**ENGINEERING ECONOMICS**

**UNIT-II**

**INTRODUCTION**

Efficiency of management lies in its capacity to analyze the market. Study of demand and supply, its determinants, elasticity of demand and supply, market equilibrium, basic concepts of production function, revenue analysis, pricing policies and pricing methods help in analyzing the market in a more pragmatic manner. Knowledge of market structure and different kinds of markets is of utmost importance to a business manager in taking right decision and planning business activities efficiently.

**MEANING OF MARKET AND MARKET STRUCTURE**

Market in economics does not refer to a place or places but to a commodity and also to buyers and sellers of that commodity who are in competition with one another e.g., the cotton market may not be confined to a particular place, but may cover the entire country and, in fact, even the entire world. Buyers and sellers of cotton may be spread all over the world. Market situation varies in their structure. Market structure refers to economically significant features of a market, which affect the behavior, and working of firms in the industry. It tells us how a market is built up and what its basic features are. **According to Pappas and Hirschey,** “Market structure refers to the number and size distribution of buyers and sellers in the market for a good or service”. It indicates a set of market characteristics that determine the nature of market in which a firm operates. Different market structures affect the behavior of sellers and buyers in different manners. The following characteristics are as follows:

1. **The number and size distribution of sellers:** A market may consist of a large, very large or a few sellers. There may be a few big firms with huge investments or a large number of small firms with limited investments. Thus, the operating size of the firm may be large or small in a market. The number and size of sellers influence the working of a market.
2. **The number and size distribution of buyers:** In a market, there may be large number of buyers. Similarly, a market may consist of many small buyers or only a few buyers. The total number of buyers exercises their influence on the nature of transactions in the market
3. **Product differentiation:** Products sold in the market may be homogeneous, or have substitutes, close substitutes or remote substitutes. A firm may deliberately differentiate its product with that of the products of other firms by adopting several techniques.
4. **Condition of entry and exit:** In case of a few market situations, new firms may enter the industry or old firms may leave the industry at their own free will and wish. In case of other markets, there will be deliberate entry barriers. Thus, the characteristics of market structure give us information about the nature of working of different markets. Thus in common parlance, market refers to a place where sellers and buyers meet for the purpose of exchanges of goods, but in the language of economics it has a wider meaning**.** It refers to a wide range of area where the buyers and sellers come into close contact with one another for the settlement of their transactions. **According to Prof.Cournot,** the term market is “not any particular market place in which things are brought or sold, but the whole of any region in which buyers and sellers are in such free intercourse with one another that the price of the same goods tend to equality easily and quickly”. **In the words of Prof. Benham,** Market is “any area over which buyers and sellers are in such close touch with one man other, either directly or through dealers that the prices obtainable in one part of the market affects the prices paid in other parts”. For the existence of a market, there is no need for face to face contact between the buyers and sellers to conclude their transactions. In recent years, means of transport and communication have developed so fast that buyers and sellers can easily come into close contact with each other for the settlement of their transactions without establishing face to face relationship. The term market hence implies:
5. Existence of a commodity to be traded.
6. Existence of sellers and buyers.
7. Establishment of contact between the sellers and buyers.
8. Willingness and ability to buy and sell a commodity.
9. Existence of a price at which the given commodity is to be bought and sold.

Among the different market situations, perfect competition and monopoly form the two extremes. In between these two market situations we come across a number of market situations which may be collectively termed as imperfect markets. In these imperfect markets, we notice the elements of competition as well as monopoly. They are bilateral monopoly, monopsony (one buyer), duopoly (two sellers) duopsony (two buyers), oligopoly (few sellers), oligopsony (few buyers) and monopolistic competition (many sellers). This can be better understood by the following chart.

**KINDS OF MARKETS**



The market situations vary in their structure. Different market structures affect the behavior of buyers and sellers and firms. Further, prices and trade volumes are influenced by different types of markets and price output determination under different market conditions.

**PERFECT COMPETITION**

Perfect competition is a comprehensive term which includes pure competition also. Before we discuss the details of perfect competition, it is necessary to have a clear idea regarding the nature and characteristics of pure competition. **Pure Competition** is a part of perfect competition. Competition in the market is said to be pure when the following conditions are satisfied:

1. Prevalence of a large number of buyers and sellers.
2. The commodity supplied by each firm is homogeneous.
3. Free entry and exit of firms.
4. Absence of any kind of monopoly element.

Under these conditions no individual producer is in a position to influence the market price of the product. **According to Prof. E.H. Chamberline,** “Under Pure Competition, the individual sellers market being completely merged with the general one, he can sell as much as he pleases at the going price”.Further, he remarks “Pure competition means unalloyed by monopoly elements. It is a much simpler and less exclusive concept than perfect competition”.

**Prof. Joel Dean**, after going through the features of pure competition observes that “Pure competition does exist in reality but it is a rare phenomenon”. Hence, it is pointed out that it is possible to come across pure competition in our life. For e.g., in the markets for rice, wheat, cotton, jowar, and other such food grains, fruits, vegetables, eggs etc, where there are a large number of sellers and buyers and we find that practically goods are identical. If we look at the present market, we notice that even in these cases, there is possibility of forming cartels by sellers to influence the market price. Now, we shall turn our attention to perfect competition.

**MEANING AND DEFINITION OF PERFECT COMPETITION**

A perfectly competitive market is one in which the number of buyers and sellers are very large, all engaged in buying and selling a homogeneous product without any artificial restriction and possessing perfect knowledge of market at a time. **According to Bilas,** “the perfect competition is characterized by the presence of many firms: They all sell identically the same product. The seller is the price taker”.

**According to Prof. F. Knight** perfect competition entails “Rational conduct on the part of buyers and sellers, full knowledge, absence of friction, perfect mobility and perfect divisibility of factors of production and completely static conditions”.

**FEATURES OF THE PERFECT COMPETITION**

1. **Existence of very large number of buyers and sellers:** A perfectly competitive market will have large number of sellers and buyer. Output of a seller (firm)will be so small that it is a negligible fraction of the output of the industry. Hence, changes in supplymade by a particular firm will not affect the total output and price. Similarly, no one particular buyercan influence the price of the commodity because the quantity purchased by him is a very smallfraction of total quantity.
2. **Homogenous products:** Different firms constituting the industry produce homogenous goods. They are identical in character.Hence, no firm can raise its price above the general level.
3. **Free entry and exit of firms:** There is absolute freedom to firms to get in or get out of the industry. If the industry is making profits,new firms are attracted into the industry. Conversely, firms will quit the industry if there are losses.This results in the realization of normal profits by all the firms in the long run.
4. **Existence of single price:** Each unit bought and sold, in the market commands the same price since products arehomogeneous.
5. **Perfect knowledge of the market:** All sellers and buyers will have perfect knowledge of the market. Sellers cannot influence buyersand buyers cannot influence sellers.
6. **Perfect mobility of factors of Production:** Factors of production are free to move into any use or occupation in order to earn higher rewards.Similarly, they are also free to come out of the occupation or industry if they feel that they are underremunerated.
7. **Full and unrestricted competition:** Perfectly competitive market is free from all sorts of monopoly, oligopoly conditions. Since there arevery large number of buyers and sellers, it is difficult for them to join together and form cartels orsome other forms of organizations. Hence, each firm acts independently.
8. **Absence of transport cost:** All firms will have equal access to the market. Market price charged by the sellers should not varybecause of differences in the cost of transportation.
9. **Absence of artificial Government controls:** The Government should not interfere in matters pertaining to supply and price. It should not placeany barriers in the way of smooth exchange. Price of a commodity must be determined only by theinteraction of supply and demand forces.
10. **The market price is flexible over a period of time:** Market price changes only because of changes in either demand or supply force or both. Thus, priceis not affected by the sellers, buyers, firm, industry or the Government.
11. **Normal Profit:** As the market price is equal to cost of production, the firm can earn only normal profits under perfectcompetition. Normal profits are those which are just sufficient to induce the firms to stay in business.It is the minimum reasonable level of profit which the entrepreneur must get in the long run. It is apart of total cost of production because it is the price paid for the services of the entrepreneur, i.e.,profit is an item of expenditure to a firm.

**REASONS FOR THE STUDY OF PERFECT COMPETITION**

1. It is used as a yardstick against which all other models can be compared and evaluated.
2. It is quite accurate and useful in explaining and predicting the behaviour of market and the firm under certain circumstances.
3. It is a good simplified model for beginners to start with. Its study is useful to prepare a ground for future study of imperfect markets.
4. It is a useful model to compare the actual with the ideal, what is and what ought to be.
5. It helps us to understand optimum allocation of resources in an ideal market.

**PRICE OUTPUT DETERMINATION UNDER PERFECT COMPETITION (GENERAL MODEL)**

It is very interesting to study the price output model under perfect competition. Under a perfectly competitive market, in case of the industry, market price of the product is determined by the interaction of supply and demand. The market price is not fixed by either the buyer or the seller, firm, industry or the Government. It is only the market forces, i.e., demand and supply determines the equilibrium price of the product. We come across this peculiar feature under perfect competition alone.

Alfred Marshall compared supply and demand to the two blades of a scissors. Just as both the blades work together to cut a piece of cloth, both supply and demand interact with each other to determine the market price at which exchange takes place. In the process of price determination, supply is not more important than demand or demand is not more important than supply. Both forces play an equally important role.

We can explain how price is determined in the market by the interaction of demand and supply with the help of the following schedule.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Price in Rs.** | **Demand in****Units** | **Supply in****Units** | **State of Market** | **Pressure on****Price** |
| 10 | 1000 | 9000 | Surplus S > D | Downward |
| 8 | 3000 | 7000 | Surplus S > D | Downward |
| 6 | 5000 | 5000 | Equilibrium S = D | Neutral |
| 4 | 7000 | 3000 | Shortage D > S | Upward |
| 2 | 9000 | 1000 | Shortage D > S | Upward |

From the table above, it is clear that equilibrium price is determined at Rs.6.00 where quantity demanded is exactly equal to quantity supplied i.e., 5000 units.



In case of industry, interaction of supply and demand will determine the equilibrium market price. In the diagram, P indicates OR as equilibrium price and OQ as equilibrium output. **The price at which** **demand and supply are equal is known as equilibrium price. The quantity bought and sold at** **the equilibrium price is known as equilibrium output.**

In the figure equilibrium price is determined at the point P where both demand and supply are equal. The upper limit to the price of a product/service is determined by the demand. This price should not exceed ‘what the market can bear’. In short, the price of the product / service should not exceed the value of its benefit to the buyers (price should not be more than the utility of product / service). The lower limit to the price is determined by production cost. In the long run, the price should not fall below production costs of making and distributing the product / service. With reference to the industry, the point P can be regarded as the position of stable equilibrium. Even if there are changes in price, there will be automatic adjustments in supply and demand, restoring the original equilibrium position. When the price rises from OR to OR1 supply exceeds demand, there will be excess supply over demand excess supply of goods push down the price from OR1 to OR, the original price. Similarly, when price falls from OR to OR2, demand exceeds supply, excess demand over supply in its turn push up the prices from OR2 to OR the original price. Thus, equality between demand and supply determine the market price. Under perfect competition, a firm will not have any independence to fix the price of its own product.

The industry is the price maker or giver and a firm is a price taker or price acceptorandquantity adjuster. As a part of the industry, it has to simply charge the price which is determined bythe industry. If it charges a higher price it will lose its sales and if it charges lesser price, it will incurlosses.In case of the firm, the price line which is equal to AR and MR, will be horizontal and parallel to OX axis.This is because same price has to be charged by the firm for all the units supplied, irrespectiveof changes in demand. Hence,

**Equilibrium or Market Price = AR = MR**

**EQUILIBRIUM OF THE COMPETITIVE FIRM IN THE SHORT RUN**

A competitive firm will reach equilibrium position at the point where short run MR equals MC. At this point equilibrium output and price is determined. The firm in the short run will have only temporary equilibrium. The short run equilibrium price is not a stable price. It is also called as sub normal price.



The competitive firm, in the short run, will not be in a position to cover its fixed costs. But it must recover short run variable costs for its survival and to continue in the industry. A firm will not produce any output unless the price is at least equal to the minimum AVC. If short run price is just equal to AVC, it will not cover fixed costs and hence, there will be losses. But it will continue in the industry with the hope that it will recover the fixed costs in the future.



If price is above the AVC and below the AC, it is called as “Loss minimization” zone. If the price is lower than AVC, the firm is compelled to stop production altogether. While analyzing short term equilibrium output and price, apart from making reference to SMC and AVC, we have to look into AC also. If AC = price, there will be normal profits. If AC is greater than price, there will be losses and if AC is lower than price, then there will be super normal profits. In the short run, a competitive firm can be in equilibrium at various points E1, E2 and E3 depending upon cost conditions and market price. At these various unstable equilibrium points, though MR = MC, the firm will be earning either super normal profits or incurring losses or earning normal profits.

In the case of the firm:

1. At OP4 price the firm will neither cover AFC nor AVC and hence it has to wind up its operations. It is regarded as shutdown point.
2. At OP1 price, OQ1 is the equilibrium output. E1 indicates the price or AR = AVC only. It does not cover fixed costs. The firm is ready to suffer this loss and continue in business with the hope that price may go up in the future.
3. At OP2 price, OQ2 is the equilibrium output. E2 indicates the price = AR = AC. At this point MR is also equal to MC. At this level of output total average revenue = total average cost hence, the firm is earning only normal profits. It is also known as Break-even point of the firm, a zone of no loss or no profit. The distance between two equilibrium points E2 and E1 indicates loss minimization zone.
4. At OP3 price, OQ3 is the output produced by the firm. At E3, MR = MC. But AR is greater than AC. For OQ3 output, the total cost is OQ3AB. The total revenue is OQ3E3P3. Hence, P3E3AB is the total super normal profits.

Thus in the short run, a firm can either incur losses or earn super normal profits. The main reason for this is that the producer does not have adequate time to make all kinds of adjustments to avoid losses in the short run. In case of the industry, E indicates the position of equilibrium where short run demand is equal to short run supply. OR indicates short run price and OQ indicates short run demand and supply.

**EQUILIBRIUM OF THE INDUSTRY IN THE LONG RUN**

In the long run, there is adequate time to make all kinds of changes, adjustments and readjustments in the productive process. All factor inputs become variable in the long run. Total number of firms can be varied and plant capacity also can be changed depending upon the nature of requirements. Economies of scale, technological improvements, better management and organization may reduce production costs substantially in the long run. Hence, production can be either increased or decreased according to the needs of the individual firms and the industry as a whole. In short, supply of the product can be fully adjusted to its demand in the long period. An industry, in the long run will be reaching the position of equilibrium under the following conditions:

1. At the point of equilibrium, the long run demand and supply of the products of the industry must be equal to each other. This will determine long run normal price.
2. There will be no scope for the industry to either expand or contract output. Hence, the total production remains stable in the long run.
3. All the firms in the industry should be in the position of equilibrium. All firms in the industry must be producing an equilibrium level of output at which long run MC is equated to long run MR. (MC = MR).
4. There should be no scope for entry of new firms into the industry or exit of old firms out of the industry. In brief, the total number of firms in the industry should remain constant.
5. All firms should be earning only normal profits. This happens when all firms equate AR (Price) with AC. This will help the industry in attaining a stable equilibrium in the long run.

**EQUILIBRIUM OF THE FIRM IN THE LONG RUN**

A competitive firm reaches the equilibrium position when it maximizes its profits. This is possible when:

1. The firm would produce that level of output at which MR = MC and MC curve cuts MR curve from below. The firm adjusts its output and the scale of its plant so as to equate MC with market price.

**Price = MC = MR**

1. The firm in the long run must cover its full costs and should earn only normal profits. This is possible when long run normal price is equal to long run average cost of production. Hence,

**Price = AR = AC**

1. When AR is greater than AC, there will be place for super normal profits. This leads to entry of new firms increase in total number of firms’ expansion in output increase in supply fall in price fall in the ratio of profits. This process will continue till supernormal profits are reduced to zero. On the other hand, when AC is greater than AR the industry will be incurring losses. This leads to exit of old firms, number of firms decrease, contraction in output, rise in price, and rise in the ratio of profits. Thus, losses are avoided by automatic adjustments. Such adjustments will continue till the firm reaches the position of equilibrium when AC becomes equal to AR. Thus losses and profits are incompatible with the position of equilibrium. Hence,

**Price = MR = MC = AR = AC**

1. The firm is operating at its minimum AC making optimum use of available resources.



In the case of the industry, E is the position of equilibrium at which LRS = LRD, indicating OR as the equilibrium price and OQ as the equilibrium quantity demanded and supplied.

In case of the firm P indicates the position of equilibrium. At P, LMR = LMC and LMC curve cuts LMR curve from below. At the same point P the minimum point of LAC is tangent to LAR curve.

Hence,

**LAR = LAC**

A competitive firm in the long run must operate at the minimum point of the LAC curve. It cannot afford to operate at any other point on the LAC curve. Otherwise, it cannot produce the optimum output or it will incur losses.

Time will play an important role in determining the price of a product in the market. As the time under consideration is short, demand will have a more decisive role than supply in the determination of price. Longer the time under consideration, supply becomes more important than demand in the determination of price.

The price determined in the long run is called as normal price and it remains stable.

**MARKET PRICE:**

It refers to that price which is determined by the forces of demand and supply in the very short period where demand plays a major role than supply. Supply plays a passive role. Market price is unstable.

**NORMAL PRICE:**

It is determined by demand and supply forces in the long period. It includes normal profits also. It is stable in nature.

**MONOPOLY**

**MEANING AND DEFINITION:**

The word monopoly is made up of two syllables – ‘MONO’ means single and “POLY” means to sell. Thus, monopoly means existence of a single seller in the market. **Monopoly is that market form in** **which a single producer controls the whole supply of a single commodity which has no close** **substitutes.** Monopoly may be defined as a condition of production in which a person or a number of persons acting in combination have the power to fix the price of the commodity or the output of the commodity. It is a situation where there exists a single control over the market producing a commodity having no substitutes and no possibilities for anyone to enter the industry to compete.

**According to Prof. Watson**, “A monopolist is the only producer of a product that has no close substitutes”.

**FEATURES OF MONOPOLY**

1. **Anti-thesis of competition:** Absence of competition in the market creates a situation of monopoly and hence the seller faces no threat of competition.
2. **Existence of a single seller:** There will be only one seller in the market who exercises single control over the market.
3. **Absence of substitutes:** There are no close substitutes for his product with a strong cross elasticity of demand. Hence, buyers have no alternatives.
4. **Control over supply:** He will have complete control over output and supply of the commodity.
5. **Price Maker:** The monopolist is the price – maker and in taking decisions on price fixation, he is independent. He can set the price to the best of his advantage. Hence, he can either charge a high price for all customers or adopt price discrimination policy.
6. **Entry barriers:** Entry of other firms is barred somehow. Hence, monopolist will not have direct competitors or direct rivals in the market.
7. **Firm and industry is same:** There will be no difference between firm and an industry.
8. **Nature of firm:** The monopoly firm may be a proprietary concern, partnership concern, Joint Stock Company or a public utility which pursues an independent price-output policy.
9. **Existence of super normal profits:** There will be place for supernormal profits under monopoly, because market price is greater than cost of production.

There are different kinds of monopolies – Private and public, pure monopoly, simple monopoly and discriminatory monopoly. It is to be clearly understood that with the exception of public utilities or institutions of a similar nature, whose price is set by regulatory bodies, monopolies rarely exist. Just like perfect competition, pure monopoly does not exist. Hence, we make a detailed study of simple monopoly and discriminatory monopoly in the foregoing analysis.

**PRICE OUTPUT DETERMINATION UNDER MONOPOLY**

**ASSUMPTIONS**

1. The monopoly firm aims at maximizing its total profit.
2. It is completely free from Govt. controls.
3. It charges a single & uniform high price to all customers.

It is necessary to note that the price output analysis and equilibrium of the firm and industry is one and the same under monopoly.

As output and supply are under the effective control of the monopolist, the market forces of demand and supply do not work freely in the determination of equilibrium price and output in case of the monopoly market. While fixing the price and output, the monopoly firm generally considers the following important aspects.

1. The monopolist can either fix the price of his product or its supply. He cannot fix the price and control the supply simultaneously. He may fix the price of his product and allow supply to be determined by the demand conditions or he may fix the output and leave the price to be determined by the demand conditions.
2. It would be more beneficial to the monopolist to fix the price of the product rather than fixing the supply because it would be difficult to estimate the accurate demand and elasticity of demand for the products.
3. While determining the price, the monopolist has to consider the conditions of demand, cost of the product, possibility of the emergence of substitutes, potential competition, import possibilities, government control policies etc.
4. If the demand for his product is inelastic, he can charge a relatively higher price and if the demand is elastic, he has to charge a relatively lower price.
5. He can sell larger quantities at lower price or smaller quantities at a higher price.
6. He should charge the most reasonable price which is neither too high nor too low.
7. The most ideal price is that under which the total profit of the monopolist is the highest.

**PRICE-OUTPUT DETERMINATION IN THE SHORT PERIOD**

Short period is a time period in which there are two types of factors of production. One is the fixed factors and the other is the variable factors. In the short period, production can be changed only by changing the variable factors of production. Fixed factors of production cannot be changed. In other words, in the short period, supply can be changed only to some extent. In this period volume of production can be changed but capacity of the plant cannot be changed. He can increase the supply only with the help of existing machines and plants. New factories and plant equipment cannot be installed. The aim of a monopolist is to earn maximum profits or suffer minimum losses if the circumstances compel. Monopolist, being single seller of his product, can fix his price equal to, above or less than the short period average cost of the product. Thus, he can earn normal profits, supernormal profits or incur losses even in the short period. This depends upon the nature and extent of the demand for his product. In order to earn maximum profits or suffer minimum losses, a monopolist compares his marginal revenue (MR) with marginal cost (MC). If marginal revenue exceeds marginal cost of a product, the monopolist can increase his profit by increasing his production. On the contrary, if MC exceeds MR at a particular level of output, the monopolist can minimize his losses by reducing his production. So the monopolist is said to be in equilibrium where marginal revenue is equal to marginal cost.

In the short period, a monopoly firm can earn supernormal profits, normal profits or incur losses. In case of losses, price must be covering at least the average variable costs. Otherwise the firm will stop production. The maximum loss can be equal to fixed costs. The three cases of monopoly equilibrium can be shown through the figures drawn below.







In figure (a) AR > AC. Hence, super normal profits.

In figure (b) AR = AC. Hence, normal profits.

In figure (c) AR < AC. Hence, losses.

The figures explain how a monopoly firm can earn supernormal profits, normal profits or incur losses in the short period.

**PRICE-OUTPUT DETERMINATION IN THE LONG RUN**

In the long run, there is adequate time to make all kinds of adjustments in both fixed as well as variable factor inputs. Supply can be adjusted to demand conditions. The total amount of long run profits will depend on the cost conditions under which the monopolist has to operate and the demand curve he has to face in the long run.

Under monopoly, the AR or demand curve slope downwards from left to right. This is because the monopolist can increase his sales and maximize his profits only when he reduces the price. MR is less than AR and hence, the MR curve lies below the AR curve. This is in accordance with the usual relationship between AR & MR.

The cost curve of the monopoly firm is influenced by the laws of returns. The price he has to charge for his product mainly depends on the nature of his cost curves.

The monopoly firm, in the long run, will continue its operations till it reaches the equilibrium point where long run MR equals long run MC. The price charged at this level of output is known as equilibrium price.



In the diagram, the monopoly firm reaches the position of equilibrium at E. At this point, MR = MC and MC curve cuts MR curve from below. The monopolist will stop his output before AC reaches its minimum point. He does not bother to reach the minimum point on AC.

He restricts his output in order to maximize his profit, OQ is the output. The price charged by the firm is QR (PQ) which is equal to AR. This price is higher than average cost QM per unit. The excess profit per unit of output is PM and the total profits of the firm is PM X RN = NRPM. Under monopoly, no doubt MR = MC but M R is less than AR. **Hence, monopoly price = AR only. Price is greater** **than AC, MC and MR.**

Generally speaking, monopoly price is slightly higher than that of competitive price because market price is over and above MC, MR and AC. The single seller has complete control over the supply as he can successfully prevent the entry of other new firms into the market. Thus, the monopoly power is reflected on its price. Monopoly price is generally higher than competitive price and thus detrimental to the interests of the society.

Monopoly price need not be high always on account of the following reasons:

1. Due to the operation of both internal as well as external economies of scale, he may reduce the cost of production and hence, price too.
2. The monopolist need not spend more money on sales promotion programmes. He can save quite a lot of money and charge a lower price for his product.
3. He has the fear that consumers may boycott his product if he charges a very high price.
4. There is the fear of discovery of new substitutes by other competitors in the market. Hence, he charges low prices.
5. He is afraid of the Govt. intervention in controlling monopoly power and hence, he may charge a lower price.
6. He may spend lot of money on R&D and reduce cost of operation. Cost reduction may facilitate price reduction.

Thus, in order to maintain the good will of the consumers and to secure good business, instead of charging high price, he may charge a relatively lower price.

**MONOPOLISTIC COMPETITION**

Perfect competition and monopoly are the two extreme forms of market situations, rarely to be found in the real world. Generally, markets are imperfect. A number of attempts have been made by different economists like Piero Shraffa, Hotelling, Zeuthen and others in the early 1920’s, Mrs Joan Robinson and Prof Chamberlin in 1930’s to explain the behavior of imperfect competition.

Prof. Chamberlin is the main architect of the theory of Monopolistic Competition. This market exhibits the characteristics of both competition and monopoly. Since modern markets are combined and integrated with monopoly power and competitive forces they are called as Monopolistic Competition. It is a market structure in which a large number of small sellers sell differentiated products which are close, but not perfect substitutes for one another.Under this market, the products produced and sold are different, but they are close substitutes for one another. This leads to competition among different sellers. Thus, in this market situation every producer is a sort of monopolist and between such “mini-monopolists” there exists competition. It is one of most popular and realistic market situation to be found in the present day world. A number of examples may be given for this kind of market. Tooth paste, blades, motor cycles and bicycles, cigarettes, cosmetics, biscuits, soaps and detergents, shoes, ice – creams etc.

**CHARACTERISTICS OF MONOPOLISTIC COMPETITION**

1. **Existence of a large Number of firms:** Under Monopolistic competition, the number of firms producing a product will be large. The size of each firm is small. No individual firm can influence the market price. Hence, each firm will act independently without worrying about the policies followed by other firms. Each firm follows an independent price-output policy.
2. **Market is characterized by imperfections:** Imperfections may arise due to advertisements, differences in transport cost, irrational preferences of consumers, ignorance about the availability of different brands of products and prices of products etc., sellers may also have inadequate knowledge about market and prices existing at different segments of markets.
3. **Free entry and exit of firms:** Each firm produces a very close substitute for the existing brands of a product. Thus, differentiation provides ample opportunity for a firm to enter with the group or industry. On the contrary, if the firm faces the problem of product obsolescence, it may be forced to go out of the industry.
4. **Element of monopoly and competition:** Every firm enjoys some sort of monopoly power over the product it produces. But it is neither absolute nor complete because each product faces competition from rival sellers selling different brands of the product.
5. **Similar products but not identical:** Under monopolistic competition, the firm produces commodities which are similar to one another but not identical or homogenous. **For example:** toothpastes, blades, cigarettes, shoes etc.
6. **Non-price competition:** In this market, there will be competition among “Mini-monopolists” for their products and not for the price of the product. Thus, there is “product competition” rather than “price competition”.
7. **Definite preference of the consumers:** Consumers will have definite preference for particular variety or brands loyalty owing to the special features of a product produced by a particular firm.
8. **Product differentiation:** The most outstanding feature of monopolistic competition is product differentiation. Firms adopt different techniques to differentiate their products from one another. It may take mainly two forms:
9. **Real product difference:** It will arise:
10. When they are produced out of materials of higher quality, durability and strength.
11. When they are extraordinary on the basis of workmanship, higher cost of material, color, design, size, shape, style, fragrance etc.
12. When personal care is taken to produce it.
13. **Imaginary product difference:** Producers adopt different methods to differentiate their products from that of other close substitutes in the following manner:
14. Proper location of sales depots in busy and prestigious commercial centers.
15. Selling goods under different trademarks, patenting rights, different brands and packing them in attractive wrappers or containers.
16. Providing convenient Working hours to customers.
17. Home delivery of goods with no extra cost.
18. Courteous treatment to customers, quick and prompt delivery of goods in time and developing cordial, personal and friendly relations with them.
19. **Selling Costs:** All those expenses which are incurred on sales promotion of a product are called as selling costs. **According to Prof. Chamberlin**, “Selling Costs are those which are incurred by the producers (sellers) to alter the position or shape of the demand curve for a product”. In short, selling costs represents all those selling activities which are directed to persuade buyers to change their preferences so as to maximize the demand for a given commodity. Selling costs include expenses on sales depots, decoration of the shop, commission given to intermediaries, window displays, demonstrations, exhibitions, door to door canvassing, distribution of free samples, printing & distributing pamphlets, cinema slides, radio, T.V., newspaper advertisements (informative and manipulative advertisements) etc.
20. **The concept of Industry & Product Groups:** Prof. Chamberlin introduced the concept of group in place of industry. Industry in economics refers to a number of firms producing similar products. Under monopolistic competition no doubt, different firms produce similar products but they are not identical. Hence, Prof. Chamberlin has made an attempt to redefine the industry. According to him, the monopolistically competitive industry is a ‘group’ of firms producing a “closely related” commodity referred to as “product group” thus group refers to a collection of firms that produce closely related but not identical products.
21. **More elastic demand curve:** Product differentiation makes the demand curve of the firm much more elastic. It implies that a slight reduction in the price of one product assuming the price of all other products remaining constant leads to a large increase in the demand for the given product.

**PRICE – OUTPUT DETERMINATION IN SHORT RUN**

Short period is a period of time where time is inadequate to make all sorts of changes and adjustments in the productive process. The demand & cost conditions may vary substantially forcing the firm either to charge a higher or lower price leading to supernormal profits or losses. However, each firm fixes such price and produce output which maximizes its profit. The equilibrium price and output is determined at the point where Short run Marginal cost equals Marginal revenue. Thus, the first condition for Short run equilibrium is MC = MR in both diagrams.



The first diagram shows supernormal profits. In this case, price (AR) is greater than AC (cost per unit). MQ is the cost per unit and total cost for OQ output is = MQ X OQ = ONMQ. PQ is the price or revenue per unit and the total revenue for OQ output is = PQ X OQ = ORPQ. Supernormal profit =TR (ORPQ) – TC (ONMQ). Hence, NRPM is the total profit.

The second diagram shows losses. In this case, AC is greater than AR. PQ is the cost per unit and the total cost is PQ x OQ = ORPQ. MQ is the revenue per unit & the total revenue for OQ output is MQ X OQ = ONMQ.

Total losses = TC (ORPQ) - TR (ONMQ) = NRPM. Thus, in the short run, there will be place for supernormal profits or losses.

**PRICE-OUTPUT DETERMINATION IN THE LONG RUN**

Long run is a period of time where a firm will get adequate time to make any changes in the productive process or business. A firm can initiate several measures to minimize its production costs and enjoy all the benefits of large scale production.The cost conditions, as a result differ slightly in the long run. While fixing the price, a firm in the long run should consider its AC & AR.

Generally speaking in the long run a firm can earn only normal profits. If AR is greater than AC, there will be super normal profits. This leads to entry of new firms – increase in the total number of firms total production – fall in prices decline in profit ratio. On the other hand, if AC is greater than AR, there will be losses. This leads to exit of old firms decrease in the number of firms total production rise in prices – increase in profit ratio. Thus, the entry and exit of firms continue till AR becomes equal to AC. Thus, in the long run, two conditions are required for the equilibrium of the firm –

1. MR=MC and
2. AR=AC. However, it should be noted that price is greater than MR & MC.



In the diagram E is the equilibrium position where MR = MC and MC curve cuts MR curve from below. At P, AR = AC = price. It is necessary to understand that a firm under monopolistic competition in the long run also can earn supernormal normal profits. Prof. Stonier & Hague suggest that a firm can go for innovation to introduce new changes in the context of a modern competitive business. This appears to be more realistic because today almost all firms make heavy profits. Hence, it is regarded as one of the most practical forms of market situations in the present day world.

**OLIGOPOLY**

The term oligopoly is derived from two Greek words “Oligoi” means a few and ‘Poly’ means to sell. Under oligopoly, we come across a few producers specializing in the production of identical goods or differentiated goods competing with one another.The products traded by the oligopolists may be differentiated or homogeneous. In the case of former, we can give the e.g., of automobile industry where different model of cars, ambassador, fiat etc., are manufactured. Other examples are cigarettes, refrigerators, T.V. sets etc., pure or homogeneous oligopoly includes such industries as cooking and commercial gas cement, food, vegetable oils, cable wires, dry batteries, petroleum etc., In the modern industrial set up there is a strong tendency towards oligopoly market situation. To avoid the wastes of competition in case of competitive industries and to face the emergence of new substitutes in case of monopoly industries, oligopoly market is developed. **e.g.,** an electric refrigerator, automatic washing machines, radios etc.

**CHARACTERISTICS OF OLIGOPOLY**

1. **Interdependence:** Each and every firm has to be conscious of the reactions of its rivals. Since the number of firms is very few, any change in price, output, product etc., by one firm will have direct effect on the policy of other firms. Therefore, economic calculations must be made always with reference to the reactions of the rival firms, as they have a high degree of cross elasticity’s of demand for their products.
2. **Indeterminateness of the demand curve:** Under oligopoly, there will be the element of uncertainty. Firms will not know the particular factors which could affect demand. Naturally rise or fall in the demand for the product cannot be speculated. Changes that would be taking place may be contrary to the expected changes in the product curve. Thus, the demand curve for the product will be indeterminate or indefinite. **Prof. Sweezy** explains it as a kinky demand curve.
3. **Conflicting attitude of firms:** Under oligopoly, on the one hand, firms may realize the disadvantages of competition and rivalry and desire to unite together to maximize their profits. On the other hand firms guided by individualistic considerations may continuously come in clash and conflict with one another. This creates uncertainty in the market.
4. **Element of monopoly and competition:** Under oligopoly, a firm has some monopoly power over the product it produces but not on the entire market. But monopoly power enjoyed by the firm will be limited by the extent of competition.
5. **Price rigidity:** Generally, prices tend to be sticky or rigid under oligopoly. This is because of the fact that if one firm changes its price, other firms may also resort to the same technique.
6. **Aggressive or defensive marketing methods:** Firms resort to aggressive and sometimes defensive marketing methods in order to either increase their share of the market or to prevent a decline of their share in the market. If one adopts extensive advertisement and sales promotion policy it provokes others to do the same. **Prof. Boumal** rightly remarks in this connection“ Under oligopoly, advertising can become a life and death matter where a firm which fails to keep up with the advertising budget of its competitors may find its customers drifting off to rival firms”.
7. **Constant struggle:** Competition is of unique type in an oligopolistic market. Hence, competition consists of constant struggle of rivals against rivals.
8. **Lack of uniformity:** Lack of uniformity in the rise of different oligopolies is another remarkable feature.
9. **Small number of large firms:** The numbers of firms in the market are small. But the size of each firm is big. The market share of each firm is sufficiently large to dominate the market.
10. **Existence of kinked demand curve:** A kinked demand curve is said to occur when there is a sudden change in the slope of the demand curve. It explains price rigidity under oligopoly.

**PRICE-OUTPUT DETERMINATION UNDER OLIGOPOLY**

It is necessary to note that there is no one system of pricing under oligopoly market. Pricing policy followed by a firm depends on the nature of oligopoly and rivals reactions. However, we can think of three popular types of pricing under oligopoly. They are as follows:

1. **INDEPENDENT PRICING (NONCOLLUSIVE OLIGOPOLY):** When goods produced by different oligopolists are more or less similar or homogeneous in nature, there will be a tendency for the firms to fix a common pricing. A firm generally accepts the “Going price” and adjusts itself to this price. So long as the firm earns adequate profits at this price, it may not endeavor to change this price, as any effort to do so may create uncertainty. Hence, a firm follows what is called is “Acceptance Pricing” in the market. When goods produced by different firms are different in nature (differentiated oligopoly), each firm will be following an independent pricing policy as in the case of monopoly. In this case, each firm is aware of the fact that what it does would be closely watched by other oligopolists in the industry. However, due to product differentiation, each firm has some monopoly power. It is referred, to as monopoly behavior of the Oligopolist. On the contrary, it may lead to Price wars between different firms and each firm may fix price at the competitive level. A firm tends to charge prices even below their variable costs. They occur as a result of one firm cutting the prices and others following the same. It is due to cutthroat competition in oligopoly. The actual price fixed by a firm may fall in between the upper limit laid down by the monopoly price and the lower limit fixed by the competitive price. It may be similar to that of the pricing under monopolistic competition. However, independent pricing in reality leads to antagonism, friction, rivalry, infighting, pricewars etc., which may bring undesirable changes in the market. The Oligopolist may realize the harmful effects of competition and may decide to avoid all kinds of wastes. It encourages a tendency to come together. This leads to pricing under collusion. In other words independent pricing can be followed only for a short period and it cannot last for a long period of time.
2. **Pricing Under Collusion:** Collusion is just opposite of competition. The term collusion means to “play together” in economics. It means that the firms cooperate with each other in taking joint actions to keep their bargaining position stronger against the consumer. Firms give place for collusion when they join their hands in order to put an end to antagonism, uncertainty and its evils.

When the government action is responsible for bringing the firms together, there will be place for EXPLICIT COLLUSION. On the other hand, when restrictions are introduced, firms may form themselves into secret societies resulting in IMPLICIT COLLUSION. Collusion may be based on either oral or written agreements. Collusion based on oral agreement leads to the creation of what is called as “Gentleman’s Agreement “. It does not consist of any records. On the other hand, collusion based on written agreement creates what is known as CARTELS.

There are different types of cartel agreements. On the one extreme, the firms surrender all their rights to a central authority which sets prices, determine output, marketing quotas for each firm, distributes profits etc. This is called as centralized cartels. A centralized or perfect cartel is an arrangement where the firms in an industry reach an agreement which maximizes joint profits. Hence, the cartel can act as a monopolist. Since the firms in the cartel are assumed to produce homogeneous goods, the market demand for the product is the cartel’s demand. It is also assumed that the cartel management knows the demand at each possible price and also the marginal costs of all its firms, it can therefore, find out the MR and MC for the industry. The desire of the firms to have large joint profits gives impulse to form cartels. But such a desire is short lived and therefore, the formal arrangement or cartels cannot be a long term phenomenon.

Under the second type of cartel agreement, market – sharing cartel, the firms in the industry produce homogeneous products and agree upon the share each firm is going to have. Each firm sells at the same price but sells within a given region. Such a system can function only if the firms having identical costs. Market sharing model has a very restrictive assumption of identical costs for all firms. Since in practice the firms have unequal costs and every firm wants to have some degree of independent action, the market-sharing cartels are not long-lived.

**PRICE RIGIDITY AND KINKED DEMAND CURVE UNDER OLIGOPOLY**

Kinked demand curve was first used by **Prof. M. Sweezy** to explain price rigidity under oligopoly. It represents the behavior of an oligopoly firm which has no incentive either to increase or decrease its price. Each firm by its experience has learnt what will be the reactions of rivals to actions on her part and may voluntarily avoid any activity that will lead to the situation of price-war. Each firm is content with present price-output and profits and it does not want to make any change. Hence, they do not change their price-quantity combinations in response to small shifts in their cost curves.

When there are significant differences in quality, service and reputation in an industry, the price-leader himself operate in the upper quality stratum with a rich mixture of service and charges some price premium for his superiority.

After a situation of price leadership is established, it is probably maintained fully as much by the followers as by the leader. The price-leader should meet a temporary drop in price by informal concessions from the official price because frequent changes in announced prices disrupt follower’s adjustments and undermine the leader’s prestige. He changes price only when he feels that changes in demand conditions and cost is permanent.

The price-leader has an important part in forecasting the demand and cost conditions to play his role effectively, accurately and in conformity with confidence of followers.

The term ‘Kink’ refers to a short backward twist to cause obstructions. A Kinked demand curve is said to occur when there is a sudden change in the slope of the demand curve. This gives rise to a kink, that is, a sharp corner in the demand curve. It arises when it is assumed that the rivals will lower their prices when the Oligopolist lowers his own price but the rivals will not raise their prices when the Oligopolist raises his price.

Kinked demand curve analysis does not explain how price and output are determined under oligopoly rather it seeks to explain why once a price-quantity combination has been established a firm will avoid changing it, why the price becomes sticky. Hence, it provides an explanation to price rigidity under oligopoly conditions.



**Kinked Demand Curve under oligopoly**

In the diagram, P represents the firm’s original price-quantity combination.

**DUOPOLY**

Many economists are of the opinion that Duopoly is only a form of simple oligopoly. In other words, duopoly is only a limited oligopoly. Duopoly models and explanations can also be taken as oligopoly models. Duopoly is a market with two sellers exercising control over the supply of commodities.It is a two firm industry. **According to Cohen and Cyret**, “When there are exactly two sellers in the market, there is a special case of oligopoly called Duopoly”. Each seller knows whatever he does will affect his rival’s policies. Each seller attempts to make a correct guess of his rivals motives and actions. The action by one will have a reaction from the other. The two firms may either resort to competition or come together. On the one extreme, the two rivals may go in for cutthroat competition with a view of eliminating the other from the market and setting himself as a monopolist. Such a type of competition may be ruinous for both. On the other extreme, the rivals may realize that competition between them will ruin both and hence, they may fix the same price and restrict competition to advertisement only.

To illustrate duopoly model, **Edgeworth** made the following assumptions:

1. There are two firms, A and B, producing and selling a homogeneous product.
2. The firms operate with zero cost of production.
3. Each firm is guided by the objective of profit maximization.
4. Each firm demand curve is linear.
5. The whole market demand is equally divided between the two firms such that each firm’s demand curve is half of the market demand curve.
6. Each firm has limited production capacity and cannot supply market by itself.
7. Each firm assumes that its rival will keep its prices constant.

Given the above assumptions, we determine the equilibrium of firms A and B with the help of the figure given below. The figure is actually a combination of two figures with y-axis as the common axis. Firm A is facing demand curve DA shown on the right and Firm B faces demand curve DB shown on the left. The two demand curves DA and DB are of the same slope, facing identical demand of 1800 units each.



**Duopoly Model**

The total market demand is therefore 3600 units shown as NM at zero prices. Since production is costless, line NM shows marginal cost equal to zero for the both the firms. Given the limited production capacity, each firm is able to produce a maximum output of 1500 units. If each firm wants to produce at full capacity and sell the entire 1500 units, it will fix price of Rs. 3 per unit.

Firm A enters the market first and faces DA as its demand curve. It will maximize the profits by producing an output of 900 units and selling it at Rs. 9 per unit, determined where marginal revenue of firm A’s demand curve DA intersects the x-axis at E. Firm A earns total profit of Rs. 8100 i.e. 900 units @ Rs. 9 per unit.

Later the firm B enters the market and assuming that firm A will keep its price constant at Rs. 9 per unit, firm B fixes a price lower than Rs. 9 per unit, say Rs. 7.50 per unit and at this lower price sells its entire production of 1500 units. Firm B therefore captures a part of firm A market as it causes consumers of firm A to switch to firm B’s identical product but sold at a lower price. Firm B therefore earns a profit of Rs. 11,250 i.e. 1500 units @ Rs. 7.50 per unit.

Firm A reacts to this situation (assuming that firm B will keep its price constant Rs. 7.50 per unit) by lowering its price, to say Rs. 6 per unit. It therefore sells its entire production of 1500 units at Rs. 6 per unit earning a profit of Rs. 9000. The firm is therefore able to capture part of the B’s market. Firm B reacts to this by further lowering its price assuming firm A will keep its price constant. Thus the price reduction by both the firms continues until the price reaches the minimum competitive price of Rs. 3 where both firms A and B sell their entire production and each earns a profit of Rs. 4500 i.e. 1500 units @ Rs. 3 per unit. However, equilibrium is not established at this position.

It is in the interest of each firm to raise its prices and earn larger profits. Suppose firm A raises its price from Rs. 3 to Rs. 9 per unit assuming firm B keeps its prices constant. The firm will be able to sell 900 units at Rs. 9 and earn Rs. 8100 as profits (its profits increase from Rs. 4500 to Rs. 8100). Firm B finding that firm A is maximizing its profits also raises its price, but keeps its price below firm A’s price, say at Rs. 7.50 per unit. Thus price cutting will commence again till prices fall down to the competitive level of Rs. 3. The price war will start once again and keep fluctuating between the monopoly price of Rs. 9 per unit and the competitive price.

Edgeworth’s model thus shows, as given that the firm assuming that the rival firm will keep its price constant, a situation of “perpetual disequilibrium”. The prices keep fluctuating between maximum monopoly price and minimum competitive price.