BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-1

Production Function

- Production function is the technical relationship between input and output.
- It shows how much output can be produced with a given set of inputs.
- The inputs for any product are Land, Labour, Capital,Organization and Technology.
- Mathematically the relationship between input and output can be expressed as –

Q = f (L1 , L2, C, O, T).

- Here Q is quantity of output, f is the function of , L1 is Land, L2 is Labour, C is capital, O is Organization, T is technology.

Production Function With One Variable Input / Laws of Returns

- The Laws of returns states that, when one factor is varied and all other factors are kept constant, then the total output increases in the initial stage at an increasing rate and after reaching a certain level of output it remains constant . If more and more doses of variable factor is added, the output will start declining.
- So this Law is also called as Law of Variable Proportions or Law of Diminishing returns.
- This law is of universal nature and proved to be true in agriculture and industry.

This Law can be illustrated with the help of following Table and Diagram.(Here Labour factor is varied and all other factors i.e Land, Capital, Technology etc. are kept constant.)

Units of Labour	Total Product(TP)	Marginal Product(MP)	Average Product(AP)	
0	0	0	0	I STG
1	10	10	10	
2	22	12	11	2STG
3	33	11	11	
4	40	7	10	
5	45	5	9	
6	48	3	8	3 STG
7	48	0	7	
8	45	-3	6	

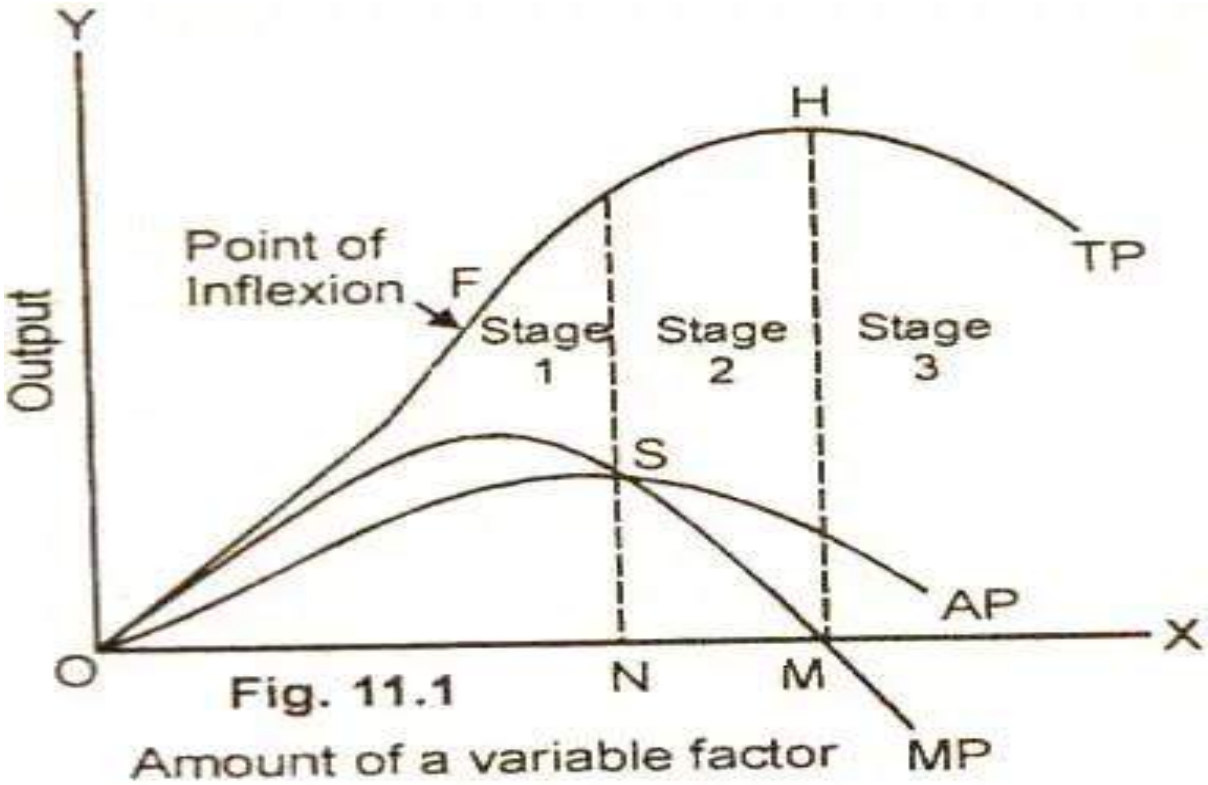


Fig. 11.1

- In the above diagram Units of labour represented on X-axis, output represented on Y-axis.
- TP represents Total Product. It is the sum of output produced by the variable factor. TP increases in the beginning, remains constant for a certain period, if more and more doses of labour is added , it starts declining.
- AP represents Average Product. Total Product divided by number of units gives AP. It also increases in the beginning (but at a slower rate than TP) remains constant, after certain period starts decreasing.
- MP represents Marginal Product. It is the change in output due to addition of one unit of variable factor. It raises faster and falls down faster.
- ✓ Stage I (Increasing Returns) :- In the above diagram TP Increases at a faster rate than AP and MP. At point "S" AP = MP . It indicates that TP will be levelled off even more and more doses of labour are added, and will not increase further. It indicates the end of Stage I.

- ✓ Stage 2 (Constant Returns) :- When TP is constant AP starts falling and MP falls more faster than AP. At point "M" MP cuts X-axis indicating the end of constant returns and on-setting of decreasing returns.

Stage 3 (Decreasing Returns) :- If further doses of labour are added the MP becomes negative and TP, AP will be showing decreasing returns

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

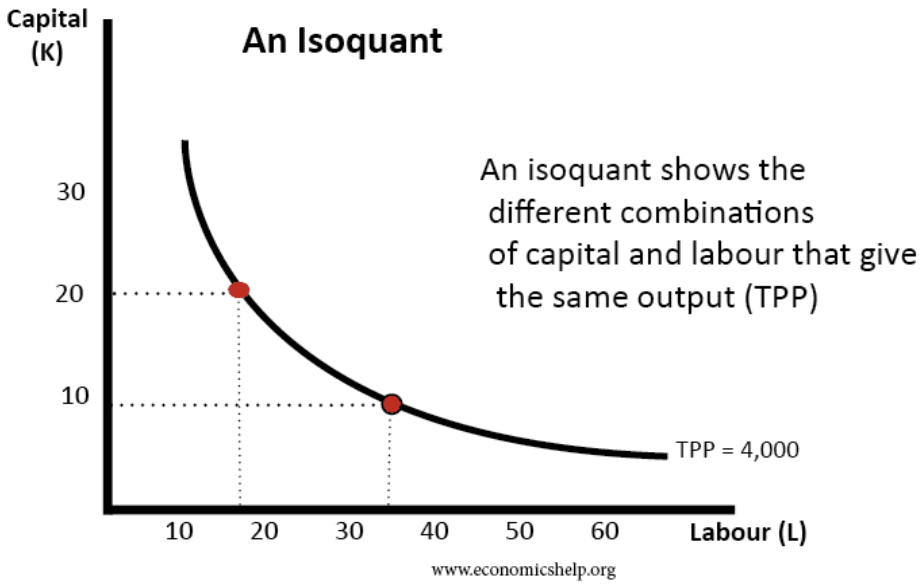
TOPIC-2

Production function with two variables

- In the previous concept , we have taken only Labour as variable factor.
- In this concept we will study Labour and Capital as variable factors.
- Labour and Capital are the two main inputs to produce a given quantity of output.
- Mathematically it can be represented as Q = f (C,L).
- These two inputs can be substituted to one another to produce a desired level of output.
- If one factor is increased , the other factor will be decreased and vice versa.
- More capital and less labour will be used for capital intensive products.
- More Labourand less Capital will be used for Labour intensive Products.
- It can be illustrated with the help of the Iso-Quant andIso- Cost curves.

Iso-Quant Curves:-

(Iso means equal , Quant means quantity) Iso-Quant curve shows that the level of output will be same at any point on the given iso-quant curve.It shows all the combination of two factors that produce a given output



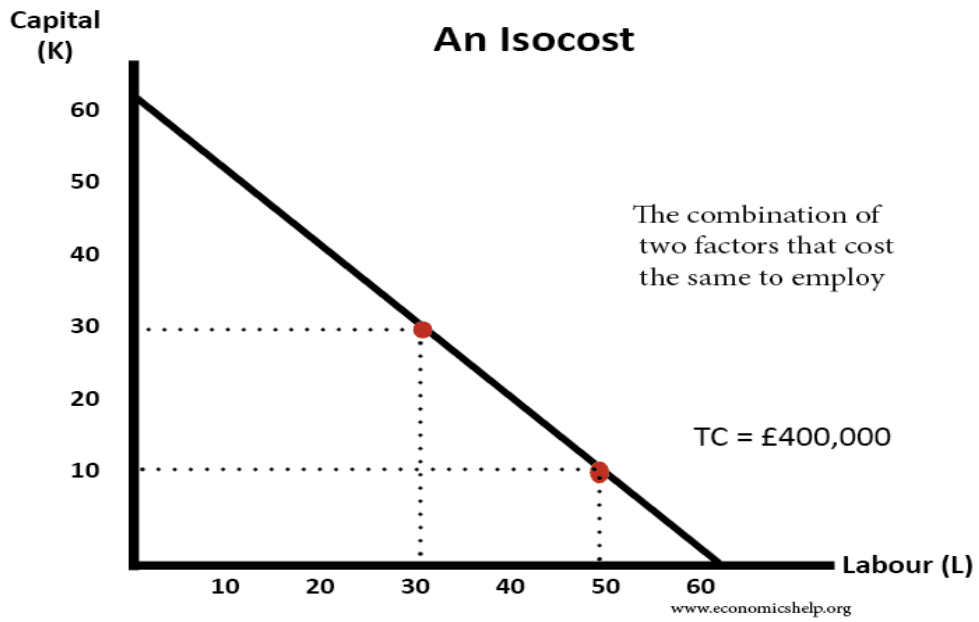
- ✓ In this diagram, the isoquant shows all the combinations of labour and capital that can produce a total output of 4,000 units.
- ✓ In this isoquant, this could be achieved through
- ✓ 20 capital and 18 labour

(or)

- ✓ 9 capital and 35 labour.
- ✓ The Iso-oquant curves are usually convex to the origin
- ✓ They will be parallel to one another.
- ✓ They will never touch x-axis and y-axis.
- ✓ If we want to increase the production the Iso-Quant curve will shift upwards (i.e to the right).

Iso-Cost Curves

Iso means equal . Cost means cost of production. Iso-cost curve represents the cost of production will be same at any point on the same Iso-cost curve.

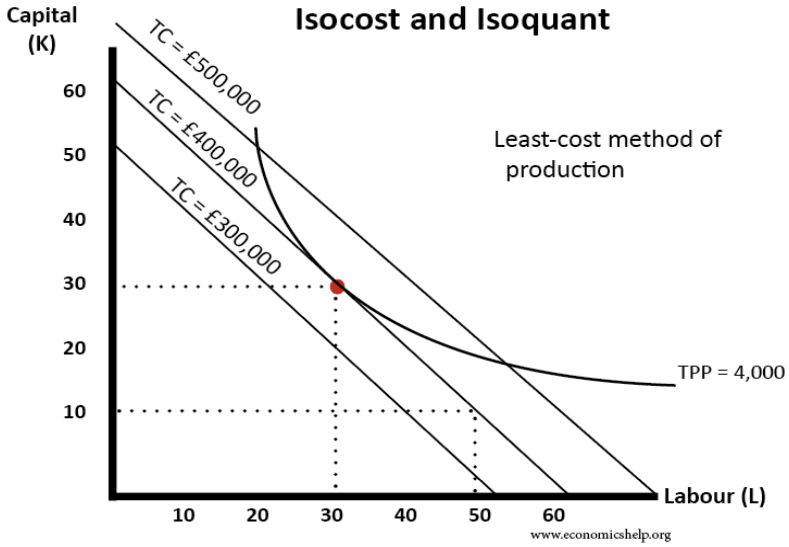


- ✓ An isocost shows all the combinations of factors that cost the same to employ.
- ✓ In this example, If we employ 30K and 30L, the total cost will be 4,00,000
- ✓ If we employ 10 K and 50L, the total cost will be 4,00,000
- ✓ The cost will be same at any point on the same curve
- ✓ If we want to increase the production , the curve will shift upwards to the right.

✓ They slope down wards from left to right. Parallel to one another.

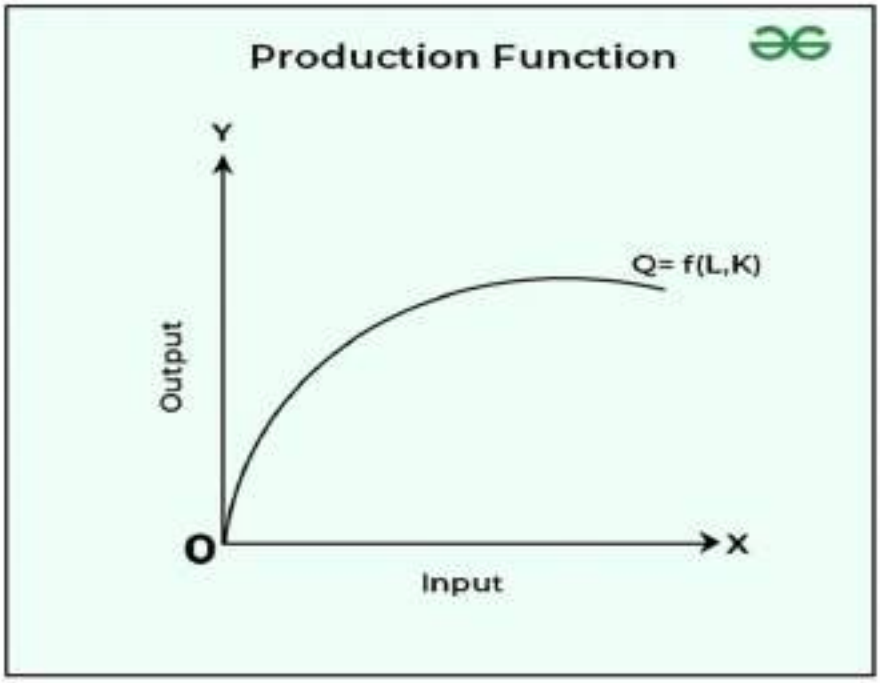
Least cost combination of inputs.

- ❖ With the help of the Isoquant and Isocost curves the producer can find out optimum combination of inputs that costs him very less.
- ❖ If we super impose Isoquant curves on Isocost curves, the point where Isoquant curve is just tangential to the Isocostcuve determines the least combination of inputs.
- ❖ At this point the cost of production will be very less and helps the producer to maximise the profits. It is illustrated in the given diagram.



Long run production function/ Returns to scale

- In the long run all factors of production are variable. (I.e Land, Labour, Capital, Organisation, Technology.)
- It shows the relationship between input and output in the longrun.
- If we increase the inputs the output increases at a faster rate in the beginning, remains constant for a certain period and if more and more doses are added output starts decreasing.



- Increasing returns :-Output increases more than proportionate change in the inputs. R >K . Returns will be more than the cost.
- Constant returns:- Change output will be equal to proportionate change in inputs. R = K. Returns will be equal to the cost.
- Decreasing returns:- Change in output will be less than the proportionate change in inputs. R < K. Returns will be less than the cost.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-3

Different types of Costs and their Behaviour

- ✓ Cost refers to the expenditure incurred to produce a particular product or service.
- ✓ Costs play a very important role in managerial decisions.
- ✓ Major part of product price consists of costs incurred for producing that product.
- ✓ Every producer tries to minimise costs to increase his profit margins.
- ✓ So it is important to understand various types of costs, their behaviour to control them effectively.

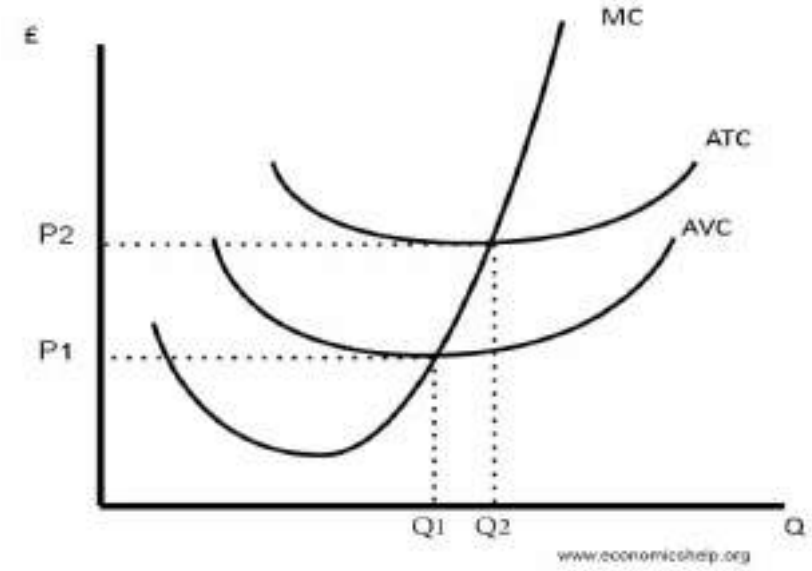
The various types of costs are as follows

- ✓ Long run vs Short run costs:- Long run is a period which is sufficient to change all factors of production. They are planning curves because management can plan its capacity of production. Short run is a time period during which only variable factors can be altered. Short run cost curves are called operating curves.
- ✓ Fixed vs Variable costs:- Fixed costs remain fixed irrespective of production. Where as variable costs vary with volume of production.
- ✓ Opportunity vs Actual cost:- Earnings that are foregone for losing an opportunity. Ex. Using own house for business and losing rent on it. Where as actual cost is one which is actually spent on a product.
- ✓ Incremental vs Sunk costs:- Incremental costs are the added costs due to increase in the level of production. Sunk costs are those which are already incurred and do not change with the level of producction.
- ✓ Explicit costs vs Implicit costs:- Explicit costs involve payment of cash. Ex. Rent, wages etc. Where as Implicit costs do not involve in payment of cash as they are not actually incurred. Ex. Saving in salary due to own supervision.

- ✓ Out of pocket costs vs Book costs:- Out of pocket costs are immediate cash flow in day-to-day business. Book costs are shown in the books and not required for current cash expenditure. Ex. Provision for depreciation, Bad debts.
- ✓ Past costs vs Future costs:- The costs which are already incurred are called past costs. They can not be controlled. Where as costs which will be incurred I future are called future costs and they can be contolled.
- ✓ Urgent costs vs Postponable costs:- Costs which affect the operational efficiency of the business and which must be met immediately are called urgent costs. Costs which are not urgent for continuation business are called postponable costs.

Short run cost curves and their behaviour

Short run is a time period during which , time is not sufficient to change Fixed costs like Land, Buildings, Machinary etc. So costs can be divided into Fixed and Variable costs. But in the long run all costs are variable . No distinction between Fixed and Variable costs.



- ✓ In this diagram, Average Variable costs (AVC) is a 'U' shaped curve denoting that, it tends to fall in the beginning when output is increasing, but after a particular level it will start increasing. AVC= Total VC / Q.
- ✓ Average Total Cost (ATC) is also 'U' shaped curve which will decrease in the beginning and raises after a certain period of time.

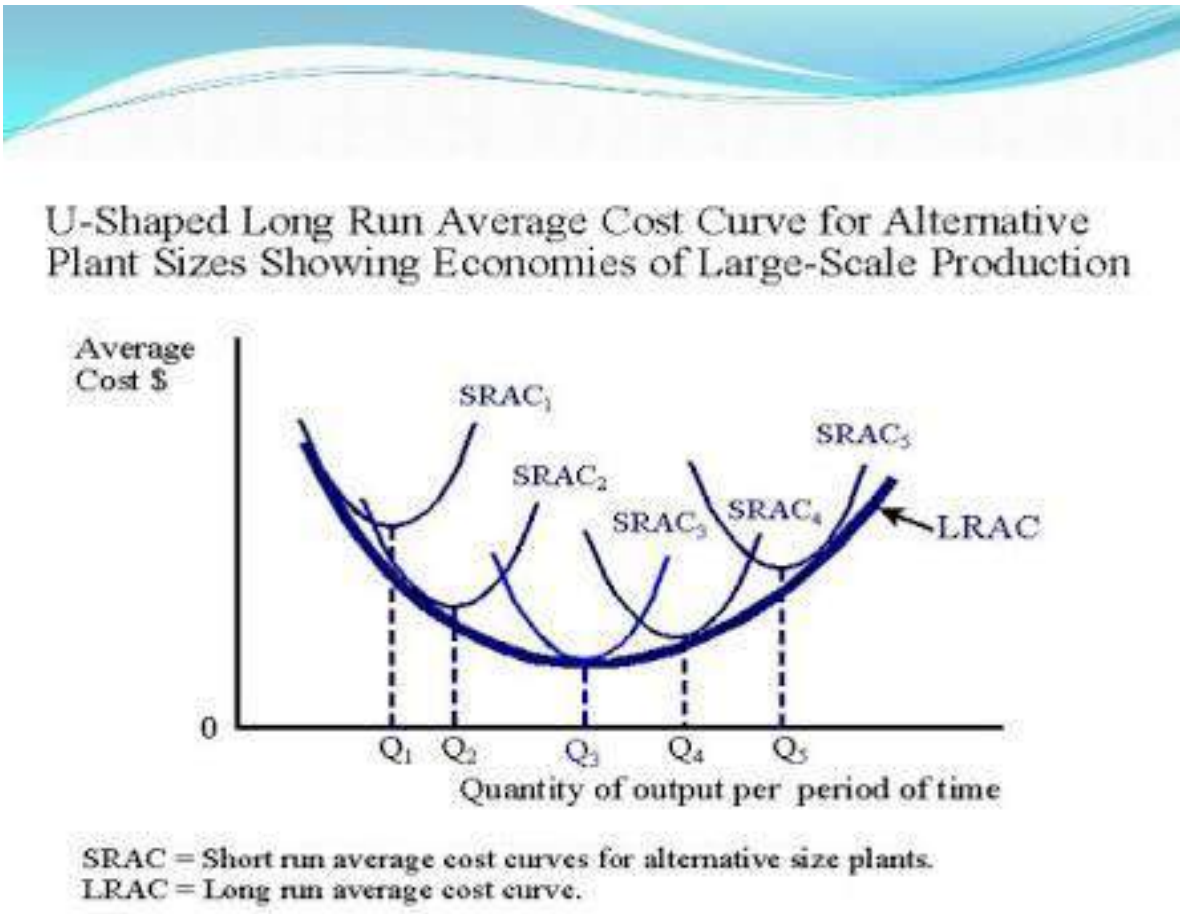
ATC = FC+VC / Q. or TC/Q

✓ Marginal cost (MC)is the additional cost incurred for producing one extra unit.It falls down fast and raises very fast.

MC = change in TC / Change in Q.

Long run cost curves and their behavior

- Long run refers to that time period during which firm can make changes in production, technology, can enter into new markets etc.
- All costs are variable.
- A long run is also expressed as a series of short run curves.



- In this diagram Long run average cost curve (LRAC) is a flat 'U' shaped curve which envelops a series of short run curves. i.e SRAC1, SRAC2 SRAC3 etc.

- Flat U shaped curve represents that the cost of production continues to be low till the output reaches OQ3. It is the optimum level bcz SRAC3 is tangential to the LARC. (SARC = LARC).
- After this period if the firm produces more, cost of production starts raising, indicated by OQ4 and OQ5 costs.

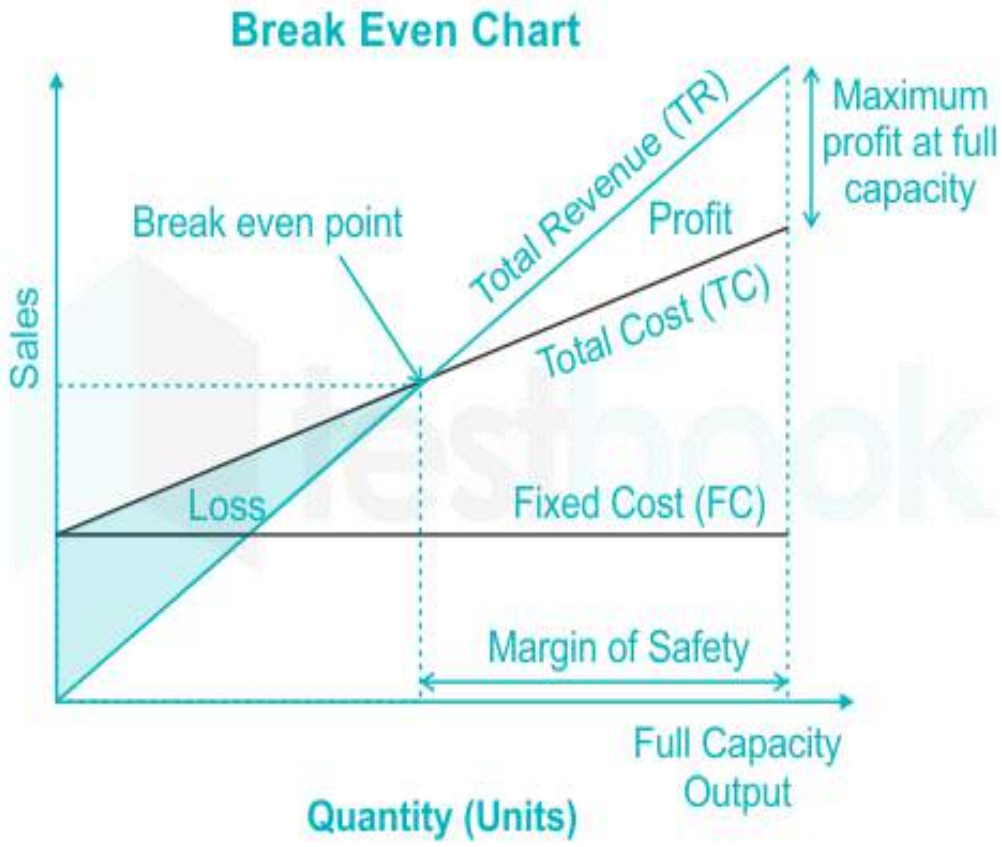
BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-4

Break Even Analysis

- ✓ Break-Even-Analysis is a technique used by the management in profit planning.
- ✓ It shows the relationship between cost, volume and profit at different levels of sales. So it is also called as CVP analysis.
- ✓ It helps to find out Break-Even Point, where the firm makes no profit no loss. This is called break even point.
- ✓ Here Total Revenue = Total Cost (TR = TC).
- ✓ Production above this point results in profits , below this point results in losses. It is shown in the diagram.



- ✓ Qty represented on x-axis and Sales represented on y-axis.
- ✓ Fixed Cost curve (FC) parallel to x-axis, indicates that it is already incurred , and remains fixed.
- ✓ TR curve starts from 0. becz no revenue in the beginning.
- ✓ TC curve starts from FC curve.
- ✓ TR curve intersects TC curve , that point is called break even point. Sales above this point will bring profits, below this point will bring losses.
- ✓ The angle Formed between TR and TC is called Angle of incidence. If the angle is narrow profits will be less. If it is wider , profits will be more.
- ✓ The difference between Break even sales and Actual sales is called Margin of safety.

Assumptions:-

- ✓ All costs can be segregated into Fixed and Variable costs.
- ✓ Fixed costs remain fixed at any level of output.
- ✓ Selling price remains constant.
- ✓ There is no change in the level of level of technology.
- ✓ There is no opening and closing stock.
- ✓ Firm is producing only one variety of output.

Advantages:-

- ✓ 1. It helps in calculating required sales to earn desired profit.
- ✓ 2. It helps in controlling costs.
- ✓ 3. It helps in optimum price fixation.
- ✓ 4. It aids in comparing the effeciency of the different firms.
- ✓ 5. The graph is very easy to study and understand the financial position of the company.

Limitations :-

1.This theory considers only FC and VC, ignores Semi variable expenses.

2. A single chart can not be of any use for firms producing multiple products.

3. This theory assumes that no change in the technology . But firms will be constantly upgrading their technology.

4. It is not addressing the changes in government policies, and general price levels in the economy.

Formulas:-

1. BEP in units :- BEP = FC / Contribution margin per unit

Contribution margin per unit = Selling price per unit – Variable cot per unit.

2. BEP in value:- BEP = FC / Contribution margin ratio.

Contribution margin ratio = SP –VC / SP (It is also called P/V ratio)

3. Margin of Safety:- No. of units sold – Break even sales.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-5

Pricing

Introduction to pricing:-

- ✓ Pricing means expressing the value of the product in monetary terms.
- ✓ It is very important function of management bcz it is the yard stick to measure the financial performance of the company.
- ✓ Under pricing results in losses and over pricing results in losing the customer base.
- ✓ So utmost care should be taken while pricing products bcz it affects the entire business.
- ✓ Different companies follow different pricing methods. They are given below.

Pricing Methods:-

1. Cost plus pricing :- In this method total cost of the product is found out and a certain % of profit will be added to arrive at the selling price. It easy to calculate and simple to follow.
2. Marginal cost pricing:- In this method price is fixed in a such way that , It covers variable costs fully and contributes towards recovery of fixed costs fully or partly.
3. Pricing above the competitive level:- In this method price will be fixed over and above the competitors price. This method can be followed by well established companies who can withstand losses in the initial stages.

4. Pricing below the competitive level:- Sometimes price will be fixed below the competitors price. But the main problem with this method is , customers suspect the quality of the product and may lose customer base.

5. Follow the leader method:- Here price will be fixed in tune with the price fixed by the market leader.. It is usually followed by Newly established companies.

6.Sealed bid pricing:- This method is more popular in tenders and contracts. Each firm will quote its price in a sealed cover and the person who quotes least will be given the contract.

7. Price discrimination:- It refers charging different prices to different customers for same good or same price to different commodities depending upon the market situation.

8. Perceived value pricing:- Fixing the prices on the basis of perception of the buyer regarding the value of the product.

9. Skimming Pricing:- It refers to fixing very high price to skim the cream of the market and then the price will settle down at low level. It will be followed to recover the original investment in the beginning itself.

10.Penetration pricing:- This is exactly opposite of skimming pricing . Here the price will be fixed at a low level in the beginning to penetrate into the market , and once the product is established , the seller will rise the price. (Skimming pricing , Penetration pricing are called New product pricing methods.)

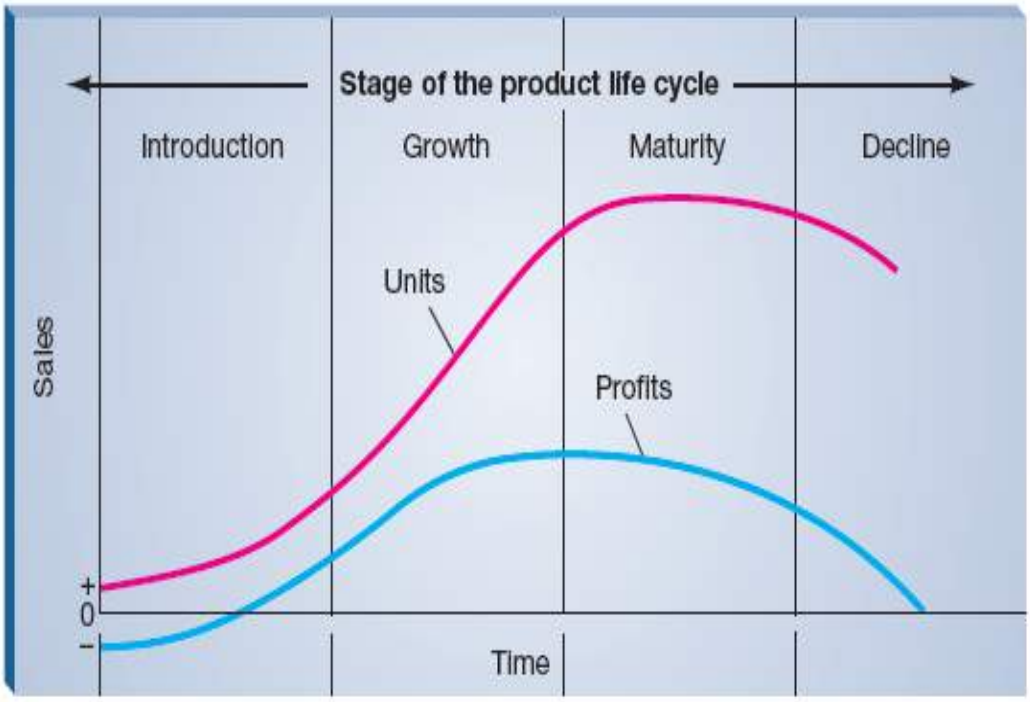
11. Block pricing:-It refers to selling certain number of products as one pack. (Ex. 6 Lux soaps as a single pack).

12.Commodity bundling:- Here different varieties of products are bundled together as a single product.(School bags, shoes, uniforms, lunch bags etc. as a single kit.)

13.Peak-load pricing:- Charging high price during peak season and low price during off-season is called peak-load pricing (selling rain coats at a high price in the rainy season is an example here.)

Product life cycle based pricing

Figure 8–1
Product life cycle



- Like human beings products also will have life cycle.
- There will be four important stages i.eIntroduction, Growth, Maturity, decline.
- These stages are inevitable. They can not be avoided but only can be postponed.
- Firms follow different pricing strategies in different stages.
- During introduction stage penetration pricing method is suitable to gain platform in the market.
- Once growth stage is started firms charges high prices to earn more profits.
- In maturity stage firms go for product modifications, discounts, offers to survive in the market, bcz next stage is declining stage. Once this stage is set in it is very difficult to survive in the market.

- In declining stage, firms try to remove the product from the market. Firms opt for clearance sale and try to shutdown the business not able to bear the losses.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-6

Introduction to market structures

- Market A market is a place where goods and services are sold to the consumers for a price
- Buyers and sellers negotiate their exchange of well defined products and services
- Size of the market depends upon many factors such as

  i) nature of the product ii)demand iii) tastes & preferences

  iv) income levels v) state of technology & infrastructural facilities.

Market structure

i)Number of sellers & their contribution or share

ii)Number of buyers & their purchasing patterns

iii) Product differentiation *ie* varieties & different brands

iv) Conditions of entry into the market & exit.

Types of market competitions

I) Perfect competition

II) Imperfect competition.

a) Monopoly b) Monopolistic c) Oligopoly d) Duopoly

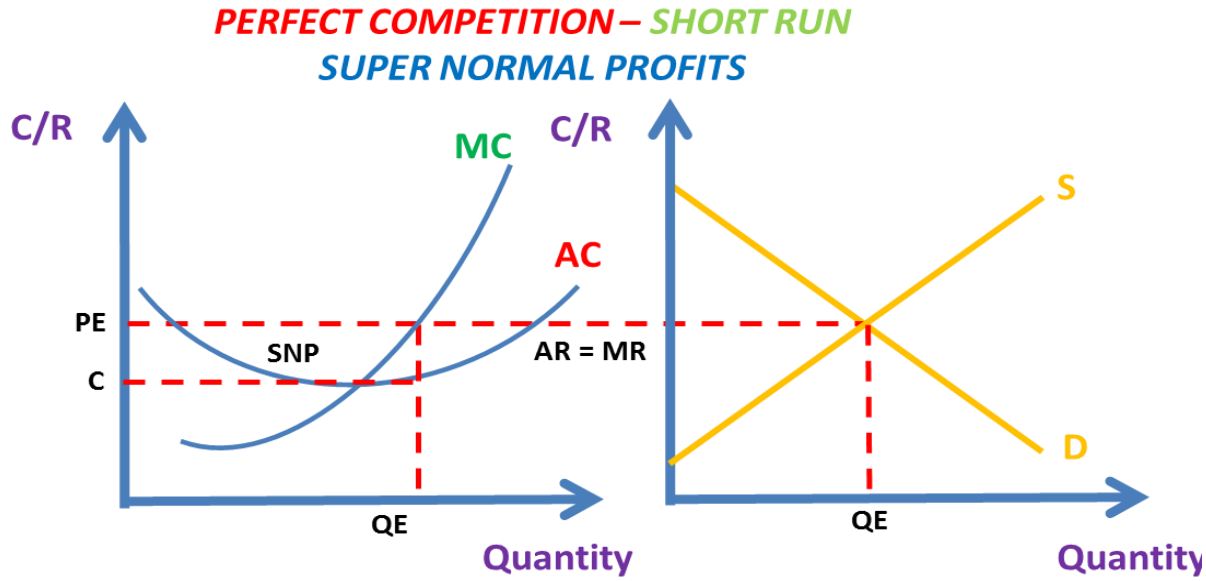
Introduction to market structures-Perfect Competition

- Perfect competition is a form of market in which there will be large number of buyers and sellers , selling homogeneous products.
- A single firm can not affect the price in the market because it produces only a part of production in the total industry.
- Price will be fixed by the market leader and all firms follow the same price.
- so a firm is a "price taker not a price maker".

Features:-

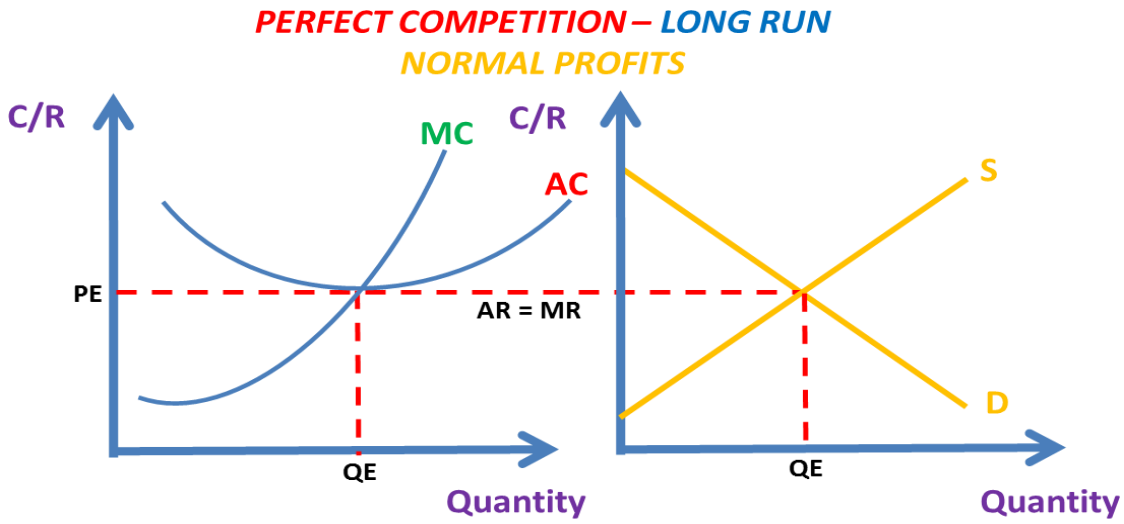
1. Large number of buyers and sellers.
2. Existence of homogeneous products and single price.
3. Free entry and exit
4. Perfect knowledge regarding prices.
5. Absence of transport costs.
6. No promotion expenses (same products in the entire market)

Price – output determination under perfect competition



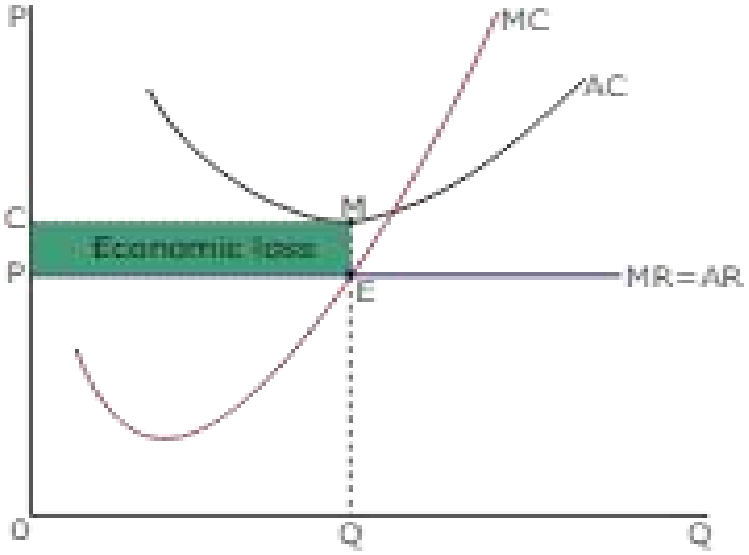
- In the above diagram ,Qty represented on x-axis and price is represented on y-axis.

- AR=MR=Price .This line parallel to x-axis. It indicates that bcz of single price there will not be any difference in the average revenue and marginal revenue and price.
- Mc curve cuts MR curve from below. From this intersection point if we draw a line to x-axis , it determines qty to be sold. The point where it cuts the AC curve determines the cost .
- We have to draw a line to y-axis to know the cost of production. Point C represents cost.
- The area represented by SNP shows super normal profits to the firm.
  - **Because of profit outlook many firms enter the market and profits will be diluted .**



- In In this diagram AC curve just tangential to AR curve.
- MC cuts MR curve from below at this point of tangency
- So the firms will be at equilibrium and making no profits no losses.
- Here Cost = Revenue.
- If we draw a line to x-axis it determines Qty.
- If we draw a line to y-axis it determines price.

perfect competition-Losses.



- In this diagram AC curve is above the AR curve. It indicates that Costs are more than revenue.
- MC cuts MR from below at point E.
- If this line is extended it touches the cost curve at point M.
- If we draw a line to y-axis from this point It touches at C, it shows cost.
- OP is price and CO is cost .Cost is more than the Revenue.
- The area PCME shows losses to the firm.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-7

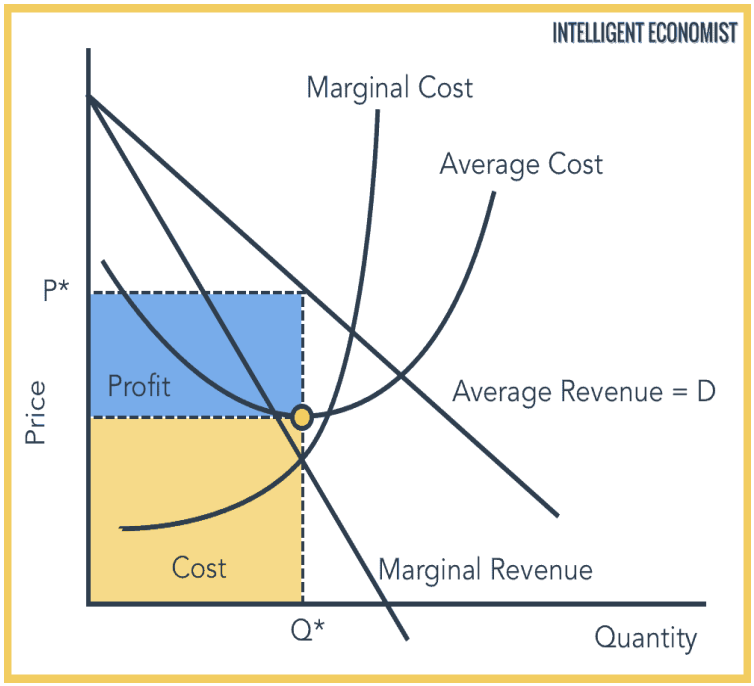
MONOPOLY

- ✓ Monopoly is that market structure in which a single seller or producer controls the whole supply.
- ✓ There is no difference between firm and industry.
- ✓ Lack of competition in the market leads to price dictatorship.

Features:-

1. There will be single seller in the market.
2. There will be no close substitutes for the product.
3. There will be entry barriers for others to enter the industry.
4. Cross elasticity is '0'.
5. A monopolist can control either price or quantity but not both.
6. There will be abnormal profits in the long run.

Price – Output determination under Monopoly



- ✓ In this diagram Qty represented on x-axis, Cost/Revenue represented on y-axis.
- ✓ Average Revenue Curve is also called Demand curve (D) sloping downwards because of inverse relationship between qty and price.
- ✓ Marginal Revenue (MR) lies below (AR) indicates that he has to reduce the price if he wants to sell more units.So it will be always less than (AR).
- ✓ AC represents average cost and MC represents marginal cost.
- ✓ MC curve cuts MR curve from below at a particular point and if we draw a line to x-axis from this point it touches at Q determines quantity to be sold.
- ✓ If we extend this line towards up, It cuts the cost line at a point which is indicated by yellow dot.
- ✓ If we draw a line to y-axis it determines cost of production.
- ✓ If we further extend this line it touches AR curve. And if we draw a line to y-axis it determines price.
- ✓ Blue shaded area shows profit and Yellow area shows cost.
- ✓ Revenue more than cost.
- ✓ So Monopolist will be earning super normal profits.
- ✓ Even in the long run also he continues to earn more profits because he will discourage the others to enter the market.

Reasons for a Monopoly Market

- There are many reasons why a monopoly may exist, including:
- **Government restrictions**

The government can grant exclusive rights to produce a product, such as through patents, licensing, or certification requirements.

- **Resource control**

A company may have control over a natural resource that is essential for producing a good.

- **Economies of scale**

A company may be more efficient than others due to production costs, which can lead to increasing returns on sales.

- **Cartels**

A group of companies can work together to limit output, fix prices, and allocate markets, which can give them monopoly power.

. Through mergers & acquisitions.

Is monopoly socially desirable ?

Many economists feel that

Monopoly is undesirable as it reduces economic welfare in many ways such as

- Insufficient allocation of resources
- Exploitation of the consumer by charging higher prices till as long as the government puts some restrictions.
- Leads to unfair trade practices.
- Restricts output intentionally eventhough he has scope to increase the production.
- Seeing all this governments in several countries have introduced laws to regulate and check monopolies
- Eg; Monopolies & Restrictive Trade Practices. (MRTP) in India.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-8

Discriminating Monopoly or Price discrimination

- Charging different prices for the same commodity or same price for different commodities is called price discrimination or discriminating monopoly.
- The monopolist will charge different prices to different customers taking the advantage of difference in customer profiles in terms of their age, education, income etc.
- **Types of discrimination**

a) personal usage.

Different prices charged for different individuals based on their incomes & willingness to pay.

For ex:- (1) Doctors are able to separate patients with high income from those with low income and charge high fee from the high income people and low fee from low income people.

(2) Railways also charge different fare to different customers , products and services.

b) Geographical .

same product charged at different prices , at different

places.

c) On the basis of usage.

Different prices for the same product according to their usage

eg; Electricity charges for domestic consumption & commercial consumption will be different.

-

➢ Conditions for price discrimination:-

1. When customers are separated by distance or tariffs.
2. When customers have certain special preferences.
3. When government rules and regulations permit discrmination.
4. Customers ignorance and lethargy.
5. Market imperfections.
6. Special orders by customers.

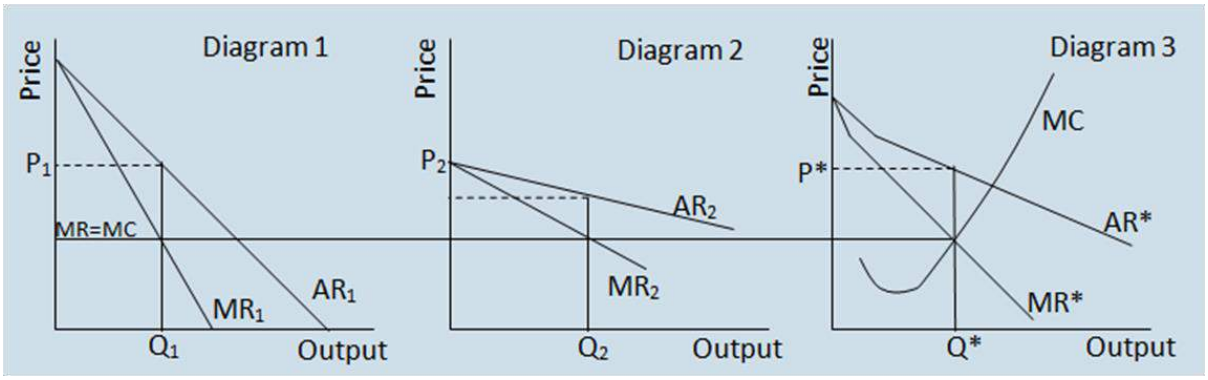
Under above conditions monopolist charge different prices to different customers.

Price - output determination under discriminating monopoly.

Price discrimination is possible and profitable only if elasticities are different in different markets.

Monopolist charge high prices where the elasticity is low and low prices where the elasticity is high.

It is illustrated in the following diagram.



- ✓ In the Diagrams output is represented on x-axis and price is on y-axis.
- ✓ Diagram 1 shows inelastic market . Here high prices will be charged because there will not be much change in qty demanded.

- ✓ In diagram 2 , the market will be highly elastic. Less prices will be charged because a small change in price brings lot of change in qty demanded.
- ✓ In diagram 3 , Combined market is represented .(Market 1+market 2).
- ✓ AR is the Average Revenue curve and MR is the Marginal Revenue curve in combined market . MC is the Marginal cost curve. MC cuts MR curve from below at a point. From this point if we draw line to x-axis ,it shows total qty demanded in both the markets.
- ✓ If we extend this line upwards it touches the AR curve at a point. From this point If we draw line to Y-axis it determines the price charged in both the markets.
- ✓ If we draw a line extending to other two markets ,we can see that OP1(High) price is charged in Market1 and OP2 (Low) price is charged in Market2 .

Monopolistic Competition

- Monopolistic competition is that market structure where many companies offer similar products , but not perfect substitutes.
- Companies differentiate their products through pricing, product modifications and other marketing strategies.
- Each firm acts as a monopolist and fix their own prices.
- The price output determination is same as Monopoly market structure.

BUSINESS ECONOMICS AND FINANCIAL ANALYSIS(21CS701HSM)

UNIT-3

TOPIC-9

Oligopoly

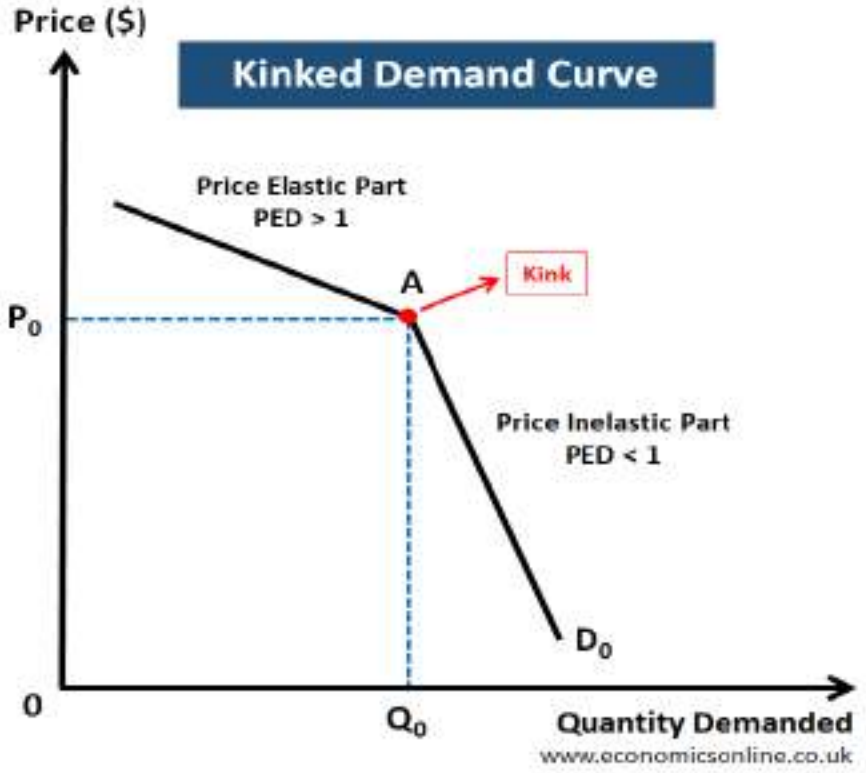
Oligopoly is that market structure where a few firms will be competing with one another producing homogeneous products or products which are different but close substitutes to one another.

- There is an interdependency in the decision making of the firms, because any decision taken bt one firm will definitely affect the trade of the competitors.
- Then the competitors are likely to react with counter policies. For ex:- Cold drinks industry and automobiles industry etc. are best examples for this.
- **Features**:-
- 1. Interdependence in decision making
- 2.Regorous advertising and selling expenses will be there.
- 3.Indeterminate demand curve.
- 4.Few sellers will be there.
- 5. severe competition will be there.
- 6. Products may be identical or differentiated , but close substitutes to one another.

Price-output determination under Oligopoly

- There is no definite theory of price output determination under oligopoly because there is an interdependency in the decision making of oligopolists.
- Kinked demand curvetheory given by Sweezy is useful for price output determination under oligopoly.

- According to him , this demand curve will have a kink at the prevailing price.



Oligopoly model is based on 2 assumptions

i) if the firm increases the prices & others do not follow

ii) if the firm decreases the prices & all other firms too decreases the prices .

- ✓ In the above diagram Qty is represented on x-axis, price is represented on y-axis.
- ✓ The demand curve has a kink at a point ' A'.
- ✓ Above this point the demand is highly elastic and ED>1.A small change in price brings a lot of change in the qty demanded.
- ✓ Below this point the demand is highly inelastic and ED<1. Even if the price is increased there will not be much change in qty demanded.
- ✓ If the Oligopolist reduces the price below the prevailing price, his competitors also will reduce the price to safeguard their sales and

customer base. So price reduction will not benefit the Oligopolist because others also follow the same method.

- ✓ If the Oligopolist increase the price above the prevailing price , his competitors will not increase the price. In that case the Oligopolist will lose his customers because of high prices.
- ✓ So increase or decrease in prices will not benefit the Oligopolist. In the above diagram, OQ is the optimum output and OP is the optimum price.