mood-book

III UNIT

PRODUCTION

The process and methods used to transform inputs into goods or services is called production.

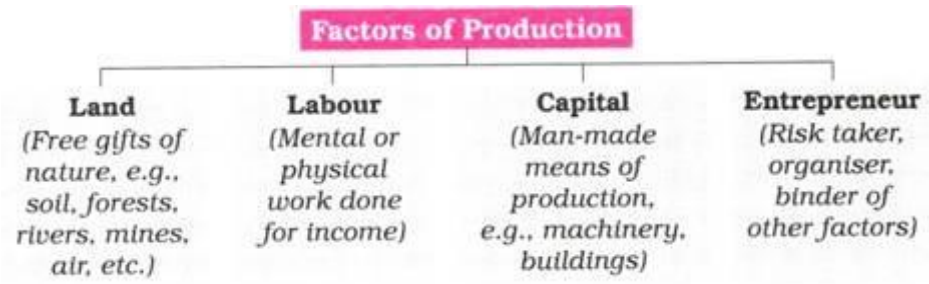
According to Bates and Parkinson:
"Production is the organized activity of transforming resources into finished products in the form of goods and services; the objective of production is to satisfy the demand for such transformed resources".

Whatever is used in producing a commodity is called its inputs. For example, for producing wheat, a farmer uses inputs like soil, tractor, tools, seeds, manure, water and his own services. All the inputs are classified into two groups—primary inputs and secondary inputs. Primary inputs render services only whereas secondary inputs get merged in the commodity for which they are used.

In the above example, soil, tractor, tools and farmer's services are primary inputs because they render services only whereas seeds, manure, water and insecticides are secondary inputs because they get merged in the commodity for which they are used. It is primary inputs which are called factors of production.

Primary inputs are also called factor inputs and secondary inputs are known as non-factor inputs. Alternatively, production is undertaken with the help of resources which can be categorised into natural resources (land), human resources (labour and entrepreneur) and manufactured resources (capital).

All factors of production are traditionally classified in the following four groups:



(i) Land:

Land a factor of production is of immense importance. The economic prosperity of a country is depend upon the richness of natural resources. The quality and quantity of agricultural wealth a country depends on nature of soil, climate, rainfall. The agri products form the basis of trade and industry. Industry also depends upon availability of coal-mines or waterfall for electricity production. Thus all aspects of economic life i.e. agriculture, trade and industry are

generally influenced by natural resources which is called as "Land" in economics. Land as a factor of production is quite peculiar, it possess some important features, they are-

1. **Land is free gift of nature:** Land is not produced or man-made resource (agent). Therefore, that we have to accept is as it is. It is after all free gift of nature.
2. **Land is limited in area:** Land surface of the world is remaining unchanged. The supply of land is perfectly inelastic from the point of view of the economy.
3. **Land is permanent:** Land as factor of production is not easy to destroy. The other factors are destructible but land can not be completely destroyed.
4. **Land lacks mobility:** Land can not move from one place to another. It lacks geographical mobility.
5. **Land is of infinite variety:** Land is not man-made. Land is of infinite variety. For example, soil may be of different types, climate elements like temperature, rains received in different part is always varying.

(ii) Labour:

Land is a passive factor whereas labour is an active factor of production. Human efforts done mentally or physically with the aim of earning income is known as labour. Thus, labour is a physical or mental effort of human being in the process of production. The compensation given to labourers in return for their productive work is called wages. Actually, it is labour which in cooperation with land makes production possible. Land and labour are also known as primary factors of production. The important peculiarities of labour are **Labour is inseparable from the labourer, Labourer sells his services not himself, Labour is more perishable than other commodity because if a** day lost for labour which means the day work gone, labour has less bargaining power because as they are poor and ignorant, labour is man but not a machine, he has feelings and likings, if good surrounding is provided like health, recreation etc, he can work efficiently, if not provided he may not show his efficiency. Labour is less mobile, it means he cannot move or shifted to other place because he does not want to leave his home. Every labour cannot render the same quantum of work therefore wages differ from labourer to labourer.

(iii) Capital:

In modern economy the production depends not only on land and labour but capital is also equally important. Without capital other factors of production (like land, labour) will become handicap. The ample supply of capital gives boost to production. All man made goods which are used for further production of wealth, included in capital. Thus, it is manmade source of production, termed as capital. Examples are—machines, tools, buildings, roads, bridges, raw material, trucks, factories, etc. An increase in the capital of an economy means an increase in the productive capacity of the economy. When more production is there, more economic activities can be initiated and as a result, more employment opportunities can be created. More employment further helpful for minimizing the poverty or improving standard of living of the people.

(iv) Entrepreneur:

The **entrepreneur** is an organizer. He is the person who organizes production by bringing together the other three factor of production land, labor and capital. An entrepreneur is a person who organises the other factors and undertakes the risks and uncertainties involved in the

production. He hires the other three factors, brings them together, organizes, coordinates them so as to earn maximum profit.

An entrepreneur acts as a boss and decides how the business shall run. He decides in what proportion factors should be combined. What and where he will produce and by what method. He is identified as the owner, speculator, innovator or inventor and organiser of the business. Thus, entrepreneur ship is a trait or quality owned by the entrepreneur.

Some economists are of the opinion that basically there are only two factors of production—land and labour. Land they say as gift of nature to mankind and entrepreneur is only a special variety of labour. Land and labour are, therefore, primary factors whereas capital and entrepreneur are secondary factors.

(v) **Technology**:
Expenditure on R & D promotes technological development. In turn, technological advancement in production process not only improves skills of labour and entrepreneur but also it helps in proper utilization of capital in business.

PRODUCTION FUNCTION

Production function refers to the functional relationship between the quantity of a good produced (output) and factors of production (inputs).

"The production function is purely a technical relation which connects factor inputs and output."
Production function reflects how much output we can expect if we have so much of labour and capital etc. output takes the form of goods or services and inputs are different factors of production that is land, labour, capital, enterprise and state of technology.

In other words, we can say that production function is an indicator of the physical relationship between the inputs and output of a firm. It shows the flow of inputs resulting into a flow of output during some time. The production function of a firm depends on the state of technology. With every development in technology the production function of the firm undergoes a change.

Mathematically, such a basic relationship between inputs and outputs may be expressed as:

$$Q = f(L_1, L_2, C, O, T)$$

Where Q = Quantity of output
f = Functional relationship
L_1,= Land
L_2 = Labour
C = Capital
O = Organisation
T = Technology

Hence, the level of output (Q), depends on the quantities of different inputs (L_1, L_2, C,O,T) available to the firm. Production function shows different ways how the minimum quantity of various inputs that are required to yield a given quantity of output.

The production function can be studied by changing the level of output by varying variable factors of production. The production function by changing only one variable factor of production is studied in law of variable proportion, changing two variables is studied in isoquants and isocosts and by changing all factors of production is studied in law of returns to scale.

LAW OF VARIABLE PROPORTION / PRODUCTION FUNCTION WITH ONE VARIABLE INPUT / LAWS OF RETURNS / LAW OF DIMINISHING RETURNS

This law was developed by Alfred Marshall. The law states that when increasing number of units of one variable factor is applied to a fixed factor, total output first increases at increasing rate, then at a diminishing rate and eventually decreases. Hence, this law is known as law of diminishing returns.

The law of diminishing returns is described by different economists in different ways, which are as follows:

According to G. Stigler, "As equal increments of one input are added; the inputs of other productive services being held, constant, beyond a certain point the resulting increments of product will decrease, i.e., the marginal product will diminish."

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

ASSUMPTIONS OF LAW:

The law of variable proportions holds good under the following conditions:

1. First, the **state of technology** is assumed to be given and unchanged. If there is improvement in the technology, then the marginal product may rise instead of diminishing.
2. Secondly, there must be **some inputs quantity is kept fixed**. In this way, we can alter the factor proportions and know its effects on output. The law does not apply if all factors are proportionately varied.
3. The law specially operates **in the short run.**

EXPLANATION OF LAW

The law of variable proportion is explained with a schedule. Suppose a farmer has 10 acres of land to cultivate the amount of land and capital are assumed to be fixed factors of production. Now the farmer can vary the number of labourers for cultivation.

Units of Labour	Total Product	Marginal Product	Average Product
1	2	2	2
2	6	4	3
3	12	6	4

4	16	4	4
5	18	2	3.6
6	18	0	3
7	14	-4	2
8	8	-6	1

Total product is the total output produced by all factors of production together. Average product refers to total product per unit of the variable factor. Marginal product is the addition made to the total product by employing additional units of a variable factor called the marginal product.

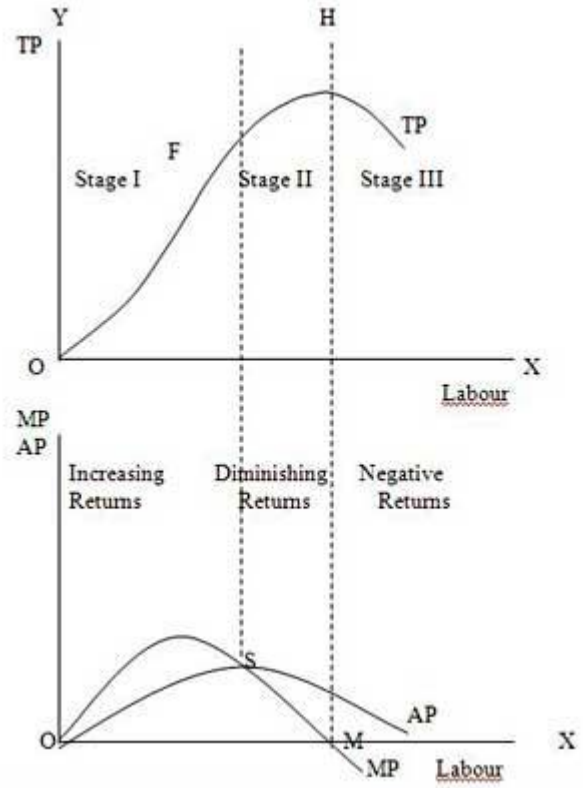
From the schedule it shows that as the cultivator employs more and more units of labour to get more produce. One unit of labour gives a total of 2 quintals of output. When two units of labour are employed, the total product rises to 6 quintals of output. The marginal product is 4 quintals and when third unit of labour is employed it is 6 quintals. When one additional unit of labour is employed the marginal product becomes 4 quintals, which is less than the marginal product in previous situation.

With successive increase in units of labour the total product increases up to 5^{th} unit of labour then after decreasing. Marginal product equals to average product at a point where average product reaches to its maximum and marginal product reached its maximum and started diminishing at 4 units of labour. Marginal product becomes zero at a point where total product reaches to its maximum.

Graphical representation

The behavior of output, as per law of variable proportion fall into three stages increasing returns, decreasing returns and negative returns. These stages are illustrated in the following figure where labour is measured on the X-axis and output on the Y-axis.

Stage 1. Stage of Increasing Returns: In this stage, total product increases at an increasing rate. Both average product and marginal product also increases, but marginal product reaches to its maximum point and starts diminishing. The stage I ends where the average product reaches its highest point S, where MP=AP. In this stage TP>MP>AP.



Stage 2. Stage of Diminishing Returns: In this stage, total product continues to increase but at a diminishing rate until it reaches its maximum point H where the second stage ends. In this stage both the marginal product and average product diminishing but are positive. This is because the fixed factor becomes inadequate relative to the quantity of the variable factor. At the end of the second stage, i.e., at point M marginal product of labour is zero which corresponds to the maximum point H of the total product curve TP. This stage is important because the firm will seek to produce in this range. Under this stage TP>AP>MP.

Stage 3. Stage of Negative Returns: In stage 3, total product and marginal product declines and therefore the TP curve slopes downward. As a result, marginal product of labour is negative and the MP curve falls below the X-axis. In this stage the variable factor (labour) is too much relative to the fixed factor.

SIGNIFICANCE OF LAW

Law of diminishing returns helps mangers to determine the optimum labor required to produce maximum output. In addition, with the help of graph of law of diminishing returns, it becomes easy to analyze capital-labor ratio. If an organization falls in stage I of production, it implies that its capital is underutilized.

Therefore, the organization needs to increase the number of workers. In case, the organization is in stage III; it implies that the organization needs to reduce number of workers. However, stage I and stage III are irrelevant for managers for setting the targets of output.

Only stage II is used for this purpose because this stage provides information about the number of workers that need to be employed for reaching the maximum level of production. The decision

regarding the employment of workers and setting the maximum level of output would only be possible when wage rate is known.

PRODUCTION FUNCTION WITH TWO VARIABLE INPUTS / ISOQUANT

The term Iso-quant or Iso-product is composed of two words, Iso = equal, quant = quantity or product = output. It means equal quantity or equal product. Different factors are needed to produce a good. These factors may be substituted for one another. A given quantity of output may be produced with different combinations of factors. Iso-quant curves are also known as Equal-product or Iso-product or Production Indifference curves.

Thus, an Iso-product or Iso-quant curve is that curve which shows the different combinations of two factors yielding the same total product. Like, indifference curves, Iso- quant curves also slope downward from left to right. The slope of an Iso-quant curve expresses the marginal rate of technical substitution (MRTS).

Definitions:

"The Iso-product curves show the different combinations of two resources with which a firm can produce equal amount of product." Bilas

"Iso-product curve shows the different input combinations that will produce a given output." Samuelson

ASSUMPTIONS OF LAW

The main assumptions of Iso-quant curves are as follows:

1. **Two Factors of Production:**

Only two factors are used to produce a commodity.

2. Divisible Factor:

Factors of production can be divided into small parts.

3. Constant Technique:

Technique of production is constant or is known before hand.

4. Possibility of Technical Substitution:

The substitution between the two factors is technically possible. That is, production function is of 'variable proportion' type rather than fixed proportion.

5. Efficient Combinations:

Under the given technique, factors of production can be used with maximum efficiency.

ISO-PRODUCT SCHEDULE:

Let us suppose that there are two factor inputs—labour and capital. An Iso-product schedule shows the different combination of these two inputs that yield the same level of output. It shows that the five combinations of labour units and units of capital yield the same level of output, i.e., 200 metres of cloth. Thus, 200 metre cloth can be produced by combining.

Table 1. Iso-Product Schedule.

Combination	Units of labour	Units of capital	Output of cloth (metres)
A	1	15	200
B	2	11	200
C	3	8	200
D	4	6	200
E	5	5	200

(a) 1 unit of labour and 15 units of capital
(b) 2 units of labour and 11 units of capital
(c) 3 units of labour and 8 units of capital
(d) 4 units of labour and 6 units of capital
(e) 5 units of labour and 5 units of capital

ISO-PRODUCT CURVE:

From the above schedule iso-product curve can be drawn with the help of a diagram. An. equal product curve represents all those combinations of two inputs which are capable of producing the same level of output. It shows the various combinations of labour and capital which give the same amount of output. A, B, C, D and E.

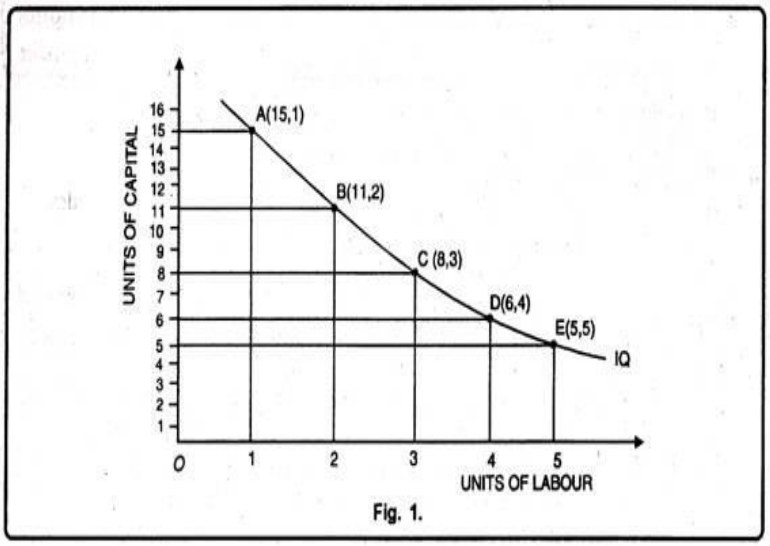


Fig. 1.

ISO-PRODUCT MAP OR EQUAL PRODUCT MAP:

An Iso-product map shows a set of iso-product curves. They are just like contour lines which show the different levels of output. A higher iso-product curve represents a higher level of output. In Fig. 2 we have family iso-product curves, each representing a particular level of output.

An iso-product curve, on the other hand, represents a particular level of output. The level of output being a physical magnitude is measurable. We can therefore know the distance between two equal product curves. While indifference curves are labeled as IQ_1, IQ_2, IQ_3, etc., the iso-product curves

are labelled by the units of output they represent -100 metres, 200 metres, 300 metres of cloth and so on.

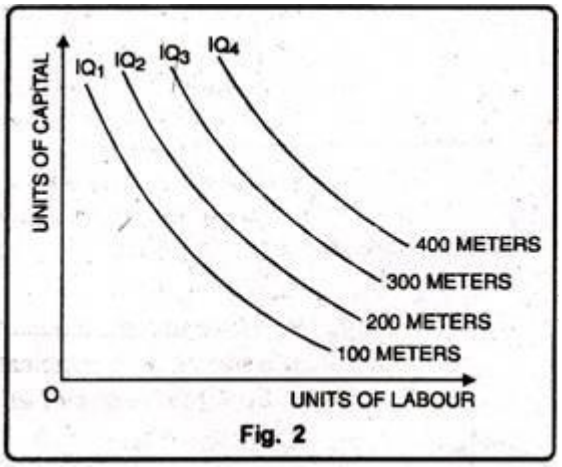


Fig. 2

PROPERTIES OF ISO-PRODUCT CURVES:

The properties of Iso-product curves are summarized below:

1. Downward sloping:
They slope downward because MRTS of labour for capital diminishes. When we increase labour, we have to decrease capital to produce a given level of output.

2. Convex to the Origin:
Isoquants are convex to the origin. Because the input factors are not perfect substitutes. One factor is substituted by the other input factor.

3. Two Iso-Product Curves Never Cut Each Other:
As two indifference curves cannot cut each other, two iso-product curves cannot cut each other. It is because each of these denotes a particular level of output. If the manufacturer wants to operate at a higher level of output, he has to switch over to another isoquant with a higher level of output and vice versa.

4. Higher Iso-Product Curves Represent Higher Level of Output:
A higher iso-product curve represents a higher level of output, an iso product curve will be moving upwards.

5. No Isoquant can Touch Either Axis:
If an isoquant touches X-axis, it would mean that the product is being produced with the help of labour alone without using capital at all. Both inputs are required to produce a given product.

LAW OF RETURNS TO SCALE

It refers to the returns enjoyed by the firm as a result of change in all the inputs. It explains the behavior of the returns when the inputs are changed simultaneously. The returns to scale are governed by the law of returns to scale.

There are three laws of returns governing production function. They are;

1. **Law of increasing returns to scale**: This law states that the volume of output keeps on increasing with every increase in the inputs. Where a given increase in inputs leads to a more than proportionate increase in the output, the law of increasing returns to scale is said to operate. We can introduce division of labour and other technological means to increase production. Hence, *the total product increases at an increasing rate.*
2. **Law of Constant/equal returns to scale:** When the scope for division of labour gets restricted, the rate of increase in the total output remains constant, the law of constant returns to scale is said to operate. *This law states that the rate of increase/decrease in volume of output is same to that of rate of increase/decrease in inputs*.
3. **Law of decreasing returns to scale:** Where the proportionate increase in the inputs does not lead to equivalent increase in output, *the output increases at a decreasing rate, the law of decreasing returns to scale is said to operate*. This results in higher average cost per unit.

STATEMENT SHOWING THE LAWS OF RETURNS TO SCALE

Capital (in units)	***Labour (in units)***	***Percentage of increase in both inputs***	***Output (in units)***	***Percentage of increase in output***	***Laws applicable***
1	3	---	---	---	---
2	6	100	120	140	*Law of increasing returns to scale*
4	12	100	240	100	*Law of constant returns to scale*
8	24	100	360	50	*Law of decreasing returns to scale*

These laws can be illustrated with an example of agricultural land. Take one acre of land. If you fill the land well with adequate bags of fertilizers and sow good quality seeds, the volume of output increases. The following table illustrates further:

From the above table, it is clear that with one unit of capital and three units of labour, the firm produces 50 units of output. When the inputs are doubled to two units of capital and six units of labour, the output has gone up to 120 units (from 50 units to 120 units). Thus, when inputs are increased by 100 percent, the output has increased by 140 percent. That is, output has increased by more than double. This is governed by Law of Increasing Returns to Scale.

When the inputs are further doubled that is to 4 units of capital and 12 units of labour, the output has gone up to 240 units (from 120 units 240 units). Thus, when inputs are increased by 100 percent, the output has increased by 100 percent. That is, output also has doubled. This is governed by Law of Constant Returns to Scale.

When the inputs are further doubled, that is, to 8 units of capital and 24 units of labour, the output has gone up by 360 units (from 240 units 360 units). Thus, when inputs are increased by 100 percent, the output has increased only by 50 percent. This is governed by Law of Decreasing Returns to Scale.

COST CONCEPTS

COST refers to expenditure incurred to produce a particular product or service. All costs involve a sacrifice of some kind or other to acquire some benefit. For example, if I want to eat food, I should be prepared to sacrifice money. The following are the possible variations in the concept of cost:

1. **Long run Vs short run costs:** long run is defined as a period of adequate length during which a company may alter all factors of production with high degree of flexibility. Long run costs cover the cost of changes in the size and kind of plant. Whereas short run is defined as the shorter period, where at least some factors of production are constant. Short run costs cover the costs associated with the variation in the utilization of fixed plant or other facilities.

   In long run, there is perfect flexibility in altering all factors of production like change in size of plant, labour force, executives and so on. Whereas such degree of flexibility is lacking in short run. Long run is the time period beyond the short run. In long run, it is very important for the firm to see that all its costs are covered. The long run cost curves are called planning curves, whereas short run cost curves are called operating curves.

   In long run, as the factors of production such as plant and equipment are variable, so the management can plan for better capacity. whereas in short run, little flexibility as the major decisions are taken regarding plant capacity and size in long run.

2. **Fixed Vs Variable costs:** variable costs are differentiated from fixed costs based on time, because it has significant role to play in decision making. Given more time, all costs are variable. If less time, some costs are variable and some are fixed.

   Fixed costs are those costs that are fixed in short run. Whether the production is taken up or not, we have to incur certain expenses such as rent for factory and office building, insurance, telephone electricity and so on. Even if the production is stopped temporarily for a shorter period, we continue to incur such fixed expenses. Fixed cost always remain fixed/constant, whereas fixed cost per unit changes with the volume of production. The more we produce, the less is the fixed cost per unit and vice versa.

Variable costs are those costs that vary with the volume of production. Variable cost includes the cost of materials, wages and so on. These costs are incurred only when there is production. If the production is temporarily suspended, there will not be any variable costs. If more the production, the variable cost will also be more.

3. **Semi fixed or semi variable cost:** These costs refer to such costs which are fixed up to some extent beyond which they are variable. For example, telephone or electricity charges, if we have connection of these we have to pay some minimum charges. This is a fixed cost. If more we use beyond this minimum charge, the more we have to pay depending on the usage. Semi fixed or semi variable costs are not absolutely fixed or absolutely variable.

4. **Marginal cost:** Marginal cost refers to the additional cost incurred for producing the additional unit. The marginal cost of production is the change in total cost that comes from making or producing one additional item. Marginal cost equals the change in variable cost per unit. This change is due to change in level of output. The concept of marginal cost is useful in allocation of resources, product pricing decisions, make or buy decisions and so on.

5. **Controllable Vs Uncontrollable costs:** the costs which can be regulated or changed/controlled as per the decision and policies of the executives is known as controllable costs. The costs which cannot be regulated or changed/controlled by management are known as uncontrollable cost. Uncontrollable costs are independent of the actions of the executives and are essential for continuing the business. Uncontrollable costs have to meet or incurred, we cannot control such expenses. Direct expenses like cost of material, labour and other direct expenses are the examples of uncontrollable cost. Whereas costs such as Research and Developments costs, advertising, salaries of top executives can be controlled.

6. **Opportunity cost Vs Outlay costs:** Opportunity cost refers to the 'cost of next best alternative foregone'. When we have scarce resources and have alternative uses, it means having opportunity cost. If there are no alternatives means no opportunity cost. In other words, the benefits from the present opportunity should also be more than the benefit of the next best alternative. These costs are not recorded in the business.
   For example if a firm choose to invest Rs 25,000. Before a firm has many alternatives whether to invest in residential plots, government bonds etc. if firm decides to invest Rs 25,000 in residential plots instead of buying government bonds, it means firm had foregone the next best alternative. If firm has invested in government bond it would have earned the interest out of it.
   Any concrete business expenses that can be identified in the past, present or future are called outlay costs. Outlay costs are easy to recognize and measure because they have actually been incurred. Outlay costs include rent, salaries etc. it is also referred to as actual cost or explicit costs. These costs are recorded in the business.

7. **Incremental Vs Sunk cost:** incremental costs are the added costs of a change in level or nature of activity. Incremental cost is also called differential cost. Incremental costs vary with a change in the alternatives. In other words, the difference in total cost due to change in quality or level of production or nature of capacity is called incremental cost. The change can be due to change in

adding a new product to the existing product or dropping an existing product or changing the channel of distribution or adding a new plant and so on.

Sunk costs are those costs that have already been committed or spent in the past. They do not affect the current production. The question of change in the level of activity does not arise here. Alternatives may change but not the sunk costs, which remain the same. For example, once an asset is purchased the funds are blocked here forever. They can neither be changed nor controlled.

8. **Explicit costs Vs Implicit costs**: explicit costs are also called as out of pocket costs. It involves payment of cash. The rent for the landlord, wages for the labor, interest paid on the funds borrowed, taxes and duties paid to the government are examples of explicit costs.
   On the other hand implicit costs are they do not involve any payment of cash as they are not actually incurred. It is also called imputed costs. For example, interest on own capital, savings in terms of salary due to own supervision, rent of own premises etc. are implicit costs.

9. **Out of pocket cost Vs Book costs**: Out of pocket costs are those costs which involve an immediate outflow of cash. They are spent in the day to day life of business such as purchase of raw materials, payment of daily wage to the labor, etc. these costs are also called explicit costs because these costs are actually incurred in reality.
   Book costs are costs which are incurred but not in real. Example Depreciation. Depreciation means reducing in value of asset, it means every year the value of an asset reduces as wear and tear of that asset. Every year we will be showing in records that the value of asset got reduced, but actually the cash is not going out, the cash remains in the business.

10. **Replacement costs Vs Historical costs**: Replacement costs are those costs that are to be paid currently if the asset were to be replaced. Historical costs are those costs that have been originally spent to acquire the assets. The financial statements are prepared taking historical costs into consideration. If the price does not change over a period of time, then replacement costs and historical costs remain one and the same.

11. **Past costs Vs Future costs:** Past costs are costs that are already spent in the past. They are also called committed costs or historical costs. They cannot be controlled or minimized. Future costs are those costs that will be spent in future and these have to be well ascertained now. They can be controlled by using certain techniques. Future costs can be projected based on the data of past costs.
12. **Urgent costs Vs Postponable costs:** the costs that have more priority and significance and cannot postpone those costs are urgent costs. Urgent costs are raw materials; wages etc., to sustain the production activity, these costs are needed. Postponable costs are such costs which we can postpone for some time, these costs are not so urgent. For example white washing of a factory building can be postponed but the same becomes urgent in case if a chief minister inaugurating a new block in that factory.

13. **Escapable Vs Unavoidable costs:** Escapable costs refer to those costs that can be saved/escaped by reducing the scale of operations to a lower level. Whereas unavoidable costs are those which are essential for the sustenance of the business activity and hence they have to be incurred.

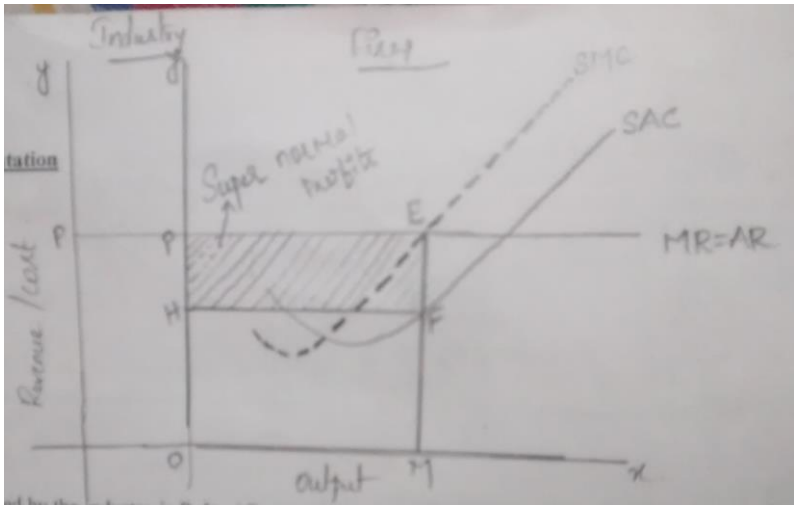
PRICE AND OUTPUT DETERMINATION UNDER PERFECT COMPETITION IN THE SHORT RUN

In the short run, an individual firm under perfect competition may either earn super normal profits or normal profits or can incur losses, depending on the positions of the short run cost curves. In perfect competition the firm has to satisfy two conditions to attain equilibrium-

1. MC=MR
2. MC curve should cut the MR curve from the below

INCASE OF SUPER NORMAL PROFITS: In the short run, the firm earns super normal profits, when average revenue is greater than average cost. The competitive firms always accepts the price determined by the industry. The average revenue curve for the output of a firm is a horizontal line at the given market price, The price, average revenue and marginal revenue are equal to each other(MR=AR) because all the units are sold at same price thus, the revenue of the firm is equal to its price. The average cost and marginal cost curves are the short run cost curves.

Graphical representation



The price determined by the industry is P. Its AR curve is horizontal. The MR curve coincides with the AR curve. SMC is the short run marginal cost curve. SMC = MR at point E and at the same time MC cuts the MR from below. Hence, the firm is in short run equilibrium at point E. Equilibrium output is OM. SAC is the short run average cost curve. At output OM the AR is ME. AC is MF. AR is greater than AC. Hence the firm is earning super normal profits.

Super normal profit = Total Revenue – Total Cost

Total Revenue = quantity x AR or Price

According to graph OM x OP area OPEM represents Total Revenue.(TR)

Total cost = quantity x Average Cost(AC)

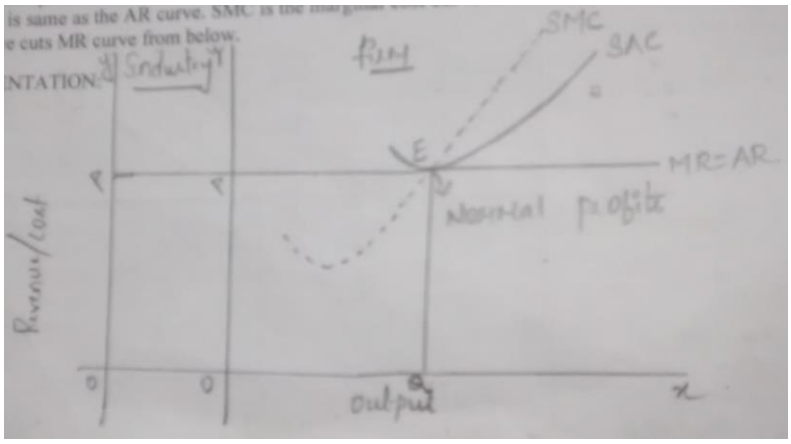
According to graph OM is the output. OH is the AC. OM X OH gives OHFM represents TC. OPEM - OHFM = HPEF, this is super normal profit. The short run equilibrium firm can earn super normal profits in short run under perfect competition

IN CASE OF NORMAL PROFIT: Not all the firms earn super normal profits in the short run. Some firms earn normal profits, it means the company is making sufficient profits to run the business, the amount which it has invested that has been collected. The short run equilibrium conditions are:

1. MC=MR
2. MC curve should cut the MR curve from the below

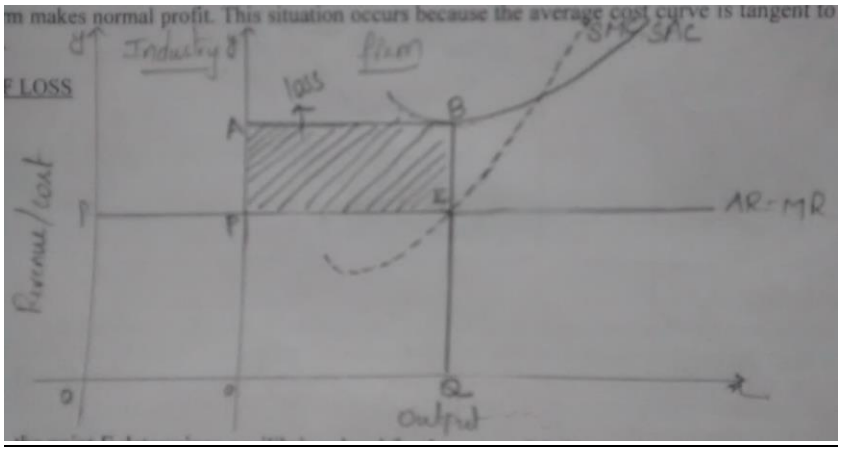
The condition for normal profit is AR = AC. The firm accepts the price determined in the market. The AR curve is horizontal, MR curve is same as the AR curve. SMC is the marginal cost curve in short run. SMC is equal to MR. At this point MC curve cuts MR curve from below.

GRAPHICAL PRESENTATION:



The MC curve cuts MR curve from below, that point is the equilibrium position of the firm. For producing the output OQ, the total revenue earned and total cost incurred are same i.e., OPEQ. Profit is therefore nil, in other words the firm makes normal profit. This situation occurs because the average cost curve is tangent to the average revenue line.

IN CASE OF LOSS



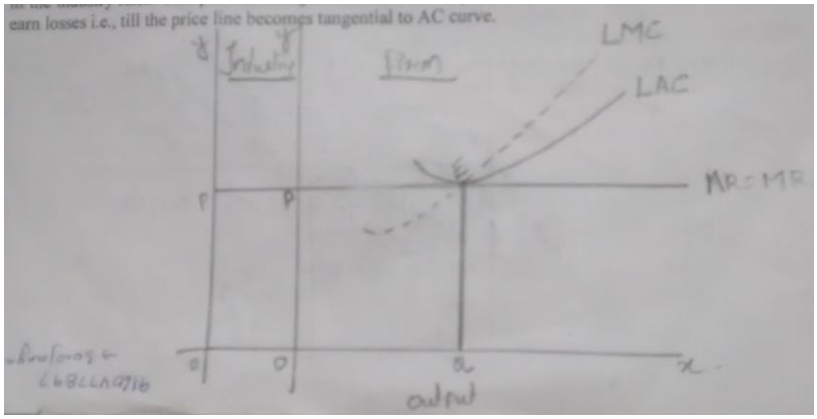
In case of loss, the point E determines equilibrium level for the output OQ The total revenue earned is given by the rectangular area OPEQ and the cost incurred is OABQ. Thus the cost of producing OQ is more than the revenue earned by selling OQ. The amount of loss incurred by the firm is given by the area PABE. The firm earn losses because the average cost of producing this output is more than the ruling market price.

PRICE DETERMINATION UNDER PERFECT COMPETITION IN THE LONG RUN

In the long run perfectly competitive firms earn only normal profits. This is due to the unrestricted entry into and exit of firms from the industry in the long run. There are two extreme possibilities in long run:

First, when existing firms enjoys super normal profits in the short run. If existing firms earns super normal profits, this attracts the new firms to enter industry to gain profits. With the entry of new firms, the supply of the commodity increases in the market. Assuming no change in demand side, this lowers the price level. This process of adjustment continues till the price becomes equal to long run average cost where (AR=MR=AC=MC). Super normal profits of the existing firms can be squeezed until all the firms in the industry earn normal profit.

Second, is when the existing firms are getting losses in the short run. Suppose firms are making losses in the short run, this force some of the firms to leave industry in the long run as they may not be able to sustain losses for long. Their exit from the industry causes reduction in supply of the product and as a result the equilibrium price in the industry rises. This process of adjustment continues up to the point where the marginal firms are no longer earn losses i.e., till the price line becomes tangential to AC curve



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IMPERFECT COMPETITION

This concept was developed by Mrs. Robinson. According to this concept, buyers and sellers have imperfect knowledge of market situations regarding prices and commodities. Producers adopt the policy of product differentiation. Firms have free entry and exist. They may join the industry, whenever they want and can also leave the industry at their disposal. Imperfect market got the following features-

1. **Large number of firms**: there are large numbers of firms in the industry, so the individual firm is incompetent to affect the price of the industry. Every firm has its own price and output policy and does not bother much for the reaction of rival firms.

2. **Product differentiation/product discrimination**: individual firms adopt the policy of product differentiation. These products are not the perfect substitutes but may close substitutes. The products may differ as regards quality, size, color, packaging, contents, guarantee, service after sales, credit terms and location of stores etc. for example, we find different brands of tooth paste such as Colgate, pepsodent, close-up, cibaca, promise etc. all of them are close substitutes but not the perfect substitutes. Product differentiation is classified as
    - Differentiation of quality of the product: Products are differentiated on the basis of raw materials used in the production, durability, design, workmanship, colour and packaging.
    - Differentiation of sales technique: sales are promoted through effective publicity, advertisement, display, attractive showrooms, home delivery systems and credit payment facilities etc.
3. **Free entry and exit:** firms are free to join and leave the industry at their own will. A new firm may enter the industry and produce close substitutes, without affecting significantly the market free entry and exit imply zero profits.

MONOPOLY

Mono means single poly means seller, there is only one seller in monopoly market. An extreme version of imperfect market is monopoly. A single seller controls entire industry. The firm and industry is one and the same in pure monopoly market example RBI is the sole supplier of currency notes in India. Another context is where the firm is supplying half of the total market may have a greater market power and the rest of the market is shared by number of small firms. When the remaining firms are equally big, it may fierce competition from the other firms. Maruthi Suzuki enjoyed government protection for a long time, when it enjoyed monopoly in respect of small cars. When several automobile manufacturers were allowed to enter the Indian industry with the New Industrial policy, maruthi Suzuki came to an end. Most of the State Electricity Boards enjoy monopoly in terms of the generation and transmission of power.

Monopoly refers to a position where a single firm is in a position to control either supply or price of a particular product or service. It cannot control or determine both price and supply as it cannot control demand. if it decides on the price, it can determine the quantity supplied at the given price or if the quantity is decided, the price can be determined.

Features of Monopoly

We may state the features of monopoly as:

1**. One Seller and Large Number of Buyers:**

The monopolist's firm is the only firm; it is an industry. But the number of buyers is assumed to be large.

2**. No Close Substitutes:**

There shall not be any close substitutes for the product sold by the monopolist. The cross elasticity of demand between the product of the monopolist and others must be negligible or zero.

3**. Difficulty of Entry of New Firms**:
There are either natural or artificial restrictions on the entry of firms into the industry, even when the firm is making abnormal profits.

4**. Monopoly is also an Industry**:
Under monopoly there is only one firm which constitutes the industry. Difference between firm and industry comes to an end.

5. **Price Maker**:
Under monopoly, monopolist has full control over the supply of the commodity. But due to large number of buyers, demand of any one buyer constitutes an infinitely small part of the total demand. Therefore, buyers have to pay the price fixed by the monopolist.

PRICE OUTPUT DETERMINATION IN MONOPOLY

Under monopoly, the average revenue curve for a firm is a downward sloping one. It is because, if the monopolist reduces the price of his product, the quantity demanded increases and vice versa. In monopoly, marginal revenue is less than the average revenue. In other words, the marginal revenue curve lies below the average revenue curve.

The monopolist always wants to maximize his profits. To achieve maximum profits, it is necessary that the marginal revenue should be more than the marginal cost. He can continue to sell as long as the marginal revenue exceeds marginal cost. At the point F, where MR=MC, profits will be maximized. Profits will diminish if the production is continued beyond this point.

It can be seen that the demand curve or average revenue curve is represented by AR, marginal revenue by MR, average cost by AC and marginal cost curve MC. OQ is the equilibrium output, OA is the equilibrium price, QC is the average cost and BC is the average profit (AR minus AC is the average profit)

Up to OQ output, MR is greater than MC and beyond OQ, MR is less than MC. Therefore, the monopolist is in equilibrium at output OQ where MR=MC and profits are maximum. OA is the

corresponding price to the output level of OQ. The rectangle ABCD represents the profits earned by the monopolist in the equilibrium position in the short run.

MONOPOLISTIC COMPETITION

Monopolistic competition is said to exist when there are many firms and each one produces such goods and services that are close substitutes to each other. They are similar but not identical. There are no restrictions on the entry, many firms who feel they can offer a relatively better product or service, enter the market.

The market share of each of the firms in the monopolistic competition is so insignificant that activities of one firm have no effect on others. They can take advantage of economies of scale but not to any significant degree. The important features of monopolistic competition are –

1. **Large Number of Buyers and Sellers:**

There are large number of firms but not as large as under perfect competition. Each firm can control its price-output policy to some extent. It is assumed that any price-output policy of a firm will not get reaction from other firms that means **each firm follows the independent price policy**. **If a firm reduces its price, the gains in sales will be slightly spread over many of its rivals** so that the extent to which each of the rival firms suffers will be very small. Thus these rival firms will have no reason to react.

2. **Free Entry and Exit of Firms:**

Like perfect competition, under monopolistic competition also, the firms can enter or exit freely. The firms will enter when the existing firms are making super-normal profits. With the entry of new firms, the supply would increase which would reduce the price and hence the existing firms will be left only with normal profits. Similarly, if the existing firms are sustaining losses, some of the marginal firms will exit. It will reduce the supply due to which price would rise and the existing firms will be left only with normal profit.

3. **Product Differentiation:**

Another feature of the monopolistic competition is the product differentiation. Product differentiation refers to a situation when the buyers of the product differentiate the product with other. Basically, the products of different firms are not altogether different; they are slightly different from others. Although each firm producing differentiated product has the monopoly of its own product, yet he has to face the competition. This product differentiation may be real or imaginary. Real differences are like design, material used, skill etc. whereas imaginary differences are through advertising, trade mark and so on.

4. **Selling Cost:**

Another feature of the monopolistic competition is that every firm tries to promote its product by different types of expenditures. Advertisement is the most important constituent of the selling cost which affects demand as well as cost of the product. The main purpose of the monopolist is to earn maximum profits; therefore, he adjusts this type of expenditure accordingly.

5. **Lack of Perfect Knowledge:**

The buyers and sellers do not have perfect knowledge of the market. There are innumerable products each being a close substitute of the other. The buyers do not know about all these products, their qualities and prices.

Therefore, so many buyers purchase a product out of a few varieties which are offered for sale near the home. Sometimes a buyer knows about a particular commodity where it is available at low price. But he is unable to go there due to lack of time or he is too lethargic to go or he is unable to find proper conveyance. Likewise, the seller does not know the exact preference of buyers and is, therefore, unable to get advantage out of the situation.

6. **Less Mobility:**

Under monopolistic competition both the factors of production as well as goods and services are not perfectly mobile.

7. **More Elastic Demand:**

Under monopolistic competition, demand curve is more elastic. In order to sell more, the firms must reduce its price.

8. **Price maker**

under monopolistic competition a firm is a price maker, it can influence the price of the commodity to some extent.

OLIGOPOLY

Oligopoly refers to a market situation in which there are a few firms selling homogeneous or differentiated products. Oligopoly is, sometimes, also known as 'competition among the few' as there are few sellers in the market and every seller influences and is influenced by the behaviour of other firms.

Example of Oligopoly:

In India, markets for automobiles, cement, steel, aluminium, etc, are the examples of oligopolistic market. In all these markets, there are few firms for each particular product.

DUOPOLY is a special case of oligopoly, in which there are exactly two sellers. Under duopoly, it is assumed that the product sold by the two firms is homogeneous and there is no substitute for it. Examples where two companies control a large proportion of a market are: (i) Pepsi and Coca-Cola in the soft drink market; (ii) Airbus and Boeing in the commercial large jet aircraft market; (iii) Intel and AMD in the consumer desktop computer microprocessor market.

Features of Oligopoly:

1. Few firms:

Under oligopoly, there are few large firms. Each firm produces a significant portion of the total output. There exists severe competition among different firms and each firm try to manipulate both prices and volume of production to outsmart each other. For example, the market for automobiles in India is an oligopolist structure as there are only few producers of automobiles.

The number of the firms is so small that an action by any one firm is likely to affect the rival firms. So, every firm keeps a close watch on the activities of rival firms.

2. Interdependence:

Firms under oligopoly are interdependent. Interdependence means that actions of one firm affect the actions of other firms. A firm considers the action and reaction of the rival firms while determining its price and output levels. A change in output or price by one firm evokes reaction from other firms operating in the market.

For example, market for cars in India is dominated by few firms (Maruti, Tata, Hyundai, Ford, Honda, etc.). A change by any one firm (say, Tata) in any of its vehicle (say, Indica) will induce other firms (say, Maruti, Hyundai, etc.) to make changes in their respective vehicles.

3. Non-Price Competition:

Under oligopoly, firms are in a position to influence the prices. However, they try to avoid price competition for the fear of price war. They follow the policy of price rigidity. Price rigidity refers to a situation in which price tends to stay fixed irrespective of changes in demand and supply conditions. Firms use other methods like advertising, better services to customers, etc. to compete with each other.

If a firm tries to reduce the price, the rivals will also react by reducing their prices. However, if it tries to raise the price, other firms might not do so. It will lead to loss of customers for the firm, which intended to raise the price. So, firms prefer non- price competition instead of price competition.

4. Barriers to Entry of Firms:

The main reason for few firms under oligopoly is the barriers, which prevent entry of new firms into the industry. Patents, requirement of large capital, control over crucial raw materials, etc, are some of the reasons, which prevent new firms from entering into industry. Only those firms enter into the industry which is able to cross these barriers. As a result, firms can earn abnormal profits in the long run.

5. Role of Selling Costs:

Due to severe competition ‘and interdependence of the firms, various sales promotion techniques are used to promote sales of the product. Advertisement is in full swing under oligopoly, and

many a times advertisement can become a matter of life-and-death. A firm under oligopoly relies more on non-price competition.

Selling costs are more important under oligopoly than under monopolistic competition.

6. Group Behaviour:

Under oligopoly, there is complete interdependence among different firms. So, price and output decisions of a particular firm directly influence the competing firms. Instead of independent price and output strategy, oligopoly firms prefer group decisions that will protect the interest of all the firms. Group Behavior means that firms tend to behave as if they were a single firm even though individually they retain their independence.

7. Nature of the Product:

The firms under oligopoly may produce homogeneous or differentiated product.

i. If the firms produce a homogeneous product, like cement or steel, the industry is called a pure or perfect oligopoly.

ii. If the firms produce a differentiated product, like automobiles, the industry is called differentiated or imperfect oligopoly.

8. Indeterminate Demand Curve:

Under oligopoly, the exact behavior pattern of a producer cannot be determined with certainty. So, demand curve faced by an oligopolistic is indeterminate (uncertain). As firms are inter-dependent, a firm cannot ignore the reaction of the rival firms. Any change in price by one firm may lead to change in prices by the competing firms. So, demand curve keeps on shifting and it is not definite, rather it is indeterminate.

PRICING METHODS

Pricing is an important exercise. Under-pricing will result in losses and over-pricing will make the customers run away. While determining the price, it is necessary to understand the pricing objectives, policies and procedures. The following are the different pricing methods.

COST BASED PRICING METHODS

1. Cost plus pricing: this is also called mark up or full cost pricing. Under this method, the total cost incurred to the product and add a percentage of profit to arrive at the selling price. This method is suitable where the costs keep fluctuating from time to time. It is commonly followed in departmental stores and other retail shops.

2. Marginal cost pricing: selling price is fixed in such a way that it covers fully the variable cost and contributes towards recovery of fixed costs fully or partly depending upon the

market situations. In stiff competition, marginal cost offers a guide line as to how far the selling price can be lowered. This is also called break even pricing or target profit pricing.

COMPETITION ORIENTED PRICING

Under this method, pricing is a very complex task. Here the price of a product is based on what the competitor charges for a similar product.

1. Sealed bid pricing: this method is more popular in tenders and contracts. Each contracting firm quotes its price in a sealed cover called 'tenders'. All the tenders are opened on a scheduled date and the person who quotes the less price is awarded the contract. The objective of the bidding firm is to bag the contract. Any price quoted less than the marginal price results in losses and more results in profits but suffers from the danger of losing the contract.

2. Going rate pricing: the prevailing market price at a given point of time is the guiding factor in determining the price. The market leaders keep announcing the prevailing prices at a given point of time based on demand and supply positions. When one wants to buy and sell gold, the prevailing market rate is taken as basis.

DEMAND ORIENTED PRICING

The higher the demand the higher can be the price. This is a modern marketing concept.

1. Price discrimination: it refers to the practice of charging different prices to customers for the same good. The firm uses its discretion to charge differently to the different customers. It is also called differential pricing. Customers of different profiles are segregated based on customer requirements like purchasing in bulk, less price and less goods low price, and also segregated by nature of product, by geographical area, by income group and so on.

2. Perceived value pricing: it refers to where the price is fixed on the basis of perception of the buyer towards the value of the product.

STRATEGY BASED PRICING

1. Market skimming: when the product is introduced for the first time in the market, the company follows this method. Under this method, the company fixed a very high price for the product. The main idea is to charge the customer maximum possible extent. This strategy mostly found in case of technology products. When Apple introduces a particular cell phone, in the beginning it fixes a very high price. As the time passes if a new series comes in to market, the new series is priced very high and the old one price is going to be reduced and more people can afford to buy.

2. Market penetration: this is exactly opposite to the market skimming method. Here the price of the product is fixed so low that the company wants to increase its market share first.

Here the company believes that it is necessary to dominate the market in the long run than making profits in the short run. A low price stimulates rapid growth.

3. Two part pricing: under this strategy, the firm charges a fixed fee for the right to purchase its goods plus a per unit charge for each unit purchased. Entertainment houses such as country clubs, health clubs, in the beginning they charge a fixed membership fee plus a charge, per month or per visit to use the facilities.

4. Block pricing: it is another way a firm with market power can enhance its profits. We see this in our daily life like six soaps in a single pack or 5 Chocó packs in a single pack. By selling certain number of units of a product as one package, the firm earns more than by selling unit wise.

5. Commodity bundling: it refers to the practice of bundling two or more different products together and selling them at a single 'bundle price'. For example, the package deals offered by the tourist companies like it includes airfare, hotel, meals, sightseeing and so on at a bundled price instead of pricing each of these services separately.

6. Peak load pricing: during seasonal period when demand is likely to be higher, a firm may enhance profits by peak load pricing. The firms philosophy is to charge more price during peak times than it is charged off peak times. The firm covers losses during off peak times from the likely profits from the peak times. For example airliners such as Air India, Jet Airways keep changing their fares during festival or holiday season.

7. Cross subsidization: in cases where demand for two products produced by a firm are interrelated through demand or costs, the firm may enhance the profitability of its operations through cross subsidization. Using the profits generated by established products, a firm may expand its activities by financing new product development and diversification into new product markets.

8. Transfer pricing: it is an internal pricing technique. It refers to a price at which inputs of one department are transferred to another, in order to maximize the overall profits of the company.