

define the law of demand & which factors affecting to the demand law?

\* The quantity demand of any good is the amount of good that buyers are willing and able to purchase. Generally price of the good and demand for the good are inversely related and this relationship between price and quantity demanded is true for most goods. Law of demand states that other things equal, when the price of good rises, the Q.D of good falls and vice versa. ⑪

⇒ Assumption →

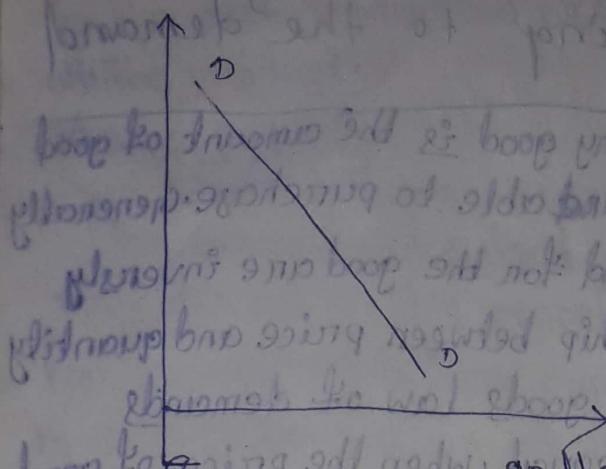
Demand schedule is a table that shows the relationship between the price of a good and the quantity demanded. On otherwise it is a table that shows the quantity demanded at each price.

Price of good X per k.g (in ₹)	Quantity of good X (in k.g)
1	25
2	20
3	15
4	10
5	5

Demand curve

Demand curve is a graph of the relationship between the price of a good and the quantity demanded. On otherwise the demand curve which graphs the demand schedule illustrates how the quantity demanded of the good changes as its price varies. The slope of the demand curve is downward because a lower price increases the quantity demanded.

Diagram →



on the figure the downward sloping line relating price and quantity demanded is called the demand curve.

### Market demand versus individual demand

Individual demand means demand for a commodity by an individual consumer at different alternate prices. On the other hand market demand is the sum of all the individual demand for a particular good or service.

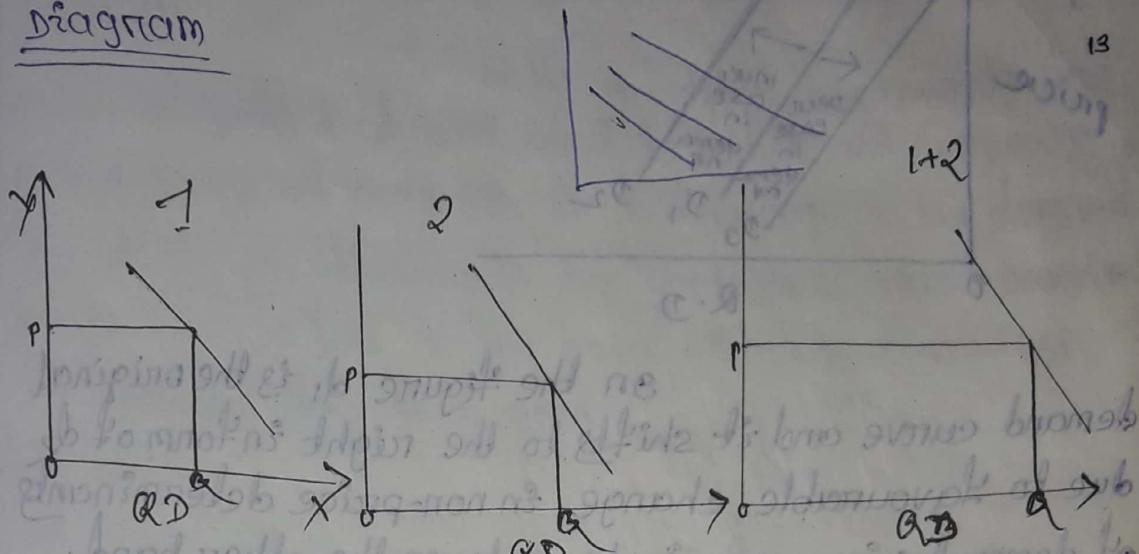
Price of good x per kg (in ₹)	Quantity of good x demanded by A (in kg)	Quantity of good x demanded by B (in kg)	Market demand
1	25	35	60
2	20	30	50
3	15	25	40
4	10	20	30
5	5	15	20

The above table shows the demand schedule for good x of two individuals A and B. At any price A's demand schedule tells us how much good x he buys and B's demand schedule tells us how much good x he buys. The market

demand at each price is the sum of the two individual demand.

The Q.D in a market is the sum of the quantities demanded by all the buyers at each price. Thus the market demand curve is found by adding horizontally the individual demand curves.

### Diagram

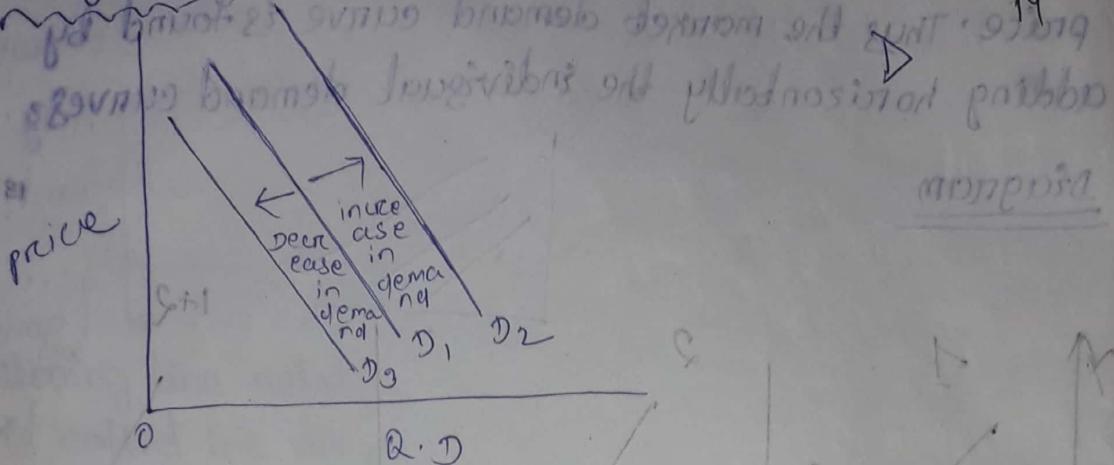


on the figure market demand curve is the horizontal summation of all individual demand curves. The market demand curve shows how the total quantity demanded of a good varies as the price of good varies, while all other factors that affect how much consumers want to buy are held constant. shifting in the demand curve

Any change that raises the quantity that buyers wish to purchase at any given price shifts the demand curve to the right and is called an increase in demand. On the other hand any change that lowers the quantity that buyers wish to purchase at any given price shifts the demand curve to the left and is called a decrease in

demand. This means that the demand curve shifts if something happens to alter the quantity demanded at any given price.

Diagram →



In the figure  $D_1$  is the original demand curve and it shifts to the right in form of  $D_2$  due to favourable change in non-price determinants of demand (increase in demand). On the other hand, when demand curve shifts to the left to  $D_3$  due to unfavourable change in non-price determinants of demand is called decrease in demand.

The most important variables that can shift the demand curve are as follows.

① Income → affecting for the demand

In case of normal goods change in income and change in demand are directly related; in other words a good for which an increase in income leads to an increase in demand is normal good.

On the other hand, if demand for a good rises when income falls, is called inferior goods; in other words a good for which an increase in income leads to a decrease in demand is inferior good.

## ② Prices of related goods

When a fall in the price of one good reduces the demand for another good, the two goods are called substitutes. On other words substitutes are peers of goods that are used in place of each other and increase in the price of one leads to an increase in the demand for the other.

On the other hand complements are peers of goods that are used together and increase in the price of one leads to a decrease in the demand for others. On other words two goods are called complements when a fall in the price of one good raises the demand for other good.

## ③ Tastes

If taste of a consumer goes in favour of a commodity, then a consumer will buy more of it and vice-versa.

## ④ Expectations

Expectations of the people about the future may affect demand for a good or service today. If price of a commodity expected to fall in future, then demand for the commodity may fall at present and vice-versa.

## ⑤ Number of buyers

Market demand for a commodity depends on the number of buyers of that commodity. Generally quantity demanded of a commodity would increase at every price due to increase in number of buyers and vice versa.

## ⑥ SUMMARY → A change in price on the vertical axis represents a movement along on the demand

curve but a curve shifts when there is a change in relevant variable that is not measured on either axis. In other words a demand curve shows change in quantity demanded of a good when its price varies, other things equal but when one of these other variable changes, the demand curve shifts.

==

~~Answer~~

Q⇒ Discuss the equilibrium of competitive labour markets etc.

OR

How equilibrium wage rate is determined under competitive condition?

ANS ⇒ Analyse the determination of wage under perfect competition in both product and factor market.

The factors of production are the inputs used to produce goods and services. Labour, Land and Capital are the three most important factors of production. The demand for a factor of production is a derived demand because demand for a factor of production by a firm is derived from its decision to supply a good. Labour is the most important factor of production because workers receive of the total income earned in an economy. The supply and demand for labour determine the prices paid to workers.

The demand for labour

Demand for labour is derived demand because demand for labour by a firm is derived from its decision to supply a good. In other words labour services are the inputs into the production of other goods.

~~What is Law of Supply? Which factors affect the law of supply?~~  
~~Shift in the supply curve.~~

ANS: ⇒ The quantity supplied of any good/service is the amount that sellers are willing able to sell. The direct relationship between price and quantity supplied is called the law of supply. According to this law other things equal, when the price of a good rises, the quantity supplied of good also rises; and when the price falls, the quantity supplied also falls.

### Supply schedule

Supply schedule is a table that shows the relationship between the price of a good and the quantity supplied. In other words it shows the quantity of a good supplied during a given time at various prices of good.

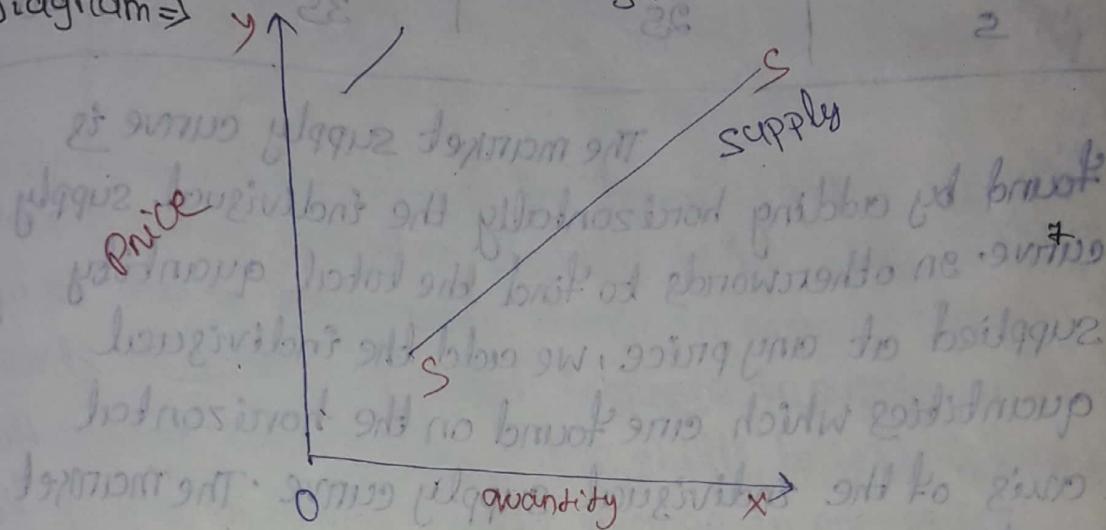
<u>Price of good (₹) (in ₹)</u>	<u>Quantity of good n supplied (in kg)</u>
1	5
2	10
3	15
4	20
5	25

The above table shows that as price of good n rises quantity that seller willing and able to sell also rises and viceversa.

## Supply curve

It is a graph of the relationship between the price of a good and the quantity supplied. In other words, the curve relating price and quantity supplied is called supply curve. The supply curve slopes upward because other things equal, A higher price means a greater quantity supplied and vice versa.

Diagram  $\Rightarrow$

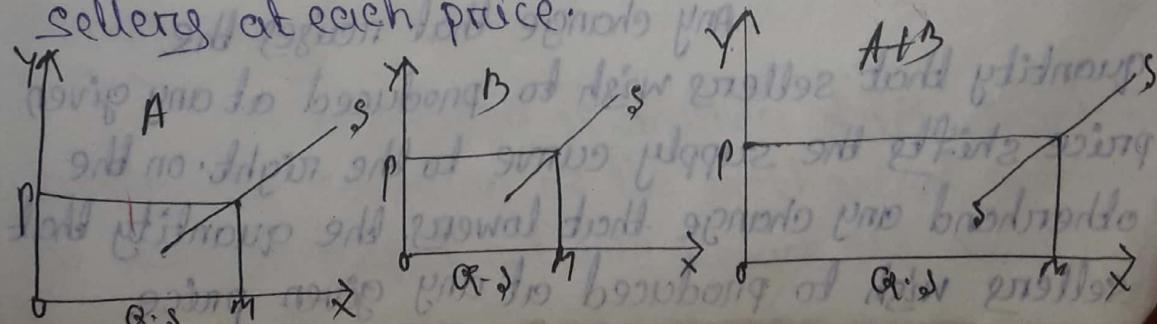


Supply curve which graphs the supply schedule illustrates that quantity supplied of good changes directly as its price varies.

## Market supply versus individual supply

Just as market demand is the sum of the demand of all buyers, market supply is the sum of the supplies of all sellers. If there are two individual suppliers of good  $u$ , then market supply is the sum of the individual supplies of  $A$  and  $B$ .

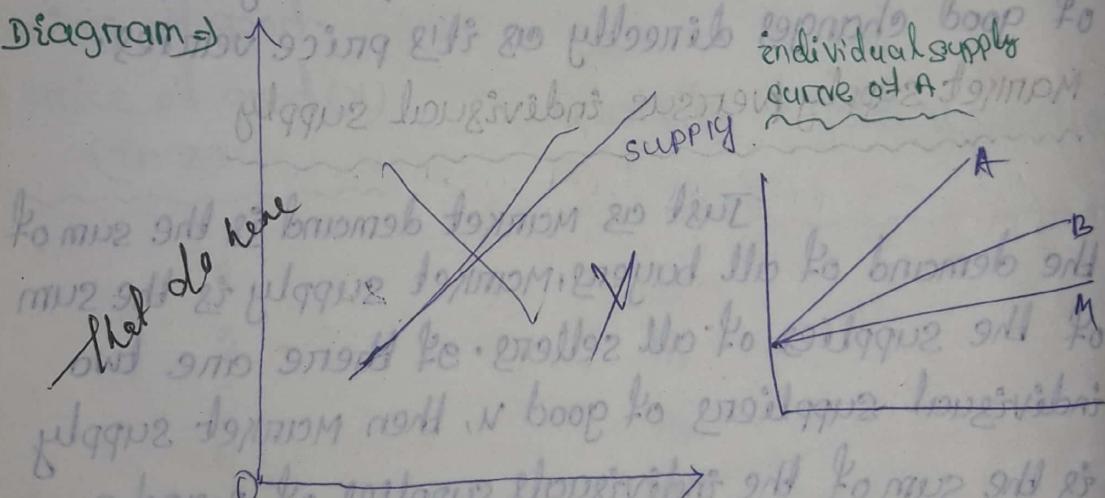
This means that the quantity supplied in a market is the sum of the quantities supplied by all sellers at each price.



price of good x (in £)	Quantity supplied by A (in kg)	Quantity supplied by B (in kg)	M.S
1	5	15	20
2	10	20	30
3	15	25	40
4	20	30	50
5	25	35	60

The market supply curve is found by adding horizontally the individual supply curve, or otherwise to find the total quantity supplied at any price, we add the individual quantities which are found on the horizontal axis of the individual supply curve. The market supply curve shows how the total quantity supplied varies.

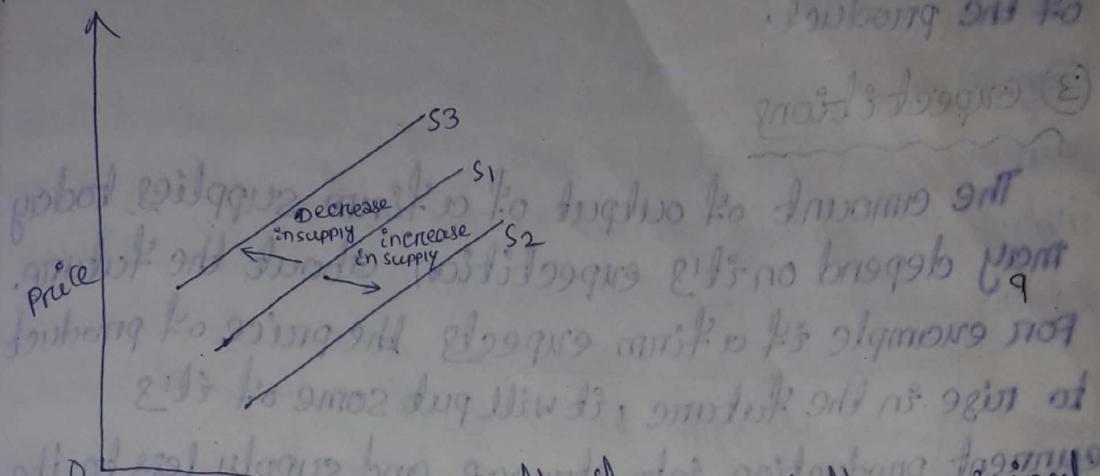
Diagram



Shifts in the Supply curve

Any change that raises the quantity that sellers wish to produce at any given price shifts the supply curve to the right; on the other hand any change that lowers the quantity that sellers wish to produce at any given price

shifting the supply curve to the left.  
diagram  $\Rightarrow$



on the figure  $S_1$  is the original supply curve and when it shifts to the right to form to  $S_2$  due to favourable change in nonprice determinants of supply is called increase in supply - on the otherhand when supply curve shifts to left to form of  $S_3$  due to unfavourable change in non-price determinants of supply is called decrease in supply.

following are the some of the important factors that can shift the supply curve.

### ① Input price

it is general that sellers use various inputs to produce their output. When the price of one or more of these input rises, it is less profitable for the firm to produce the same quantity at the given price. As a result supply of output fall. Thus the supply of a good is negatively related to the price of the inputs used to make the good.

### ② Technology

The technology is another determinant of supply. The invention of the mechanized machine to produce output not only reduce the amount of

Labour necessary to make output but also reduced to the cost production of firm and increase supply of the product.

### ③ Expectations

The amount of output of a firm supplies today may depend on its expectation about the future. For example if a firm expects the price of product to rise in the future, it will put some of its current production into storage and supply less to the market at present.

### ④ Number of sellers

Market supply of a commodity depends on number of sellers in the market. If number of sellers offering a product in the market increases then supply of that product to increase and vice versa.

### SUMMARY

The supply curve shows what happens to the Q's of a good when its price varies, holding constant all other variables that influence sellers. When one of these other variable changes, the supply curve shifts, so a change in price on the vertical axis represents a movement along the supply curve and a curve shift only when there is a change in a relevant variable that is not measured on either axis.

How supply and demand together determine the equilibrium price and output in the market?

A  $\Rightarrow$  The point at which the supply and demand curves intersect each other is called the equilibrium of market. The price at this intersection is called the equilibrium price and the quantity is called the equilibrium quantity. Equilibrium is a situation in which the market price (equilibrium price) has reached the level at which the quantity supply equals quantity demand. In other words, equilibrium price is the price that balances Q.S and Q.D. At the equilibrium price the quantity of the good that buyers are willing and able to buy exactly balances Q.S and Q.D. At the equilibrium price, the quantity of the good that buyers are willing and able to sell.

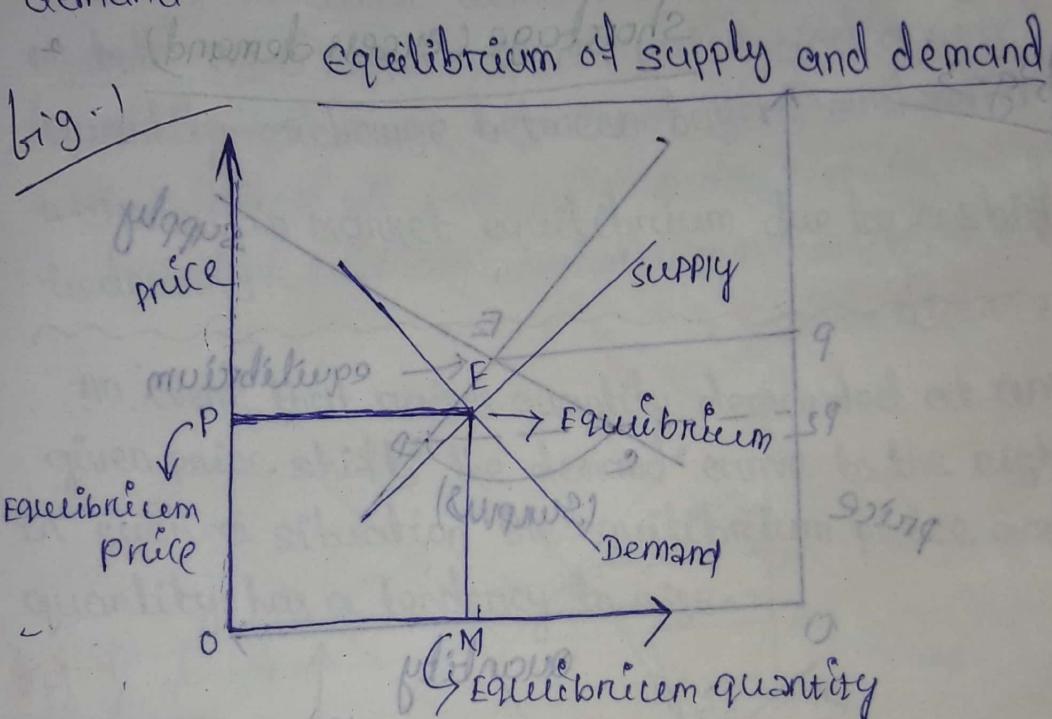
The equilibrium price is also called the market-clearing price because at this price everyone in the market has been satisfied. At this price buyers have bought all they want to buy and sellers have sold all they want to sell.

The action of buyers and sellers naturally move markets toward the equilibrium of supply and demand. The Q.S and Q.D at the equilibrium price is called equilibrium quantity.

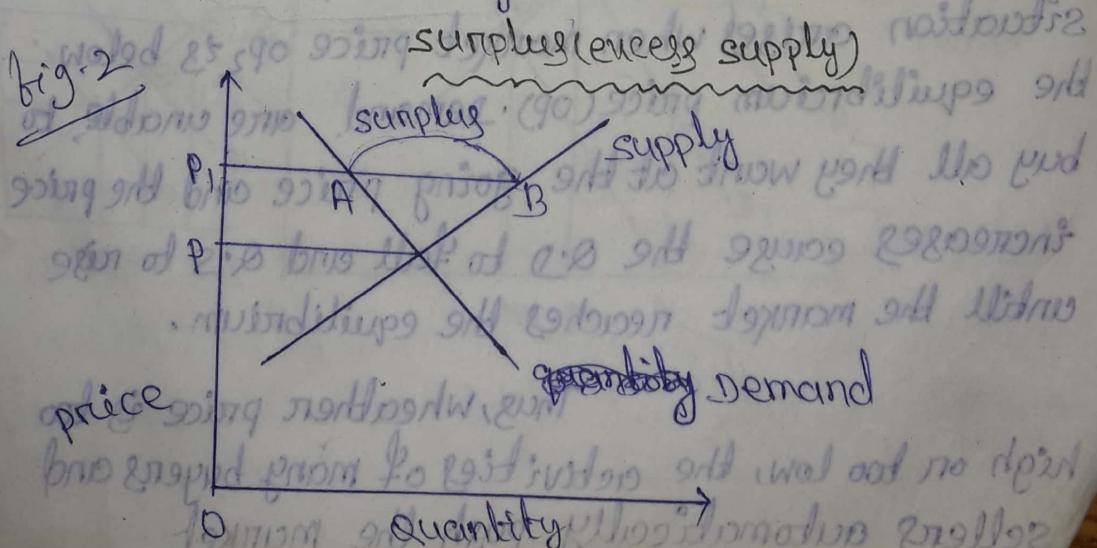
If the market price is above the equilibrium price, the quantity of the good supplied exceeds the quantity demanded. Here

Supply of the good changes and suppliers are able to sell all they want at the going price.

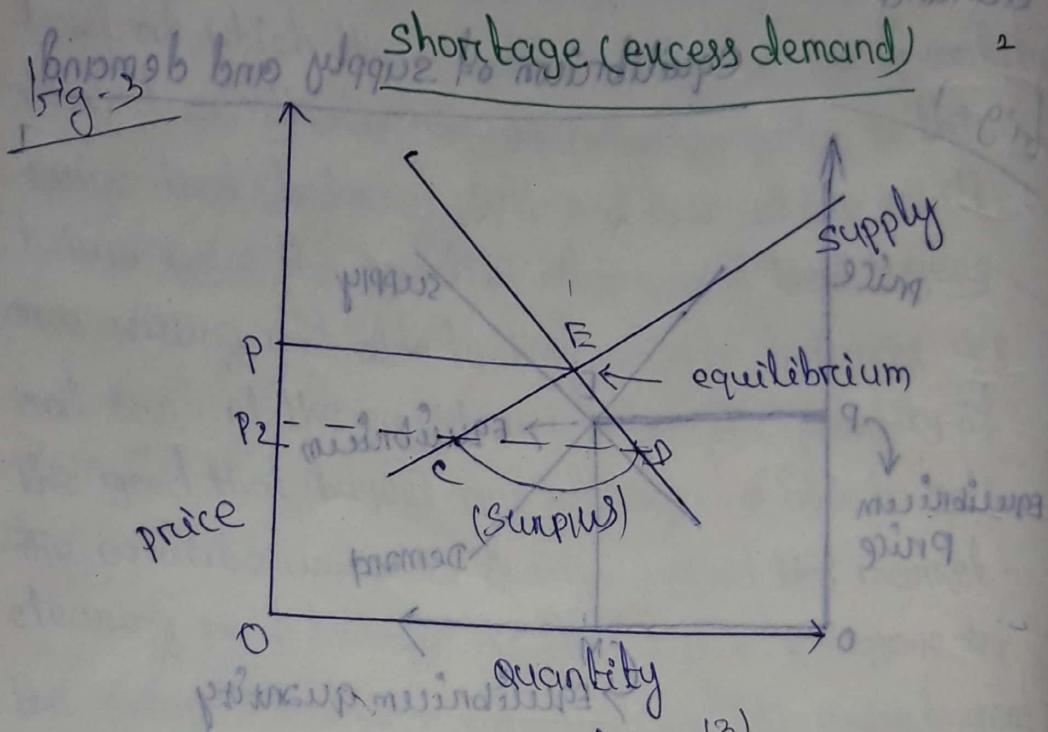
If market price is below the equilibrium price, the Q.D exceeds the Q.S (shortage) with too many buyers choosing too few goods, suppliers can take advantage of the shortage by raising the price. Hence, both supply and shortage causes the price adjustment moves the market toward the equilibrium of supply and demand.



Here the equilibrium price is  $OP$  and equilibrium quantity is  $OM$ .



On the figure<sup>(2)</sup> there is a surplus as quantity supplied ( $P_1B$ ) exceeds quantity demand ( $P_1A$ ). It is due to greatness of market price in relation to the equilibrium price. Now sellers respond to the surplus by cutting the price of product and this moves the price toward its equilibrium level. In other words, falling prices increase the quantity demanded and decrease the Q.S until the market reaches the equilibrium.



On the figure<sup>(3)</sup> there is a shortage as  $Q.D(P_2)$  exceeds  $Q.S(P_2)$  and this situation arises when market price  $OP_2$  is below the equilibrium price ( $OP$ ). Demand are unable to buy all they want at the going price and the price increases cause the Q.D to fall and Q.S to rise until the market reaches the equilibrium.

Thus, whether price is too high or too low, the activities of many buyers and sellers automatically push the market

price toward the equilibrium price. Once, the market reaches its equilibrium all buyers and sellers are satisfied and there is no upward or downward pressure on the price. The price of any good adjusts to bring the Q.S and Q.D for that good into balance.

The equilibrium price and quantity depend on the position of the supply and demand curves. The equilibrium in the market changes due to shift of either demand curve or supply curve or both as a result a new price and a new quantity exchange between buyers and sellers.

A change in Market equilibrium due to a shift in demand:-

An event that raises quantity demanded at any given price shifts the demand curve to the right in such a situation the equilibrium price and quantity has a tendency to rise.

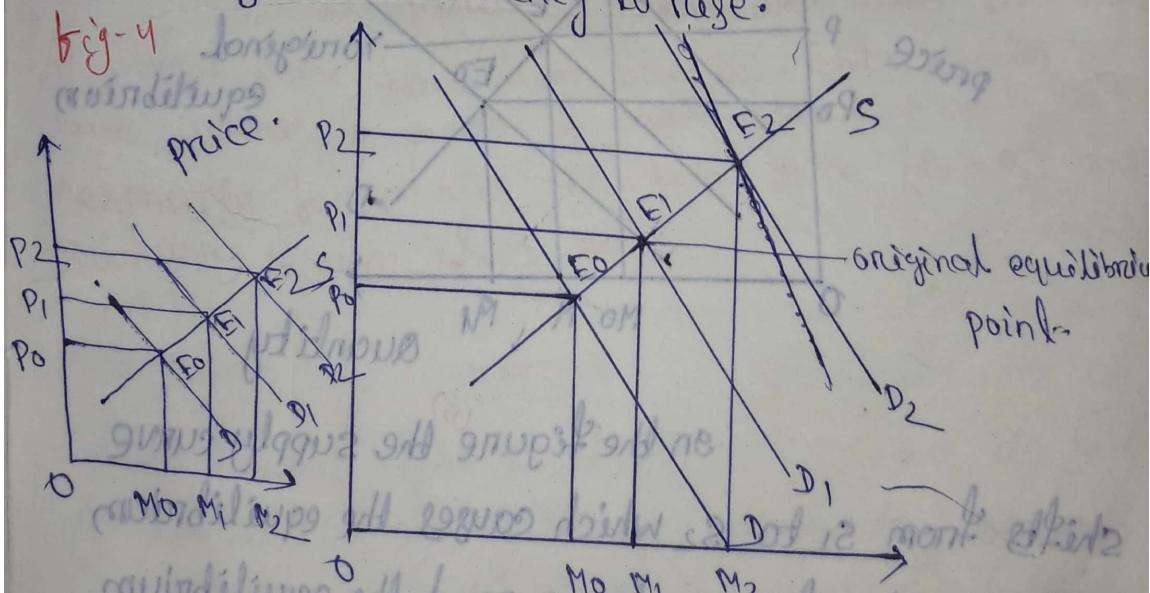
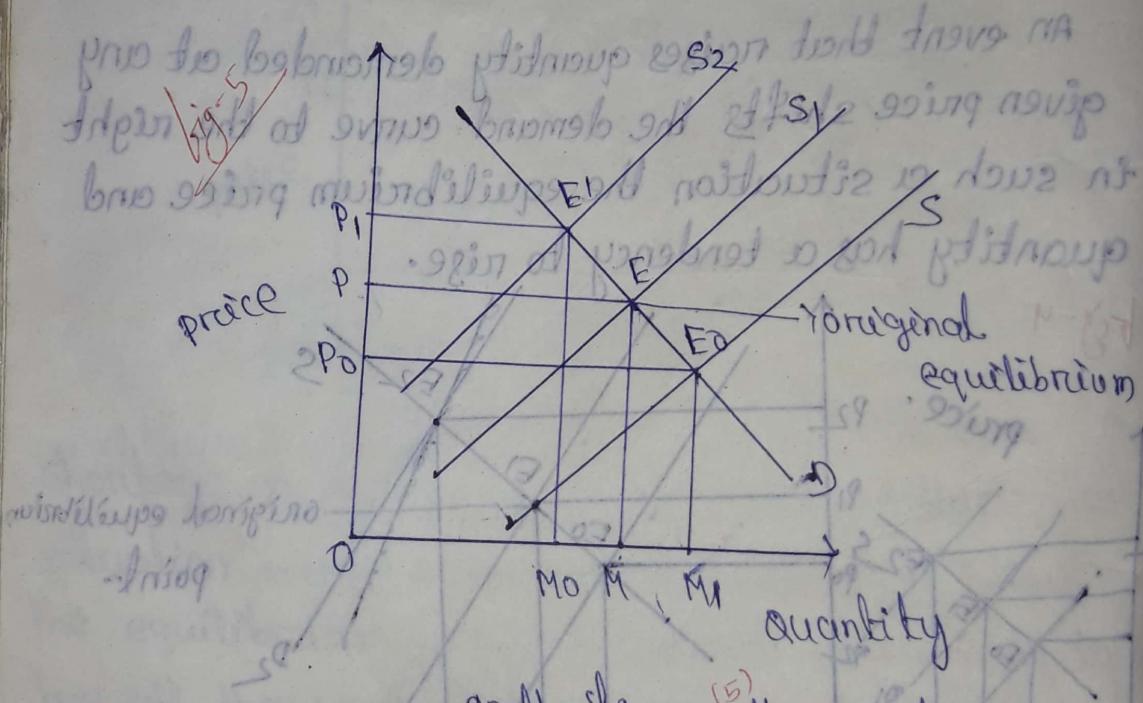


Fig-4 shows that an increase in demand shifts the demand curve to the right. This causes the equilibrium price to rise from  $P_0$  to  $P_2$  and the equilibrium quantity to rise from  $M_0$  to  $M_2$ .

on the figure the demand curve shifts from  $D_1$  to  $D_2$  which causes the equilibrium price to rise from  $oP_1$  to  $oP_2$  and the equilibrium quantity to rise from  $oM_1$  to  $oM_2$ . When demand curve shifts from  $D_1$  to  $D$  equilibrium price not only fall from  $oP_1$  to  $oP_0$  but also equilibrium quantity falls to  $oM_0$ .

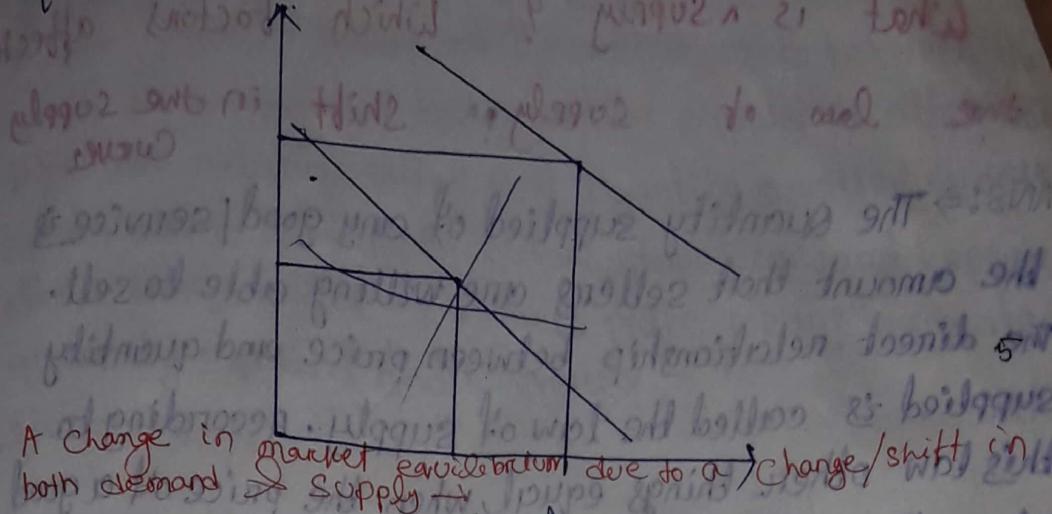
A change in market equilibrium due to a shift in supply

An event that reduces quantity supply at any given price shifts the supply curve to the left and vice-versa. In such a situation the equilibrium price rises and equilibrium quantity falls and vice-versa.

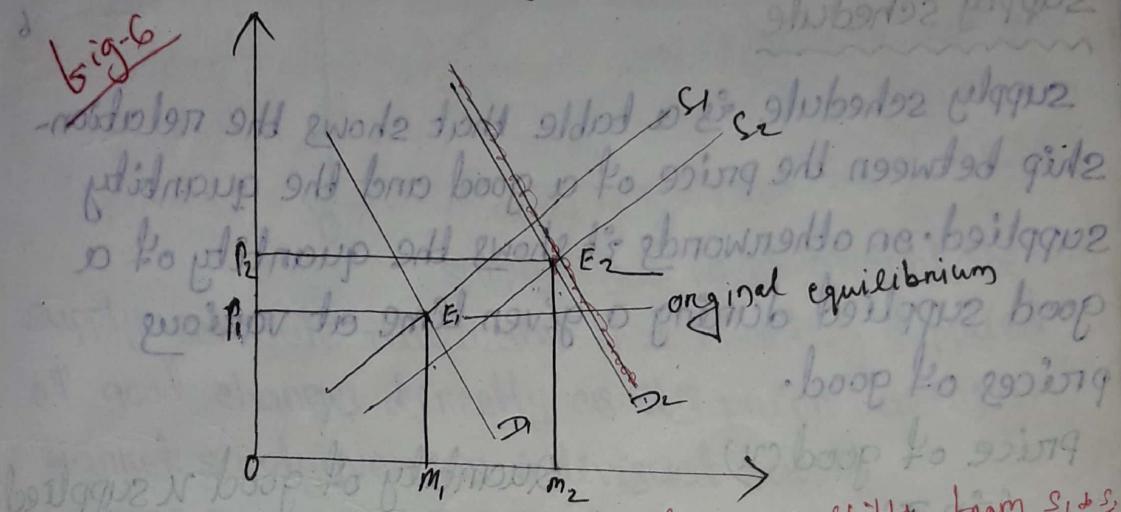


On the figure the supply curve shifts from  $S_1$  to  $S_2$  which causes the equilibrium price to rise from  $oP_0$  to  $oP_1$  and the equilibrium quantity to fall from  $oM_0$  to  $oM_1$ . On the other hand when supply curve shifts from  $S_1$  to  $S$ , the equilibrium price falls from  $oP_0$  to  $oP_1$  and equilibrium quantity falls to  $oM_0$ .

quantity to rise from  $OM_1$  to  $OM_2$ ,



A Change in market equilibrium due to a change in both demand & Supply →  
on the figure a large increase in demand and small increase in supply is responsible for a change in both price and quantity.



In the figure (6) the supply curve shifts from  $S_1$  to  $S_2$  & demand curve shifts from  $D_1$  to  $D_2$ , which explain a large increase in demand & small increase in supply is responsible for a rise in both Price ( $P_1$  to  $P_2$ ) and quantity ( $m_1$  to  $m_2$ ). Price-area:

$$\frac{P_2 - P_1}{2} \times m_2$$

equilibrium point is now to owing to increase in demand & decrease in supply at old level

Q State and explain the law of variable proportion / law of diminishing return.

OR

Discuss the behaviour of production in the shortrun.

OR

Diminishing return is due to disproportion of factors of production - elucidate.

Ans  $\Rightarrow$  The law of variable proportion explaining the behaviour of a non-homogeneous production function. This law examines the input and output relation when the output increases by varying the quantity of one input, when the quantity of one factor is varied and the quantity of the other factors constant the ratio of employment of variable factors to that of fixed factors goes on increasing as the quantity of variable factor is increased. Moreover, law of variable proportion or law of diminishing return study of effect on output due to variation in the factors proportion.

Statement of the Law:  $\rightarrow$

According to Stigler "As equal increments of one input are added the inputs

of other productive services being held constant, beyond a certain point, the resulting increment of product will decrease that the marginal product will diminish.

According to Benham, "As the proportion of one factor in a combination of factors is increased, after a point first, the marginal and average product of the factor will diminish."

### Assumption of the Law:-

- ① The state of technology should not change at the time of production.
- ② There must be some inputs whose quantity is kept fixed.
- ③ Unity of variable factor must be homogeneous.
- ④ There must be vary in factor proportion.

### Explanation of the Law

Law of variable proportion can be divided into following three stages.

- ① stage of increasing return/diminishing costs.
- ② stage of diminishing return/increasing costs.
- ③ stage of negative return.

This stage of law of variable proportion has following characteristic.

- ① Total product increases (TP) at an increasing rate upto point of inflection as a result of which MPL rises.

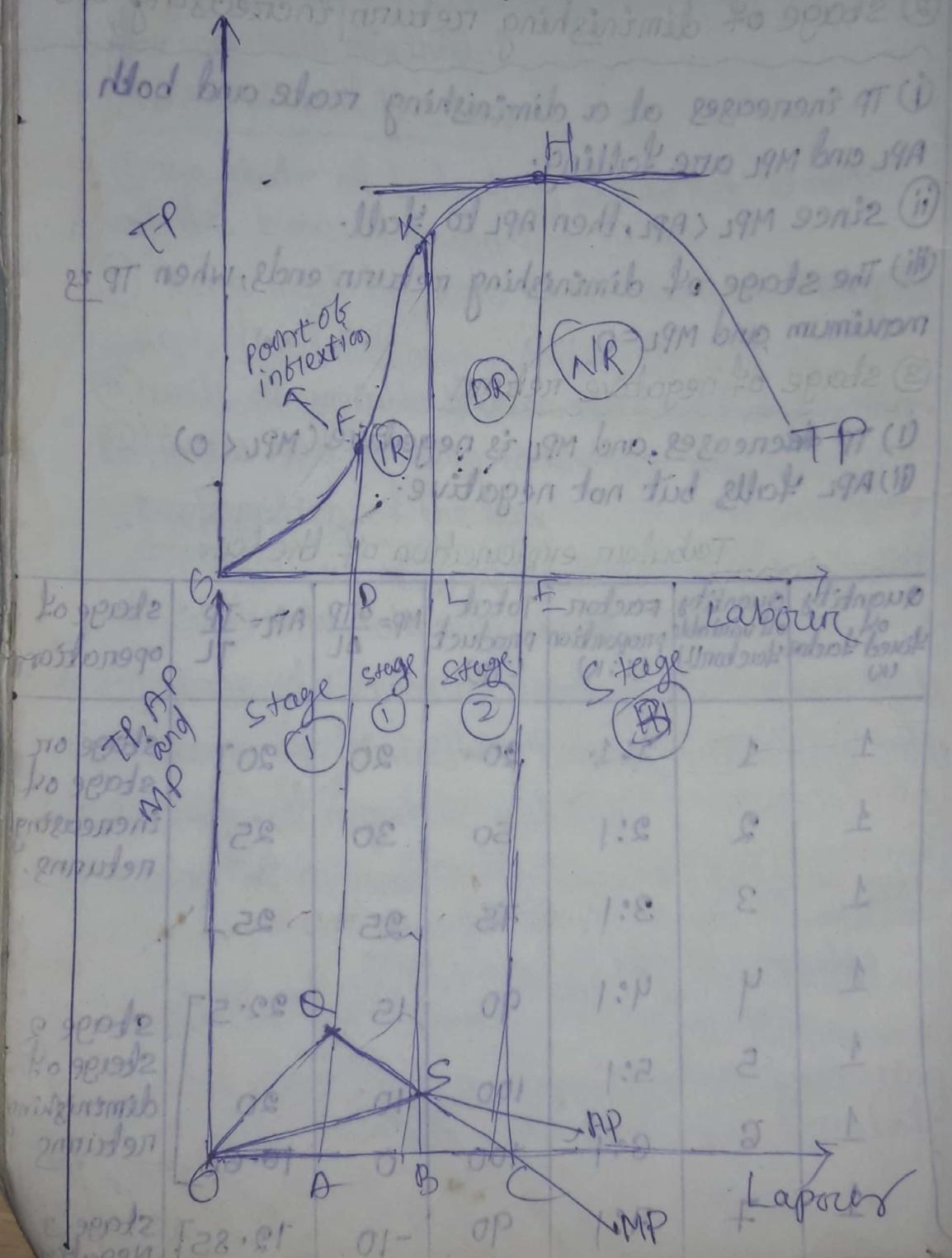
- ② After point of inflection TP increases at a diminishing rate and MP falls.
- ③ APL rises through out the stage and it is maximum at the end of the stage.
- ④ During this stage  $MPL > APL$  as a result of which APL to rise.
- ⑤ Stage one ends when  $MPL = APL$
- ② Stage of diminishing return/increasing cost
- (i) TP increases at a diminishing rate and both APL and MPL are falling.
- (ii) Since  $MPL < APL$ , then APL to fall.
- (iii) The stage of diminishing return ends, when TP is maximum and  $MPL = 0$ .
- ③ Stage of negative return
- (i) TP decreases and MPL is negative ( $MPL < 0$ )
- (ii) APL falls but not negative.

Tabular explanation of the law.

Quantity of fixed factor (K)	Quantity of variable factor (L)	Factor proportion (L:K)	Total product (TP)	$MP = \frac{\Delta TP}{\Delta L}$	$APL = \frac{TP}{TL}$	Stage of operation
1	1	1:1	20	20	20	stage 1 stage of increasing returns.
1	2	2:1	50	30	25	
1	3	3:1	75	25	25	
1	4	4:1	90	15	22.5	stage 2 stage of diminishing returns
1	5	5:1	100	10	20	
1	6	6:1	100	0	16.66	
1	7	7:1	90	-10	12.85	stage 3 negative returns

From the above table it is observed that stage 1 increasing return operates up to the application of third (3rd) Labour. Stage 2 (diminishing return) operates in between fourth (4th) and sixth (6th) labour, and from 7th labour there is operation of negative return.

Diagrammatic explanation of the law



On the above figure TP is the total product of labour curve, MP is the Marginal product curve and AP is the Average product curve.

### (i) Explanation of stage 1 from the diagram.

In this stage TP increases at an increasing rate up to point E and from point F, TP increases at a diminishing rate which means that MP to increase in the beginning and then to fall. Corresponding vertically to point F (point of inflection), MPL is maximum. Moreover, stage I ends to point S where  $APL = MPL$  and APL is maximum. During this stage the marginal product of fixed factor is negative.

Causes for the operation of the law

- (a) Too much of fixed factor.
- (b) Indivisibility of factor of production.
- (c) Increase inefficiency of variable factor.

### (ii) Explanation of stage-2

During this stage TP continues to increase at a diminishing rate and finally it is maximum at point H, when TP is maximum at that time  $MPL = zero$ .

Both  $MPL$  and  $APL$  are falling but  $MPL < APL$ .

Causes for the operation of the law

- (1) Inadequate fixed factor in relation to variable factor.
- (2) Availability of imperfect substitute of one factor for another.

### (iii) Explanation of stage 3

During this stage TP declines and TP curve slopes downward. As a result MPL is negative and MPL curve goes below the X axis. Marginal product of variable factors during this stage is negative. It causes for the operation of the law.

(d) Excess quantity of variable factors in relation to fixed factor.

Limitations of the law

① The law will not operate if the state of technology is not constant at the time of production.

② The law will not operate in case of fixed proportion.

③ Units of variable factors are not homogeneous as assumed by this law.

Conclusion

A rational producer will never produce during stage 1 and stage 3 because marginal product of fixed factor is negative during stage 1, and marginal product of variable factor is negative in stage 3. These stages are called the stage of economic non-sense. Thus a rational producer will always produce in stage - 2 where marginal product and average product of variable factor are diminishing but positive.

8x

What do you mean by returning to scale?

Discuss the various types of returning to scale.

Discuss the behaviour of production in the longrun.

Discuss the various stages of longrun production function.

Discuss the various types of returning to scale with the help of iso-quants?

ANS  $\Rightarrow$  longrun production function/homogeneous production function is a study of effect on the level of output due to change in scale. In the longrun all factors are variable and expansion of output can be achieved by the variation in the use of all factors of production. To longrun production function is technically referred as law of returning to scale because in the longrun change in output is possible due to change in scale. The change in scale means change in all inputs in the same proportion.

Thus longrun behaviour of production is based on the proposition of fixed proportion. Increase in scale means increase use all inputs in same proportions and viceversa.

The change in scale leads to change in returning in different rates.

Accordingly returning to scale are  
of three types

- ① Increasing returning to scale.
- ② constant returning to scale.
- ③ Diminishing returning to scale.

### ① Increasing returning to scale

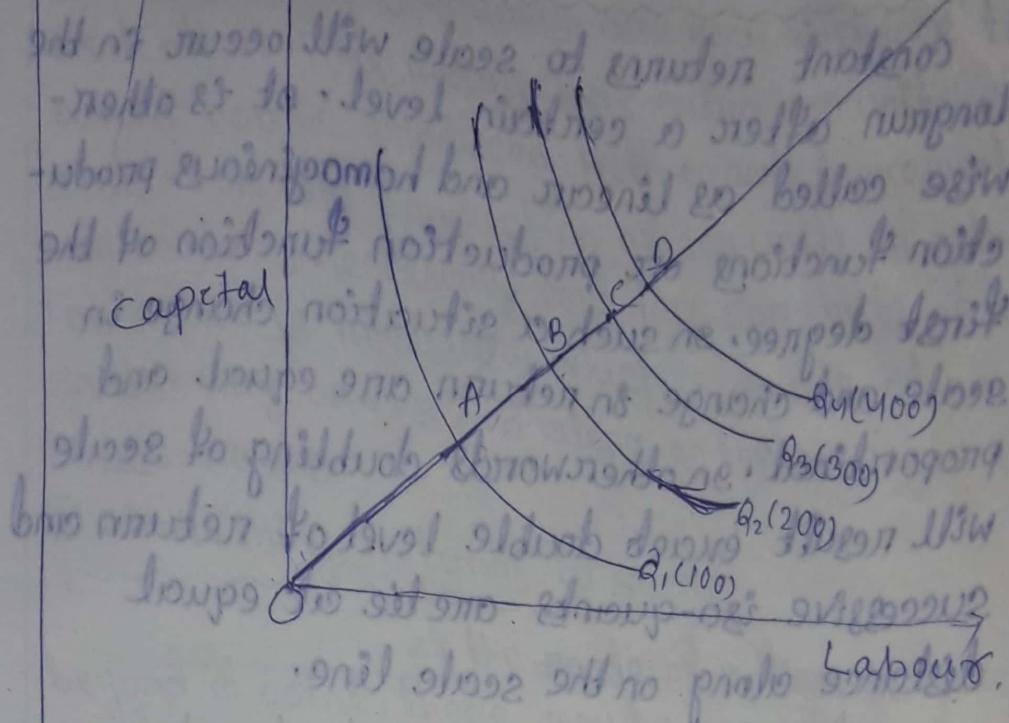
Increasing returning to scale operates to initial stages when a firm expands. It is a situation when increase in scale leads to increase in scale return more than proportionately. On the other hand in case of increasing returning to scale doubling of scale will result more than double of return and successive iso-quants will lie at smaller distances along on the scale line.

Causes for the operation of increasing returning to scale

The causes for the operation of increasing returning to scale are as

- ① In divisibility of factory of production.
- ② Greater possibility of specialization of labour and machinery.
- ③ Better management and supervision.
- ④ Greater economies of scale in relation to diseconomies of scale.

Diagram  $\Rightarrow$



On the figure OR is the scale line and iso-quants like  $Q_1, Q_2, Q_3, Q_4$  are representing 100, 200, 300 and 400 units of output respectively. These successive ISO-quants along on the scale line lies at smaller distance which means that lesser and lesser amount of scale is necessary for equal increment in output. For the production 100 units of output 'OA' scale is necessary, but for the production of 200 units of output 'OB' scale is necessary, which is less than double of OA. This means that  $AB < OA$  and on the 'OR' scale line  $OA > AB > BC > CD$  or  $CD < BC < AB < OA$ .

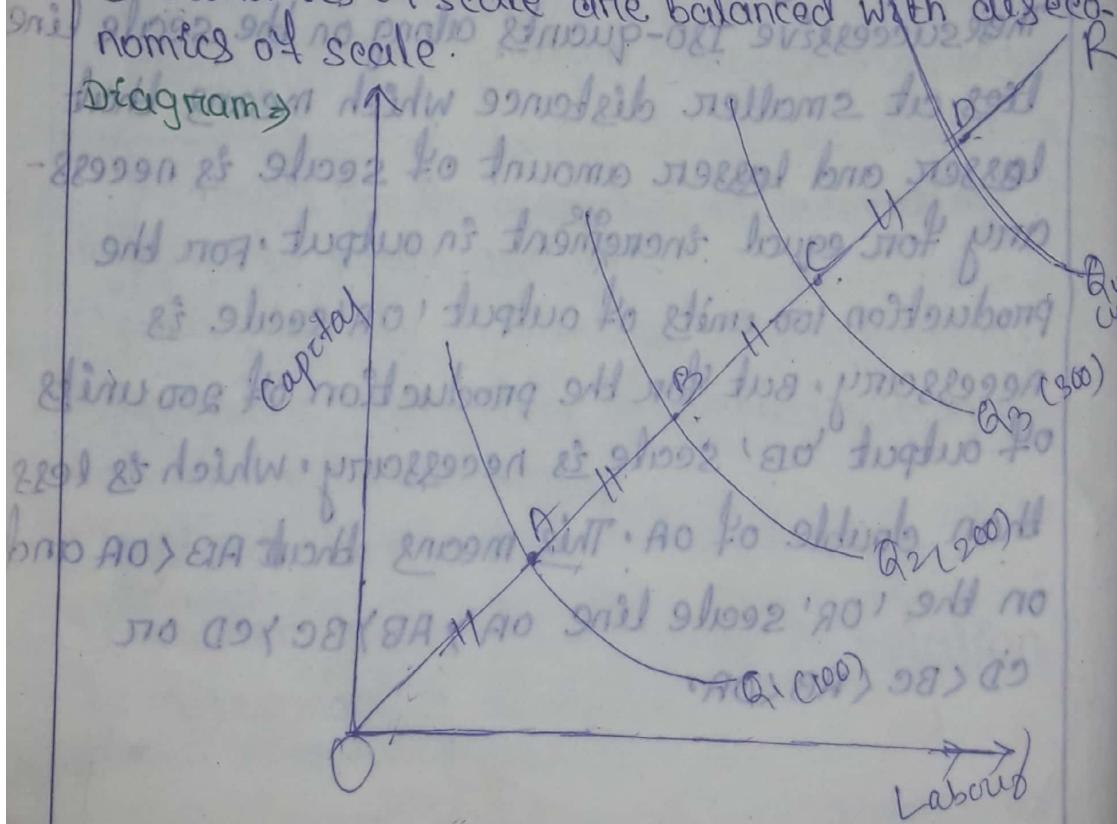
## ② constant returns to scale

constant returns to scale will occur in the longrun after a certain level. It is otherwise called as linear and homogeneous production functions are production function of the first degree. In such a situation change in scale and change in return are equal and proportional. In other words doubling of scale will result exact double level of return and successive iso-quants are lie at equal distance along on the scale line. causes for the operation constant returns to scale.

① Divisibility and proportionality of factors of production.

② Economies of scale are balanced with diseconomies of scale

Diagram →



on the figure along on the 'OR' scale line the iso-quants are equi distance to each other. This means that extra 100 units of output can be produced with equal increments of scale. For the production of 100 units of output 'OA' scale is necessary and for 200 units of output 'OB' scale is necessary which is double of OA. In this way  $OA = AB = BC = CD$  and along on the OB scale line

### ③ Diminishing returns to scale

If the scale of a firm is increased beyond a point, there may be operation of diminishing returns to scale. In such a situation change in scale will result change in return less than proportionately and doubling of scale will result less than double of return. This means that the successive iso-quants will lie at progressively greater distances along on the scale line.

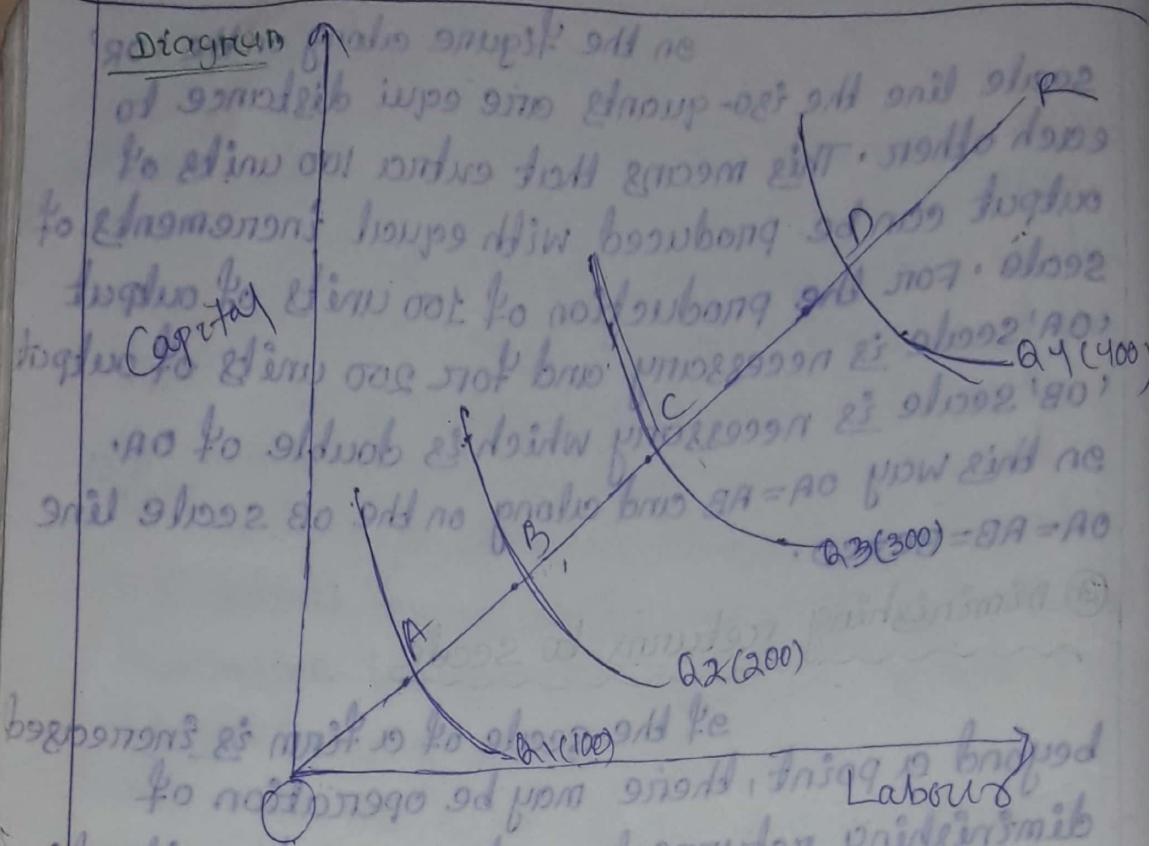
causes for the operation of decreasing returns to scale

1  $\Rightarrow$  Increasing difficulties of management.

2  $\Rightarrow$  Lack of co-ordination and control.

3  $\Rightarrow$  Entrepreneur is a fixed factor of production.

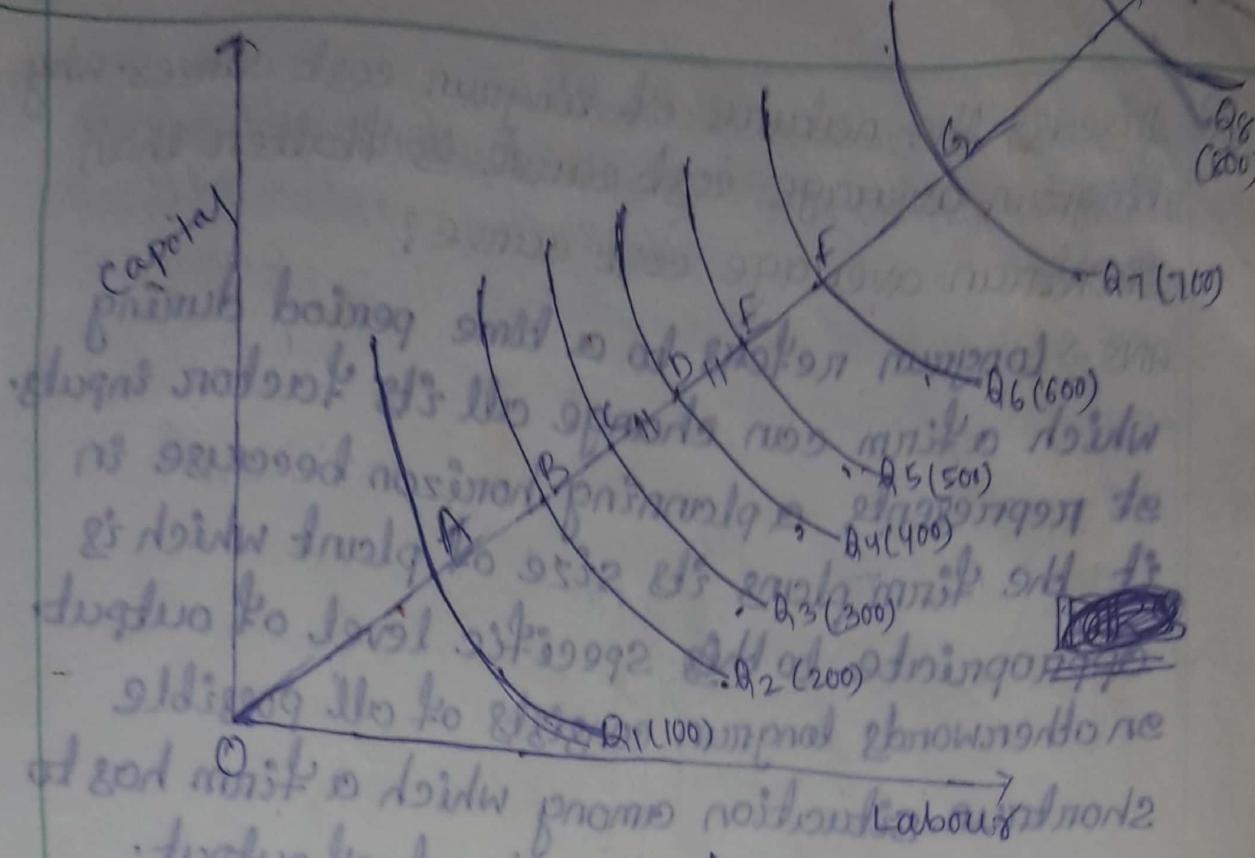
4  $\Rightarrow$  Dis-economies of scale exceeds economies of scale.



on the diagram along on the 'OR' scale line 'OA' scale is necessary for production of 100 units of output, but 'OB' scale is necessary for production of 200 units of output. It is visible from the diagram that 'OB' is more than double of 'OA', so this way  $OA < AB$  and on the OR scale line  $CD > BC > AB > OA$  or  $OA < AB < BC < CD$ . operation of different returning to scale in a single production process.

To note of benefit is increasing returns to scale.

$\rightarrow$



on the OR scale line the distance between successive iso-quants goes on diminishing. This implies increasing returning to scale where  $OA > AB > BC$ . From point 'C' to point 'E' on the scale line there is operation of constant return to scale where  $CD = DE$ . From point 'E' onwards there is operation of diminishing returning to scale because  $EF < FG < GH$ .

not having LAC curve

(having long run cost curve and short run cost curve but not SFC & AFC curve all ne 95% off page. same Q12 find no profit so it will not hold up to same Q12. Long to