Economics

Economics
-Farhan Shakib

1. <u>What is economics?</u>

The word 'Economics' come from the word 'OIKONOMIA'.
'OIKOS' means 'House' and 'NOMIA' means 'Rules' or 'Custom'.
So, economics means rules of the households or good man-agements of the households.

According to Adam Smith, "Economics is the 'science of wealth'".

According to Marshall, Economics is material welfare. That is, how to use less wealth to develop the society.

According to L. Robins, it is scarcity and choice.

Economics is social science concerned with the factors that determine production, distribution and consumption of an economy.

In a words, Economics is well optimization of resources.

2. <u>Types of Economics:</u>

Economics is two types —
1. Macro economics
2. Micro economics

<u>Macro economics:</u>

Macro comes from the word 'Makro' which means 'Large'.
Studies performance, structure, behaviour and decision

making of an economy as a whole

2. Micro economics:

Comes from Greek prefix 'Mikro' which means 'Small'.
It is a branch of economics that studies behaviour
and decision making of an individual of a firm at
individual level.

3. ## Three basic economic problems:

(i) what to produce?

(ii) How to produce?

(iii) for whom to produce?

Efficiency:
Maximum product with
less cost.

4. ## How to distribute among the participants:

Land → Rent

Capital → Interest

Labour → Wage

Enterpreneur → Profit

5. Subject matter of economics:

    (i) Consumption

    (ii) Production

    (iii) Exchange

    (iv) Distribution

    (v) Tax (Revenew analybis)

    (vi) International trade

    (vii) Economic development

6. Invisible hand:

Is a metaphor for how in a free economy self interested persons operate through a system of mutual inter-dependance to promote the general benefit of the society at large.

7. Positive economics:

What and why an economy operate based on scientific formula and statistical data.

- Descriptive economics

- Relationship between cause and effect.

8. **8. Law of demand:**

- High price, low consumption: low price, high consumption
- When other things remaining equal-
  If Price increases, Quantity demand decreases
  If " decreases, " " increases

9. **Normative economics:**

- Based on value and judgement.
- Policy economics
- Right or wrong
- How the economy should be
- Minimum wage law

10. **Wants:**

Unlimited desires or wishes for goods and services.

11. **Demands:**

Conditions for demand —

- Want it.
- Can afford it
- Plan to buy it

12. **Determinants of demand:**

$$DF = f(Price, Income, Taste, Expectations,$$
$$Price \ of \ substitute \ goods \ or$$
$$complementary \ goods)$$

13. **Demand Analysis:**

Demand	Quantity demanded
Sum of all demands at different prices	Goods or services purchased at a pariticular price

$$Demand = \sum QD$$
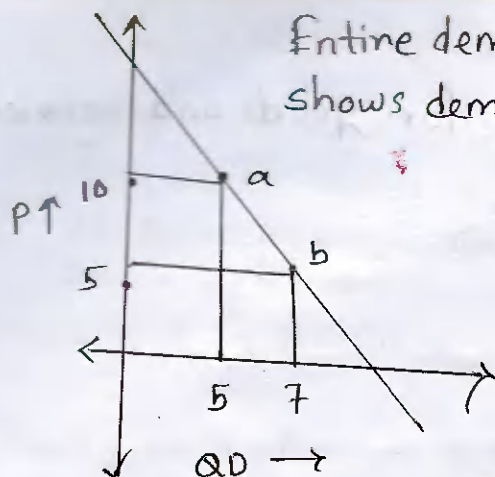
Entire demand curve
shows demand

$$Demand = \Sigma QD$$
$$= 5 + 7$$
$$= 12$$

Ex: Suppose you are given the demand equation
$$Q^d = 100 - 5P.$$

Soln:

─ Demand scedule (DS):   ─ Demand curve (DC):

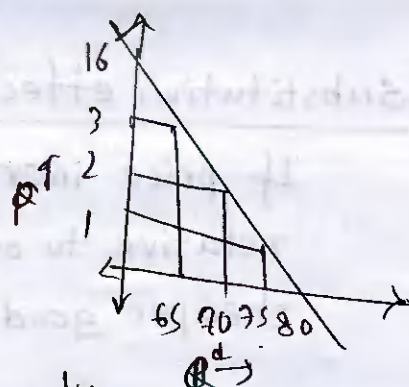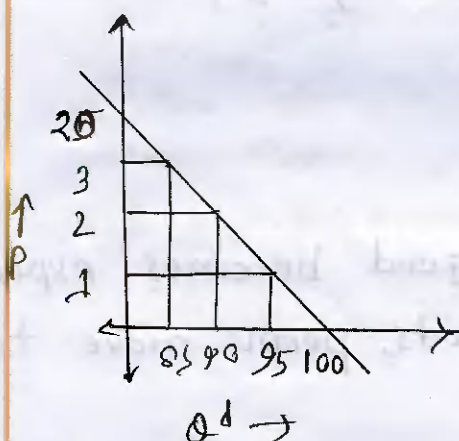| P	Qd
1	95
2	90
3	85
4	80
5	75
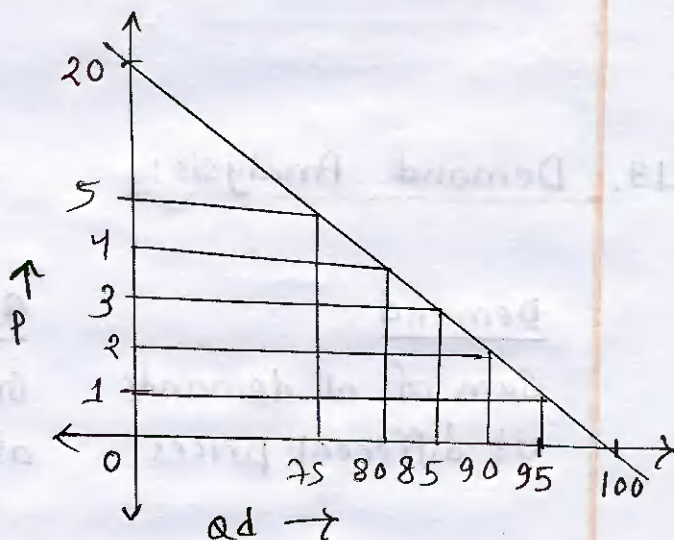
14.

Market demand and Individual demand:

- To analyze market demand, we need to know about market demand curve.

- We get market demand curve by summing all the individual demand for a particular product.

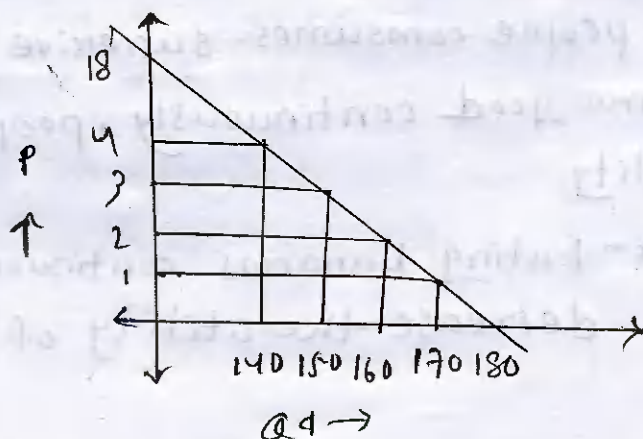- Summing the individual demand curve horizonally, we get market demand curve.

Person X : $Q^{d_x} = 100 - 5p$ Person Y : $Q^{d_y} = 80 - 5p$

$$Q^{dm} = Q^{d_x} - Q^{d_y}$$
$$= 180 - 10p$$

15. **why the demand curve slopes downwards?**

(1) Income effect:

If price increases and income ($\bar{y}$) ramains unchanged

Real income (R.Y.) $= \dfrac{\bar{y}}{P}$ decreases.

Hence, Qd decreases.

Example: $Y_0 = 10$ $\quad$ Pen $= \dfrac{10}{1} = 10$
$\qquad\quad$ $P_0 = 10$

$\qquad\qquad$ $Y_0 = 10$ $\quad$ Pen $= \dfrac{10}{2} = 5$
$\qquad\qquad$ $P_1 = 2$

$\qquad\qquad\qquad\qquad\qquad\qquad\qquad$ lost 5 pen

(2) Substitution effect:

If price increases, good becomes expensive relative to other goods, people move to cheaper goods.

(3) Law of Diminishing Marginal Utility (LDMU):

As people comsumes successive units of the same good continuously, people get lesser utility.

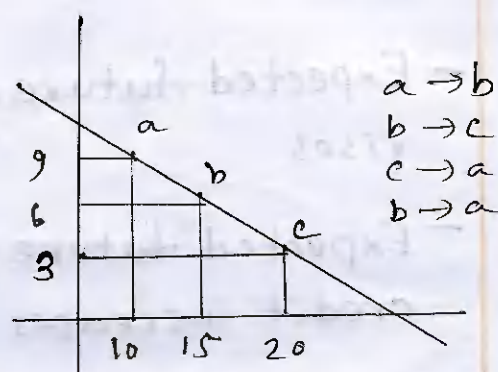Ex- Eating bananas continuously will decrease the utility of banana

(4) Usage in product:

when price increases, people use goods for important work / need.

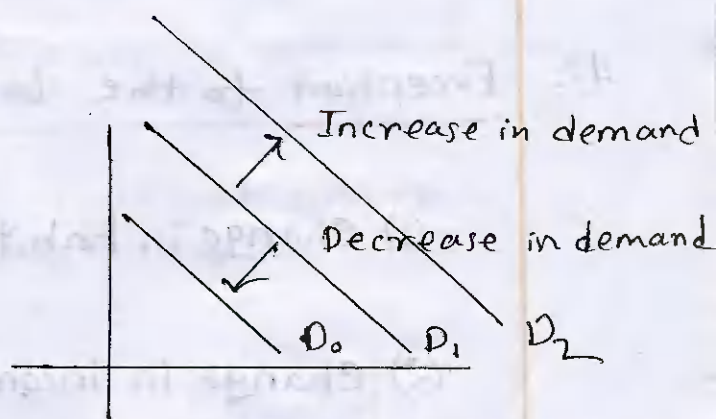Ex - Cooking and electricity, plastic

16. Change in Qd:

- when only price changes, there is change in Qd

- Quantity demanded indicates ' shi ' movement along the curve, not shift of curve.

- $Qd = f(\overbrace{P}, \overline{Y}, \overline{Taste}, \overline{Expense}, \overline{Wealth}, \overline{price\ of\ related\ product})$

a → b
b → c
c → a
b → a

17. Change in demand:

- when other things except price changes, there is change in demand.

- change in demand indicates ' shift of the curve, not movement along the curve.

Increase in demand

Decrease in demand

D_0 D_1 D_2

- $Q^d = f(\overline{P}, \overline{Y}, \overline{T}, \overline{W}, \overline{PRP}, \overline{Exp.})$

18. Reason for increase and decrease in demand:

Increase

- Price of substitute goods rises.

- Price of complementary goods decreases

- Expected future price rises

- Expected future income/ credit increases

- Income increases

- Population increases

Decrease

- Poice of substitute goods decreases.

- Price of substitute comp. goods increases.

- Expected future price decreases

- Expected future i/c decreases.

- Income decreases

- Population decreases

19. Exception to the law of Demand:

(1) Change in habit / taste.

(2) Change in income.

$$Ry_0 = \frac{Y_0}{P_0} = \frac{10}{1} = 10$$

$$Py_1 = \frac{Y_1}{P_1} = \frac{20}{2c} = 10$$

(3) Substitution price increase

(4) No substitution. (salt)

(5) Change in future expectation

(6) Griffen good $(P\uparrow, Qd\uparrow; P\downarrow, Qd\downarrow)$

(7) Aristocratic consumption

20. Supply analysis:

Supply:

Supply, Q^S, Supply scedule, Law of supply ($P\uparrow, QS\uparrow$; $P\downarrow, Q^S\downarrow$)

Ex:

$Q^S = -20 + 5P$

— Supply scedule:

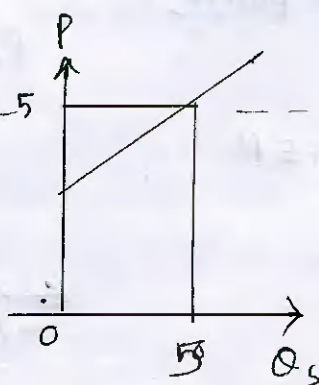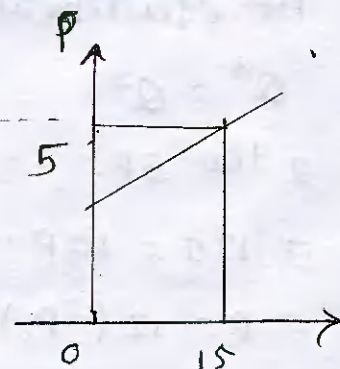| P	Q^S
5	5
6	10
7	15
8	20
9	25
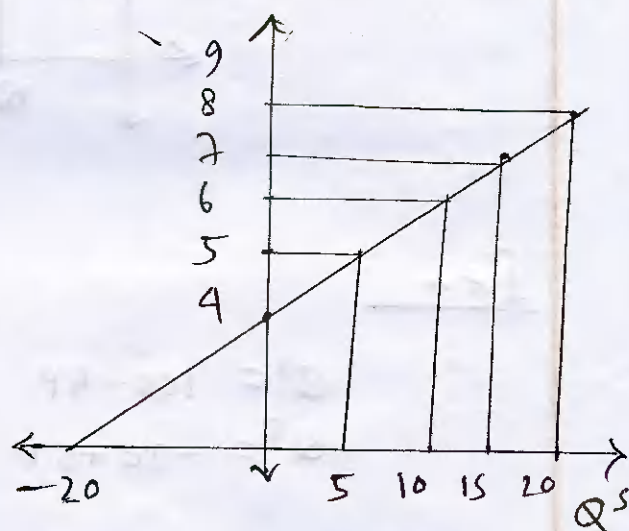
c Supply curve

21. Individual supply curve and market supply curve:
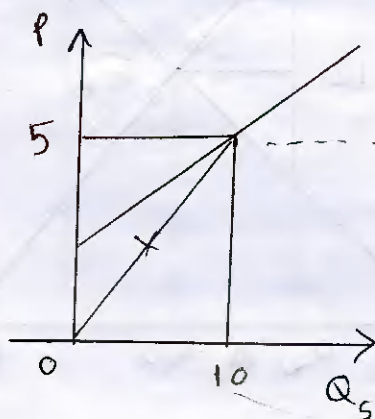
(X's curve)   (Y's curve)   (Market curve)

∅ Equilibrium:

—Equilibrium is such a situation where economic forces have no tendency to change.

Here, at equilibrium point, Quantity supplied = Quantit~~y~~ demanded.
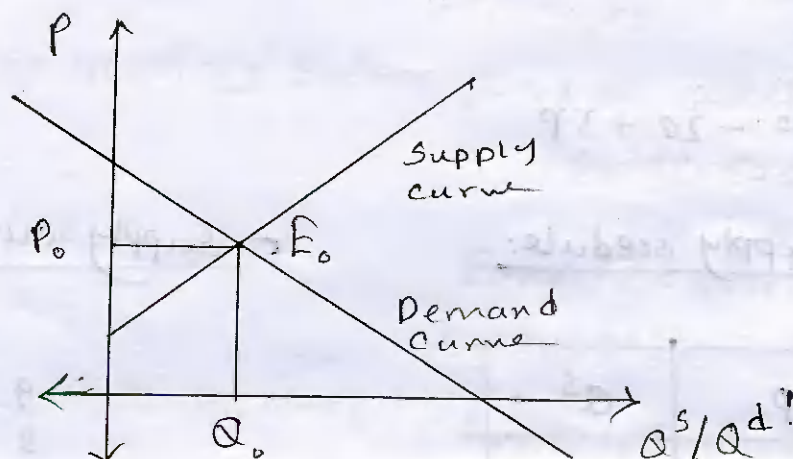
Ex —

$$Q^d = 100 - 5P$$
$$Q^s = -20 + 5P$$

we know,

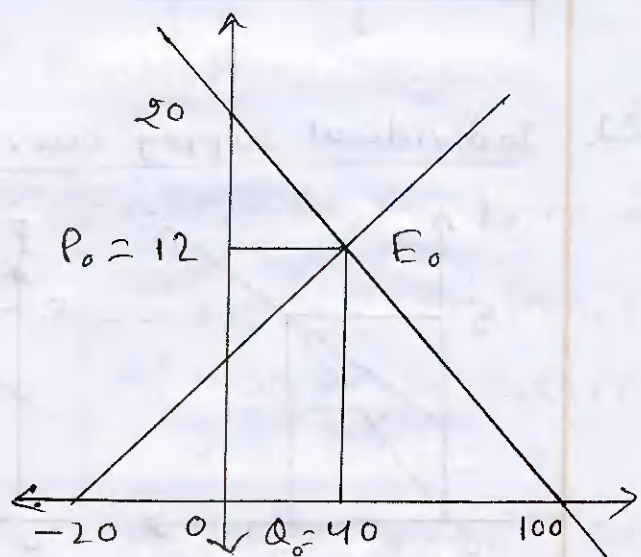At equilibrium point,

$$Q^d = Q^s$$

$$\Rightarrow 100 - 5P = -20 + 5P$$

$$\Rightarrow 120 = 10P$$
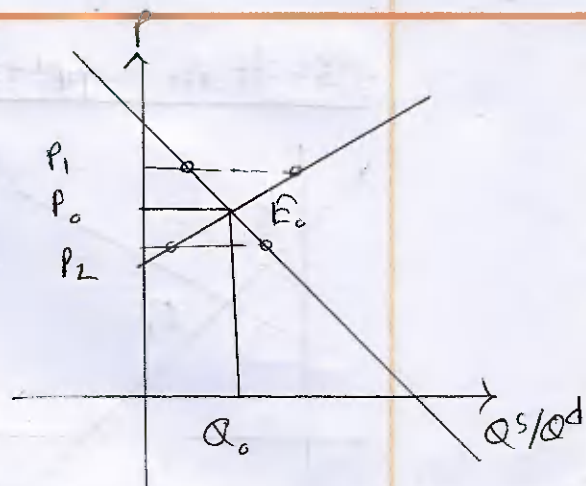
$$\therefore P = 12 \,(= P_0)$$

At equilibrium,

$$Q^d = Q^s = 100 - 5P = 40$$

At E_0, $Q^d = Q^s$

At P_1, $Q^s > Q^d$ → Excess supply
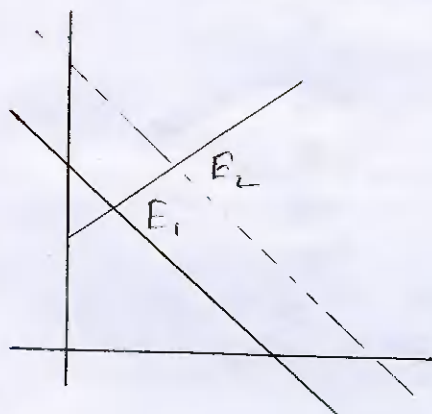
At P_2, $Q^s < Q^d$ → Excess demand

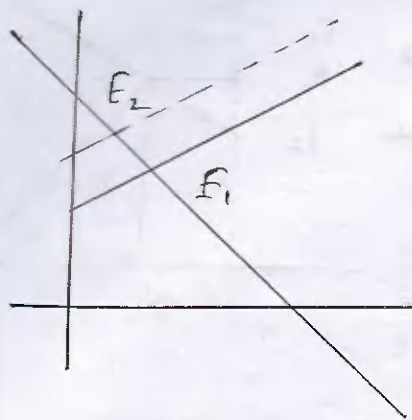23. Shifts in the supply curve:

- Input price
- Technology
- Expectations
- No. of seller

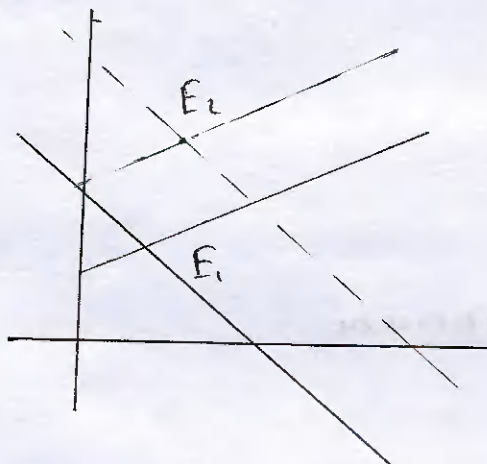24. Analyzing changes in equilibrium:

- Shift in demand:

Shift in supply:

Shift in both supply and demand.

25.   27. Elasticity:

Q. Why we should study elasticity?

- To study percentage change

Q. What is elasticity?

- Elasticity is a measure of responseness of Q^d/Q^s to a change in its one of determinants

Q. What is price elasticity of demand?

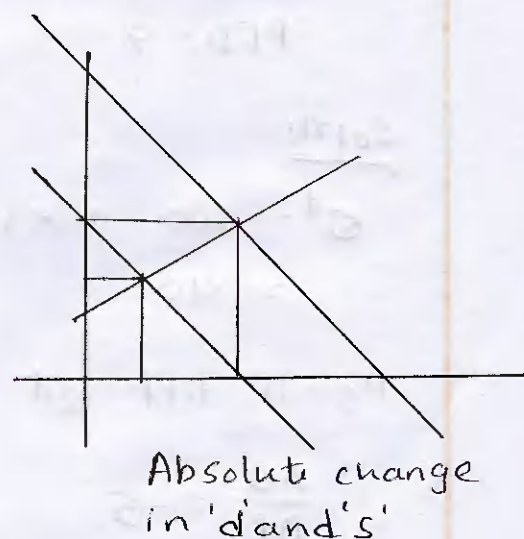- Measure of quantity demanded to change in its price.

$$PED = \frac{Percentage\ change\ in\ Q^d}{Percentage\ change\ in\ price}$$

$$= \frac{\frac{Q_1 - Q_0}{Q_0}}{\frac{P_1 - P_0}{P_0}}$$

$$\cong \frac{\frac{\Delta Q}{Q_0}}{\frac{\Delta P}{P_0}}$$

$$= \frac{\Delta Q}{\Delta P} \times \frac{P_0}{Q_0}$$

$$\cong \frac{DQ}{DP} \times \frac{P}{Q}$$

Absolute change in 'd and 's'

__Exn__ $P_0 = 10$, $Q_0 = 20$

$P_1 = 8$, $Q_1 = 24$

$PED = ?$

__Soln:__

$$PED = \frac{\Delta Q}{\Delta P} \times \frac{P_0}{Q_0}$$

$$= \frac{4}{-2} \times \frac{10}{20}$$

$$= -1$$

__Implication:__ When, price decreases by 100%.

Q^d increases by 100%.

__Exn__ $Q^d = 100 - 5P$

$P = 12$, $Q^d = 40$

$PED = ?$

__Soln:__

$$Q^d = 100 - 5 \times 12$$

$$= 40$$

Again, diff. Q^d w.r.t. P

$$\frac{\Delta Q}{\Delta P} = -5$$

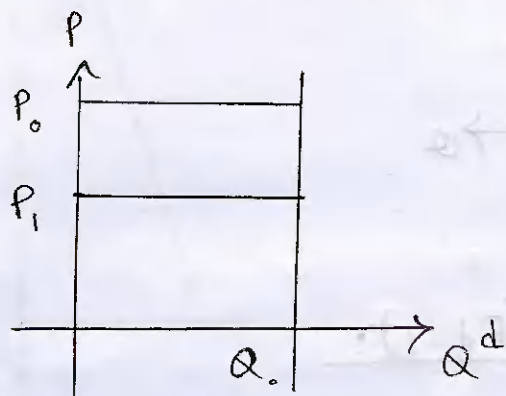$$\therefore PED = -5 \times \frac{\cancel{12}^{3}}{\cancel{40}^{\,2}}$$

$$= -1.5$$

When price increases by 100%

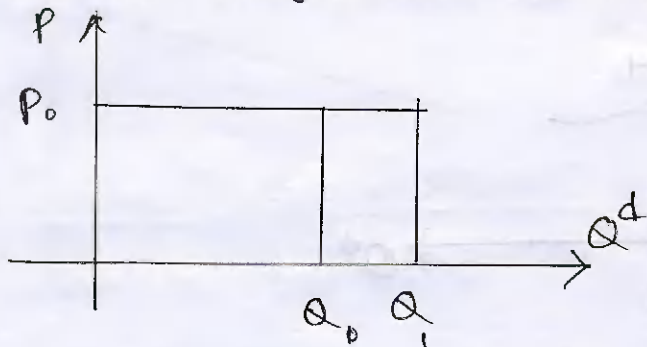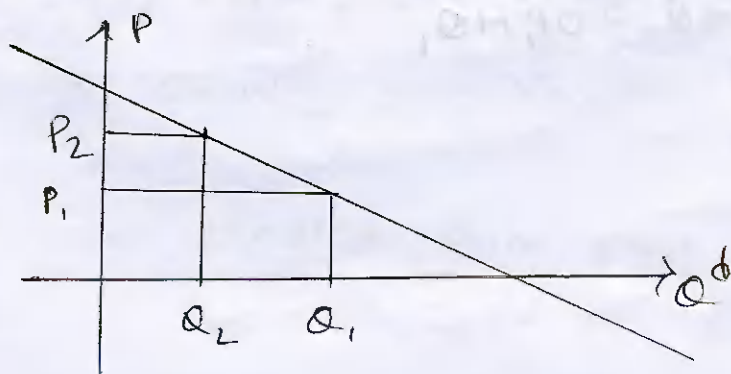Q^d decreases by 150%.

26.

Types: Total outlay method (Marshall)
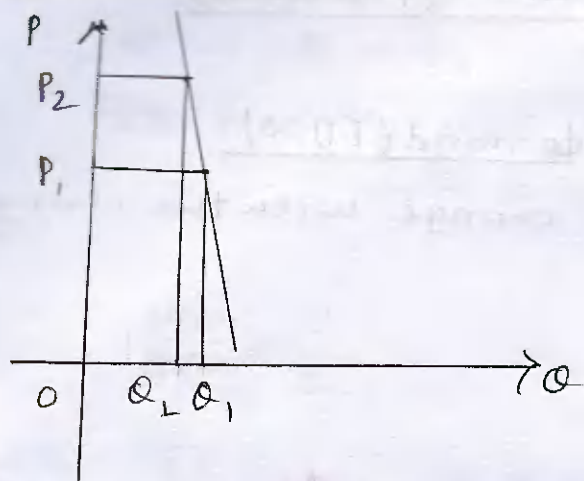
1. **Perfectly inelastic demand $(ED = 0)$:**
   Demand does not change with the change of price
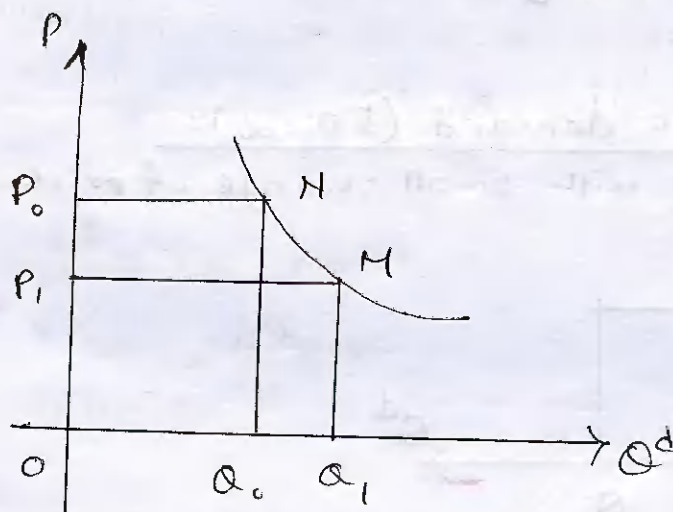

2. **Perfectly elastic demand $(ED = \alpha)$:**
   Demand changes with small change of price

3. **Elastic demand $(ED > 0)$:**

4. Inelastic demand ($0 < ED < 1$):

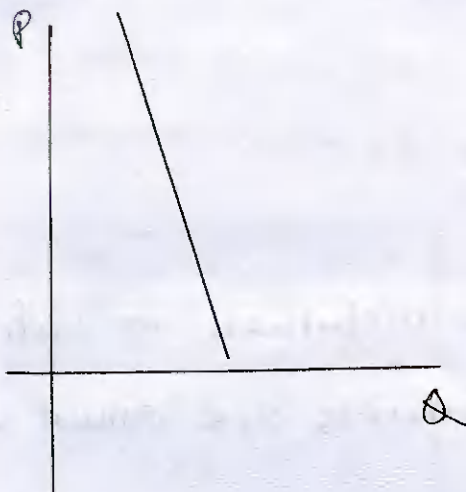

5. Unique elasticity ($Ed = 1$):

- Rectangular hyperbola
- Area $= OP_0 MQ_0 = OP_1 MQ_1$

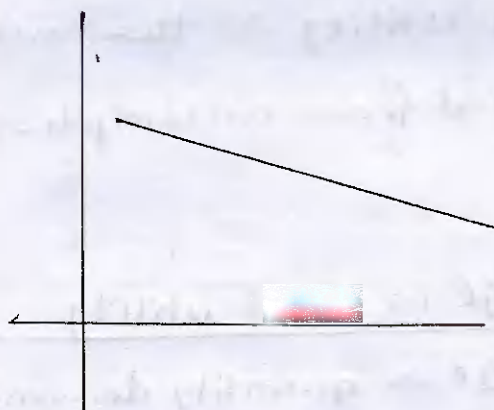27. factors that influence elasticity : demand :

- Claseness of substitute :

P

- less close substitute
  Ex - Insuline
- Low response

Q

- More close substitute
  Ex: TV
- More response

- Proportion of income spent :
  More spent, more response
  Ex: Chewing gum vs. house

- Time ellapsed since price chang :

28. Theory of consumer behaviours:-

    1. Utility approach
    2. Indefferent curve approach

29. Utility approach:

    Utility: Utility means the usefulness or satisfaction derived from goods or products are called utility.

    Merginal utility: Merginal utility is the net edition to the total utility derived from consumption of an additional unit.

    $$MU = \frac{dTU}{dQ} = \frac{\text{change in total utility}}{\text{change in quantity demanded}}$$

    $$MU_n = TU_n - TU_{n-1}$$

    Total utility: Total utility is the sum of all merginal utilities derived from consumption of all units of a good or service.

    $$TU_n = MU_1 + MU_2 + MU_3 + \cdots + MU_n$$

30. Law of diminishing merginal utility (LDMU):

- An individual gets lesser utility from consumption of successive units continuously.

- An individual get lesser utility if he consumes successive units of same goods continuously.

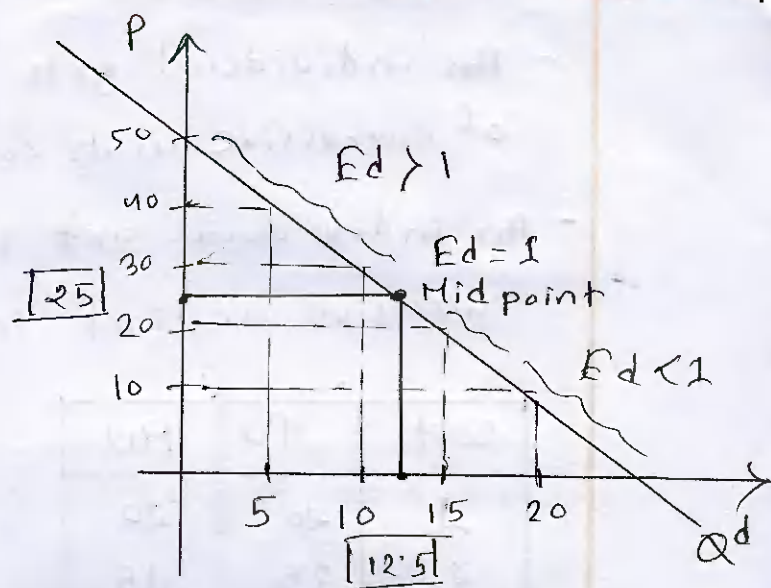| Units	TU	MU
1	20	20
2	35	15
3	45	10
4	50	5
5	50	0
6	45	-5
7	35	-10
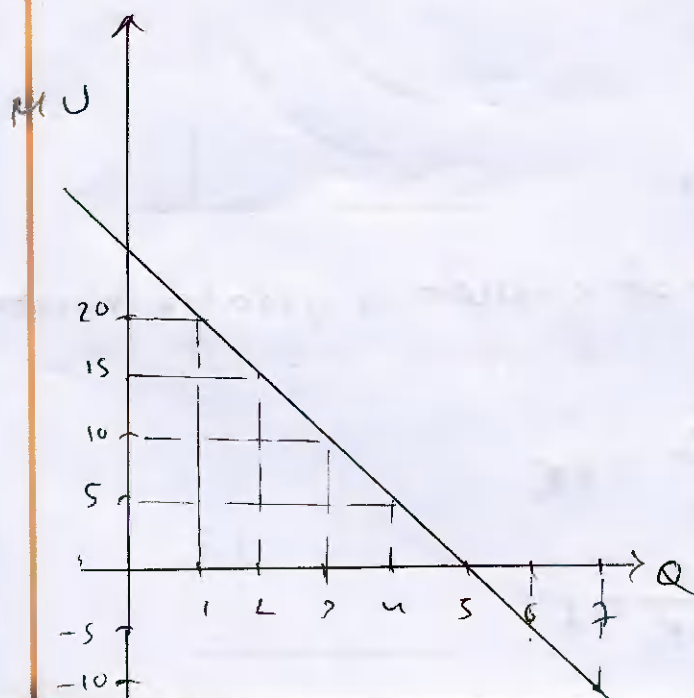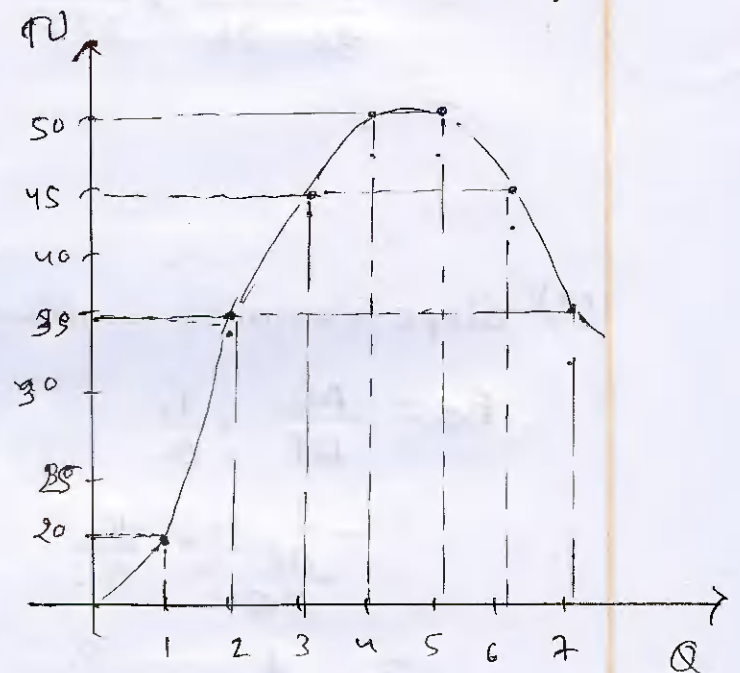
- It is a psycological thing. cannot be quantified

- MU varies from person to person

- MU of money doesn't remain constant

- This law isn't applicable for a single commodity.

31. <u>Why elasticity varies along a linear demand curve?</u>

$Q_0 = 12.5, \quad Q_1 = 10$

$P_0 = 25, \quad P_1 = 30$

$Ed = \dfrac{\Delta Q}{\Delta P} \times \dfrac{P_0}{Q_0}$

$= \dfrac{10 - 12.5}{30 - 25} \times \dfrac{25}{12.5}$

$= -1$

P

50

40

30 — Ed > 1

$\boxed{25}$ 20 — Ed = 1 · Mid point

10 — Ed < 1

5 10 15 20

$\boxed{12.5}$

Q^d

(1) Slope remains unchanged but P, Q varies.

$Ed = \dfrac{\Delta Q}{\Delta P} \cdot \times \dfrac{P_0}{Q_0}$

$= \dfrac{1}{\dfrac{\Delta P}{\Delta Q}} \times \dfrac{P_0}{Q_0}$

$= \dfrac{1}{slope} \times \dfrac{P_0}{Q_0}$
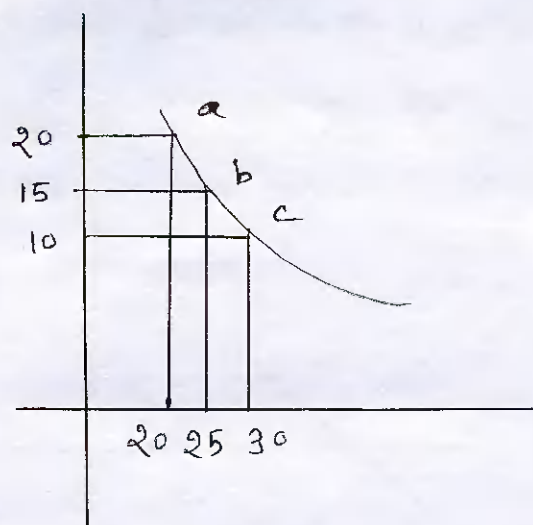
↓ ↓
const. var.

(2) Percentage change of smaller or greater number matters

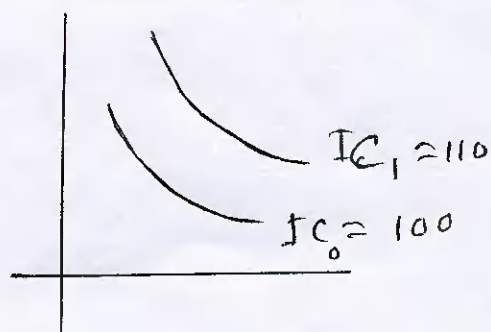$Ed = \dfrac{(2 \to 4) \times 100\%}{(10 \to 8) \times 20\%} = 5\%$

$Ed = \dfrac{(10 \to 8) \times 100\%}{(2 \to 4) \times 100\%} = 1$

32. <u>Indifferent curve:</u>

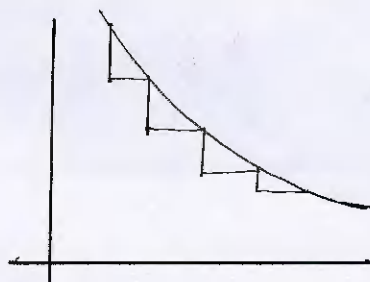**33.** <u>Properties of IC:</u>
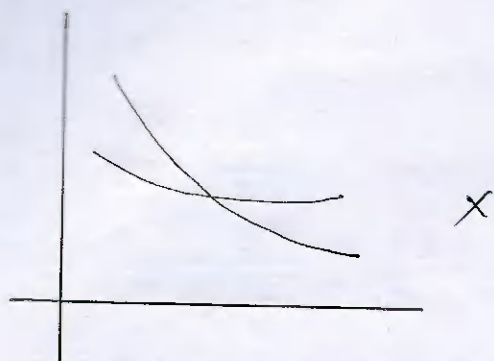
(1) ICs are negatively sloped.

(2) Higher IC shows higher utility.
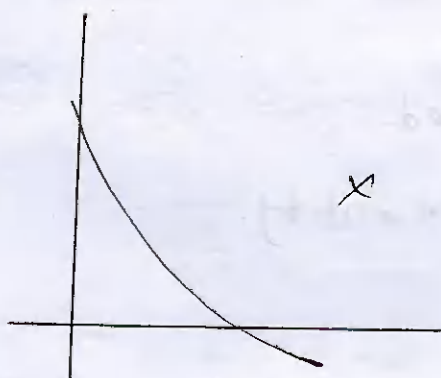

$IC_1 = 110$

$IC_0 = 100$

(3) ICs are convex to origin.
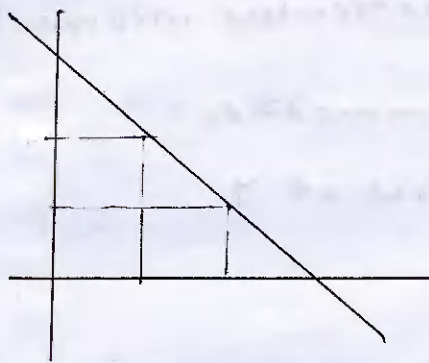
(4) ICs cannot intersect each other.

(5) ICs do not touch the axes.

34. **34.** Marginal rate of substitution (MRS):

MRS measures the rate at which the consumer is just willing to substitute the one good for other.

(1)
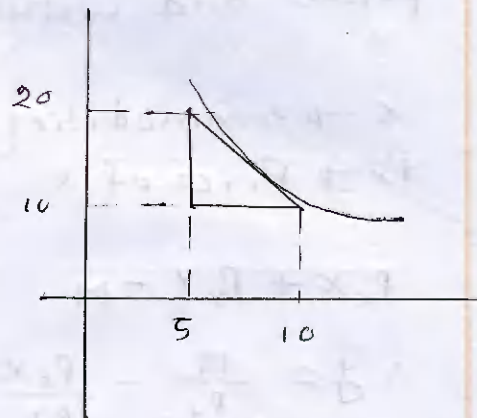
(ii)

Slope of IC = MRS = $\dfrac{dy}{dx}$

∴ MRS in fig - (ii) →

$\dfrac{dy}{dx}$

$= -$

35. **Budget line:**

It shows all the combinations of two commodities that a consumer can afford at a given market prices and within the particular income level.

$X \to$ commodities $Y \to$ commodities
$P_x \to$ Price of x $P_y \to$ Price of y.

$$P_x X + P_y Y = M$$

$$\therefore Y = \frac{M}{P_y} - \frac{P_x X}{P_y}$$

$$= -\frac{P_x}{P_y} X - \frac{M}{P_y}$$

$$\therefore \frac{dy}{dx} = -\frac{P_x}{P_y} \to \text{Exchange rate / Price ratio}$$

slope $= -\frac{P_x}{P_y}$
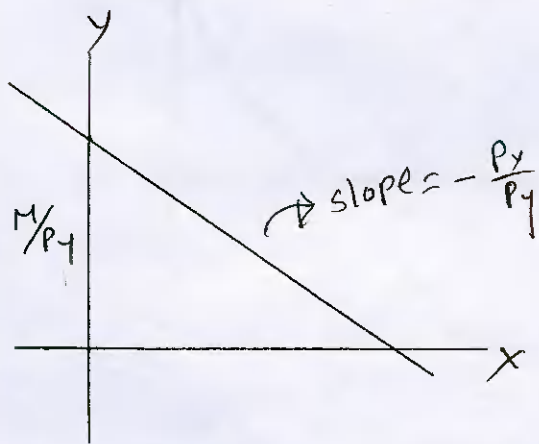
Ex: $P_x \to 5$, $P_y \to 10$, $M = 100$

$P_x X + P_y Y = M$

$\Rrightarrow 5X + 10Y = 100$

$\Rrightarrow X + 2Y = 20$

$\therefore Y = -\frac{1}{2}X + 10$

Slope $= -\frac{1}{2}$

10

20

36. <u>Consumer's equilibrium and utility minimitation:</u>

Y_0

E_0

IE_2

IC_0

IE_1
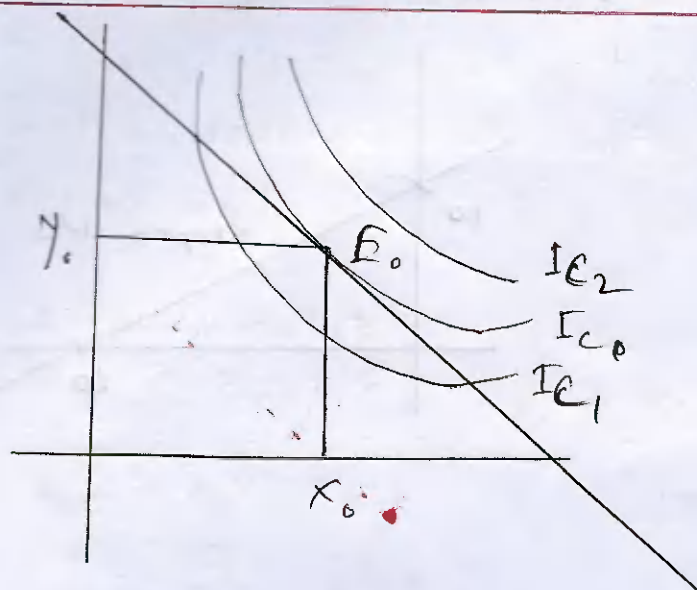
X_0

37. Production:

- what is production?

  The processes and methods used to transform tansible and intansible resources into outcome is called production.

  tansible → wood

  intansible → IQ

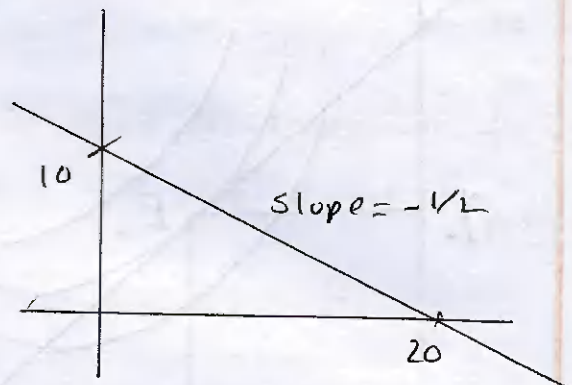- what is production function?

  Production function relates physical inputs into outputs.

  $P(y) = F(K, L);$

  $K \rightarrow$ Capital

  $L \rightarrow$ Labour

- what are the factors of production?

  Land, Labour, Capital and Enterpreneur.

- what is short run?

  In economics, short run means, at least one factor of production remains constant.

  Short run production function : $y = f(\bar{K}, L)$ or $f(K, \bar{L})$

$TP(y) = f(\bar{K}, L)$
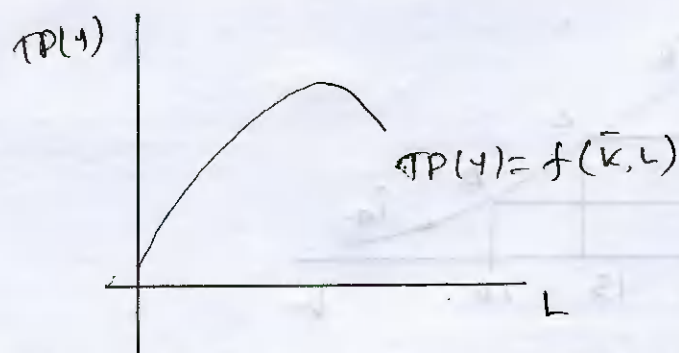
~ what is long run?

All production factors will vary. long run production
function: $y = f(k, L)$
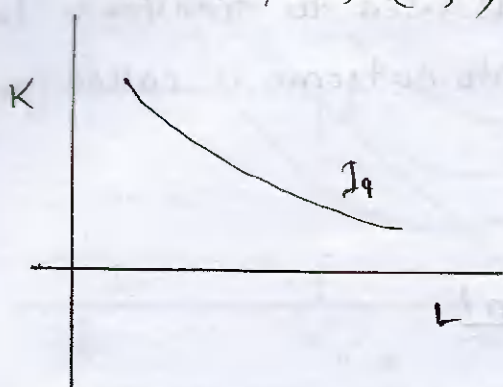
~ what is isoquant?

Shows same level of production produced by the the
help of different combinations of two inputs.

Combinations	L	K	Output	
A	5	9	100	A: $5L + 9k = 100$
B	10	6	100	B: $10L + 6k = 100$
C	15	4	100	C: $15L + 4k = 100$
D	20	3	100	D: $20L + 3k = 100$
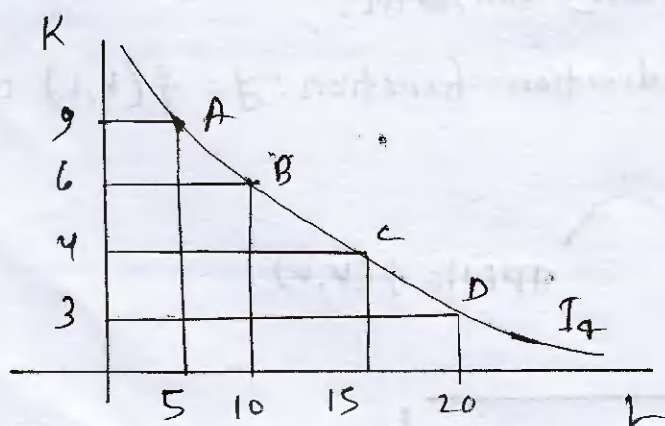
Iq map?
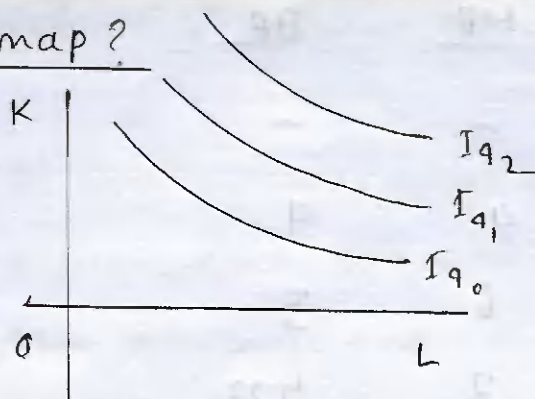
- By Iq-maps, it is possible to say how much production is greater than or less than on one's production curve than other.

Total product:

It is the summation of all products produced by the different factors of production.

Average product:

It is the ratio of total product and Labour.

$$AP = \frac{TP}{L}$$

Merginal product:

It is the net edition of total product produced from using an extra labour.

$$MP = \frac{dTP}{dL}$$

Labour	TP	MP	AP
0	0	—	—
1	4	4	4
2	10	6	5
3	13	3	4.33
4	15	2	3.75
5	16	1	3.20
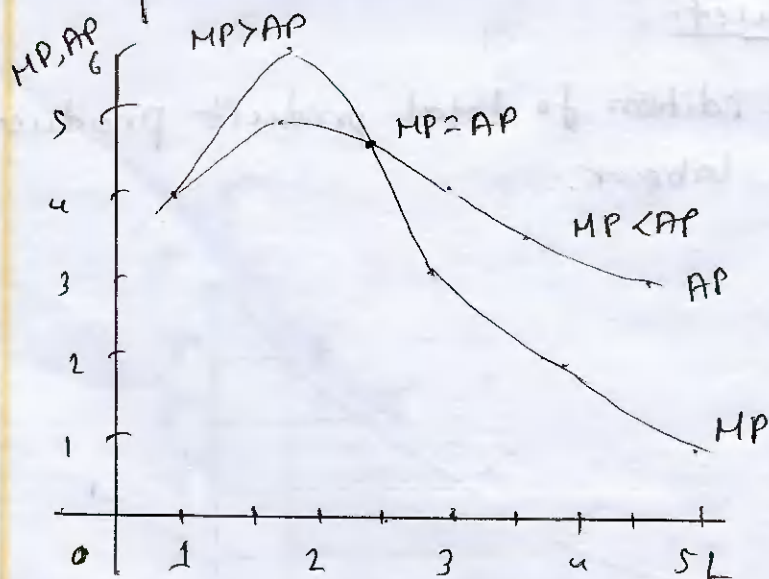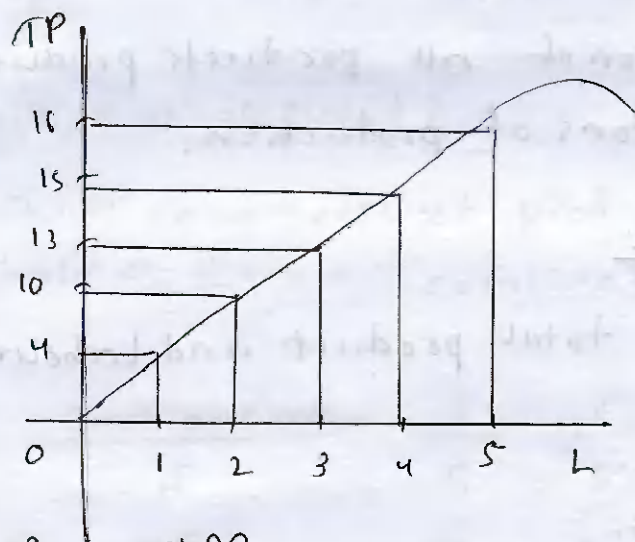
- Relationship between MP and AP:

- As long as marginal return exceeds the average return, each average return will be larger than the previous one. That is, average renturn continues to increase.

- The average return remains const. when average and marginal returns are equal. Also when, average product is maximum, marginal product is equal to average product.

- When marginal product goes below average product, average product starts to decrease. Beause, new marginal is lower and it bings average down.

38. Productivity and technological change:

When, technology improves, production f^n shifts upward
when, technology deteriorates, production f^n shifts downward.
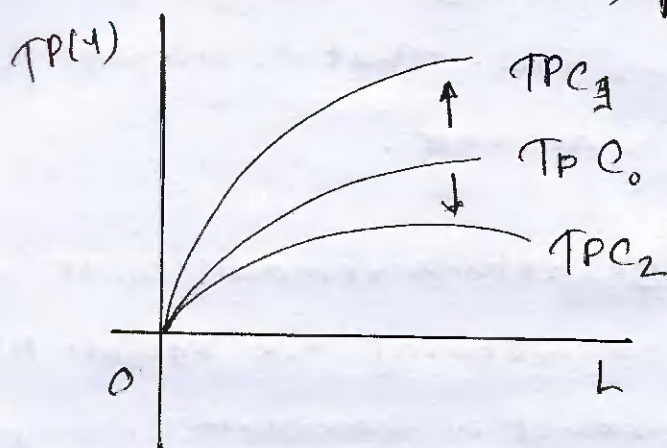
39. Law of Returns to scale:

The law of returns to scale examines the relationship between output and the sale of inputs in the long run when all inputs are increased in the same proportion.

Rate of $\uparrow\downarrow$ of input $\Leftrightarrow$ Rate of $\uparrow\downarrow$ of y (output)

(1) <u>Increasing returns to scale:</u>

Proportional change
in input   <   Proportional change
in output

Ex~   Input: Output:
$$f(2k, 2L) \quad < \quad 3f(k, L)$$

Here, $\Delta L < \Delta Y$
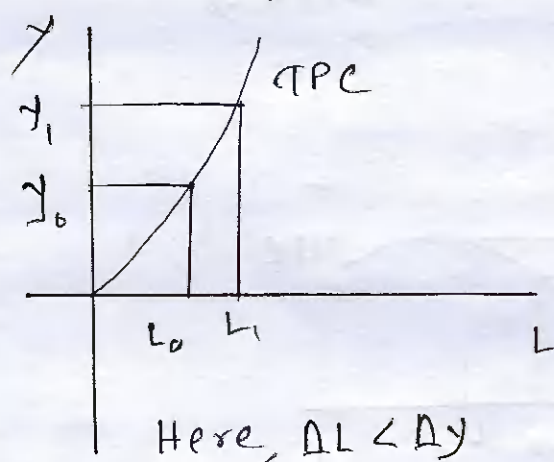
(II) <u>Constant returns to scale:</u>

Proportional change
in input   =   Proportional change
in output

Ex ~   Input: =   Output:
$$f(2k, 2k) \qquad \simeq \qquad 2f(k, L)$$

Here, $\Delta L = \Delta Y$
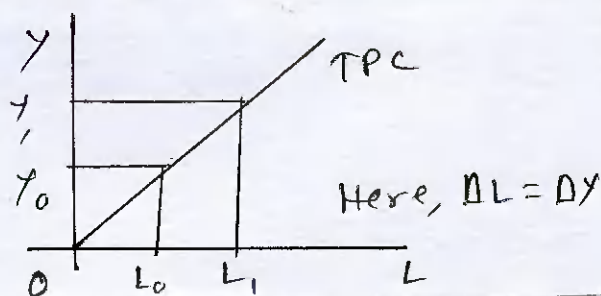
(III) Decreasing returns to scale:

Proportional change in input $>$ Proportional change in output

Ex: Input: $f(3k, 3L)$ $>$ Output: $2f(k, L)$

Here, $\Delta L > \Delta Y$
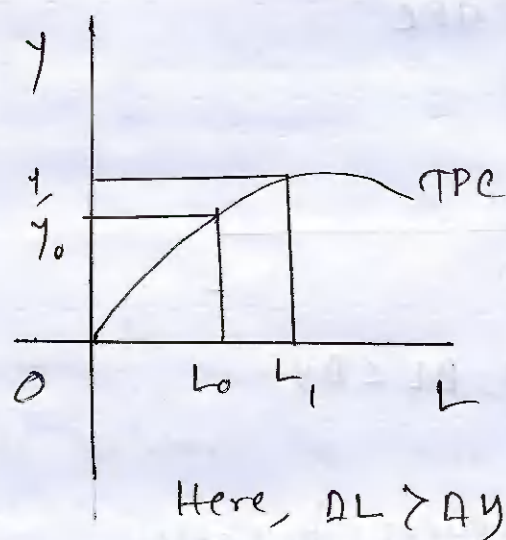
40. Cost:

— Total cost,
Total cost is the cost of all type of factors of production it uses.
$$TC = TVC + TFC$$

— Total variable cost,
Total variable cost is the cost of all variable factors of production it uses.

— Total fixed cost:
Total fixed cost is the cost of all fixed factors of production it uses.
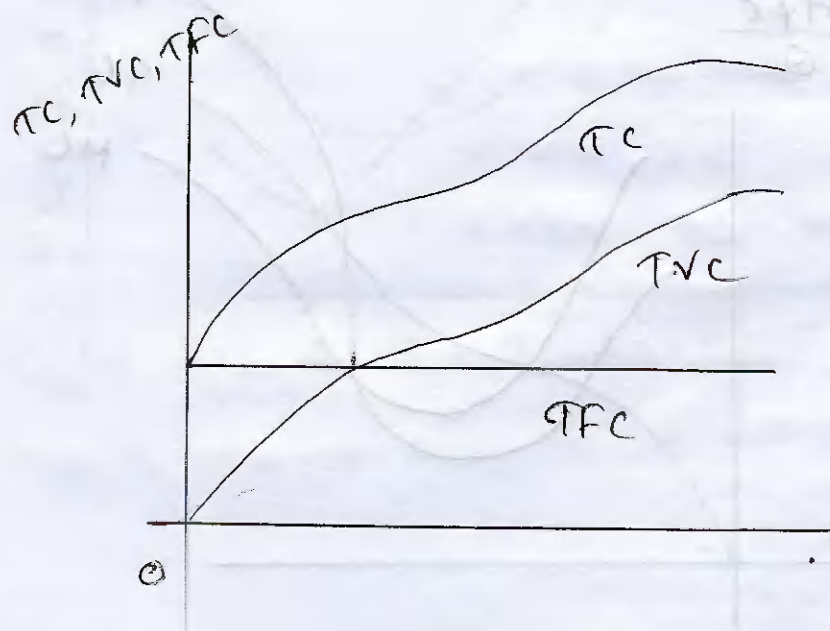
- **Marginal cost:**

Marginal cost is the neat addition of total cost arising from the production of extra one unit of output.

$$MC = \frac{dTC}{dQ}$$

Average cost:

Average cost is the ratio of total cost and the number of unit produced.

$$AC = \frac{TC}{Q} \quad , \quad AC = AFC + AVC$$

$$- AVC = \frac{TVC}{Q}$$

$$- AFC = \frac{TFC}{Q}$$
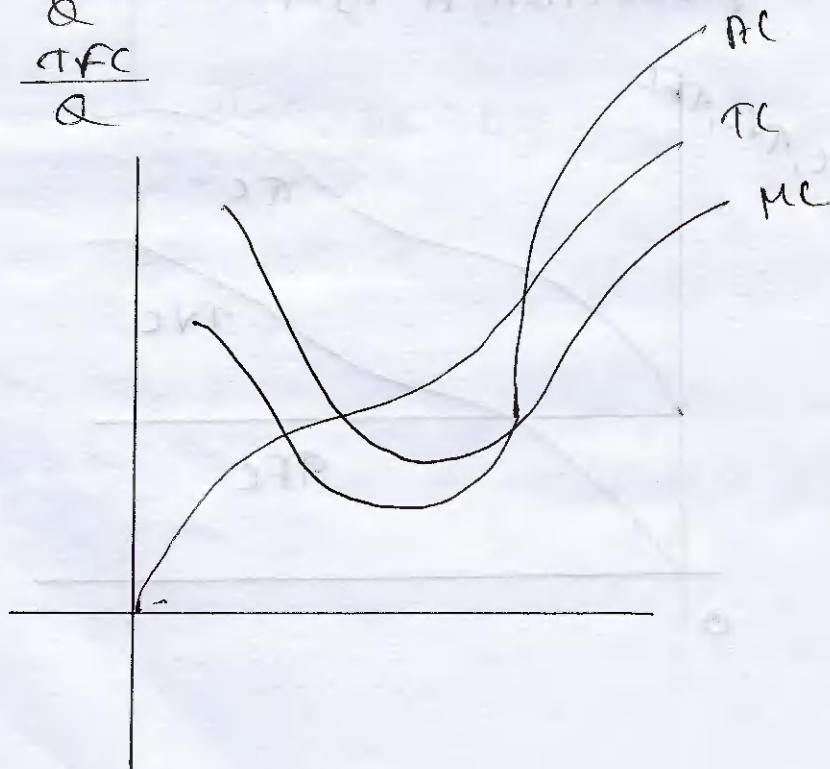
	Labour	Output	TFC	TVC	TC	MC	AC
A	0	0	20	5	25	—	—
B	1	4	25	25	50	6.25	12.5
C	2	10	25	50	75	4.17	7.5
D	3	13	25	75	100	8.33	7.7
E	4	15	25	100	125	12.5	8.33
F	5	16	25	125	150	25	9.375
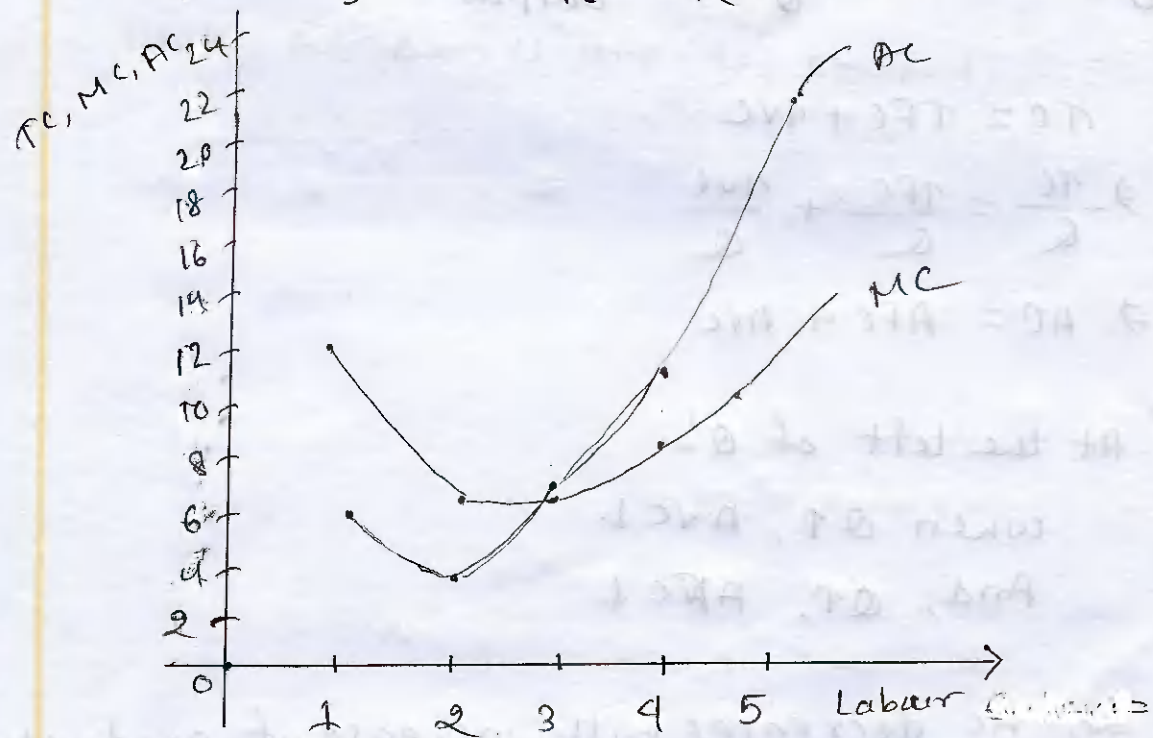
41. <u>Why AC curves are 'u' shaped?</u>
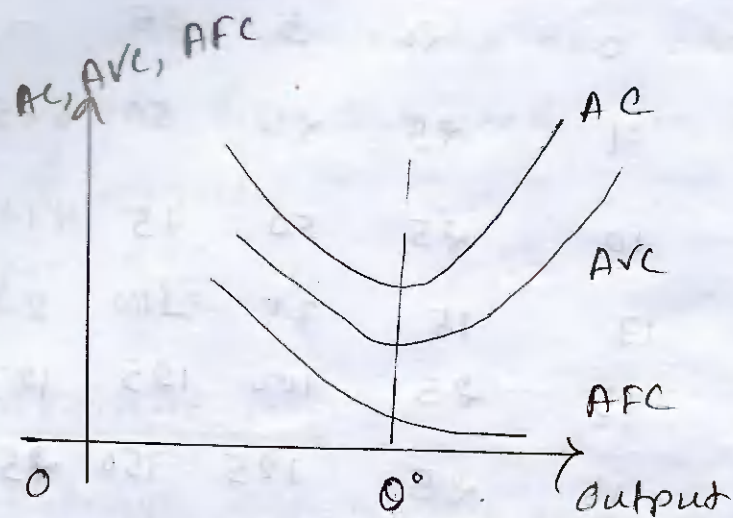
$$TC = TFC + TVC$$

$$\Rightarrow \frac{TC}{Q} = \frac{TFC}{Q} + \frac{TVC}{Q}$$

$$\Rightarrow AC = AFC + AVC$$

At the left of $O°$;

    when $Q\uparrow$, $AVC\downarrow$

    And, $Q\uparrow$, $AFC\downarrow$

So, AC decreases with increase of production.
We get the downward segment of AC curve

At the right of $Q°$ -

when, $Q\uparrow$, AFC$\downarrow$

and, $Q\uparrow$, AVC$\uparrow$

Proportionate increasing in AVC > Proportionate
decreasing in AFC

So, this pushes curve upward. We get the upward segment of AC curve.

Hence, AC curves are 'U' shaped.

42. Long run cost (All the factors of production varies)

  — Why long run AC is the envelop of short run AC?
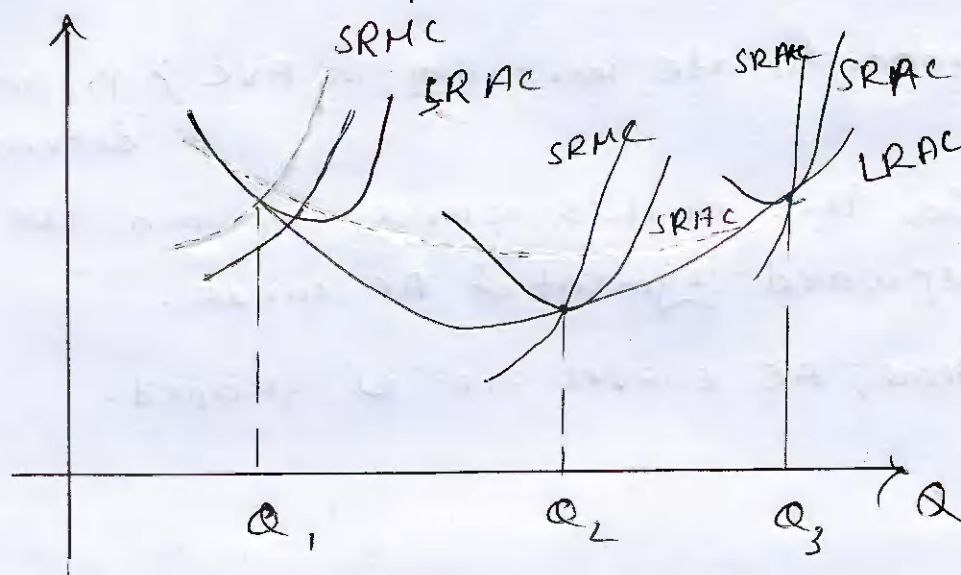
Extend:

$$c = b_0 + b_1 x + b_2 x^2 + b_3 x^3$$

$$TFC = b_0 \quad \bigg| \quad TVC = b_1 x - b_2 x^2 + b_3 x^3$$
$$AFC = \frac{b_0}{x} \quad \bigg| \quad TAC = b_1 - b_2 x + b_3 x^2$$

$$TC = TVC + TFC = b_0 + b_1 x - b_2 x^2 + b_3 x^3$$

$$AC = AVC + AFC = \frac{b_0}{x} + b_1 - b_2 x + b_3 x^2$$

$$MC = b_1 - 2b_2 x + 3b_3 x^2$$

43. Market:

- **What is market?**

Market is just a processor mechanism through which buyers will buy and sellers will sell.

- **What are the different types of market structure?**

1. Perfectly competitive market
2. Imperfectly competitive market
   - Monopoly
   - Duopoly
   - Oligopoly
   - Monopsony
   - Monopolistic competition

44. **Difference between PCM, ICM?**

PCM	ICM	
	Oligopoly	Monopoly
1. Large no. of buyers and sellers. Ex- Rice market	1. Large no. of buyers and few sellers Ex.- Brandshop	1. Large no. of buyers but single seller. Ex - Wasa.

$\Rightarrow P = \dfrac{dTC}{dq}$

$\Rightarrow 20 = 4 + 2q$

$\therefore q = 8 \quad$ (Equilibrium output)

(Ans.)

Profit, $\pi = TR - TC$

$$= P \times q - (16 + 4q + q^2)$$

$$= 20 \times 8 - (16 + 4 \times 8 + 8^2)$$

$$= 160 - 16 - 32 - 64$$

$$= 160 - 112$$

$\therefore \pi = 48$

(Ans)

Market supply, $Q = 100 - P$

$$= 100 - 20$$

$$= 80$$

(Ans)

No. of firms, $N = \dfrac{Q}{q}$

$$= \dfrac{80}{8}$$

$$= 10$$

(Ans)

$MC = 4 + 2q$	$AC = \dfrac{TC}{q}$
$= 4 + 2 \times 8$	$= \dfrac{112}{8}$
$= 20$	$= 14$

P, AC, MC

$$MC = 4 + 2q$$

$$AC = \frac{16}{q} + 4 + q$$

20

14

4

O   8   q

k
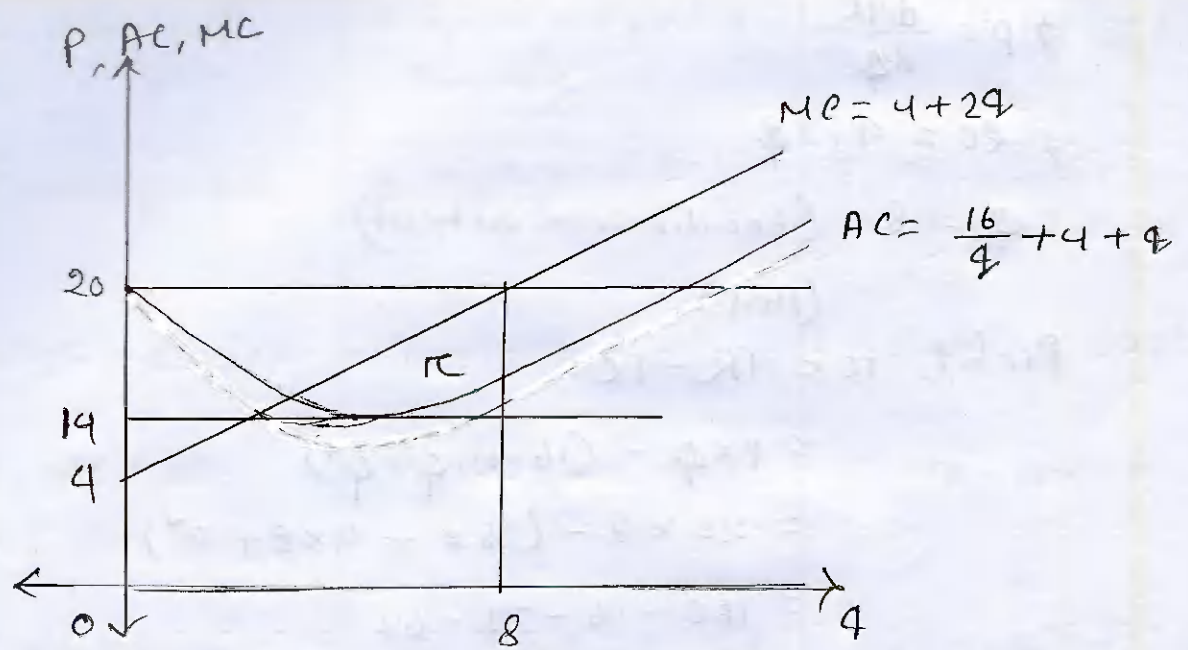
46. <u>Duopoly</u>: Two seller, large buyers

<u>Monopsony</u>: One buyer, large no. of seller

47. Monopolistic competition (Monopoly + PCM)

Example: Soap industry.

- Exists freedom of entry.
- There is a symmetry in product.
- Large number of buyers.
- Each firm faces a downward demand curve.

48. Why monopoly arises?

- Natural barriers to entry.

- Legal barriers: Ex - Patent right
- Ownership.

49. Ex: A monopolist faces-

$$DC: P = 100 - Q$$
$$TC = 10 + 4Q^2$$

- How much output will produce?
- what price will it charge?
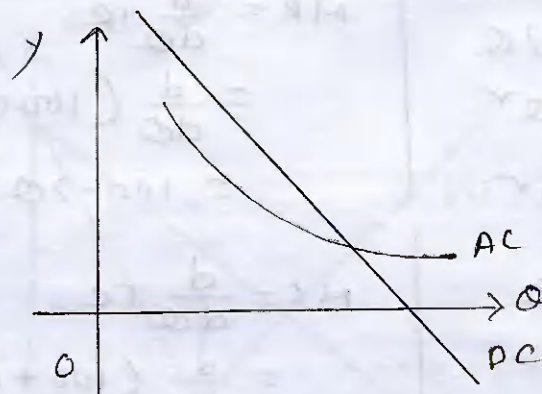- what will be the profit?
- show graphically?

Soln:

We know Under monopoly -

$$MR = MC$$

$$TR = P \times Q$$
$$= (100 - Q)Q$$
$$= 100Q - Q^2$$

$$TC = 10 + 4Q^2$$

$$MC = \frac{d}{dQ} TC$$
$$=$$

$$MR = \frac{d}{dQ} TR$$
$$= \frac{d}{dQ}(100Q - Q^2)$$
$$= 100 - 2Q$$

$$MC = \frac{d}{dQ} TC$$
$$= \frac{d}{dQ}(10 + 4Q^2)$$
$$= 8Q$$

$$\therefore 100 - 2Q = 8Q$$

$$\Rightarrow 100 = 10Q$$

$$\therefore Q = 10 \quad (Output)$$

Price, $P = 100 - Q$

$\qquad = 100 - 10$

$\qquad = 90$

Profit, $\pi = TR - TC$

$\qquad = (100Q - Q^2) - (4Q^2 + 10)$

$\qquad = (100 \times 10 - 10^2) - (4 \times 10^2 + 10)$

$\qquad = 900 - 410$

$\qquad = 490$

Graphical representation –

P, MC, MR

100

90

80

MC = 8Q

P = 100 - Q

MR = 100 - 2Q

O $Q_0 = 10$ 50 100 Q
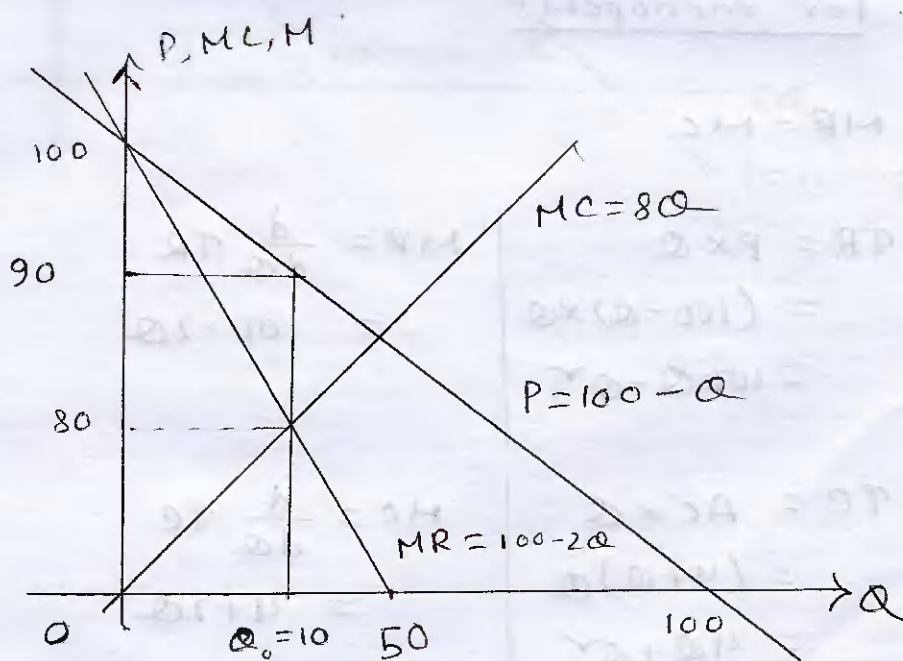
50.

<u>Ex:</u>

$$P = 100 - Q$$

$$AC = 4 + Q$$

- Calculate eq^m Q, P, π for monopoly.
- Show graphically.
- Calculate for PCM.
- Show graphically.
- Calculate DWL due to the presence of monopoly.
- Show graphically.

<u>Soln:</u>

❶ <u>For monopoly:</u>

$$MR = MC$$

$$TR = P \times Q$$
$$= (100 - Q) \times Q$$
$$= 100Q - Q^2$$

$$MR = \frac{d}{dQ} TR$$
$$= 100 - 2Q$$

$$TC = AC \times Q$$
$$= (4 + Q)Q$$
$$= 4Q + Q^2$$

$$MC = \frac{d}{dQ} TC$$
$$= 4 + 2Q$$

$$\therefore 100 - 2Q = 4 + 2Q$$

$$\Rightarrow 4Q = 96$$

$$\therefore Q = 24$$

$$P = 100 - Q$$
$$= 100 - 24$$
$$= 76$$

$$\pi = TR - TC$$

$$= (100Q - Q^2) - (40 + Q^2)$$

$$= (100 \times 24 - 24^2) - (4 \times 24 + 24^2)$$

$$= 1152$$

P, AC, MC

100

76

52

4

$MC = 4 + 2Q$

$MR = 100 - 2Q$

24   50   100   Q

$P = 100 - Q$
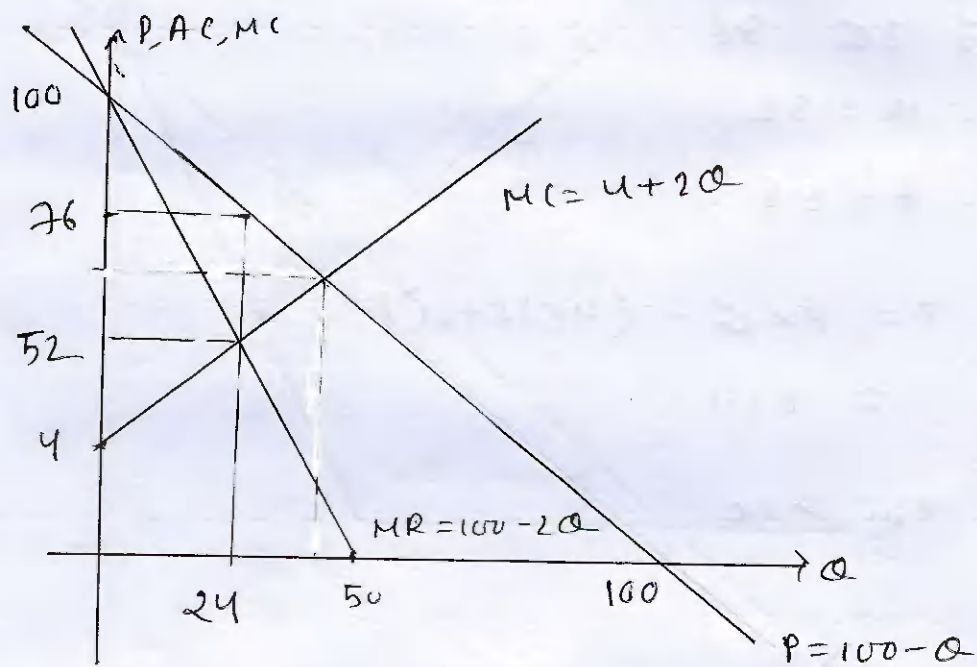
A for PCM:

$P = MC$

$\Rightarrow P = 4 + 2Q$

$\Rightarrow 100 - Q = 4 + 2Q$

$\Rightarrow 3Q = 96$

$\therefore Q = 32$

$\therefore P = 68$

$\pi = P \times Q - (4 \times 32 + 32^{\checkmark})$

$= 1024$

$\pi_m > \pi_c$
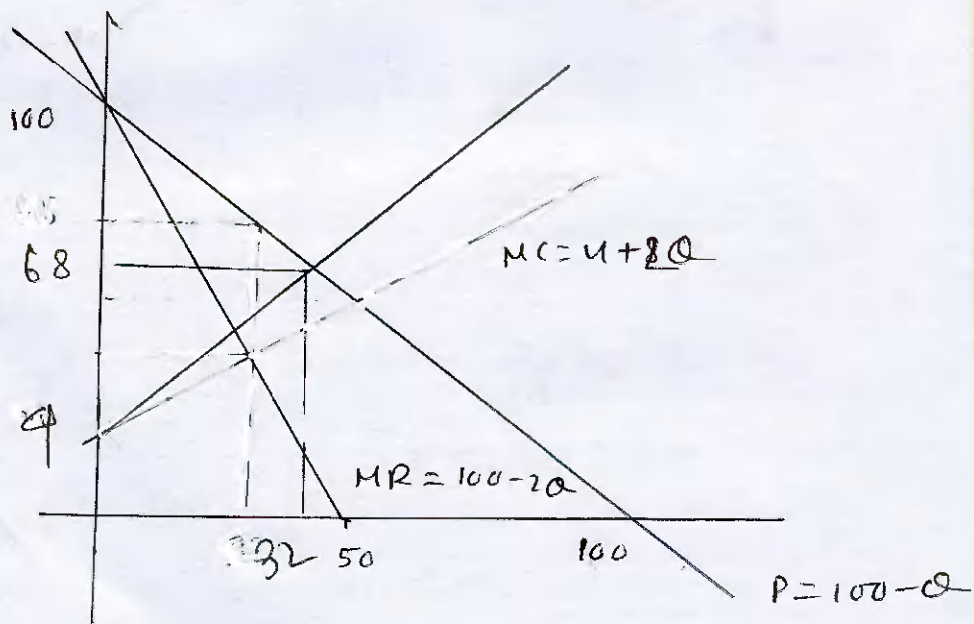
Q Dead weight loss:
It is the portion of production that is lost forever. Neither government, nor population gets the lost partition.

Graph with axes labeled P, AC, MC (vertical) and Q (horizontal).

- 100 marked on vertical axis
- $P_m = 76$
- $P_c = 68$
- $MC_m = 52$
- 4
- DWL (shaded region)
- $MR = 4 + 2Q$
- $MR = 100 - 2Q$
- $P = 100 - Q$
- $Q_m \quad Q_c \quad 50 \quad\quad 100$
- $= 24 \quad = 32$
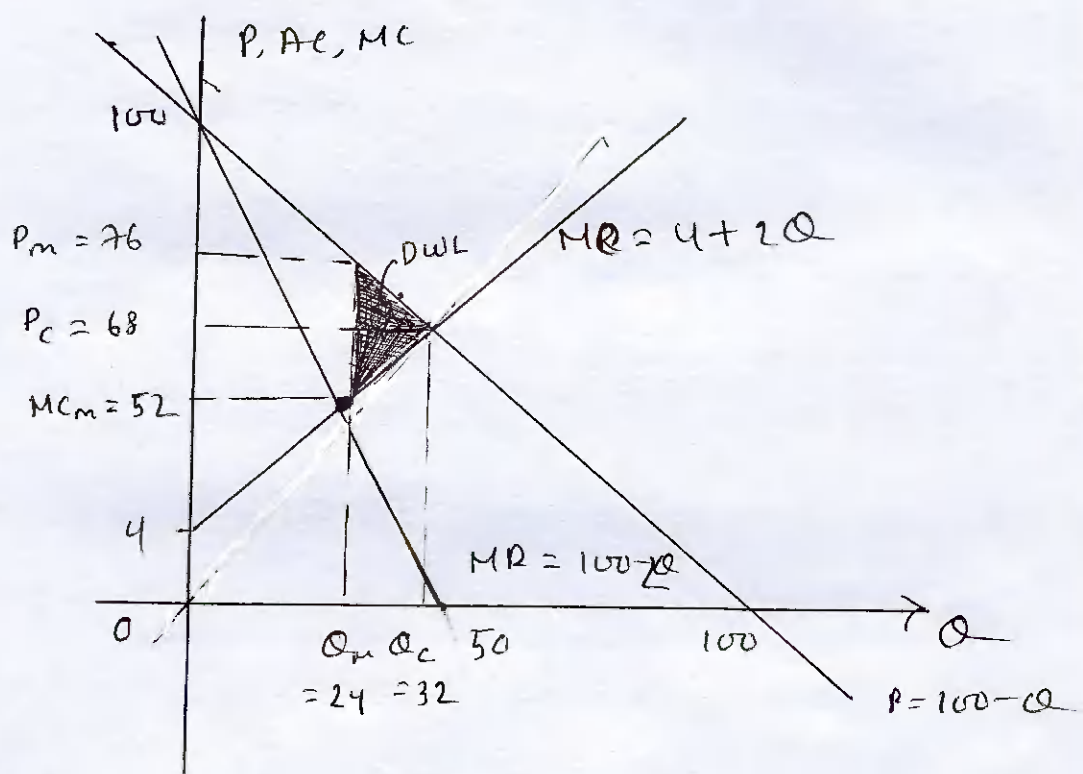
$$DWL = \tfrac{1}{2} \times (P_m - P_c)(Q_c - Q_m)$$
$$= \tfrac{1}{2} \times (76 - 52)(32 - 24)$$
$$= \tfrac{1}{2} \times 24 \times 8$$
$$= 96$$

51. <u>Saving:</u>

Saving = Disposable income — Expenditures

= (Income − Tax) − Expenditures

52. Savings: The amount which a man saves out of income after he has incurred his consumption expenditure

53. <u>Investment:</u> Investment means the net addition to stock of capital goods like machinery, equipment, factories etc. over a period of time.

54. <u>Types of investment:</u>

- <u>Net investment:</u> Gross investment − Depreciation
- <u>Ex-ante / Planned inv.:</u> Govt. inv.
- <u>Ex-post/realised inv.:</u> Can be known after inv.
- <u>Public inv:</u> Govt. inv.
- <u>Private inv:</u> By private individuals

From the point of view of the theory of income and employment, the more important classification of investments ~~into~~ is autonomous and induced inv.

- <u>Autonomous investment:</u> Which do not depend on inc
    1. Independent of income level.
    2. Income~~—~~inelastic.

Inv.
↑
Income →
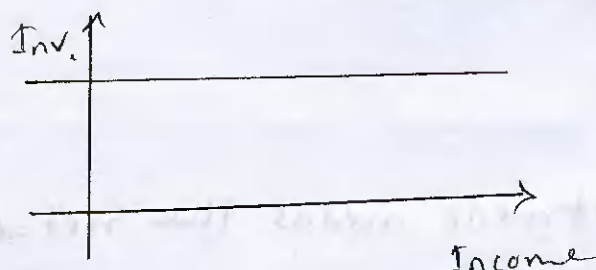
3. Dependant on population growth and technical progress

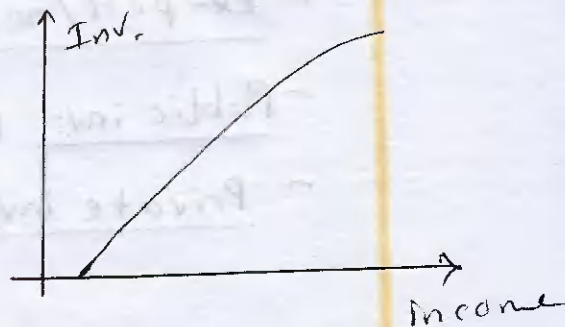Ex: ~~High~~ Long range investments in houses, roads, public buildings etc.

- <u>Induced investment:</u> Which varies with national inc.

Inv.
↑
Income →

1. NI ↑   I. inv ↑
    NI ↓   I. inv ↓

2. Income-elastic
3. Influenced by profit motive
4. Sensitive to change in income

55. Importance of investment:

1. Employment depends upon effective demand. There are two major constituents of of effective demand — investment and consumption.

   Effective demand = Investment + Consumption

   Investment is more volatile and unpredictabe and more strategic variable.

2. Employment depends on investment.

3. If inv.↑, emp.↑ + inc.↑ + cons^m↑ + gr.↑

56. factors affecting investment:

— Investment depends on —

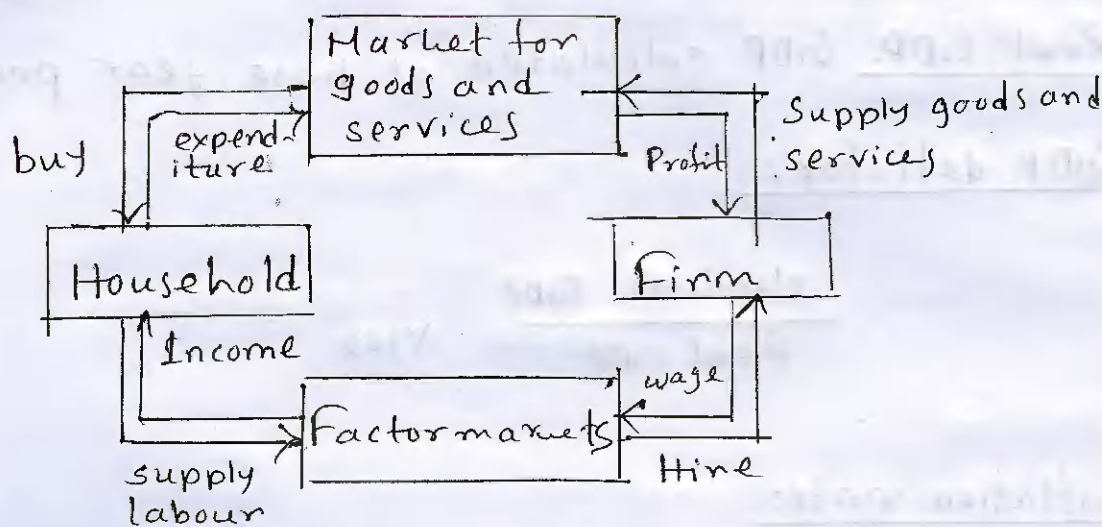   (a) Rate of interest

      (b) Expected rate of return

— If rate of interest < rate of return, investment will continue

— Investment depends on capacity of firm. If a firm has excess capacity and can handle increased future demand, it will not go for further investment.

57. Circular flow of income:

58. GDP (Gross domestic product):

GDP is the market value of the final goods and services produced within a country in a given period of time.

Components of $GDP = C + I + G + NX$
$$= C + I + G + (X - M)$$

$Y = GDP$
$C = $ consumption
$I = $ Investment
$G = $ Govt. expenditure
$NX = $ Net export
$X = $ Export
$M = $ Import

59. Ways to measure GDP:

There are 3 ways to measure gdp-

(1) Product approach → Price × total amount

(2) GDP at factor cost → Rent, Interest, Profit, wage

(3) Value added → All steps are added to final good

60. Nominal GDP: GDP calculated at current year prices

Real GDP: GDP calculated at base year prices.

GDP deflator:

$$\frac{Nominal \ GDP}{Real \ GDP} \times 100$$

Inflation rate:

$$\frac{GDP \ deflator \ at \ y_n - GDP \ deflator \ at \ y_{n-1}}{GDP \ deflator \ at \ y_{n-1}}$$

GNP: GDP + Nation's income in abroad - Foreigner income in country

61. IS GDP a well measure of economic well being?

Or, What are the limitations of GDP?

Illigal inomes are not added

62. Exercise-4:

Year	P. of apple	Q. of apple	P. of orange	Q. of orange
2015	$1	100	$2	50
2016	$2	150	$3	100
2017	$3	200	$4	150

Calculate NGDP, RGDP, deflator, inflation rate, growth rate?

Soln.

2015→

N. GDP = $1 × 100 + $2 × 50 = $200

R. GDP = $1 × 100 + $2 × 50 = $200

deflator = $\frac{\$200}{\$200} \times 100 = 100$

2016 →

$NGDP = \$2 \times 150 + \$3 \times 100 = \$600$

$RGDP = \$1 \times 150 + \$2 \times 100 = \$350$

$deflator = \dfrac{\$600}{\$350} \times 100 = 171.42$

$Inflation\ rate = \dfrac{171.42 - 100}{100} = 0.7142$

2017 →

$NGDP = \$3 \times 200 + \$4 \times 150 = \$1200$

$RGDP = \$1 \times 200 + \$2 \times 150 = \$500$

$Deflator = \dfrac{\$1200}{\$500} \times 100 = 240$

$Inflation\ rate = \dfrac{240 - 171.42}{171.42}$

$= 0.4$

(Av)

63. <u>Monetary policy</u>:—

That action of central bank that how to manage liquidity of money to create economic growth.

64. <u>What are the tools of monetary policy?</u>

1. <u>Open market operation (OMO)</u>:

Bangladesh bank
buys securities
from commertial → Money Supply ↑
bank

BB sells securities → Money Supply ↓

2. <u>Reserved requirement</u>:

rr ↑ → ms ↓
rr ↓ → ms↑

3. Discount window:

65. Goals / Objectives of Monetary policy:

- Neutrality of money
- Full employment
- Exchange rate stability
- Economic growth
- Price stability

- Demand — what is demand, Quantity demand
  - difference
  - law of demand
  - exceptions
  - DC slopes downward = why?
  - Market demand curve?
  - Equilibrium
  - Causes of changes in demand
  - Consumer's surplus

- Cost
- Market — what is?
  - Structure
  - Monopoly / P. Competition
  - Dwl

- GDP/GNP — what?
  - Math
  - well or not?