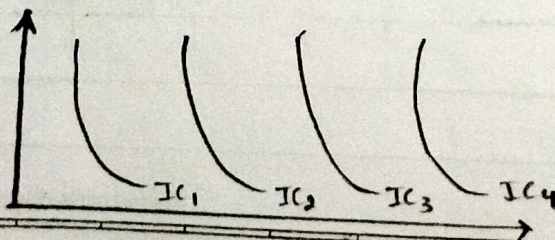
→ IC - Convex



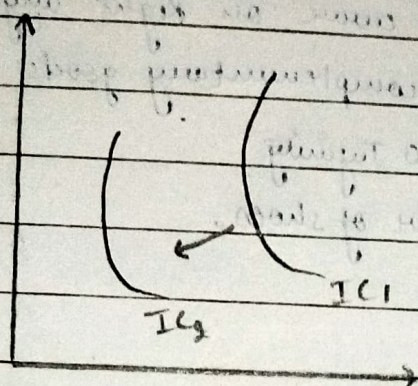
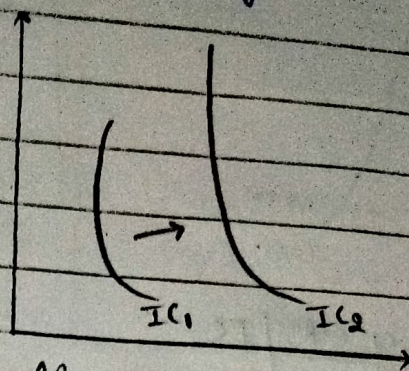
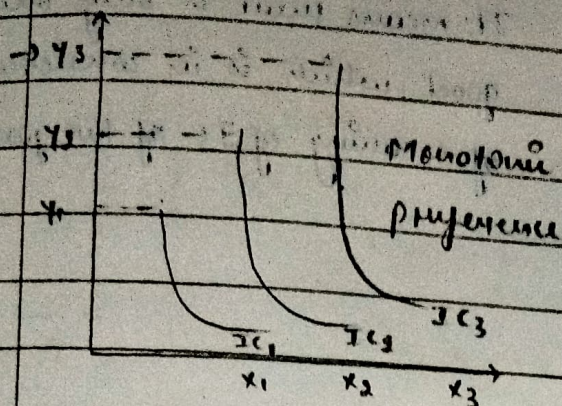
MRS ↓ ON MRE ↓

→ Family | set | Group of collection of IC.

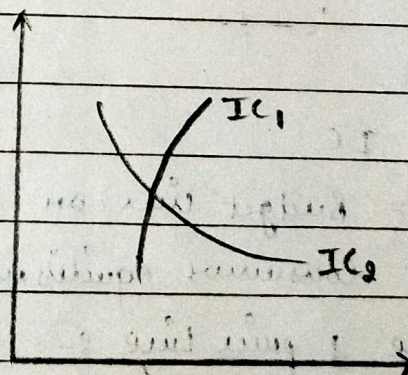
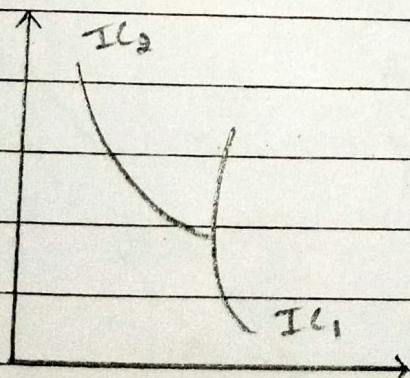
→ Indifference Map



It shows complete picture of consumer's taste & preference

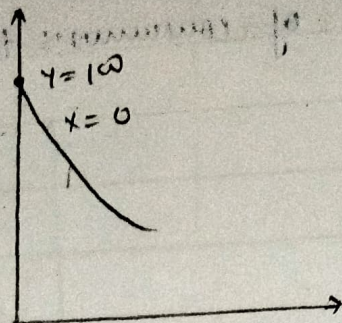
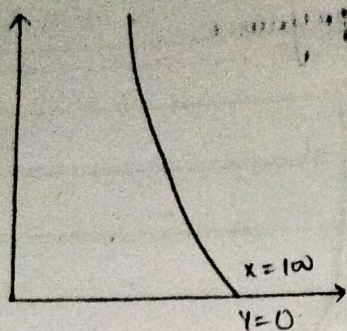


→ IC never tangent or IC never intersect



Because higher IC and lower IC can not be equal to each other.

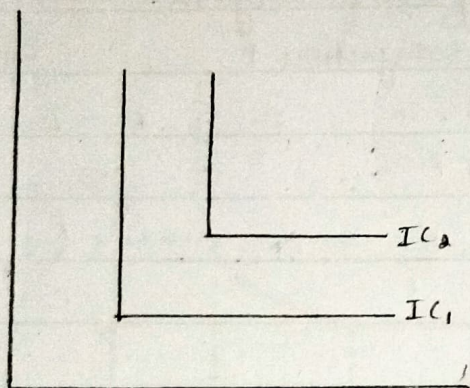
→ IC neither touch x-axis nor y-axis



It means there is only one good which is inconsistent of meaning of IC of two goods

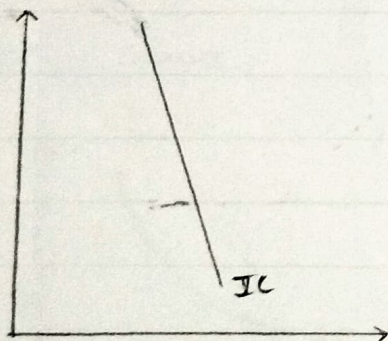
• Exception of MRS/IC

1.



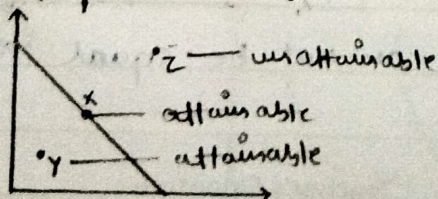
- L shaped curve on right angled IC
- Perfect complementary goods
- $MRS = \infty$ Infinity
- Like pair of shoes.

2.



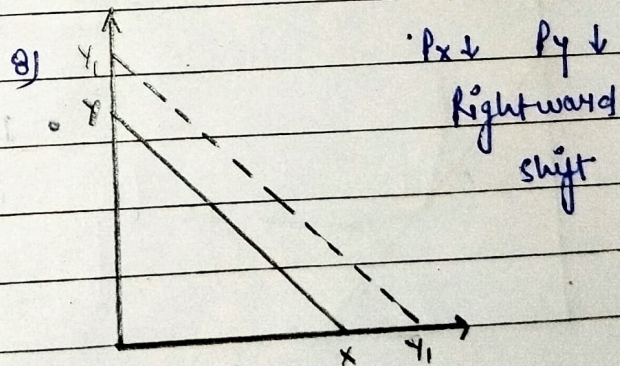
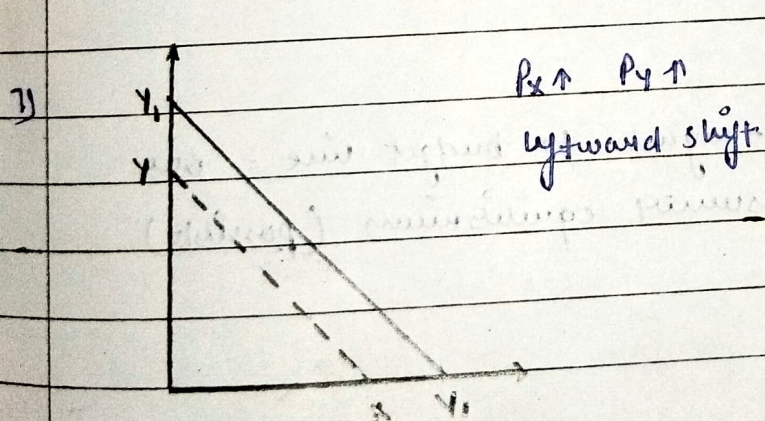
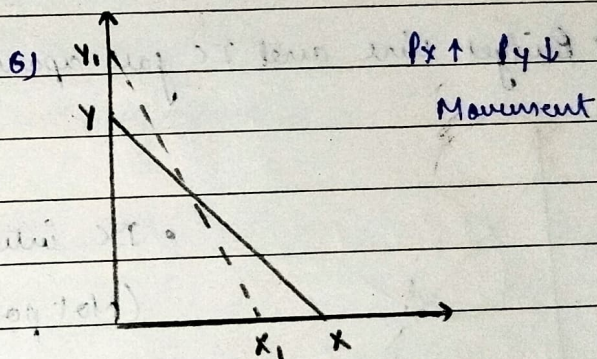
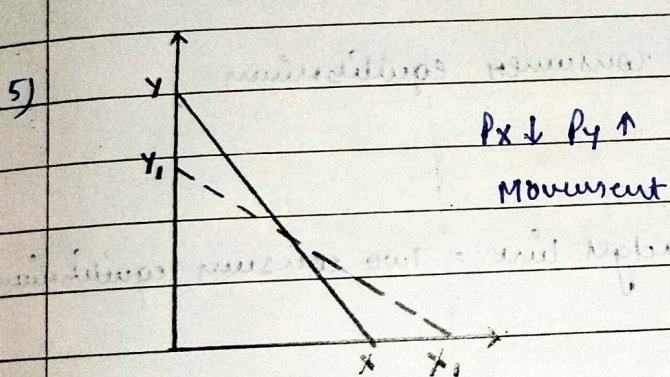
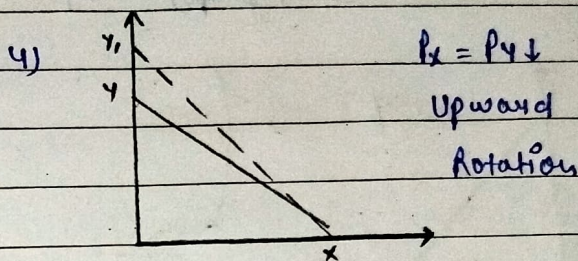
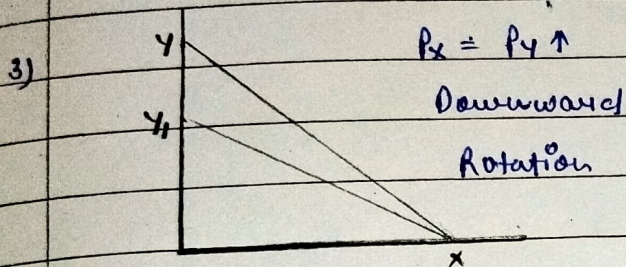
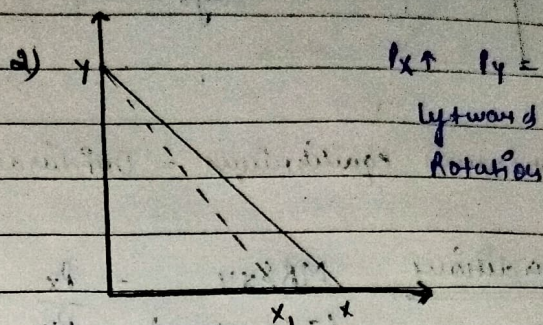
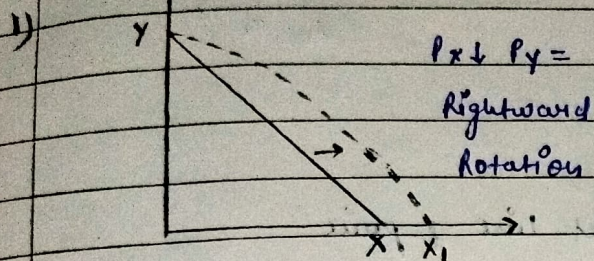
- IC = Linear
- Perfect substitute goods
- $MRS = \text{constant value}$

- Desires = IC
- Afford level = Budget line on Price line
- Both equal = Consumer equilibrium
- Budget line & price line :-

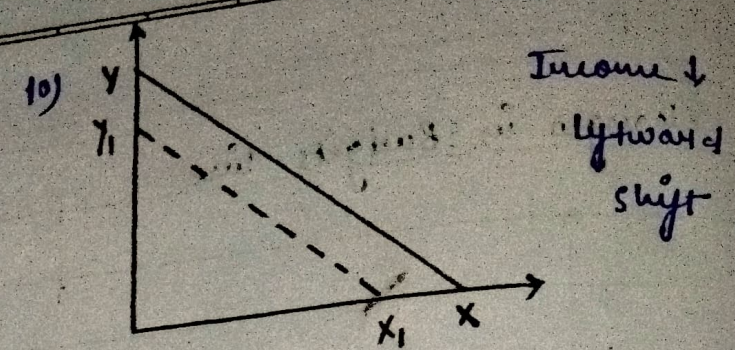
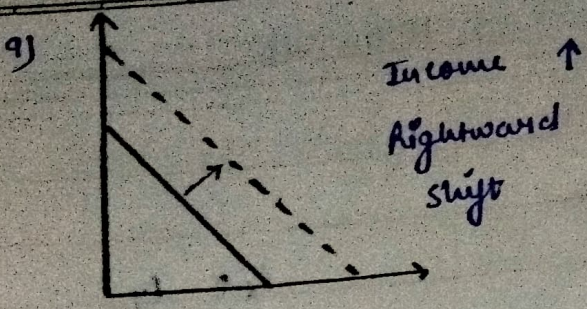


Z = outside budget line
X = on budget line
Y = Inside Budget line.

Changes in Budgets line

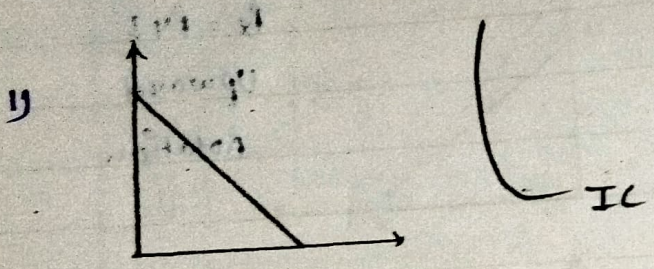


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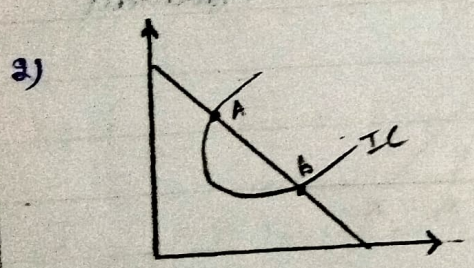


• Consumer equilibrium = Original IC

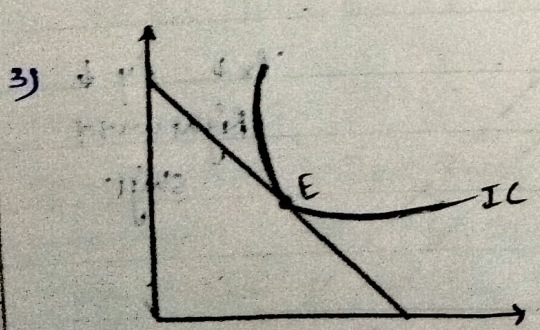
Condition $MRS_{xy} = \frac{P_x}{P_y} \rightarrow$ Budget line & price line slope
(IC's slope)



• Budget line and IC fall apart = No consumer equilibrium



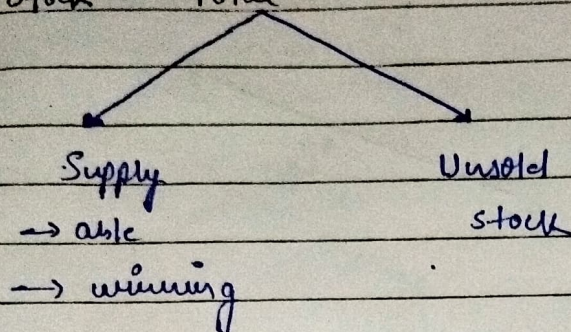
• IC intersect budget line = Two consumer equilibrium (Not possible)



• IC tangent to budget line = one consumer equilibrium (possible)

Unit 3 SUPPLY

• Stock = Total



• Stock concept

1. Total goods
2. Point of time measured.
3. Static concept
4. No time dimension
eg:- Investment, National capital etc.

• Supply (Flow) concept

A part which is able and willingly to sell.

Period of time.

Dynamic concept.

Time dimension present.

eg:- Demand, supply, cost, Revenue, Income etc.

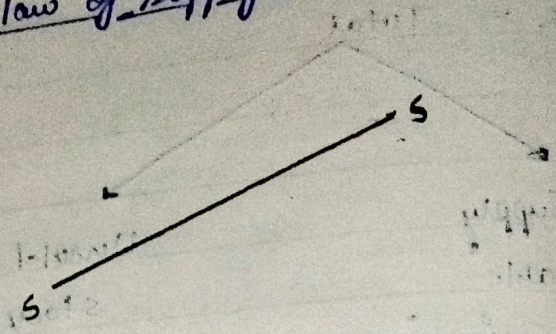
- Firm :- Individual supply
- Industry :- Market supply
- Supply :- Individual supply

Teacher's Signature : _____

• Factors affecting / influencing / factors determining / determinants of individual supply / supply

1) Price of commodity / price effect / law of supply

$P \uparrow \Rightarrow X \uparrow \Rightarrow S \uparrow$
 $P \downarrow \Rightarrow X \downarrow \Rightarrow S \downarrow$
 Direct Relation (upward graph)



2) Price of related goods

Jio			Airtel		
P	X	S	P	X	S
10	=		10		
10	=	↓	12	↑	↑

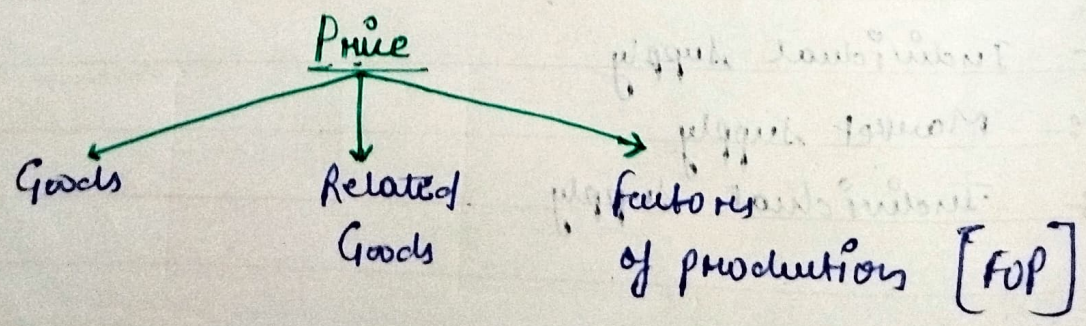
shifting of Resources

3) Price of FOP / inputs / resources

FOP price $\uparrow$ Cost $\uparrow$ $S \downarrow$

FOP price $\downarrow$ Cost $\downarrow$ $S \uparrow$

Inverse Relationship between FOP price & supply.



4. Technological factorsModern technology $S \uparrow$ Obsolete technology $S \downarrow$ 5. Government policy

Favourable

 $S \uparrow$ Tax $\downarrow$, Subsidy $\uparrow$

get license

Ban removed

Unfavourable

 $S \downarrow$ Tax $\uparrow$, Subsidy $\downarrow$

Takes license

Ban imposed

6. Goal / objective of firmSales Maximisation

(Tio)

 $P \downarrow S \uparrow$ Profit Maximisation

(Airtel)

 $P \uparrow S \uparrow$ 7. Other factors

Fashion, Trend, Festival, Need, seasons etc.

- Assumptions of law of supply *other things being unaltered*
ceteris paribus (Latin word)

$P_x \uparrow$ $P_x \downarrow$
 Price of related goods
 Price of FOP
 Technological
 Govt. policy
 Goal of firms
 Others factors

No change (constant)

Market Supply

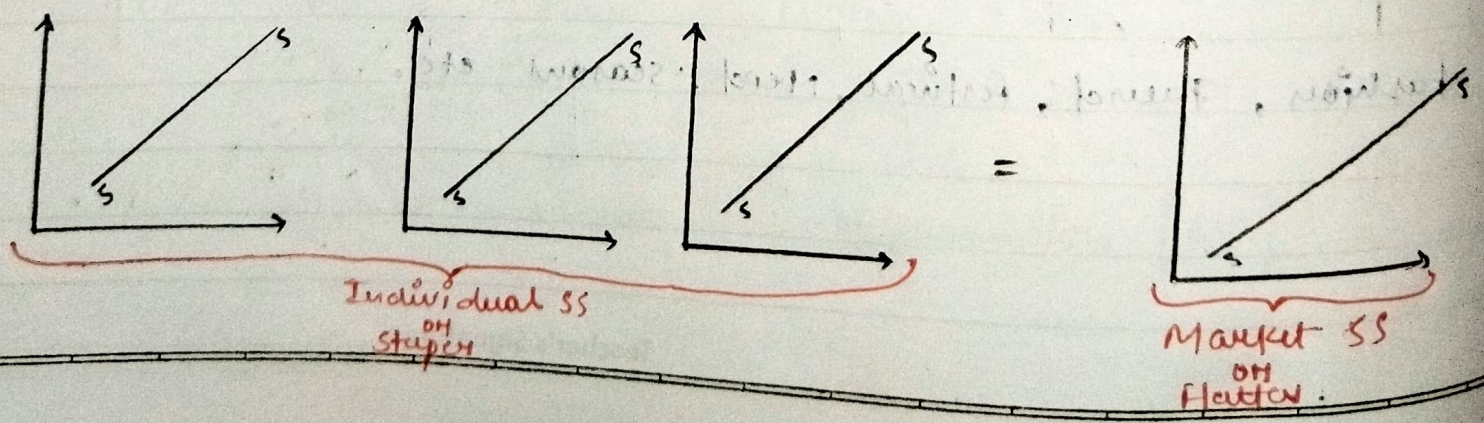
Individual + Individual + Individual + ... = Market

HORIZONTALLY OR Laterally

Market supply schedule

(quantity) P	I	I	I	I	M
10	5	5	5	10	(25)

Market supply curve



- Market supply function

$$S = f(P_G, P_r, P_F, G_0; D_0; O, T)$$

- Law of supply

Table
(schedule)

I M

Graph (ss)
(curve)

I M

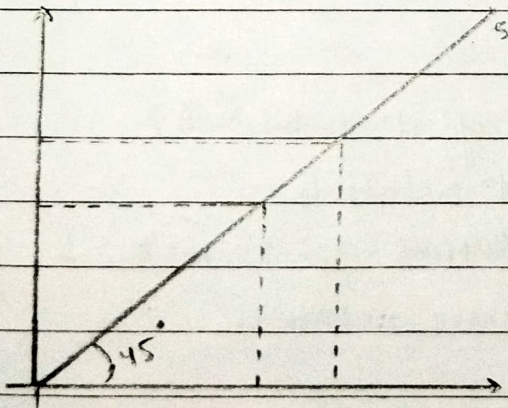
Equation
(function)

I M

- Supply Schedule

	<u>P</u>	<u>S</u>	
↓	10	100	↓
	8	80	

- Supply Curve



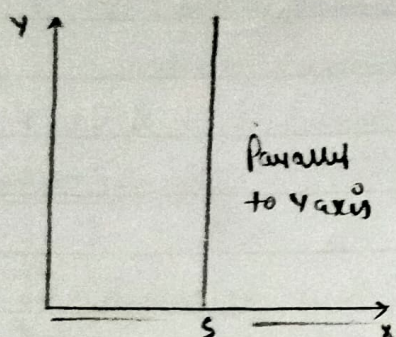
• Exceptions (failures) to law of supply

Hint. (No direct relation)

(No upward graph)

1) Very short period

or
Market period
(1 day)

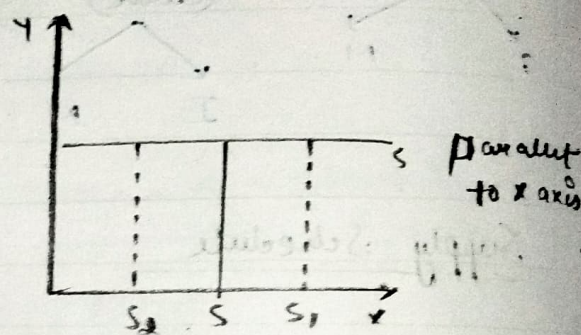


$E_s = 0$
Perfectly Inelastic Supply

Very long period

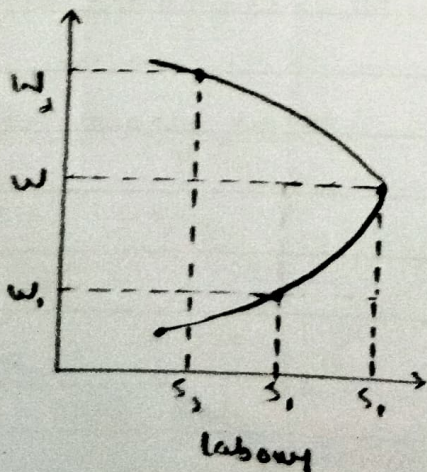
or
Similar period

Time Horizon
(10 years)



$E_s = \infty$
Perfectly Elastic Supply

2) Inverse "C" or backward bending to left SS of labour.



Income effect = $W \uparrow \rightarrow S \uparrow$

Direct Relation

Substitution effect = $W \uparrow \rightarrow S \downarrow$

Inverse Relation

• Elasticity of supply (E_s)

Response of change in supply $\xrightarrow{\text{due to}}$ change in price

$S \uparrow \longrightarrow P \uparrow$

$S \downarrow \longrightarrow P \downarrow$

$$E_s = \frac{\% \text{ change in quantity supplied}}{\% \text{ change in price}}$$

The ratio between % change in quantity supplied and % in price is called E_s .

• Ed Method

• E_s Method

1. %, proportionate; mathematical, flux method
2. Ave, mid point Average
3. Geometric method
4. Total expenditure

• Percentage / proportionate / Mathematical / Flux method

$$E_s = \frac{\% \text{ change in quantity supplied}}{\% \text{ change in price}}$$

$$= \frac{\frac{\text{change in quantity supplied}}{\text{Starting quantity supplied}} \times 100}{\frac{\text{change in price}}{\text{Starting price}} \times 100}$$

$$= \frac{\text{change in quantity supplied}}{\text{Starting quantity supplied}} \times \frac{\text{Starting price}}{\text{change in price}}$$

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$$= \frac{\text{Change in quantity supply}}{\text{Starting quantity supply}} \times \frac{\text{Starting price}}{\text{change in price}}$$

$$= \frac{\Delta q}{q} \times \frac{p}{\Delta p}$$

$$= \left| \frac{\Delta q}{\Delta p} \times \frac{p}{q} \right|$$

2) Ave / Mid point / Average (No economist)

$$\frac{q_1 - q_2}{q_1 + q_2} \times \frac{p_1 + p_2}{p_1 + p_2}$$

$$\frac{q_1 - q_2}{q_1 + q_2} \div \frac{p_1 - p_2}{p_1 + p_2}$$

→

P	S
p_1 10	100 q_1
p_2 20	200 q_2

$$= \frac{100 - 200}{100 + 200} \times \frac{10 + 20}{10 - 20}$$

$$= \frac{-100}{300} \times \frac{-30}{10}$$

$$\boxed{Es = 1}$$

* Unitary Elastic supply

• % Method

$$Q = -100 + 10P$$

$$\text{price} = ₹ 15$$

$$Q = -100 + 10(15)$$

$$= 50$$

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

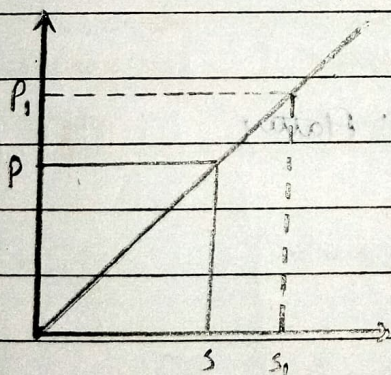
$$= \frac{10 \times 15}{50}$$

$$E_s = 3$$

* More than unitary elastic supply

• Degree / Types of price E_s

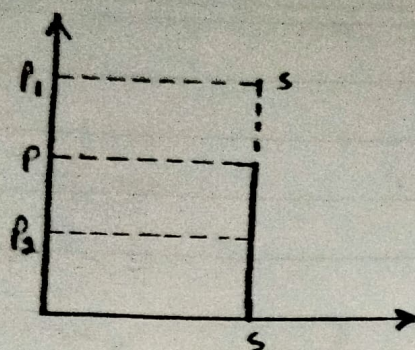
1) $E_s = 1$ (unitary elastic supply)



SS = Rectangular Hyperbola

SS = 45°

2) $E_s = 0$ (Perfectly Inelastic supply)

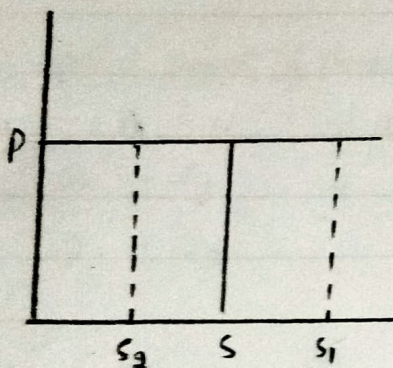


SS = $\parallel$ to y axis

SS = 90°

Very short period or market period

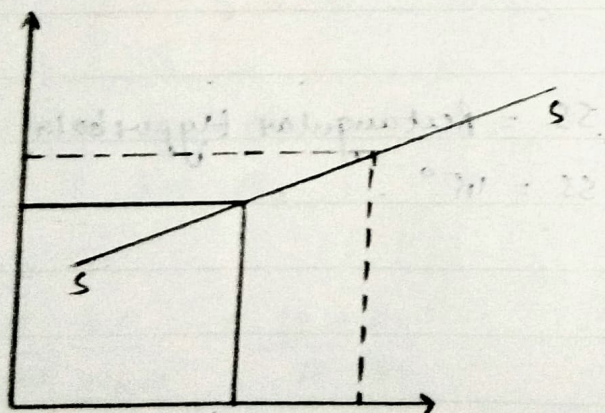
3) $E_s = \infty$ (Perfectly elastic supply)



SS = $\parallel$ to x axis

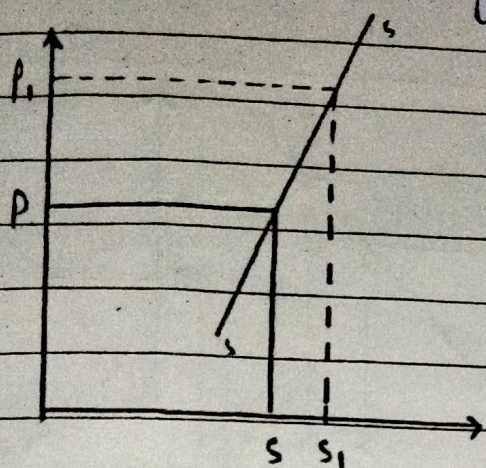
Very long period / secular period / time horizon

4) $E_s > 1$ (More than unitary elastic supply / Relatively more / Elastic)

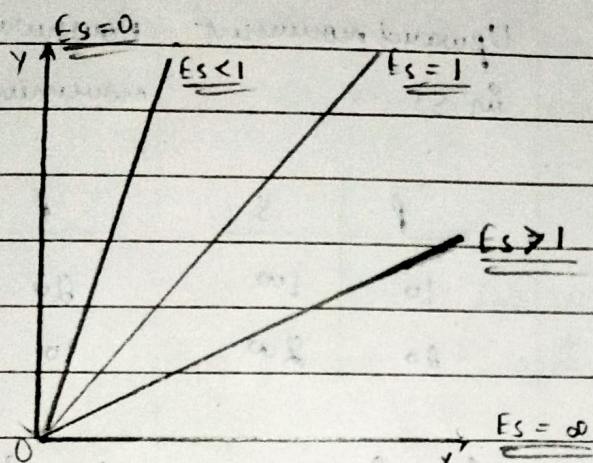


SS = Flatter

5) $E_s < 1$ (less than unitary: inelastic supply / Relatively less / Inelastic)

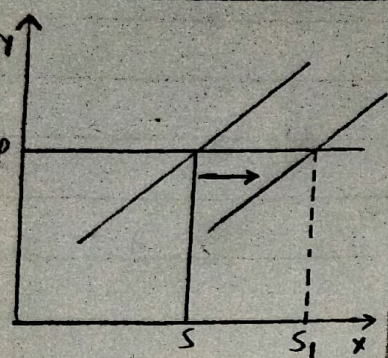
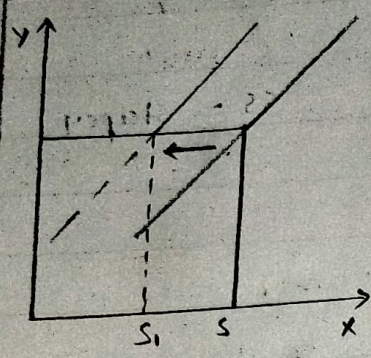
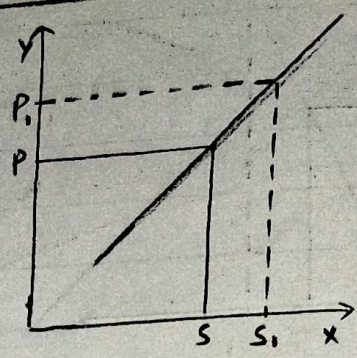
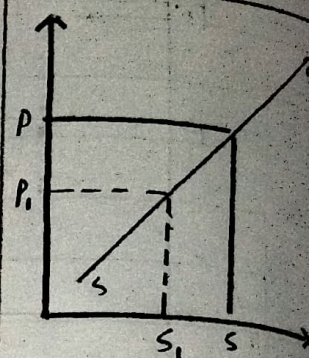


SS = steeper



• Increase in supply	Decrease in supply	Increase in quantity supply	Decrease in quantity supply.
$P = S \uparrow$	$P = S \downarrow$	$P \uparrow \cdot S \uparrow$	$P \downarrow \cdot S \downarrow$
Price remains constant and supply rising	Price remains constant and supply falling	Price rising and supply also rising	Price-falling and supply also falling

Teacher's Signature : _____

No other name	No other name	Expansion or extension	Contraction																								
No law of supply	No law of supply	Law of supply	Law of supply																								
																											
Rightward shift in SS	Leftward shift in SS	Upward movement in SS	Downward movement in SS																								
<table><tr><th>P</th><th>S</th></tr><tr><td>10</td><td>100</td></tr><tr><td>10</td><td>200</td></tr></table>	P	S	10	100	10	200	<table><tr><th>P</th><th>S</th></tr><tr><td>10</td><td>200</td></tr><tr><td>10</td><td>100</td></tr></table>	P	S	10	200	10	100	<table><tr><th>P</th><th>S</th></tr><tr><td>10</td><td>100</td></tr><tr><td>20</td><td>200</td></tr></table>	P	S	10	100	20	200	<table><tr><th>P</th><th>S</th></tr><tr><td>20</td><td>200</td></tr><tr><td>10</td><td>100</td></tr></table>	P	S	20	200	10	100
P	S																										
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20	200																										
10	100																										
No ceteris paribus	No ceteris paribus	Ceteris paribus	Ceteris paribus																								

Market

- Elastic - changeable
- Inelastic - constant

- Temp. {
- Increase in cost
 - Decrease in cost
 - Constant in cost

• Factors affecting "supply"

$S \uparrow S \downarrow$

Factors affecting "Es"

$S \uparrow S \downarrow S =$

• Factors affecting / Factors influencing / Factors determining / determinants of "Es".

1. Cost :

Increase in cost = less elastic supply

Decrease in cost = More elastic supply

Constant cost or Negligible rise in cost = constant Es

2. Time period :-

short period = Inelastic supply

long period = Elastic supply

3. No. of sellers / producers

few = Inelastic supply

more = Elastic supply

4. Less than full employment :-

lowering = Elastic supply

full employment = Inelastic supply

5. Inputs :-

Inputs cheaper : Elastic supply

Inputs expensive : Inelastic supply

6. Storage :-

Easy = Elastic supply (durable)

Difficulty = Inelastic supply (perishable)

7. Factor :-

Common = Elastic supply

Uncommon = Inelastic supply

8. Factor :-

Mobile = Elastic supply

Immobile = Inelastic supply

9. Future :-

Future supply $\uparrow$ Presently supply $\downarrow$ Future price $\uparrow$
Future price $\downarrow$ Presently supply $\uparrow$ Future supply $\downarrow$