

# ECONOMICS

Demand:

Desire + Willingness + Purchase

Type of Commodity:

- Normal
- Inferior
- Luxury

C: Consumer

I: Investment

T: Tax

Y: Income

S: Sale

Demand function (ddfn):

$$dd = f(P, P_R, Y, t, E, U) \rightarrow \text{The other factors}$$

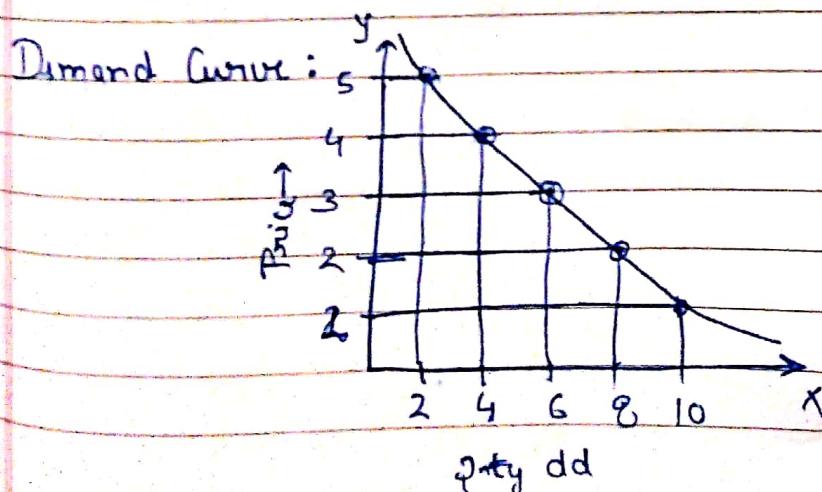
(-1) price      ↙      ↓      ↘      Expectation of future  
 Price of related Good      Income      Consumer taste

↳ Two types

- Substitution (Tea & Coffee)
- Complementary (Car & Petrol)

Demand schedule:

Price	Qty. Demanded
1	10
2	8
3	6
4	4
5	2



## Theory of consumer behaviour:

Theory of Demand: Demand in economics is desire, availability, willingness and ability to pay in order to purchase.

Demand function: It shows the functional relationship between demands and its determinants.

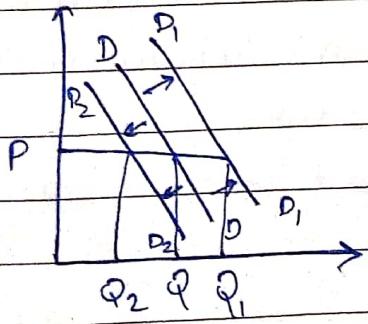
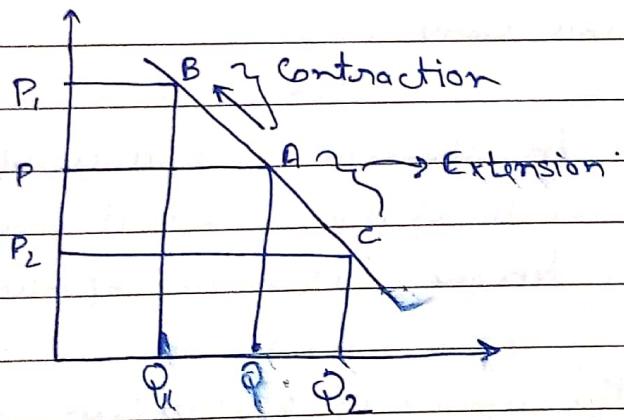
- ① Price of own commodity
- ② Price of related commodity
- ③ Income of the consumer
- ④ Consumer's taste and preferences
- ⑤ Consumer's expectations about the future price & other factors

Mathematically it can be represented as

$$d = f(P, P_r, Y, t, E, U)$$

There is a -ive relation b/w demand & price. As price increases demand decreases.

\* Extension & Contraction in demand:



Market Demand: It is the sum total of commodity that the consumers are ready to purchase at different price levels. It is the horizontal summation of the individual demand in the market at different price levels. It is shown in the last page table.

Extention & Contraction in demand curve (Change in demand):

- 1) Changes in price of commodity leads to changes in quantity demanded.  
backward
- 2) An upward movement along with the demand curve shows a contraction ( $A \rightarrow B$ ) in demand it is mainly due to increase in price of the commodity.
- 3) An upward movement along with the demand curve shows a extention ( $A \rightarrow C$ ) in demand, it is due to the decrease in price of the commodity.

Shift in the demand curve:

Changes in the factors other than price leads to shift in demand curve. Upward shift shows increase in demand and downward shift shows decrease in demand. Reason for upward shift in demand curve?

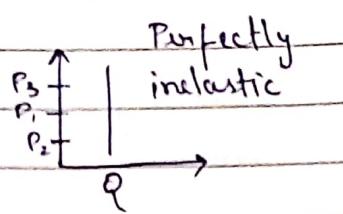
- 1) An increase in the income of the consumer.
- 2) Tast of the consumer is in favour of commodity.
- 3) Consumer expectation about the future increase in the price.
- 4) An increase in the price of one substitute.
- 5) A reduction in the price of one complementary.

Elasticity of Demand:  
 $ed$ : elasticity.

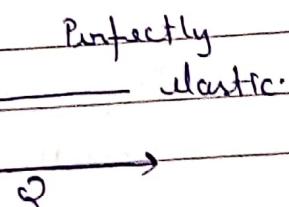
$$ed = \frac{\% \Delta \text{ in Quantity demanded}}{\% \Delta \text{ in Product Price}}$$

Degrees of elasticity:

1) Perfectly elastic  $\alpha$



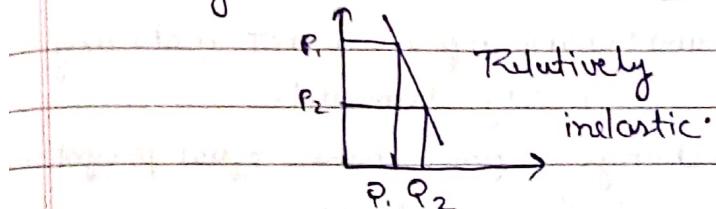
2) Perfectly inelastic  $= 0$



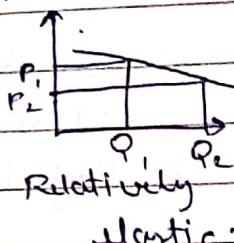
3) Unitary elastic  $= 1$

4) Relatively elastic  $> 1$

5) Relatively inelastic  $< 1$



Unitary elastic



Supply: (related to producer's behaviour)

$Q_s$ : Quantity Supply

$$Q_s = f(P, f_1, \dots, f_n, S, U)$$

Other factors

Price  
(itive)

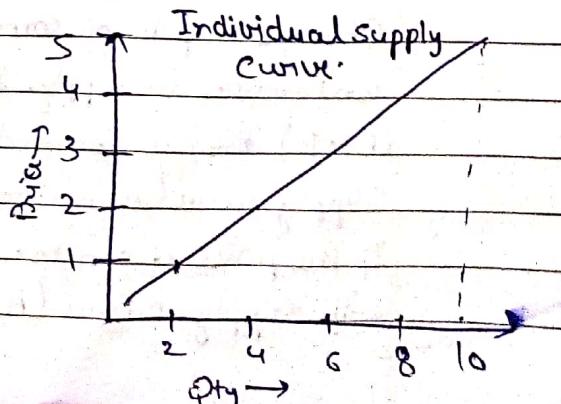
Price of the factors (ive)  
of the production.

State of Technology  
(itive)

1. Land 2. Labour 3. Capital 4. Organization.  
 Rent      Wage      Interest      Profit.

Schedule  
Supply demand:

Price	Quantity
1	2
2	4
3	6
4	8
5	10



## Price Elasticity of demand:

It is the degree of responsiveness in change in Qty demanded as a result of change in price.

It is denoted by "ed".

$$ed = \frac{\text{Percentage change in Qty dd}}{\text{Percentage change in Price}} = \frac{\Delta Q}{\Delta P} \times \frac{P_{initial}}{Q_{initial}}$$

## Degrees of price elasticity of Demand:

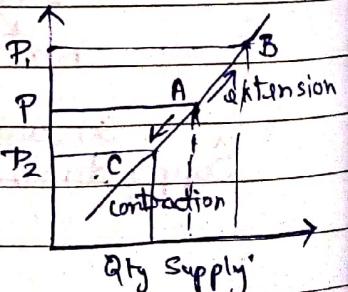
1. Perfectly elastic Demand: A small change in price which makes an infinite change in quantity demanded is called perfectly elastic demand.  
 $ed = \infty$ , eg: Real life no such commodity.
2. Perfectly inelastic demand: Change in price do not make any change in Qty demanded.
3. Unitary elastic dd: % change in price makes equal proportionate change in the quantity dd.
4. Relatively elastic edd: A small change in price that makes more than proportionate change in quantity.
5. Relatively in elastic demand: Change in price which makes less than proportionate change in Qty dd.

\* SUPPLY: Supply is the amount of commodity that producer are willing to offer for sell at diff. price level. The final relation b/w price & qty. supplied is termed as supply function.

### \* Extension & contraction in supply:

Change in price of commodity leads to extension or contraction in supply. If price of commodity incr. ( $P_1$  to  $P_2$ ) there is forward movement along with the supply curve (extension).

If the price of comm. decrease from  $P_1$  to  $P_2$  there is a backward shift with supply curve (A to C) (Contraction).



Change in the factors other than P leads to shift in supply.

Upward shift shows increase in supply & downward shift shows decrease in supply.

\* Factors that leads to upward shift in supply curve:

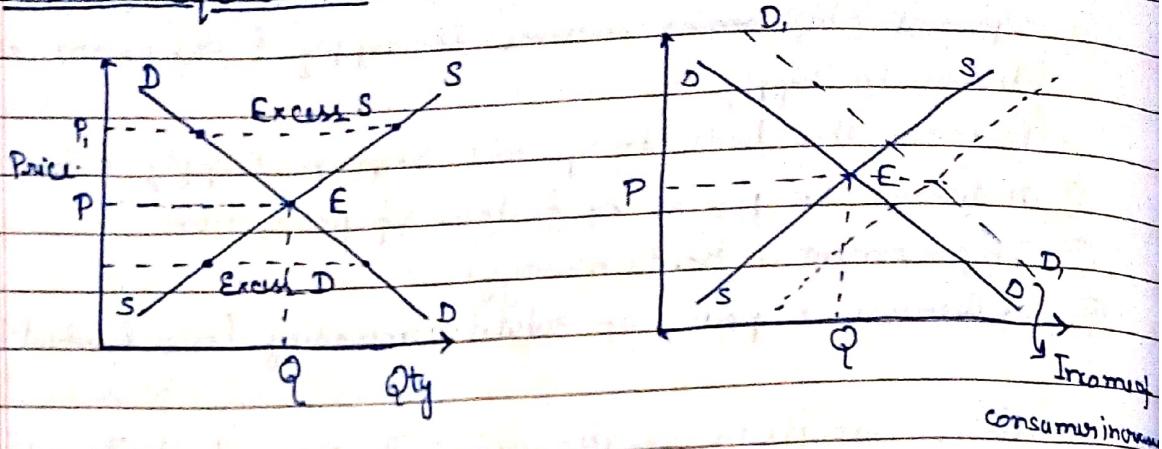
- ① A decrease in price of factor of production.
- ② Improvement in technology.
- ③ A decrease in price of related commodity (rice & wheat).

\* Gross elasticity of supply: The gross elasticity of supply measures a proportional change

in the quantity supplied in relation to the proportional change in the price.

$$\epsilon_{xy} = \frac{\Delta Q_x/Q_x}{\Delta P_y/P_y} = \frac{\Delta Q_x}{\Delta P_y} \times \frac{P_y}{Q_x}$$

## \* Market Equilibrium:



### Types of Elasticity:

1: Price elasticity of demand

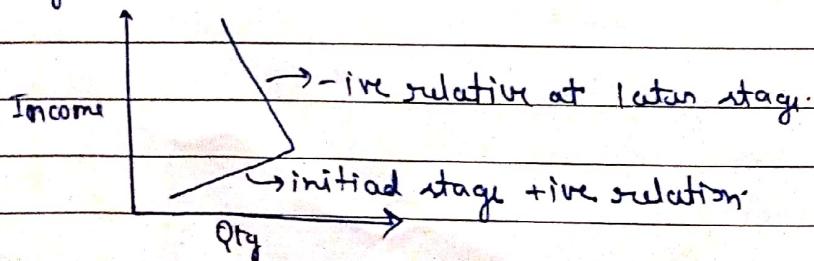
2: Income elasticity:

It is the degree of responsiveness

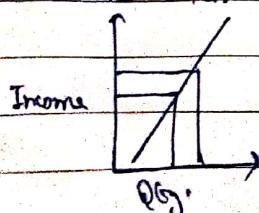
in change of quantity demanded as the result of change in income.

$$\epsilon_Y = \frac{\% \text{ change in Qty dd}}{\% \text{ change in income}} = \frac{\Delta Q}{Q} \times \frac{Y}{\Delta Y}$$

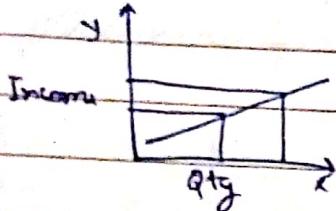
Income elasticity will be different among different kind of commodity. In case of <sup>inferior</sup> normal commodity, income elasticity will be -ive.



For normal commodity income elasticity will be +ive but it will be less than proportionately.



In case of superior or luxury commodity income elasticity will be +ve and it will be more than proportionate.



+ Price elasticity of supply: It is the degree of responsiveness in change in quantity supply as a result of change in supply price.

$$\% \text{ change in qty supply} = \frac{\Delta Q}{Q} \times \frac{P}{\Delta P}$$

Types of elasticity of supply:

1. Perfectly elastic:  $ed = \infty$

2. Perfectly inelastic: Change in price that do not make change in qty supply.

$$ed = 0$$

3. Unitary elastic supply:

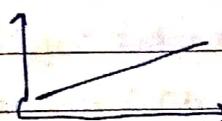
% change in price that makes equal

change in qty supply.

$$ed = 1$$

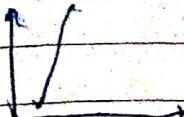
4. Relatively elastic Supply: % change in price that makes more than proportionate change in qty of supply.

$$ed > 1$$



5. Relatively inelastic Supply: % change in price that makes less than proportionate change in qty of supply.

$$ed < 1$$



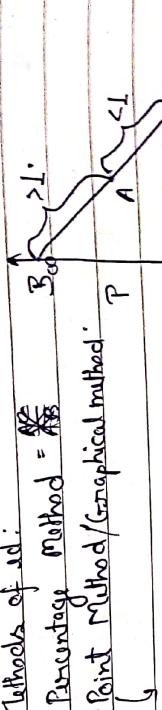
**Cross-elasticity of demand:** Degree of responsiveness in change in quantity demanded of commodity X on the result of change in some price of commodity Y.

$$\frac{\% \text{ change in } Q_X}{\% \text{ change in price of commodity Y}} = \frac{\Delta Q_X}{Q_X} \times \frac{P_Y}{P_X}$$

### 26-8-19 Methods of Ed:

① Percentage Method =  $\frac{B_{cd}}{B_{ad}}$   $\geq 1$ .

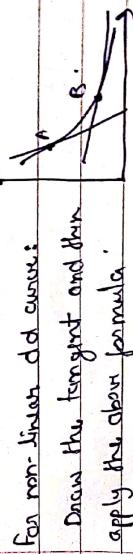
② Point Method/Graphical method:



(i) It means elasticity is measured at diff. points on the demand curve.

(ii) Elasticity will be different at different points on curve it can be measured by using following approach:  
 $Ed = \frac{\text{downward shift of demand}}{\text{upward shift of demand}}$

Above formula is for linear demand.



For non-linear dd curve:

Draw the tangent and then

apply the above formula.

**Market Equilibrium:** A market is in equl. when market demand = market supply.

→ The price at which dd = ss it is equilibrium price and quantity is eq. quantity.

→ Any price other than equl. price is dis-equilibrium price.

→ If market price > eq. price there will be more supply than demand.

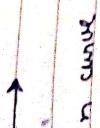
Business in change  
as the result  
by N.

$$\frac{\Delta Q_s}{P_s} \times \frac{P_s}{\Delta Q_d}$$

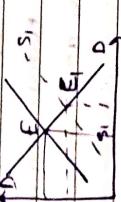
- The situation in which  $ss > dd$  is called excess supply.  
→ If market price is below the  $mr$  price there is a shortage in supply and this is termed as excess demand.

+ Changes in equilibrium Position:

- Changes in the factors other than price leads to change in  $dd$  curve and  $ss$  curve.
- Assume that the income of the consumers increases in market  $dd$  curve will shift upward and it will lead to increase of price.



- If government adopt a policy in favour of the producer (or if the technology improves) then  $ss$  will shift upward and  $dd$  is constant.

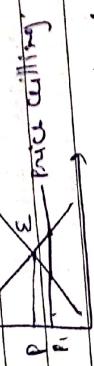


- \* Application tool of demand and supply analysis: Government can interfere in the market through -
  - ① Imposition of tax.
  - ② Price culling.
  - ③ Price floor.

price  
ceiling  
and  
price  
floor

Price culling: It means govt. fixing the price below the  $mr$  price in other word it is the maximum price a producer can impose on a product. It is mainly to protect the consumer.

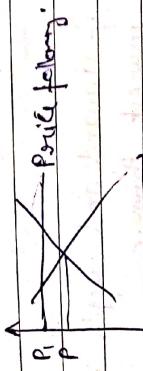
→ It is the price imposed on necessary commodity such as rice, wheat etc. because at higher prices it cannot be affordable to a certain section of the society.



It is ceiling below the open price. If govt decided to cap the price there will be people in demands it will be solved through rationing of such kind of products.

\* Price floor: It refers to the minimum price of a commodity which is fixed by the govt. to protect to the producers.

It is the price above the open price. It is the minimum price which should be paid to the producers for their product because if certain products of the certain commodity will be highly supplied producers govt. faces such a problem.



→ At higher prices it will be taken by the govt. and distributed to the people at lower price.

$$\text{Ex) } \begin{aligned} Q_d &= 10 - 4P \\ Q_s &= -2 + 8P \end{aligned}$$

$$10 - 4P = -2 + 8P$$

$$12 = 12P \Rightarrow P = 1$$

↳ Eq "price"

$$\begin{aligned} \text{① } Q_d &= 40 - 10P \\ Q_s &= 2S + 8P \end{aligned}$$

$$\begin{aligned} 40 - 10P &= 2S + 8P \\ 40 &= 2S + 18P \end{aligned}$$

$$\text{Eqn: } Q_d = 14 - 5P, \quad Q_s = 2 + 8P.$$

So, find the eqn price & Qdg.

$$14 - 5P = 2 + 8P$$

$$12P = 12$$

$$P = \frac{12}{12} = 1.00$$

$$Q_d = 14 - 5 \times 1.00 = 9.00$$

(3)

\* Production: It is the function relation b/w input & output.  
It is the transformation of Inputs into output.

Thus one 4 agents of production:

1. Land - Reward is rent.

2. (iii) The supply of land is totally fixed.



(iii) Land is different in terms of fertility.  
Ans

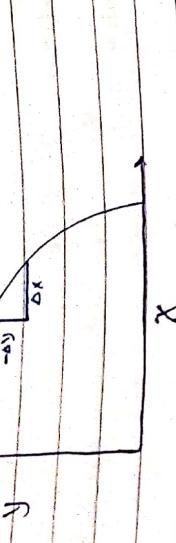
2. Labour:- (i) It is the service of Human mind & physical effort.  
(ii) Actually labour is heterogeneous in terms of quality by economic analysis it is assumed that labour are homogeneous.

3. Capital: (i) It is any fixed asset that generates the fixed flow of income. Eg: Building, machinery etc.

4. Organization: (i) An organization is an economic agent who organize the factors of production.

### \* Production Possibility Curve (PPC)

$$MRTS = \frac{\Delta Y}{\Delta X}$$



(i) It is the locus of all possible combination of two goods that a country can produce by using available resources.

(ii) Our resources are limited, but our wants are unlimited. So, production possibility curve shows that how a nation must the unlimited want by limited resources is explained with the help of PPC.

(iii) A point on PPC shows maximum utilization of resources, any point below PPC shows under utilization of resources, any point above PPC which is impossible for nation because there are resources only upto PPC. It is possible, only if there is improvement of technology on the productivity of the labour & capital should be increased.

### \* Marginal Rate of Product Transformation: It is the slope of PPC,

it is the rate at which one product is transformed into another.

Combinations	Commodity X	Commodity Y
A	0	5
B	1	4
C	2	3
D	3	2
E	4	1
F	5	0

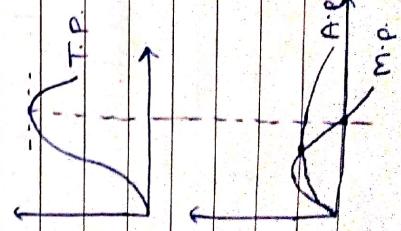
- \* Types of Production function:  
 - Short run & Long run production function.

In short run:  $Q = f(\bar{K}, L)$    
 Scale of output Capital can't be changed.

In long run:  $Q = f(K, L)$ .

\* Law of variable proportion:  
 TP (Total production) =  $T P_i$   
 AP (Average production) =  $A P_i$   
 MP (Marginal production).

K	Labour no.	TP	AP	MP
1	1	16	16	16
1	2	25	12.5	15
1	3	37	12.3	12
1	4	47	11.8	10
1	5	55	11.0	8
1	6	60	10.00	5
1	7	63	9	3
1	8	63	7.9	0
1	9	62	6.8	-1



- Long run production function

Short run: It refers to production in which there are some factors are fixed and other some function is variable.

$$Q = f(K, L)$$

Short run production function also known as Law of Variable Prods  
Production can increase only through increasing in  
variable production without changing constant one.

Long run: In long run all the factors are variable product  
can be increased by increasing all the factors of  
the production.

$$Q = f(K, L)$$

\* Law of Variable Production:

TP (Total Production): It is the total production of  
resulting from the ~~total~~ use of total qty of input.

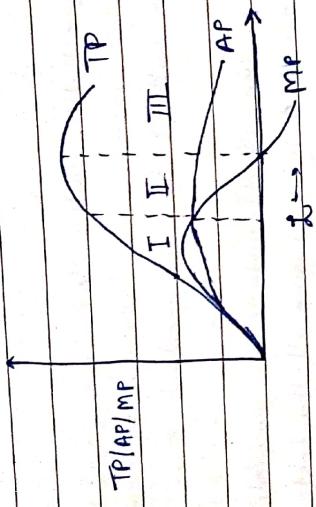
$$\text{Average production (AV)} = \frac{\text{Total Product}}{\text{No. of labour.}} = \frac{TP}{L}$$

Marginal product: It is the addition product obtained from  
the additional use of input. In other word it  
is the change in total product to the change in the amount  
of labour.

$$MP = \frac{\Delta TP}{\Delta L}$$

Assumption of the law:

- (i) Technology remains constant.
- (ii) Labours are homogeneous.
- (iii) Fixed factors cannot be increased in the short-run period.
- (iv) There are two factors of production out of which one is fixed and other is variable.



The first stage is known as stage of increasing returns.  
Second stage is stage of decreasing returns.  
Third stage is stage of negative returns.

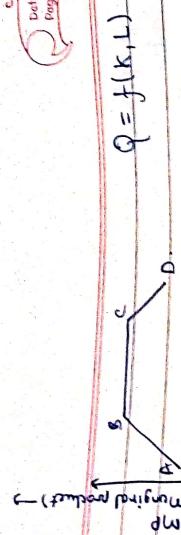
#### Relationship b/w TP/AP/MP:

- (i) When total product is max, MP=0.
- (ii) When AP is maximum, AP=MP.
- (iii) When TP is falling, MP will be -ive.
- (iv) As long as TP is +ve, AP will also be +ve.

Law of returns to scale: It is the law of long run.

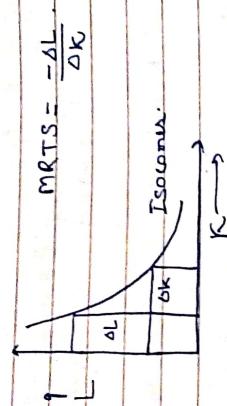
K	1	TP	MP	
1	1	10	10	{stage of increasing return scale}
2	2	30	20	
3	3	60	30	
4	4	100	40	{stage of constant return scale}
5	5	140	40	
6	6	180	40	
7	7	210	30	{stage of decreasing return scale}
8	8	230	20	
9	9	240	10	

classmate  
Date 2-9-19  
Page:



The short run period,  
of which

Marginal rate of technical substitution:



Long run production function:

- Law of returns to scale: It refers to response of total output to change in all I/P by the same proportion.
- If all inputs increase in same proportion initially, output will increase at increasing rate. Then constant rate after decreasing rate.

$\times MP = 0$

- Cause of increase in return: (i) Economies of scale (indivisibilities).  
~~(ii)~~ Cost concepts due to increase in scale of production such as availability of raw materials at cheap cost, management efficiency etc.).  
(iii) Division of labour and specialization  $\rightarrow$  Output will increase.

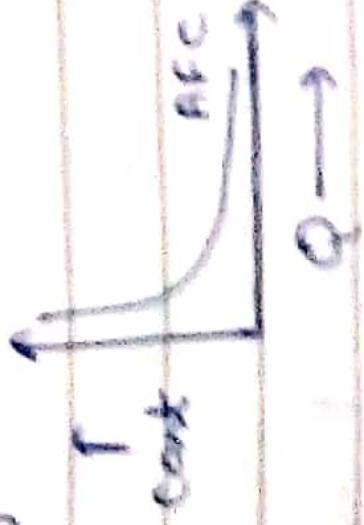
- Reason for decrease in return scale: Organizm is a fixed factor if the scale of production increases beyond a level leads to decrease in organization.  
(i) Excessibility of natural resources.  
(ii) Management problem.

average fixed cost = average

$$AFC = \frac{TFC}{Q}$$

$$AVC = \frac{TC - AFC}{Q}$$

AFC: It is the per unit fixed cost. It will continuously fall throughout. So the shape is inverted hyperbolic.



AVC: It is the per unit variable cost by dividing total

$$AVC = \frac{ATVC}{Q}$$



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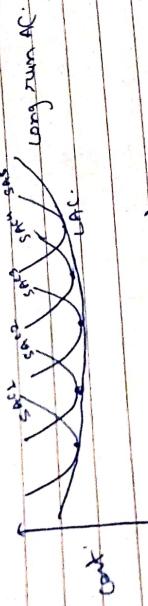
- \* Opportunity Cost: It is the next best alternative cost. For e.g. A nation can produce either can or cloth. If the nation is producing can then opportunity cost is cloth.

only falls  
symbols:

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### Long Run Average Cost curve (Envelop curve)

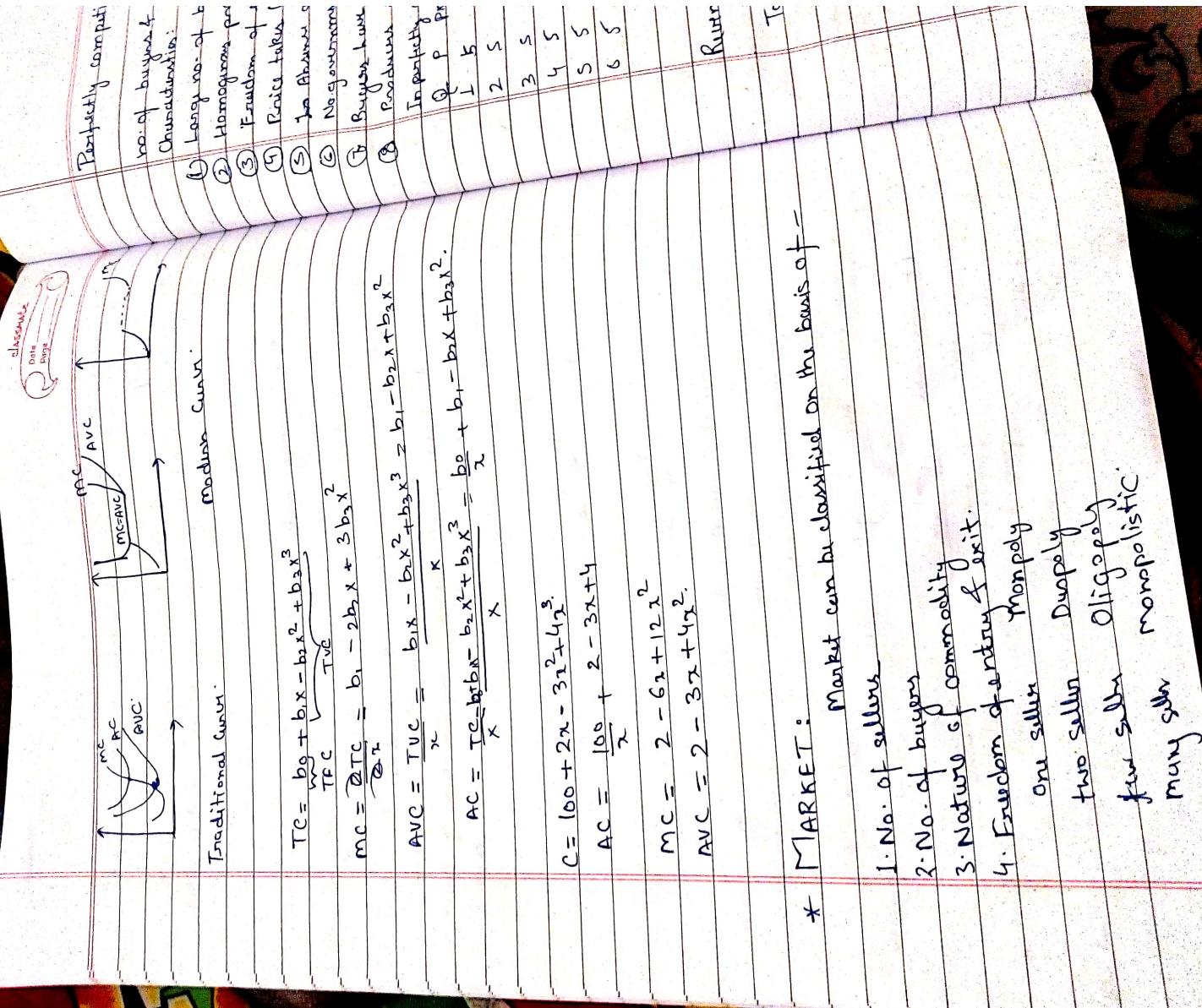
In long run all factors of production will be variable. LAC, also known as planning curve or organism sum plan the level of O/P in long run period from its short run exposure (3) LAC is the locus of all possible combination of least cost minimum points of short run average cost curve that's why it is known as 'enveloped' cost curve.



Modern theory of cost: According to the modern economist Short run average cost curve it is a

smooth shaped curve because it is a range of O/P at AVC. There is a flatness stretch over its moderate capacity At the minimum AVC, the firm takes its

- At the minimum -  
Reasons -  
1) To meet seasonal fluctuation when there is  
a) To meet a smooth flow of production  
2) To allow a smooth expansion of plant size  
3) To meet the growing demand



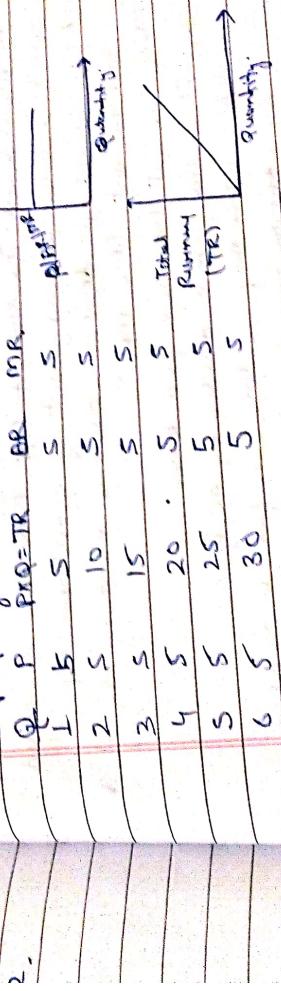
Perfectly competitive market:

It is characterized by large no. of buyers & sellers with homogeneous product.

Characteristics:

- ① Large no. of buyers & sellers
- ② Homogeneous product
- ③ Freedom of entry & exit.
- ④ Prices taken (price will be determined by demand & supply)
- ⑤ No barriers of entry/exit
- ⑥ No government intervention
- ⑦ Buyers have perfect knowledge about the market
- ⑧ Producers receive only economic profit in long run period

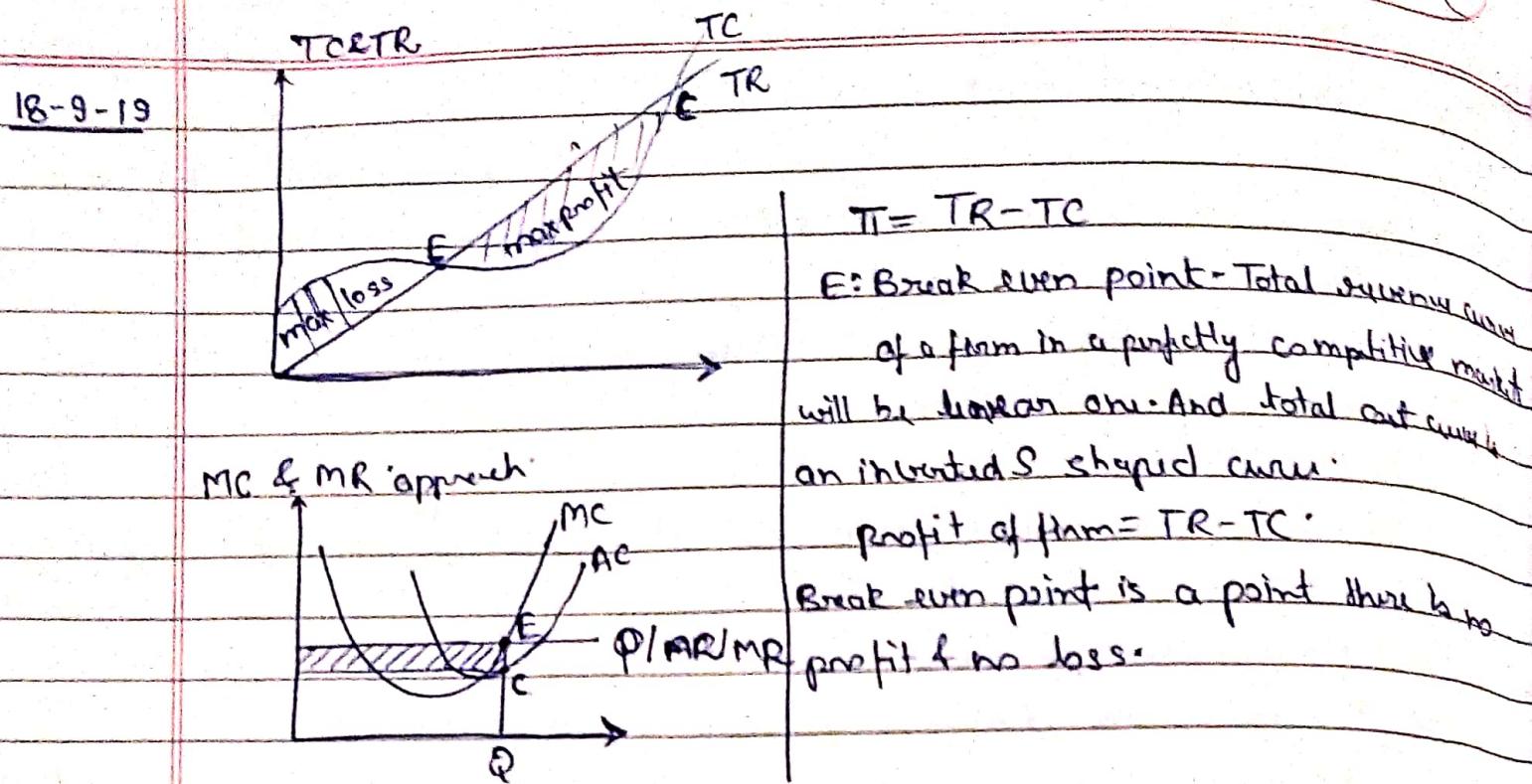
In perfectly competitive market:



Rutine Concept: Revenue of is the total price mulitplied by the firm.

$$\text{Total revenue} = P \times Q$$

$$\begin{aligned} AR &= \frac{TR}{Q} \\ MR &= \frac{\Delta TR}{\Delta Q} \\ &= TR_2 - TR_1 \\ &\quad SQ \end{aligned}$$



A firm maximises its profit when its marginal revenue is equal to marginal cost. The level of output at which  $MR = MC$  is called optimum output. Condition for attainment of equilibrium o/p.

1. A firm should get additional revenue which is equal to additional cost ( $MC = MR$ )
2. MC curve cut MR curve from below.
3. The profit of the firm is decided by AC, if-
  - AC is below the price line then firm is running with

Chomsky 1

1	4	16	64	256
2	8	32	128	512
3	16	64	256	1024
4	32	128	512	2048
5	64	256	1024	4096

