

Demand

- ① Willingness
 - ② money.
 - ③ Availability in market.

Determinants of Demand:

- By consumer point of view.

 - ① Price of commodity.
 - ② Price of related products.
 - ③ Related Goods.

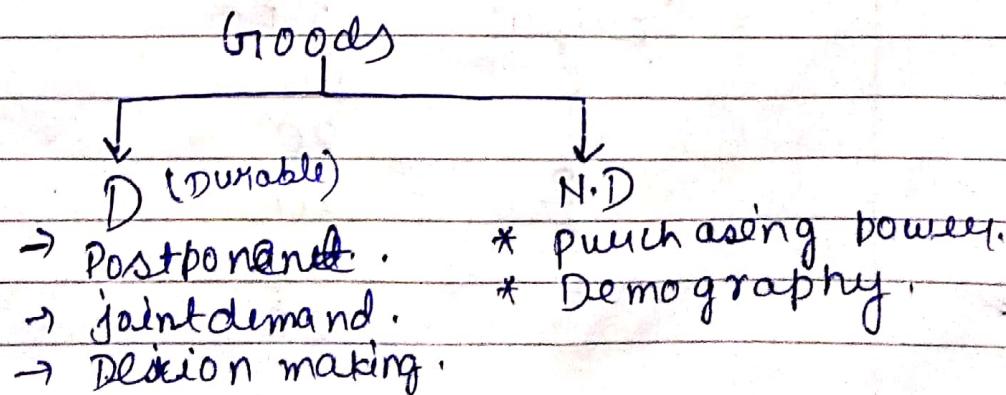
Substitute Complementary

- iv) Income of consumer. (y)
 - v) Taste and preference.
 - vi) Expectation of consumer.

By producer's point of view

- i) No. of Consumers (Gender Specific)
(Season Specific)
(Age Specific)
 - ii) Distribution of Consumers.

$$D_n = f(P_n, P_S, P_C, \gamma, T, E, N, D, \mu)$$



- replacement
- credit Condition etc.

$$\rightarrow \text{Cost Price} = \text{TFC} + \text{TVC}$$

Cost is a sum of total fixed & total variable cost.

$$\text{PRICE} = \text{cost} + \text{profit}$$

$$\text{PROFIT} = \text{Price} - \text{cost}$$

→ Fixed cost includes those cost that do not vary with size output.

→ Variable cost are those cost that vary with size of output.

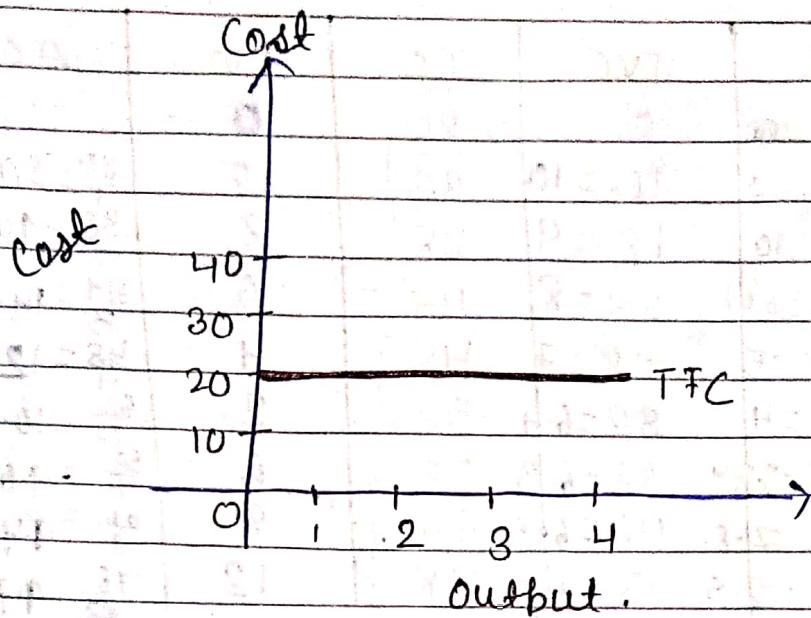
→ Demand refers to various quantities of a commodity that a consumer is willing to buy at different possible prices of a different price of commodity within a given period of time.

Demand denote three elements that are:- Quantity, price and time.

$$\text{Total cost} \div Tc = \text{TVC} + \text{TFC}$$

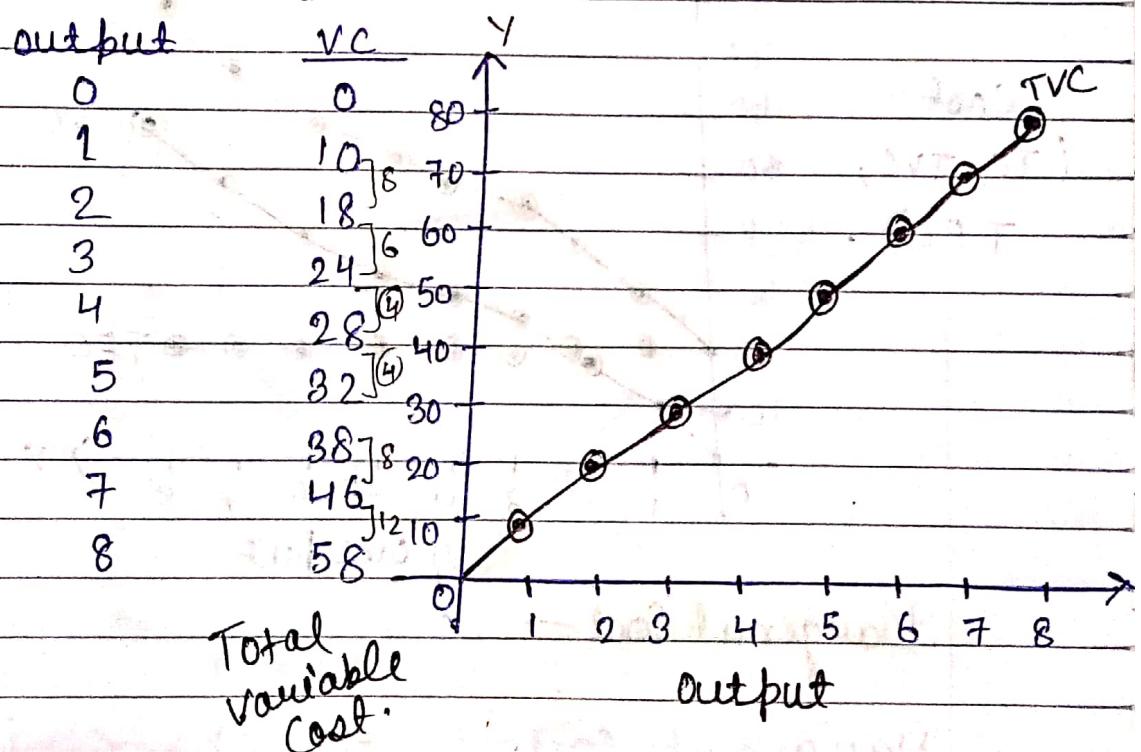
Total fixed cost

output	<u>TFC</u>
0	20
1	20
2	20
3	20
4	20



Total Fixed cost is represented as a st. line parallel to x-axis because its remain const. at all level of output.

Total Variable cost:



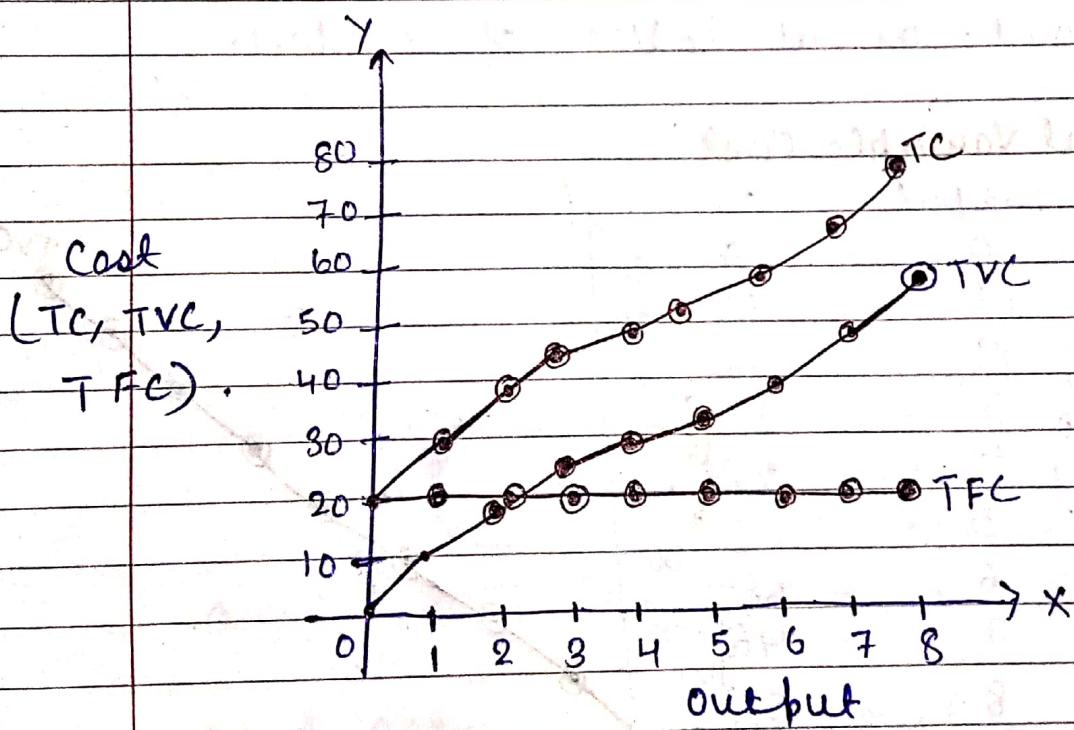
$$TC = TFC + TVC$$

$$MC = TC_n - TC_{n-1} (VC)$$

$$AC = \frac{TC}{\text{output}}$$

Date

Output	TFC	TVC	TC	MC	AC
0	20 = 0	0 = 0	20 = 20	0 = -	—
1	20 = 20	10 = 10	30 = 30	10	$\frac{30}{1} = 30$
2	20 = 10	18 = 9	38 = 38	8	$\frac{38}{2} = 19$
3	20 = 6.67	24 = 8	44 = 44	6	$\frac{44}{3} = 14.67$
4	20 = 5	28 = 7	48 = 48	4	$\frac{48}{4} = 12$
5	20 = 4	32 = 6.4	52 = 52	2	$\frac{52}{5} = 10.4$
6	20 = 3.33	38 = 6.3	58 = 58	6	$\frac{58}{6} = 9.67$
7	20 = 2.8	46 = 6.5	66 = 66	8	$\frac{66}{7} = 9.42$
8	20 = 2.5	58 = 7.25	78 = 78	12	$\frac{78}{8} = 9.75$



Marginal Cost:

Marginal Cost is the change in total cost (Variable) by producing one more or one less unit of output.

Average cost:

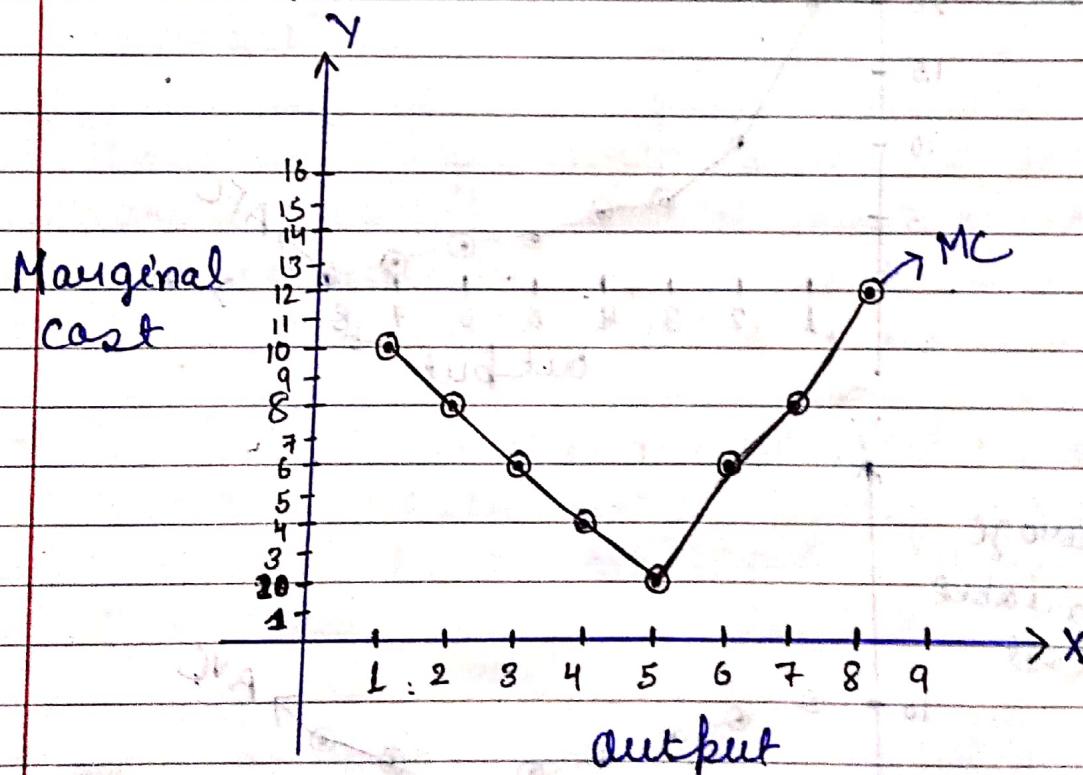
$$AC = \frac{TC}{\text{Output}}$$

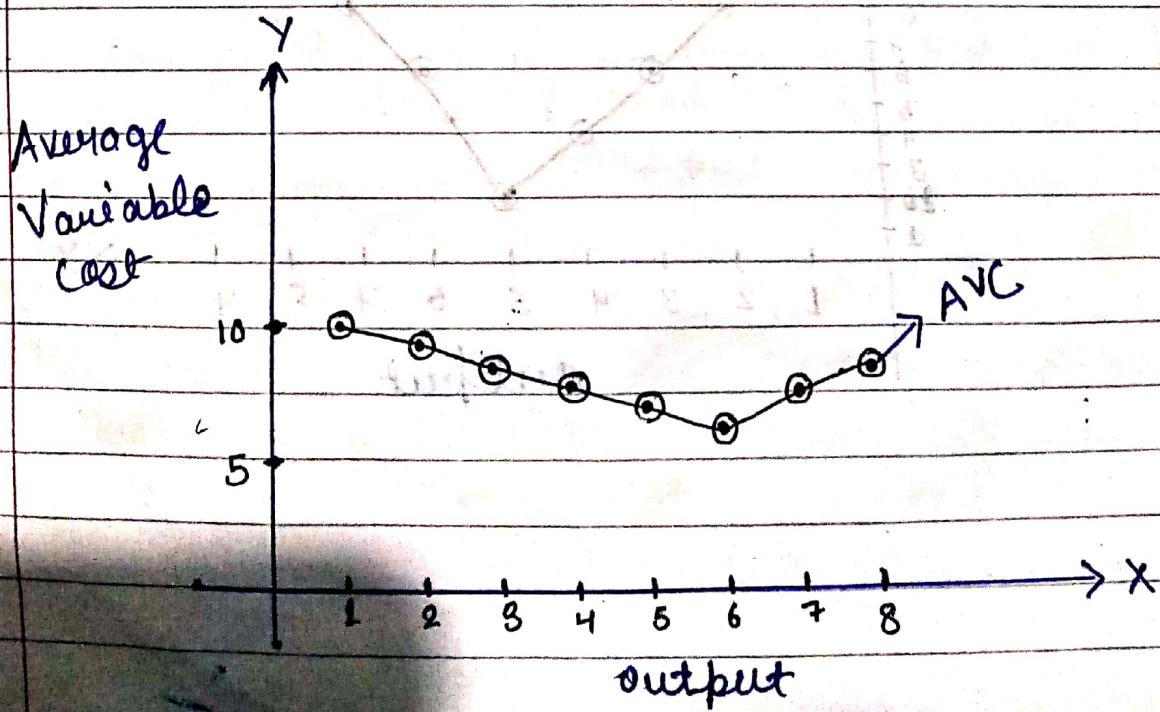
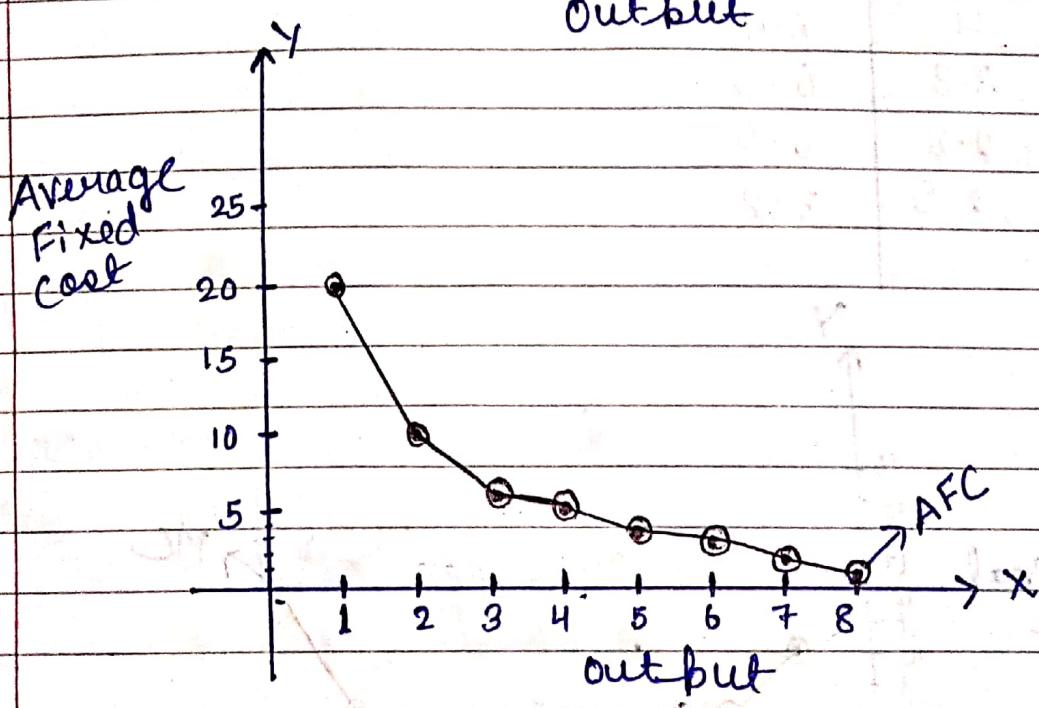
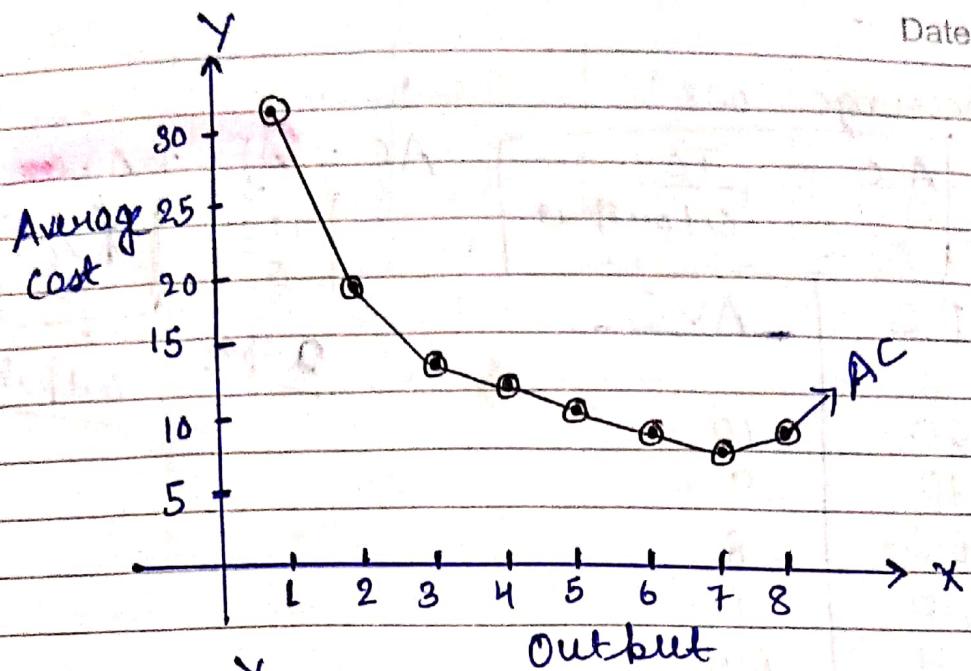
$$AC = AFC + AVC$$

$$\begin{array}{c} \boxed{\frac{TFC}{Q}} \\ \downarrow \\ \text{Output} \end{array} \quad \begin{array}{c} \boxed{\frac{AVC}{Q}} \\ \downarrow \\ \text{Output} \end{array}$$

AFC AVC

20	10
10	9
6.67	8
5	7
4	6.4
3.3	6.3
2.8	6.5
2.5	7.2





Total Fixed Cost

- Total fixed cost represent const. line parallel to X-axis because its remain const. at all level of output.

Total Variable Cost

Total Variable Cost increases with the level of output initially increases at falling rate. (From point 1 to 4). Then it increases at constant rate. (4 to 5). Finally it increases at increasing rate.

Total cost

Total cost can never be zero even when the level of output is zero. Because fixed cost is positive at zero level of output. As the level of output increases total cost also increases.

- Total cost also increases due to increase in Variable cost (the rate of increase in TVC is determine by the law of returns (the law of variable proportion)).
- TC & TVC curves are parallel to each other but can never meet at any level of output between ~~as~~ TFC is always positive and const.

Law of Demand

→ Law of demand explain the negative relationship between price and quantity demanded of a commodity other factor remaining constant. (other factor includes income of consumer, taste and preference etc).

(Q) Different

T.O
Law of Demand

and Elasticity of demand.

→ Demand of the commodity is determined by many factors like change in its own price, income of the consumer, price of related goods etc.

The concept of elasticity of demand refers to responsiveness of the quantity demanded of any good or product to a change in any of the factors affecting demand.

→ There are three different type of Elasticity of demand :-

- i) Price elasticity of demand.
- ii) Income elasticity of demand.
- iii) Cross elasticity of demand. (with related goods)

S C

$$\frac{10-8}{8} = \frac{2}{8} = \frac{1}{4}$$

$$\frac{10-0}{10} = \frac{10}{10} = 1$$

25% \rightarrow 100% \rightarrow 100%

Date: _____

Price elasticity of Demand:

Degree of price elasticity of demand:

→ Price elasticity of demand is measure of degree responsiveness of demand for a commodity to change in price.

$$P_{ed} = \frac{\% \Delta \text{ in } Q}{\% \Delta \text{ in } P}$$

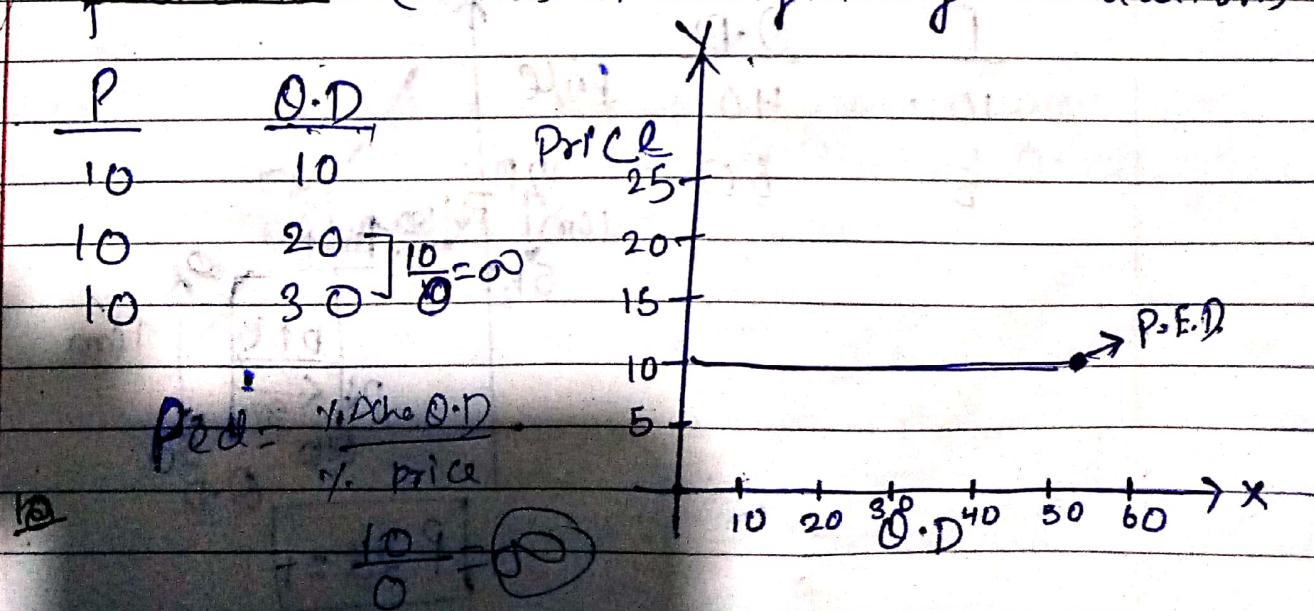
↓ ↓
Price elasticity of demand % change in price

= % change in quantity demanded
/ % change in price of n.

Degree of price elasticity of demand:

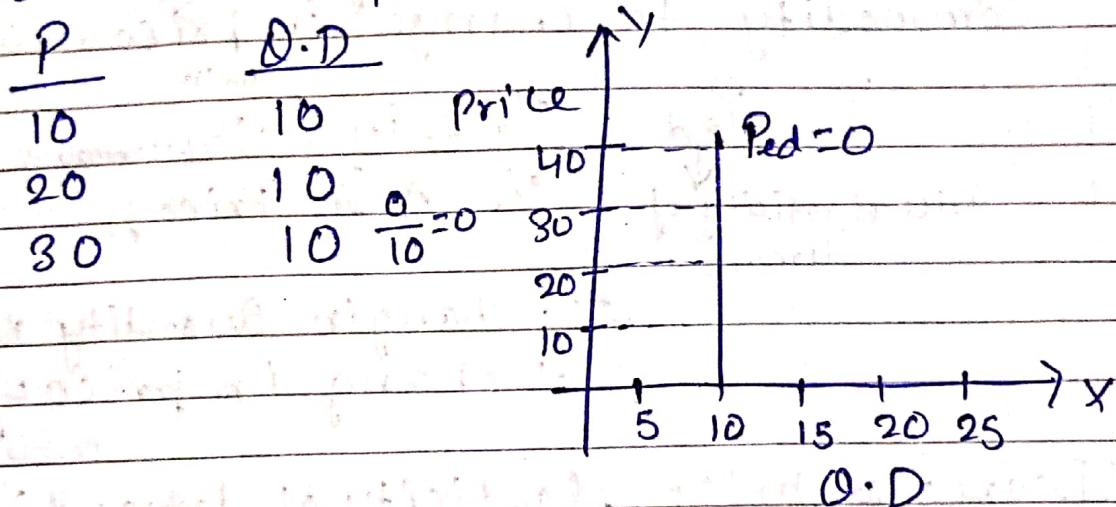
i) Perfectly elastic demand (∞)

→ It refers to the situation when demand of the commodity is infinite at a prevailing price. A slightest increase in price of the seller causes the quantity demand to fall zero. (it is in imaginary situation).



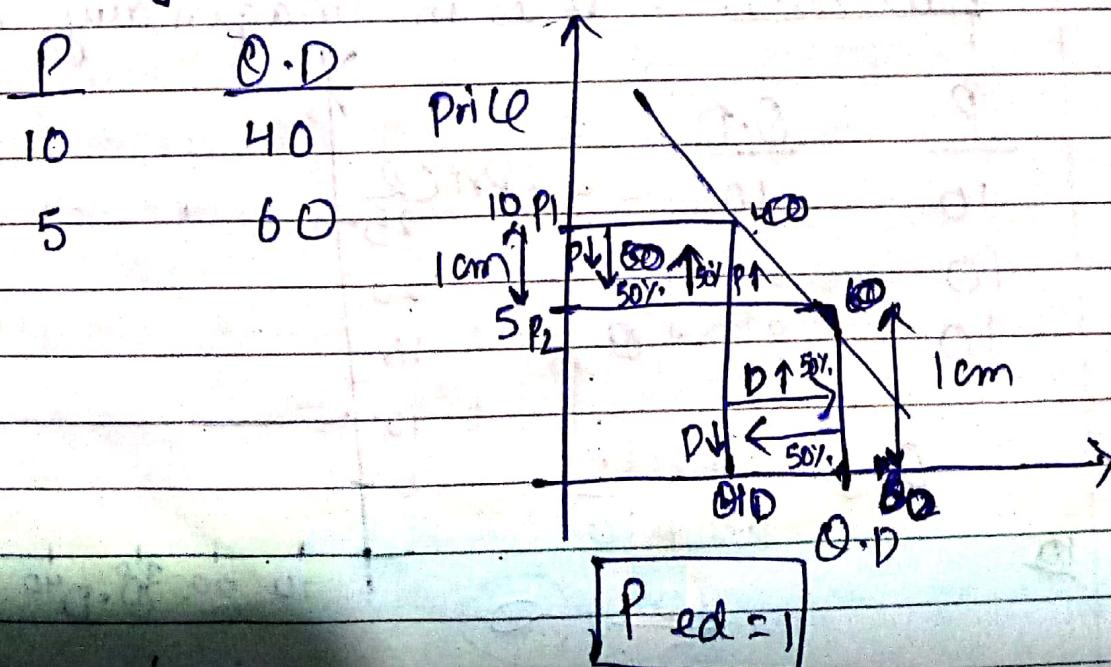
iii) Perfectly inelastic demand :- (0)

→ In this case the change in price of commodity causes no change in its quantity demand. That is any substantial changes in price leave the demand unaffected.



iv) Unitary elastic demand :- (1)

→ In this case percentage change in quantity demanded is equal to % change in price. Change of the commodity If price increase by 10%, quantity demanded falls by 10%.



Methods to calculate the price elasticity of demand.

① Percentage or proportionate method.

$$P_{ed} = \frac{\% \Delta \text{ in } Q}{\% \Delta \text{ in price}} \rightarrow \frac{\Delta \text{ in Q.D.}}{\Delta \text{ in Price}} \times 100$$

If price of commodity is rises by 40%, due to which demand cause by 80%. what will be the price of

Ans

$$D = \frac{80}{40} = (-)2$$

② Graphic geometric or point method of Elasticity of demand.

This method is used when the elasticity of demand is to be measure at different point on a st. line or linear demand curve. Here price demand elasticity of demand is given by,

$$P_{ed} = \pm s \text{ of Demand Curve}$$

U.S of demand curve

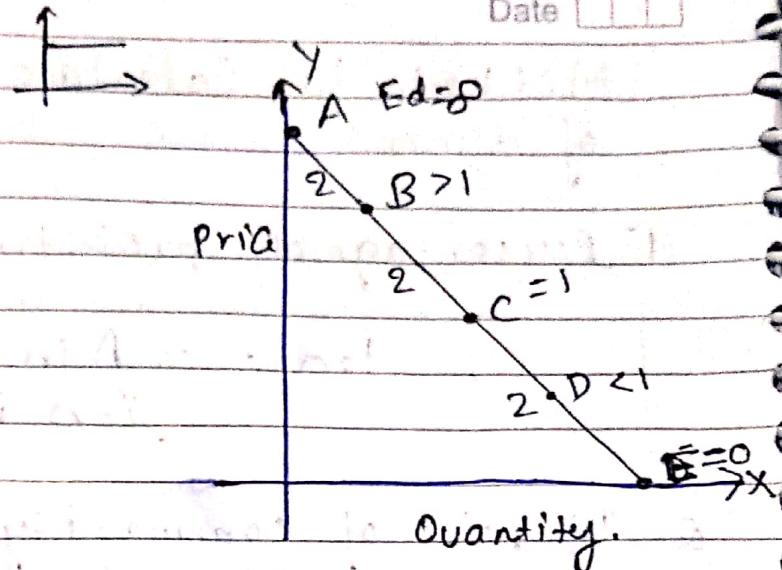
$$(A) \frac{AE}{O} = 0$$

$$(B) \frac{BE}{BA} > 1$$

$$(C) \frac{CE}{CA} = 1$$

$$(D) \frac{DE}{DA} < 1$$

$$(E) \frac{O}{AE} = 0$$



(B) Total Expenditure Method :-

→ The change in price of a commodity causes the change in its total expenditure by the consumer. This also tells the effect of change in price due to total expenditure.

Price	O.D	TE	
1	10	10	
2	9	18	$P \uparrow TE \uparrow / P \downarrow TE \downarrow$
3	8	24	
$P \uparrow$ 4	7	28	
5	6	30	$P \uparrow TE \text{ const.}$
6	5	30	
7	4	28	
8	3	24	
9	2	18	$P \uparrow TE \downarrow$
10	1	10	

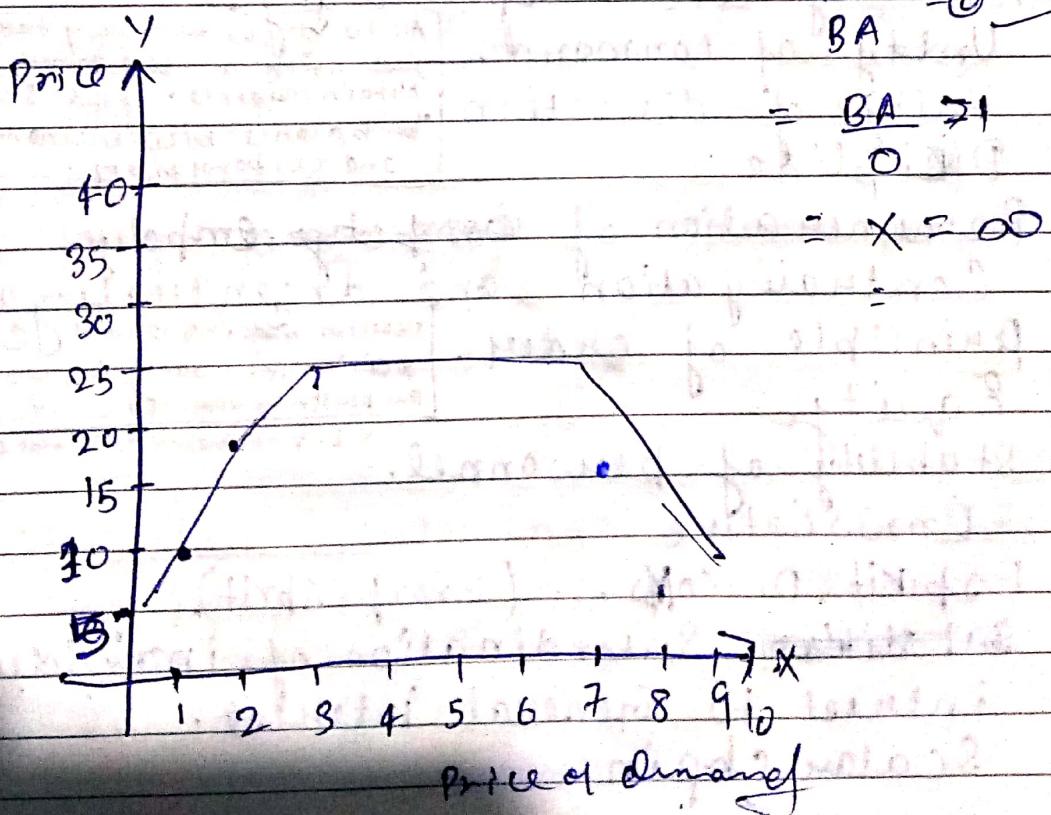
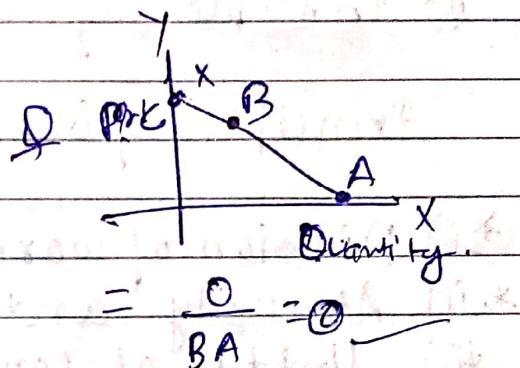
i) Elasticity of demand is less than one if ^{with} the fall in price / Rise in price (in same dirn)

ii) Elasticity of demand is equal to one.

→ If with the fall in price of commodity total expenditure does not change.

iii) Elasticity of demand is greater than one.

→ If with the fall in price total exp. rises. If with the rise in price total exp. fall. (with both fall in opp. dirn.)



Part-I
I of
II demand

II
I Mang
II cost

Business Study XI, XII → NCERT

Disci

Date []

Management

- Management is a set of principles relating to function planning, organizing, directing and controlling.
- i) Defining the problem.
 - ii) Developing alternative Solution.
 - iii) Anticipating consequences
 - iv) majoring progress.
 - v) Drawing Conclusion.

Principle of management :-

- ① Principle of Scientific management (F.W Taylor)
- ② Principle of General management (Henri Fayol)

Principle of General management (Henri Fayol)

- * i) Division of work → Work should be divided in small units. The intelligent and efficient workers should do more work. Good company has separate offices of management, finance, marketing, products.
- * ii) Authority and responsibility
- iii) Unity of command.
- iv) Unity of direction
- * v) Discipline
- vi) Remuneration of employees.
- * vii) Centralization and decentralization.
- viii) Principle of order.
- * ix) Equity
- x) Stability of personnel.
- xi) Initiative
- xii) Esprit De corps. → (Group Spirit)
- * xiii) Subordination of individual interest to General interest.
- xiv) Scalar chain.

Decision making is called C and decision not making by more than one person is known D.C. In general the big companies have more D.C.

Principle of Scientific management :- (F.W Taylor)

- ① Science, not rule of thumb.
 - ② Harmony, not discord. → factory → manager & labour (uniting) →
 - ③ Cooperation not individualism.
 - ④ Development of each employee to his or her greater efficiency.
- worker + training, motivation and intelligence given by measured training.

* Theory of Demand

→ Consumer Surplus :-

$$\text{Potential price} - \text{Actual price} = CS$$

Consumer surplus is an economic major of consumer benefit. It is calculated by analyzing the difference between what the consumer is willing and able to pay for a good or service relative to its market price or what they actually do spend for the good or service.

Engel's Law

This law states that as the income rises the proportion of income spent on food falls even if the absolute food expenditure on food prices.

$$\frac{75}{100} \times 100 = 75\%$$

$$\frac{100}{150} \times 100 = 66.67\%$$

Date

Observation	Total Expenditure	Exp (food)	Proportion of I.E on food
1	100	75	75%
2	150	100	66.67%
3	250	115	46%
4	380	125	32.8%

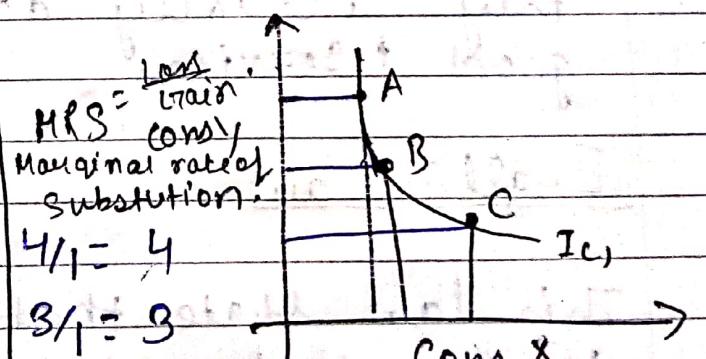
Engel's law similarly state that lower income house hold spend a greater proportion of the available income on food as compare to middle and higher income house hold.

Indifference curve

Indifference Curve is an locus of diff. point, each point represent a commodity bundle consisting of some unit of X and some unit of Y.

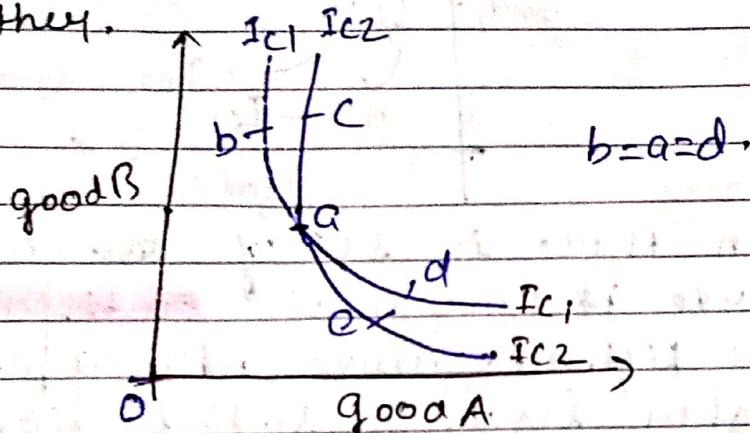
Giving the consumer the table of satisfaction

Bundled	X	Y
A	1	12
B	2	8
C	3	5
D	4	3
E	5	2



Indifference Curve:

- i) Each and every combination will have same satisfaction.
- ii) Two indifference curves ~~will~~ ~~not~~ never intersect each other.



- iii) Indifference curve always a concave in nature.
- iv) They are parallel. Indifference curve, nature can be parallel but they need not to be parallel.

12 marks
OKKA

Cost Sheet

To determine a

Statement of cost of (Name.) as on (Date)

Particulars	Amount in Rs.	Amount in £
DM	—	—
+ DL	—	—
+ DEB.	—	—

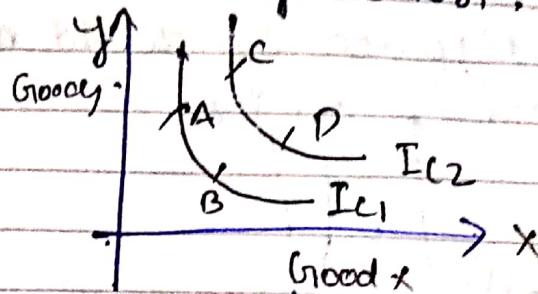
Properties of Indifference

Date

Value of RMP

- i) Higher the ~~the~~ in indifference curve higher the satisfaction.

(a)



- ii) When there is set of ~~two~~ indifference curve is known as Indifference map. The higher curve will represent higher levels of satisfaction.

- iii) Indifference curves slopes downward it also represent the IC has a negative slope because if the consumer wants to have more units of one good he will have to reduce the number of units of another good to maintain same level of satisfaction.

- iv) Convex to the point of origin.

→ This is because of decreasing marginal rate of substitution or the slope of IC. In order to gain an additional units of good one the consumer prepared to give up less and less unit of ~~commodity~~ good to ..

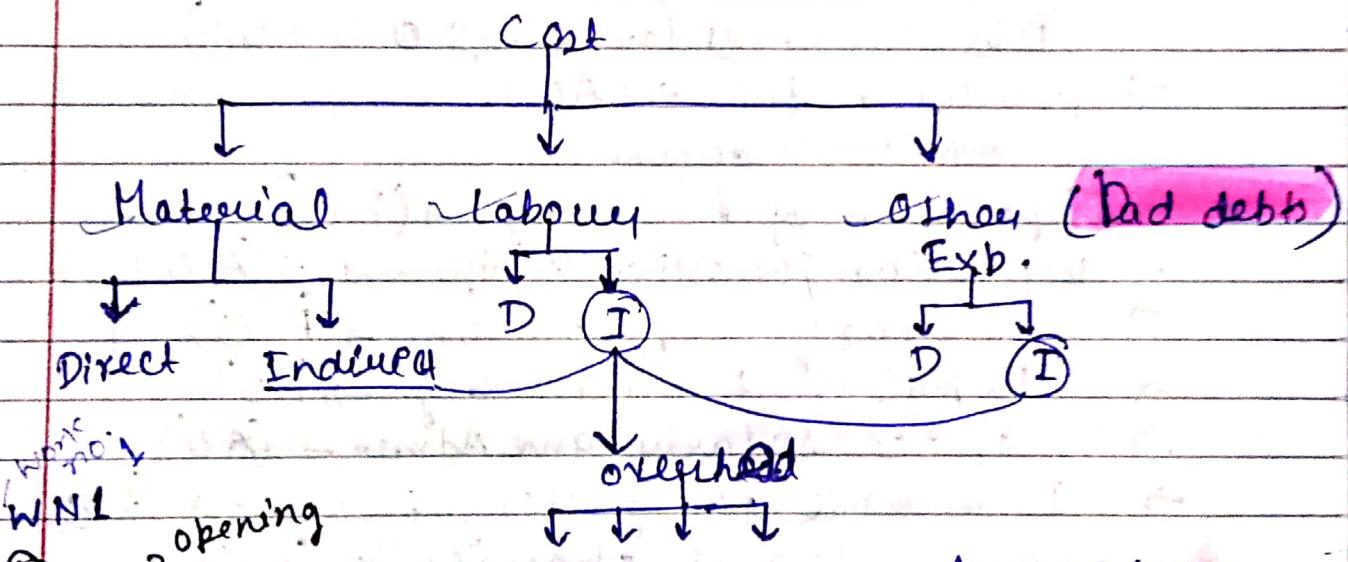
Q
16
Q
17
Q
18
Q
19
Q
20

iv) Indifference curve did not intersect each other.

→ In C can never touch n and y axis.

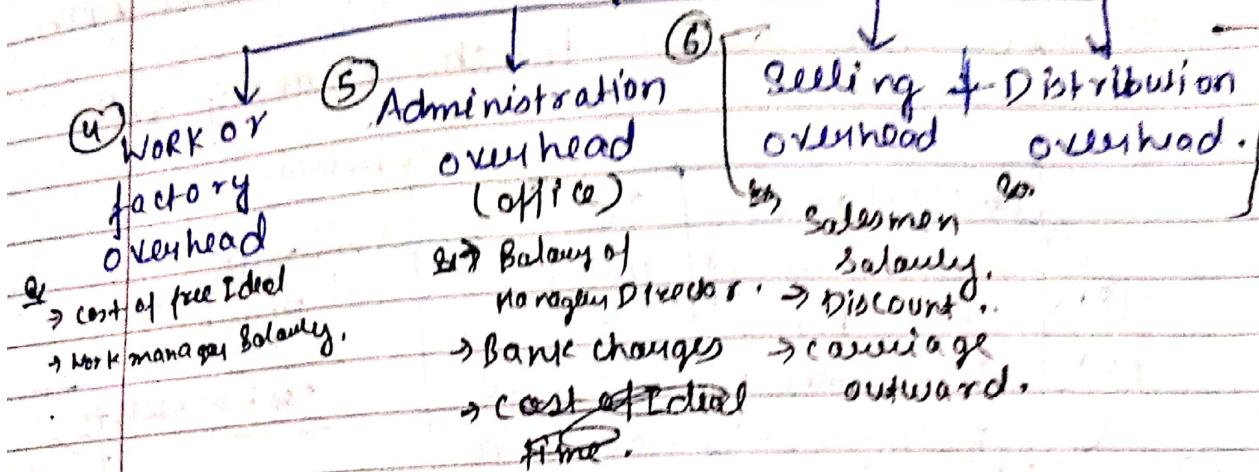
			Total expenditure
	Particulars	TE	TE per unit
①	Direct material	1000	10
②	Direct labour (WNE)	3000	30
③	Direct other exp.	2000	20
	Prime cost	6000	60
	Work Factory overhead		
④	Factory cost \Rightarrow		
⑤	Administration overhead		
	cost of production \Rightarrow		

Saler $\Rightarrow \frac{8000}{2000} = \frac{10000}{10000}$



①	<u>f. Stock</u>	19000	As → 106000
②	<u>+ purchases</u>	2000	50000
			<u>156000</u>
③	<u>Purchase Return</u>	1000	
			<u>11,000</u>
④	<u>+ C.Iward</u>	500	
			<u>11500</u>
⑤	<u>- c/ Stock closing</u>	10500	→ direct material.
			<u>1000</u>

OVERHEAD



Electrical 10000
(var. cost)
20% of 1000

Date

- ① Travelling Salesmen salary \rightarrow (SO)
- ② Sales promotion (SO) & DO
- * Bad debts \rightarrow (SO)

Law of Variable proportion :-

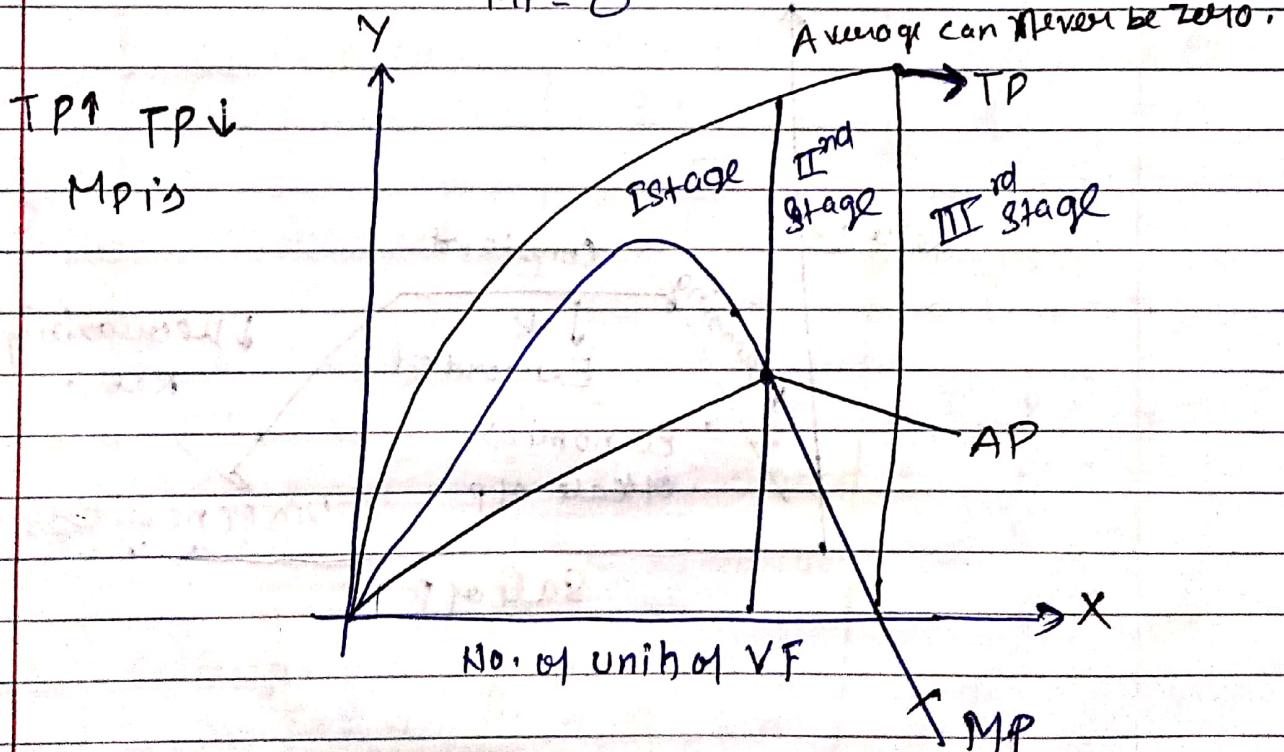
MP is +ve then increase in TP.

Rate of $\uparrow \downarrow$ in M $>$ Rate of $\uparrow \downarrow$ Av.

$$\sum MP = TP.$$

TP Max where

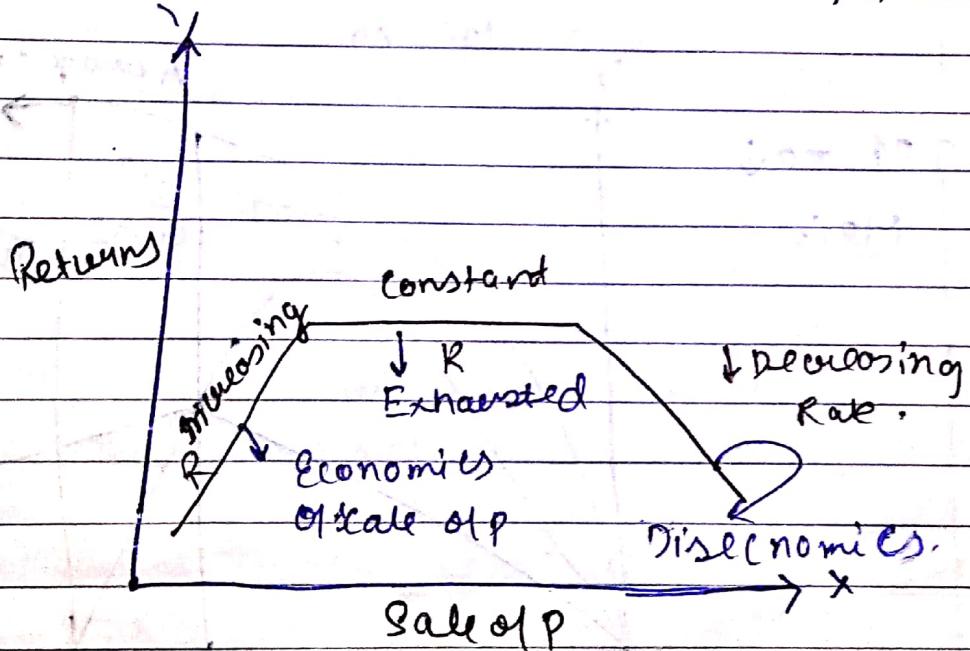
$$MP = 0$$



Units of Variable Factory

M.P.APTP

1	10	10	10
2	12	11	22
3	16	12.6	38
4	15	13.2	53
5	13	13.2	66
6	10	12.6	76
7	5	11	81
8	0	10.1	81
9	-1	8.9	80
10	-6	7.4	74



Q) Direct material \rightarrow 9,05,000
 Direct Labour \rightarrow 7,05,000
 Factory overhead \rightarrow 4,05,000
 Administrative overhead \rightarrow 4,02,000
 Selling and distribution \rightarrow 5,25,000.
 Sales \rightarrow 35,50,000.

Calculate if prime cost :

- i) Work cost.
- ii) Cost of production.
- iii) Cost of sales.
- iv) Profit or Loss.

	Particulars	Amount in Rs.	Amount in Rs
①	Direct material	9,05,000	9,05,000
	Direct Labour	7,05,000	7,05,000
	Prime cost	₹ 16,10,000	₹ 16,55,000
		+ 45,000	
②	Factory overhead	4,05,000	
	Work cost	₹ 2,015,000	₹ 2,105,000
	Administrative overhead	+ 4,02,000	+ 42,000
③	Cost of production	₹ 2,417,000	₹ 25,25,000
		- 5,25,000	
④	Selling and distb.	5,25,000	
	Cost of sales	₹ 2,942,000	₹ 30,50,000

(5)

Sales

Profit \rightarrow Sale - cost of selling

$$= 35,50,000 - 30,50,000$$

$$= 5,00,000$$

Date

① Direct material 4,55,000
 Direct wages 1,45,000
 Direct expenses 54,000

Factory overhead \rightarrow 80% of Direct wages
 Administrative overhead \rightarrow 10% of W.C.
 S.I.D \rightarrow 10.30 per unit.
 Unit produced and sold \rightarrow 10,000.

Calculate \rightarrow i) P.C

- i) Work cost
- ii) cost of price
- iii) cost of sales
- iv) profit or loss

Particular	Amount in Rs.	per Unit cost
Direct material.	4,55,000	45.50
Direct wages	1,45,000	14.50
Direct expenses	54,000	5.40
Prime cost	Rs 6,54,000	
Factory overhead	1,16,000	
Work cost	Rs 7,70,000	
Administrative overhead	77,000	
cost of price	Rs 8147,000	
Selling and Dis-	10,8000	
Cost of Sales	9,50,000	
		95.

$$\frac{50}{100} \times 13,600$$

$$\frac{50}{100} \times 17,600$$

$$\frac{50}{100} \times 12,000 = 60,00$$

Date

D calculate the work cost or factory cost.

opening stock of raw material \rightarrow 5,000 purchasing
Year 10,000.

O/S \rightarrow 5,000

Purchase \rightarrow 10,000

P.R \rightarrow 2,000 $-$ 12,000

Carriage \rightarrow 2,000

~~2,000~~ ~~2,000~~

~~2,000~~

\rightarrow Direct material

~~12,000~~

Direct labour \rightarrow 50% of DM.

Closing Stock of \rightarrow 4,00

Factory overhead and \rightarrow 40% of WC.

Clockwise Works or Factory cost.

Particulars	Amount in Rs
Direct material	$\text{Rs } 12,000$
Direct labour	$6,000 + 3,000$
P.C	$\frac{50}{60} \times 21,900$ $= F.O = 14,600$
Factory overhead	$14,600$
	$86,500$

* Q Raw material consumed 15000
 Direct wages 9000
 Machines were used work 800 hours 900 hours
 Machine rate Rs 5.
 Administration overhead 20% of WC.
 Selling overhead 0.50 percent.
 Unit produced 1,7100
 Unit sold 16000 at rate of
 4Rs each.

Mach hours 900
 Rate 2.5/-
 Total 900x5
 Rs 4500

Cost Sheet

$$\frac{15000}{17100} = 0.88$$

$$\text{Unit} = 17100$$

Particulars	Amount in Rs	Unit
R M consumed	15000	0.88
Direct wages	9000	0.53
(1) Prime cost	24,000	1.41
Factory overhead	4500	0.26
24000 (2) Factory works cost	28,500	1.67
Administration overhead	5700	0.33
(3) Cost of production	34,200	2.00
	17100 - 2200	2.00
17100	32,000	2.00
16000 COP		
1100		
	Unit	
+ Selling (0.50)	8000	0.50
- Cost of selling	40000	2.5
Profit	24000	1.5
Sale	64000	4.00Rs.

Profit = Sale - Cost of selling.

$$= 64000 - 40000$$

$$= \underline{\underline{24000}}$$

- Q) Depreciation on furniture → ~~AO~~ A.O
 Depreciation on machinery → F.O
 carriage outward → S.O
~~AO~~ Repair of plant → F.O
 Travelling expenses → S.O and D.O
 Bad debts → S.O
 office insurance → A.O
 Factory stationary → ~~FO AO~~ F.O
 Market research → S.O and D.O
 * Purchase of building → ~~AO~~ _____
 * House charges → S.O and D.O
 Property tax on factory building → F.O

Q9) Draw Break Even chart and calculate break point from the following data:

Total no. of units sold = 20,000
 Selling price = Rs 30 per unit.
 Fixed expenses = Rs 1,50,000
 Variable cost = Rs 10 per unit.

Q4

Prepare statement of cost, profit and sales from the following data.
 → Profits are 12% of sales.

$$\begin{array}{r}
 \text{Ans} \rightarrow 0.8 \rightarrow 12,000 \\
 + P \rightarrow 138,000 \\
 \hline
 142,000 \\
 - P.R \quad \hline
 25,000 \\
 \hline
 117,000 \\
 \text{C.I} \quad \hline
 435
 \end{array}$$

$$\begin{array}{l}
 \text{W.N.1} \quad \text{Direct Labour} \rightarrow 30 \\
 \text{W.N.2} \quad \text{Other Exp} = \\
 \text{W.N.2} \quad \text{Direct wages} \rightarrow 35,000 \\
 \text{W.N.3} \quad \text{Direct lab} \rightarrow 4,000
 \end{array}$$

$$\begin{array}{r}
 117,435 \\
 30,000 \\
 \hline
 87,435 \rightarrow \text{Direct wages.}
 \end{array}$$

WN4 Work of Factory overhead:

Electric power → 5,500

Factory → 2,250

Factory → 5,000

Factory → 600

Factory → 3200

Factory cost 16,550

WN5 Administration overhead

Office → 700

Office → 1200

Office Stationery → 400

Director fee → 1300

Office → 1000

Manager Salary → 5000

Office → 450

Cost of production, 10,050

WN6

Selling and Distribution:

Salesman's Salary → 1,400

Advertisement → 1200

Courierage outward → 325

Cost of Sales 2,925

ParticularyAmount in Rs.

NN1	Direct Material	₹ 87,435
NN2	Direct Wages	₹ 85,000
NN3	Direct expenses	4,000
(1)	Prime cost	₹ 1,26,435
NN4	Factory overhead	₹ 16,550
(2)	Work cost	₹ 1,42,985
NN5	Administration overhead	10,050
(3)	Cost of production	₹ 1,53,035
NN6	Selling and Distribution	2925
(4)	Cost of selling	₹ 1,55,960
* (7) ← Profit		₹ 21,267.27
	Sale	1,77,227
	Cost	21,267.27

$$\frac{12}{88} \times 15,5960 = 21,267.27$$

profit

Cost + profit's Sale.

$$= \frac{12}{100} \times 1$$

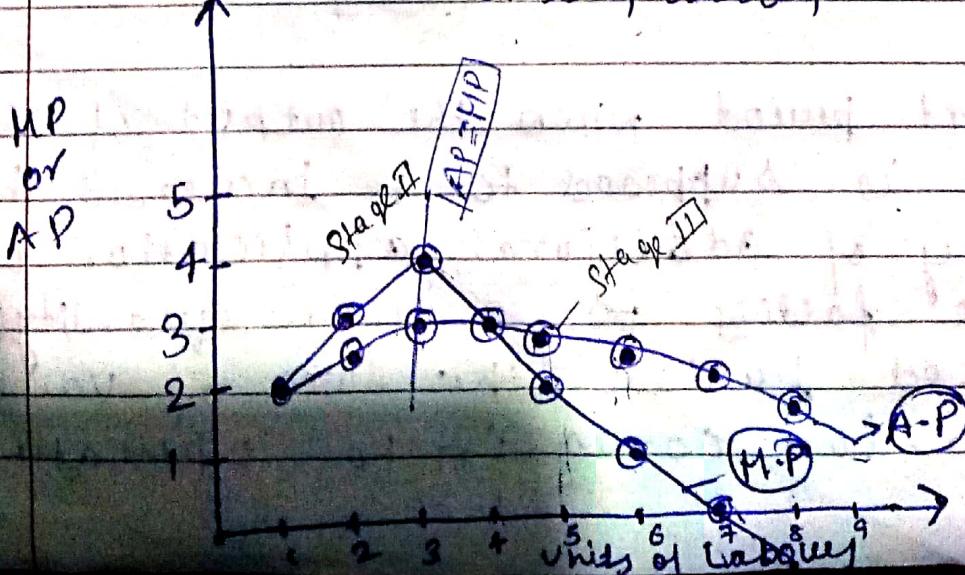
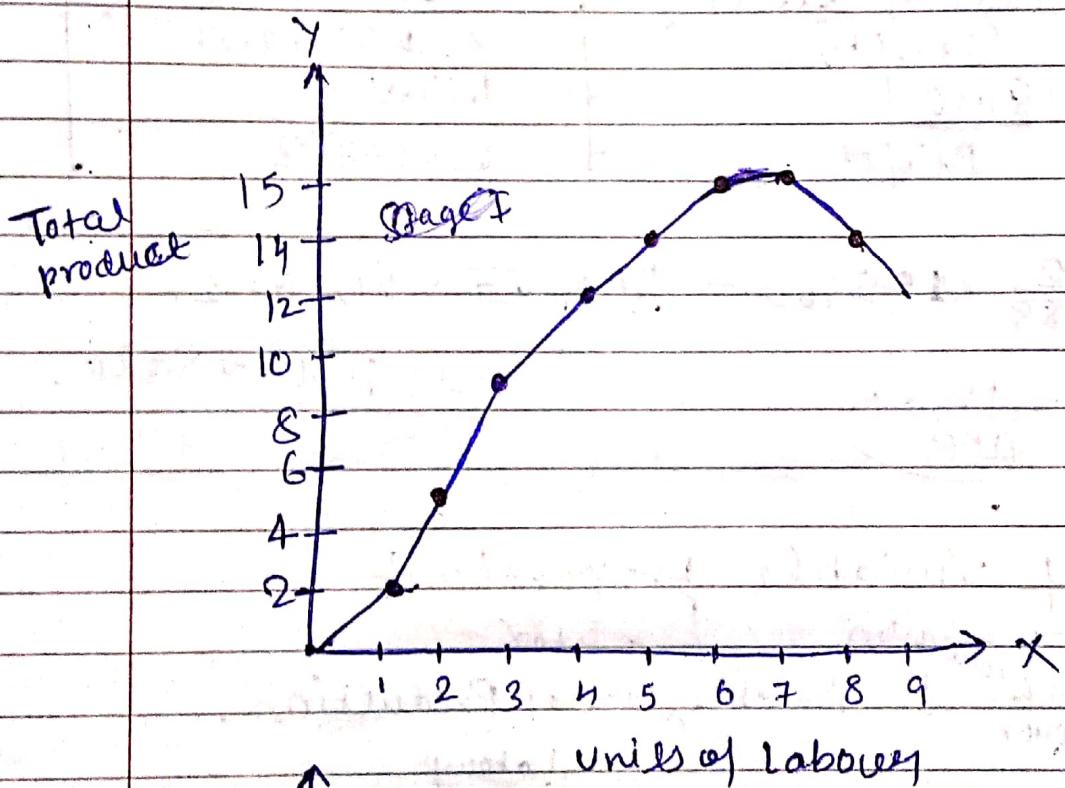
Law of Variable proportion:

Fixed Factor & Variable Factor of Production.

In short period when the output of the product is supposed to be increased by the way of additional application of variable factor to a given quantity of fixed factors the law of variable proportion comes in to operation.

Marginal
Product

<u>Units of Land</u>	<u>Units of Labour</u>	<u>Total produced</u>	<u>Average Product</u>	<u>Marginal Product</u>
1	1	$2 \frac{2}{3}$	M.P. 2	2
1	2	$5 \frac{2}{3}$	M.P. 2.5	3
1	3	$9 \frac{1}{3}$	3	4
1	4	$12 \frac{1}{3}$	3	3
1	5	$14 \frac{1}{3}$	2.8	2
1	6	$15 \frac{1}{6}$	2.5	1
1	7	$15 \frac{1}{9}$	2.1	0
1	8	$14 \frac{1}{8}$	1.7	-1



Stage - I

Represents average productivity increases, total productivity also increases marginal productivity initially increases and then begins to fall. The Stage I ends at $AP = MP$.

Stage - II

Average productivity decreases, Total productivity increasing marginal productivity decreases till it becomes zero. This stage ends when marginal productivity is equal to zero. Total productivity is max and const.

Stage III

A.P is decreasing and M.P turns negative Total productivity become starts declining

Law of returns of scale:

The law of returns to scale explains the proportional change in the output w.r.t. to the proportionate change in the input i.e. other words law of return^{to} scale States when there are any proportionate change in amount of input.

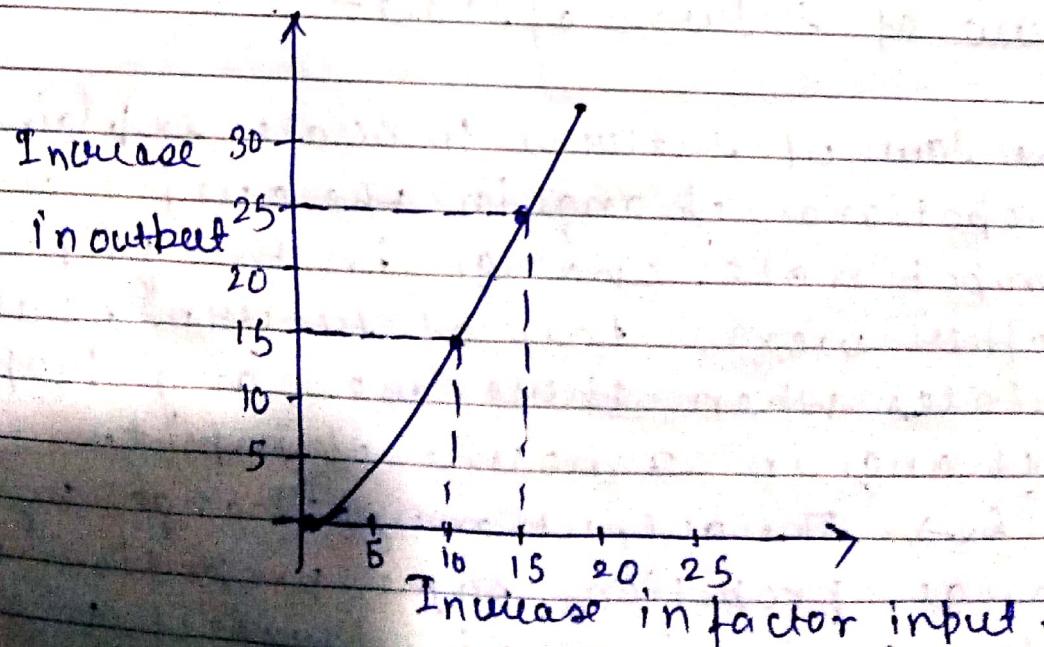
Ex → The output may change by a large proportion, same proportion or in less proportion with respect to change

In the inputs, on the basis of these probability the law of returns can classified into these categories-

- 1) Increasing returns to scale.
- 2) Constant returns to scale.
- 3) Decreasing returns to scale.

Units of labour	Units of Capital	Percentage increase in labour/capital	Total product	Percentage increase in total product	Returns to scale
1	2	—	10	—	
2	4	100	30	200	↑ Increase
3	6	50	60	100	
4	8	33	80	33	const
5	10	25	100	25	
6	12	20	110	10	
7	14	16	120	9	
8	16	14	125	4	↓ Decrease

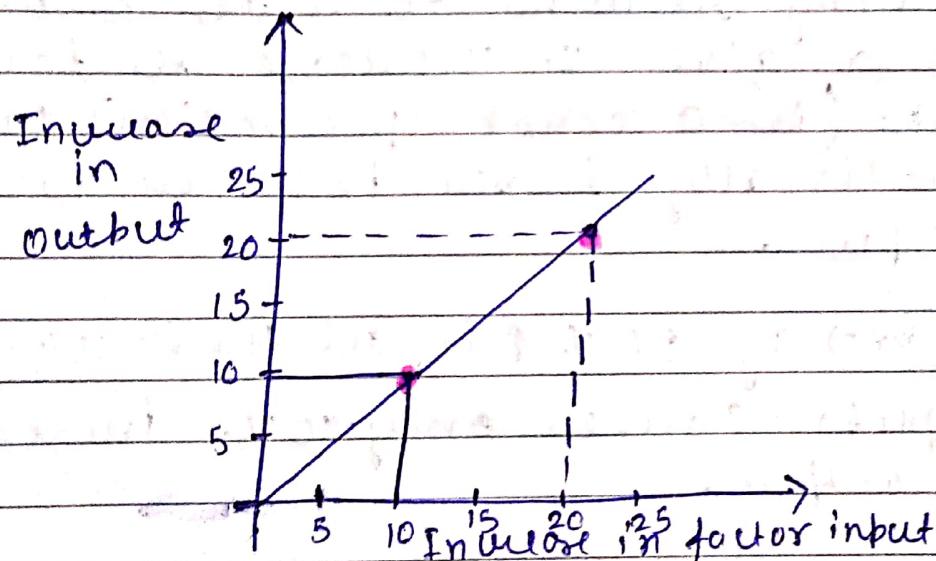
Increasing returns to scale.



Increasing returns to scale occurs when the percentage increase in all factor input (in same or const. proportion and const. ratio) causes proportionally greater increase in output.

Ex If 50% ↑ in all factor inputs will cause 100% change in the output.
If the case

Const. return to scale

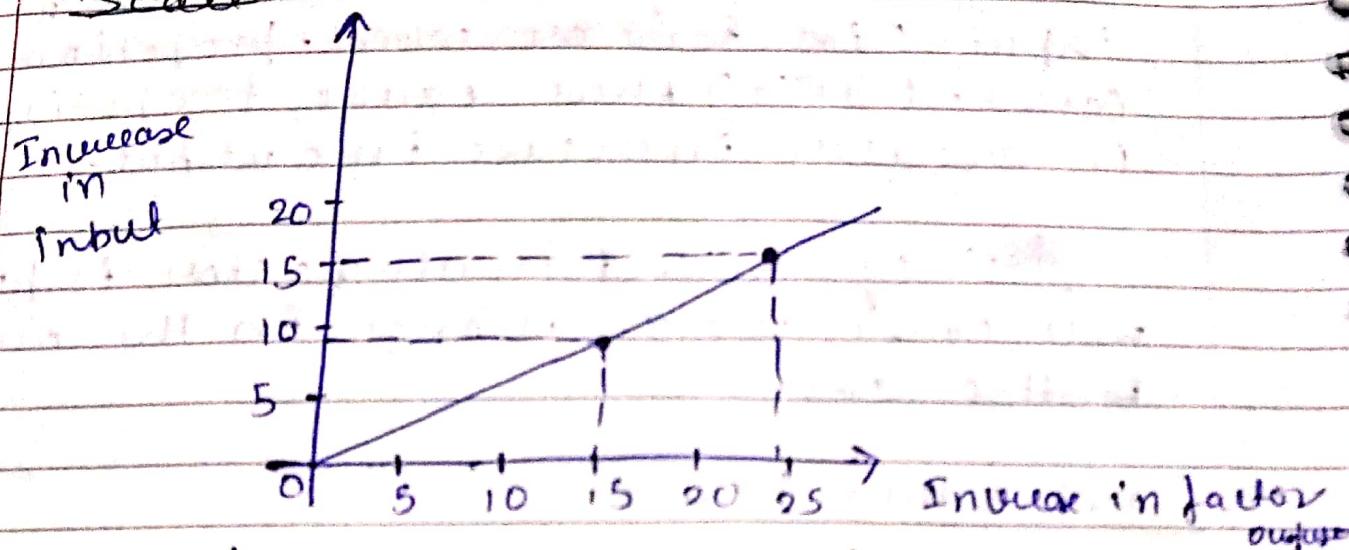


Const. return to scale occurs when a given percentage increase in all factor input (in a const. ratio) causes an equal % in output.

Ex 25% ↑ in factor input will

cause 25% ↑ in the output

Decreasing or Diminishing returns to Scale.



Decreasing returns to scale occurs when a given % increase all factor inputs (in a const proportion) causes proportionally lesser increase in output.

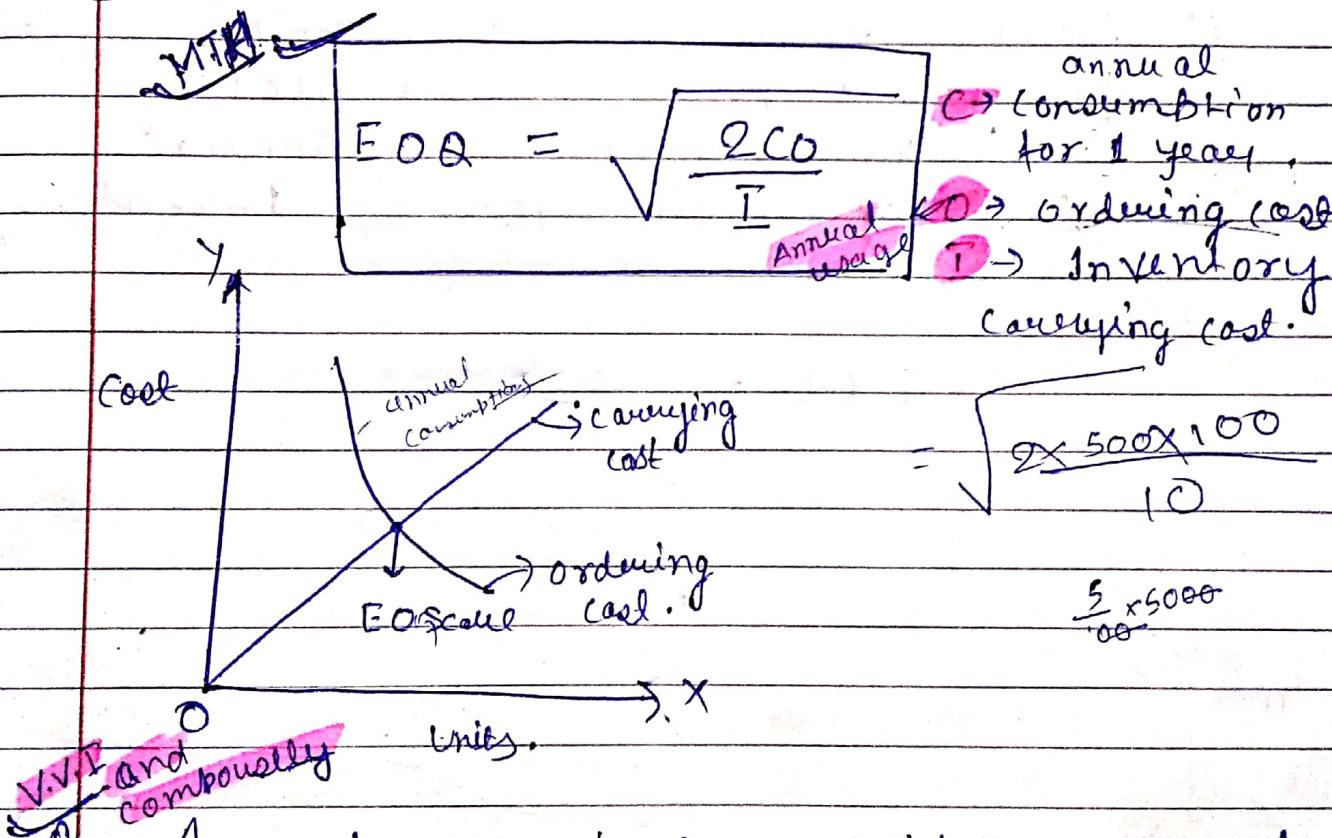
Ex → If 20% ↑ in all the factor inputs causes only 10% increase in output.

Economies of Scale:-

- External Economies \rightarrow Govt. Merger $\rightarrow A + B \rightarrow AB$
- Internal Economies $\downarrow P.$
Discrimination
- Dis-Economies.
Govt. Tax for degradation.

Economic order Quantity (EOQ).

- (1) Carrying cost. \rightarrow Transportation
- (2) Ordering cost. \rightarrow Storage space \rightarrow Rent
- (3) Acquisition cost. \rightarrow To book order to yourself.



Annual usages is 5,000 units, material cost 20/- per unit, cost of placing and receiving one order will be 100 Rupees. Annual carrying cost of inventory \rightarrow 5% of material cost.

Calculate EOQ and no. of orders.

$$\frac{20 \times 500}{100} = 100$$

$$= \frac{50 \times 200}{100} = 10$$

$$\frac{5 \times 10}{100} = 1 \text{ yr.}$$

$$20 \text{ days } \frac{5}{20} \text{ days per day}$$

Date

$$EOQ = \sqrt{\frac{2CO}{I}}$$

$$= \sqrt{\frac{2 \times 250 \times 20 \times 2}{1}}$$

$$= \sqrt{80 \times 250}$$

$$= \sqrt{\frac{2 \times 5000 \times 100}{1}}$$

$$EOQ = 1000 \text{ units}$$

$$\text{No. of orders} = \frac{5000}{1000} = 5 \text{ orders}$$

Q Annual usages 6,000, Cost of material per unit is Rs. 20, and placing and receiving is 60. Annual Carrying cost of 1 year 10% of inventory cost.

$$EOQ = \sqrt{\frac{2CO}{I}}$$

$$= \sqrt{\frac{2 \times 6000 \times 60}{2}}$$

$$= \sqrt{12,000 \times 60}$$

$$= \sqrt{36,000}$$

$$= 600 \text{ units}$$

$$\frac{20 \times 10}{100} = 1$$

$$\text{No. of orders} = \frac{6000}{600} = 10 \text{ orders}$$

Break even
point \rightarrow neither loss
nor profit.

Date []

Inventory Cost:

It is the cost of carrying the material and in store which includes cost of storage.
 \rightarrow Rent

- \rightarrow Salary of store keeper.
- \rightarrow cost of maintaining the material.
- \rightarrow Inventory carrying cost.
- \rightarrow Cost of loss due to wastage or ~~water~~. vapourisation.

②

Ordering cost includes:

- \rightarrow Transportation cost.
- \rightarrow Cost of Inviting quotation.
- \rightarrow Cost of comparative evaluation of tenders.
- \rightarrow Inspection cost.



CAPITAL BUDGETING (Replacement)

\downarrow Machine.

① Payback period Method:

\rightarrow Payback period represent that period in which the total investment in permanent assets paybacks itself. The payback period is the duration of time required to recover the cost of investment this determine whether to undertake the project or not as longer payback period are typically non desirable for

business or investment position.

Payback period = $\frac{\text{Cash outlay of the project}}{\text{Annual cash inflows.}}$

i) Calculate annual cash inflows (annual net earning or profit before depreciation and after tax).

Q The project cost Rs 1,00000 and generate the annual cash inflow of 20,000 in 8 years. calculate the payback period.

Ans →

Payback period = cash outlay of the project

A

$$= \frac{1,00,000}{20,000} = 5 \text{ years.}$$

Q Calculate Payback period which requires the cash outlet of 1,0,000 and generate the inflow.

Years	Inflow
1.	2,000 \rightarrow 2,000
2.	4,000 \rightarrow 6,000
3.	3,000 \rightarrow 9,000 $(2,000)$
4.	2,000 \rightarrow 11,000

So the payback period is between 3rd and 4th year.

$$\frac{1000}{2000} = 0.5 \times 12 \\ = 6 \text{ months.}$$

$$= 3 \text{ years} + 0.5 = 3.5 \text{ years.}$$

(2) Average rate of Return:

The average rate of return takes into consideration the earning expected from the investment over his whole life. In this method the average profit (after depreciation after tax) is calculated and then it is divided by the total capital outlay or the total investment of project.

$$\text{Average rate of return} = \frac{\text{Avg. annual profit} \times 100}{\text{Net investment}}$$

Q The project requires investment of Rs 5,00,000 having the scrap value after 5 years. Rs 20,000. It is expected to generate the profit after depreciation and taxes Rs. 40,000, 60,000, 70,000, 50,000, and 20,000 respectively for 5 years. Calculate average return.

Ans) $\text{Average return} = \frac{\text{Avg. annual profit} \times 100}{\text{Net Investment}}$

$$= 40,000 + 60,000 + 70,000 + 50,000 + 20,000$$

$$= \frac{\text{Rs. } 240,000}{5} = \underline{48,000}$$

$$= 50,000 - 20,000$$

$$\text{Investment} = 48,000$$

$$= \frac{48,000 \times 100}{48,000} = \frac{1}{10} \times 100 = 10\%$$

③ Internal rate of return:

④ Present value method: (BDAF)

Net Present Value method is a different method of evaluating a investment proposal. This method takes into consideration the time value of money and attempts to calculate the return on investment by introducing the time element.

I From the following information . Calculate the net present value of the two projects and suggest which of the two should be accepted according to the discount 10%.

	Project X	Project Y
Initial Investment	20,000	30,000
Estimated life	5 years	5 years
Scrap value	1000 Rs	2000 Rs.
Profits (B DAT)	5000	20,000
i) 10,000		10,000
ii) 10,000		5000
iii) 3000		3000
iv) 2000		2000

Solⁿ:Project Y

Years	cash Inflow	value of ₹ 1 Dis F=10%	Present value of cash Inflow
1	20,000	0.909	18,180
2	10,000	0.826	8,260
3	5000	0.751	3,755
4	3000	0.683	2,049
5	2000	0.621	1242
5(SV)	2000	0.621	1242
			<u>34,728</u>

(Inflow)

$$P.V = 34,728$$

$$T.I \equiv 30,000$$

$$4,728$$

Project Y is
more than

so, the net present value

Project X

Years	Cash Inflow	Value of ₹ 1 Dis F=10% for taxable	Present value of cash Inflow
1	5000	0.909	4545
2	10,000	0.826	8260
3	10,000	0.751	7510
4	3000	0.683	2049
5	2000	0.621	1242
5(SV)	1000	0.621	621
			<u>24,227</u>

$$P.V = 24,227$$

Project Y should be accepted and
Total I = 20,000
4,127 project X should be rejected.

3) Internal rate of Return:

- It also takes in to consideration for Time Value of money this method is also known as time adjusted rate of return.
- Initial outlay ₹ 90,000, net cash flow per annum ₹ 28,000, estimated life 5 years. Give your opinion in regard to the proposal if the required internal rate of return is 10%.

<u>Ans</u>	Discount Rate	Discount factor (table)	Net cash flows.	Present value of cash inflows.
	18%	0.1272	28,000	87561
increasing ↓	17%	0.1993	28,000	89580
	16%	0.2743	28,000	91680
	15%	0.3522	28,000	93862
	14%	0.4330	28,000	96000
	13%	0.5158	28,000	98160
	12%	0.6000	28,000	100000
	11%	0.6868	28,000	101680
	10%	0.7742	28,000	103862
	9%	0.8626	28,000	106000
	8%	0.9519	28,000	108160
	7%	1.0422	28,000	1103862
	6%	1.1336	28,000	1126000
	5%	1.2260	28,000	1148160
	4%	1.3186	28,000	11703862
	3%	1.4113	28,000	11926000
	2%	1.5041	28,000	12148160
	1%	1.5970	28,000	123703862
	0%	1.6901	28,000	12600000

When we compare the present value of cash inflow with initial outlay (₹ 90,000) we consider that the internal rate of return necessary to discount the cash inflow of 90,000 falls b/w 16% and 17%, being more

② Replacement

③ Leason of replacement

Date []

Closer to 17%. then 16%. To find the actual rate we consider the value b/w 16 and 17% as follows.

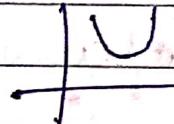
From 16%, there is a difference of 1680 ($-9000 - 1.0$) to cover the distance of 1680 we have to use additional discount of $\frac{1680}{2100} = \frac{1680}{2100} = 0.8$, So the

IP Internal rate of return is ~~16.8%~~ will be $16\% + 0.8\% = 16.8\%$. The proposal should be accepted.

Defender and challenger

→ New assets which challenge

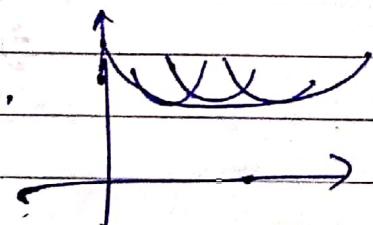
COST CURVES



U shaped → Short Run Cost.

L shaped →

Dish Shaped → Long Run Cost.



A)

B)

C)

Sales

100000 300000 200000 V-C

80,000 280000 (150000)

20,000 + 80,000 + 50,000 contribution.

$$= 1,50,000 = \text{Cont}$$

1 (10,0000) (180000) (150000) F-C

50000 (P) 30000 (-) (L)

Break point method :-

Date []

Q From the foll

Calculate contribution from the following data.

$$\text{Fixed expenses} = 150,000$$

$$\text{Variable cost} = ₹ 10$$

$$\text{Selling Price} = ₹ 15$$

$$S - V = C$$

$$15 - 10 = 5 \text{ contribution}$$

Q Calculate the P/V ratio.

$$\frac{P}{V} = \frac{\text{Contribution}}{\text{Sale}} \times 100$$

$$= \frac{5}{15} \times 100 = \frac{100}{3} = 33.33.$$

Q Calculate the break even unit.

$$\Rightarrow 15n - 10n = 150,000$$

$$\Rightarrow 5n = 150,000$$

$$n = 30,000$$

OR

$$\text{BEP} = \frac{\text{Fixed expenses}}{\text{Contribution}} = \frac{150,000}{5} = 30,000.$$

Q Calculate the BEP in Rs. = BEP \times S.P

$$\Rightarrow 30,000 \times 15 = 450,000$$

$$\text{BEP} = \frac{\text{Fixed expenses}}{\text{P/V ratio}}$$

$$= \frac{1,50,000 \times 100}{33.33}$$

$$= 4,50,000$$

Q what will be the selling price if the BEP is brought down to 25,000 units.

Ans ?

$$50 - 10 \leq 25,000$$

$$\boxed{\text{BEP} = \frac{\text{Fixed Exp.}}{\text{Cont.}}} \quad \underline{1,50,000}$$

$$25,000 = \frac{1,50,000}{\text{Cont}}$$

$$\text{Cont} = \frac{150,000}{25,000} = 6 \text{ Rs.}$$

$$\boxed{S - V = C}$$

$$\boxed{S = C + V}$$

$$= 6 + 10 = 16 \text{ Rs.}$$

(Ans)

Production of cost

i) Internal and External Economies and dis-Economies

→ Internal Economies : means increasing return to scale these are the result of increase division of labour or use of improve production method. / The benefit of these economies is received by a organisation according to its organisation ability /

if Labour economies.

ii) Marketing economies.

iii) Technical economies.

iv) Financial economies.

v) Managerial economies.

vi) Commercial economies.

bulk production

External Economies:

- These economies receive the benefit when the scale of production in any industry or group of industries increases.
- Sources of external economies are
- i) Economies of concentration:
 - ii) → These are related to the advantage arising from the availability of skilled labour, better transportation facility, assistance from subsidiary

Economies of information:

- These are the benefit which all firms engage to some in an industry derives from any publication of trade (copyright, printing and technical grounds from their research institute).

Economies of disintegration:

- When industry grows it become possible to split up certain process when are taken over by some specialist firm.

Internal and External diseconomies:

Internal diseconomies are those factors which raise the cost of production. As the production is increase beyond a certain point. It may ~~also~~ lead decreasing return to scale.

- 1) Un-widely management or mis-management.
- 2) Technical difficulties.

External diseconomies

- Law of
- Government policy →
Replacement:

i) Challenger:

- In replacement analysis the existing (currently owned assets) is referred as defender whereas its new alternative is referred ~~as~~ to the challenger.

Defender:

- If an existing equipment is considered for replacement with a new equipment, then the existing equipment is known as defender and the new equipment is known as challenger.