# BUSINESS ECONOMICS

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*General Editor*

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# BUSINESS ECONOMICS

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# UNIT – I
# LESSON – I
# ELASTICITY OF DEMAND

## Structure

## 1.0 OBJECTIVES

After study of this unit one can be able to

- Explain the concept of elasticity of demand
- Identify different elasticities of demand
- Describe various methods of measurement of elasticity of demand

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- List of the factors determining price elasticity
- Explain the importance of price elasticity of demand.

## 1.1. INTRODUCTION

In this unit we will examine the extent to which the price of a commodity, income of the consumer and prices of other commodities exercise influence on the quantity demanded of a commodity. We will as o study the factors on which the influence on demand depends.

## 1.2 CONCEPT OF ELASTICITY OF DEMAND

The elasticity of demand is the responsiveness of a dependent variable (demand) to a given change in independent variables. (Price of a commodity, income of the consumer or price of a commodity other than the commodity the question). Elasticity of demand measures the sensitiveness of a demand in terms of a percentage or proportionate change in the independent variable. The concept of elasticity tries to quantify the relationship. There are three concepts of elasticity of demand. They are (i) price elasticity of demand, incomes elasticity of demand and cross elasticity of demand.

### 1.2.1 Price Elasticity of Demand

Price elasticity of demand measures the relative change in quantity demanded of a commodity resulting from a given (percentage or proportion) change in price. It is the relative responsiveness or sensitiveness of quantity demanded of a commodity to change in the price of the commodity. This can be expressed in a different way by stating that price elasticity of demand is the proportional or percentage change in quantity demanded of a commodity divided by the proportional or percentage change in the price of the commodity.

Let price elasticity of demand be represented by Ped where P stands for price and ed for elasticity of demand. Then

$$P_{ed} = \frac{\text{proportionate change in quantity demanded of the commodity}}{\text{Proportionate change in price of the commodity}}$$

This can be explained with the help of an example. Suppose the quantity demanded is 40 units and its gets increased to 60 units, then the proportionate change in quantity demanded

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(2)

is the new quantity demanded (60 units) minus old quantity demanded (40 units) and whatever figure of quantity demanded is left (60-40) if divided by the old figure of quantity demanded (40 units)

$$\text{This } \frac{60-40}{40} \text{ or } \frac{20}{40} \text{ or } \frac{1}{2}$$

is the proportional change in quantity demanded. Similarly proportional change in price of a commodity can be explained with the help of an example. If original price is Rs.6/- per unit and it falls to Rs.4/- then the proportional change in price is the new price Rs.4/- minus the old price Rs.6/-, divided by the original price Rs.6/-.

$$\text{Thus proportional change in price is } \frac{Rs.4 - Rs.6}{Rs.6} \text{ or } \frac{Rs.2/-}{Rs.6} \text{ or } \frac{-1}{3}$$

$$\text{Since } P_{ed} = \frac{\text{proportional change in Q.D}}{\text{proportional change in Q}}$$

$$P_{ed} = \frac{\frac{1}{2}}{\frac{1}{3}} \text{ or } \frac{1}{2} \times \frac{-3}{1} = \frac{-3}{2} \text{ or } -1.5$$

In this care price elasticity of demand is negative which indicates an inverse relationship between price and quantity demanded.

Symbols can be used to express proportional changes. Let the difference between the new quantity demanded and the old quantity demanded by represented by AD and the original demand be represented by D. Then the proportional change in quantity demanded of commodity is $\frac{\Delta D}{D}$.

Similarly the difference between the new price and the old price is $\Delta P$ and the original price is represented by P. This the proportional change in price is $\frac{\Delta P}{P}$.

If proportional change in quantity demanded of a commodity $\frac{\Delta D}{D}$

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(-3)

is divided by proportional change in price $\frac{\Delta P}{P}$

then the elasticity of demand $P_{ed}$ is.

$$P_{ed} = \frac{\frac{\Delta D}{D}}{\frac{\Delta P}{P}} \text{ or } \frac{\Delta D}{D} \times \frac{P}{\Delta P} \text{ or } \frac{\Delta D}{\Delta P} \times \frac{P}{D}$$

The figures in the examples given can be put in the formula to find out the price elasticity of demand. $\frac{\Delta D}{\Delta P} \times \frac{P}{D}$ formula is transformed to figures.

$$\frac{20}{-2} \times \frac{6}{40} \text{ or } \frac{10}{-1} \times \frac{3}{20} \text{ or } \frac{-3 \text{ or} - 1.5}{2}$$

In this care price elasticity of demand is negative. Which indicates an inverse relationship between price and quantity demanded.

### 1.2.2 Income Elasticity of Demand

Income elasticity of demand is the relative responsiveness of quantity demanded of a commodity to changes in income of the consumer demanding the commodity. It is the proportional or percentage change in quantity demanded of a commodity divided by the proportionate change in income of the consumer demanding the commodity. Symbols are used to represent income elasticity of demand $(Y_{ed})$ where Y stands for income, ed for elasticity of demand.

$$P_{ed} = \frac{\text{proportionate change in Q.D}}{\text{proportionate change in Q Income}}$$

$$= \frac{\frac{\Delta D}{D}}{\frac{\Delta Y}{Y}} = \frac{\Delta D}{D} \times \frac{Y}{\Delta Y} = \frac{\Delta D}{\Delta Y} \times \frac{Y}{D}$$

**NOTES**

( 4 )

AY is the change in income of the consumer Y is the original income, ΔD is the change in quantity demanded, D is the original demand.

Income elasticity of demand can be illustrated with the help of numerical examples.

| Illustration – 1 | | Illustration – 2 | |
|---|---|---|---|
| Income in Rs. | Quantity demanded | Income in Rs. | Quantity demanded |
| 1000 | 40 | 1000 | 42 |
| 1020 | 42 | 1020 | 40 |

Income elasticity measured from the 1st illustration

$$Y_{ed} = \frac{\Delta D}{\Delta Y} \times \frac{Y}{D} = \frac{2}{20} \times \frac{1000}{40}$$

$$= \frac{1}{10} \times \frac{25}{1} = +2.5$$

Since the relationship between Q.D and income is direct the result is positive

Income elasticity measured from 2nd illustration.

$$Y_{ed} = \frac{\Delta D}{\Delta Y} \times \frac{Y}{D} = \frac{-2}{20} \times \frac{1000}{42}$$

$$= \frac{-1}{10} \times \frac{500}{21} = \frac{-50}{21} = -2.38$$

Since the relationship is inverse the result is negative.

In case where is direct relationship between the quantity demanded of a commodit and the income of the consumer the commodity is considered as a normal commodity. I case where there is inverse relationship the commodity is considered as a inferior commodity

## 1.2.3 Price Cross Elasticity of Demand

Price cross elasticity of demand is the relative responsiveness of quantity demanded of a given commodity. It is the proportional or percentage change in the quantity demanded of a commodity as x divided by the percentage change in the price of related commodity say Y. Symbolically :-

$$C_{ed} = \frac{\text{Proportional change in quantity demanded of commodity X}}{\text{Proportionate change in price of Y}}$$

NOTES

C stands for price cross and ed for elasticity of demand. Formula is : -

$$Ped = \frac{\frac{\Delta Dx}{Dx}}{\frac{\Delta Py}{Py}} = \frac{\Delta Dx}{Dx} . \frac{Py}{\Delta Py} = \frac{\Delta Dx}{\Delta Py} . \frac{Py}{Dx}$$

Where $\Delta Dx$ is the change is quantity demanded of commodity X, $\Delta Py$ is the change is price of commodity Y, Py is the original price of commodity Y and Dx is the original demand of commodity X

Price cross elasticity of demand can be illustrated with the help of a numerical example.

| Price of sugar (kg) in Rs. | Quantity demanded of Molanes (kg) |
|---|---|
| 20 | 200 |
| 19 | 150 |

The change in quantity demanded of molanes is 150 – 200 = - 50, the change in price of sugar is 19 – 20 = - 1, original quantity demanded of molanes is 200 kg and the original price of sugar is Rs.20/-. Thus price cross elasticity of demand ($C_{ed}$) is $C_{ed}$ = x Where X is molanes and Y is sugar.

$$\frac{-50}{-1} \times \frac{20}{200}$$

The Co-efficient of price cross elasticity of demand is positive where the co-efficient of price cross elasticity of demand in positive, it is a case of what is called substitutes, in case of complements the price cross elasticity of demand is negative.

**1.3 Measurement of price elasticity of demand**

There are number of methods to measure price elasticity of demand.

1. Point Method : This method is already discussed in 1.2.1

2. Outlay Method : This method is only help us to distinguish three situations.

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or

(I)     Whether the price elasticity of demand is more than one or more than unity

(ii)    Whether it is equal to one or unit

(iii)   Whether it is less than one or unity.

Through numerical examples we can illustrate the three situations.

Illustration – I

| Price is Rs. | Quantity demanded in units | Total outlay or expenditure |
|---|---|---|
| 5 | 20 | 100 |
| 4 | 25 | 100 |

Illustration – II

Price in Rs.

| | | |
|---|---|---|
| 5 | 20 | 100 |
| 4 | 22 | 88 |

Illustration - III

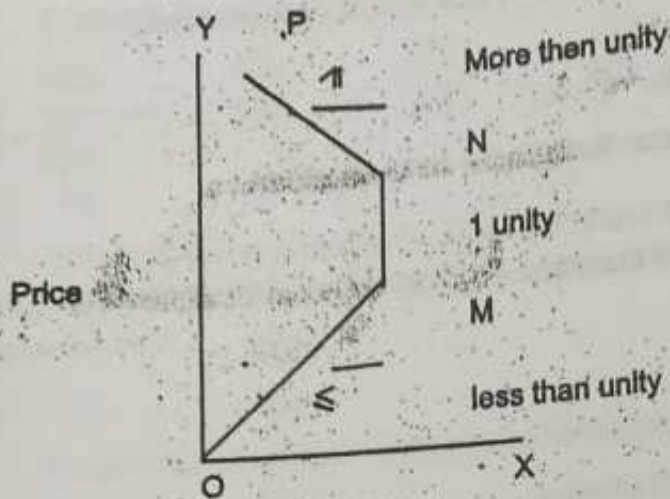| | | |
|---|---|---|
| 5 | 20 | 100 |
| 4 | 30 | 120 |

Elasticity of demand is said to be equal to unity or one when total outlay remains the same irrespective of a change in price.

Elasticity of demand is said to be less than one or unity when fall in price reduces the total outlay and vice versa.

Elasticity of demand is said to be more than one or unity when fall in price leads to an increase in total outlay and vice versa.

This total outlay method is explained with the help of diagram. On the x axis outlay is measured on Y axis the price of the commodity is measured. From O to M we have case of less than unity between M to N the price elasticity of demand is unity. Between N to P the price elasticity of demand is more than unity.

**NOTES**

The figure shows Price on Y axis and X axis, with points P, N (1 unity), M. Labels: "More then unity", "1 unity", "less than unity"

3    Geometrical Method : This method is explained with the help of a diagram. On the X axis quantity demanded of the commodity is measured and on the Y axis price of the commodity is measured. DD is the demand curve To find price elasticity of demand at point P is the demanded curve. We are to draw a tangent to the point P which cuts X axis at L and Y axis at M. The price elasticity of demand is given by $\dfrac{LP}{PM}$ or

The lower segment
   Upper sEgment

If P happens to be the middle point of L and M, the price elasticity of demand is equal to unity. If P happens to be nearer to L than M, than LP will be less then PM and hence elasticity of demand is less than unity. If P happens to be nearer to M than L then MP will be less than LP and elasticity of demand is more than unity. (Figure 1.3).
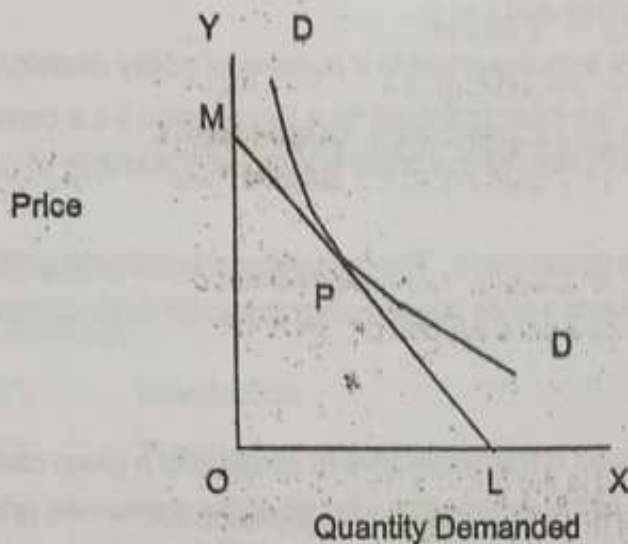
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Figure 1.3

## 1.4 Determinants of price elasticity of demand

There are a number of factors on which the price elasticity of commodity depends. Some of the important factors effecting price elasticity of demand are discussed below –

1.  Nature of the commodity : If the commodity happens to be necessity, price elasticity of demand will be less. In case of comforts it is more elastic is regards luxuries elasticity in less.

2.  Number of substitutes : Commodities with few and poor substitutes rice, salt, for example, will always tend to have low price elasticity of demand commodities with many substitutes will have relatively high price elasticity of demand.

3.  Number of use of a commodity : The greater the number of possible uses of a commodity, the greater its price elasticity of demand will be. Thus demand for coal which can be used for various purposes i.e. power generation, domestic purposes and industrial purposes – will have higher price elasticity of demand.

4.  Price of a commodity : A commodity like match box which has a very low price will have less elasticity of demand.

**NOTES**

**1.5    Importance of price elasticity of demand**

The price elasticity of demand is very important in a number of policy decisions.

1.    Price fixation by a monopolist : The monopolist will fix a higher price for a commodity if its demand is less elastic. Lower price fixation policy is adopted if elasticity of demand for the commodity is more.

2.    Price support programme of the government : The government in order to protect the interest of the farmers can announce a price support programme for such commodities less elastic demand.

**1.6    Let us sum Up**

The concept of elasticity of demand is the responsive of demand to a given change in an independent variable such as price of the commodity, income of the consumer, price of a commodity related to the commodity in question. Normally the co-efficient of price elasticity of demand is negative. But the co-efficient of income and price cross elasticity of demand may be positive or negative.

Price elasticity of demand can be measured by the point method outlay method and geometrical method. The concept of price elasticity of demand can be put to a number of uses.

**1.7    Key Words**

Rectangular hyperbola. It is a curve in which any rectangular drawn has the same area.

**1.8    Questions**

No.-1 What are the main determinants of price elasticity of demand ?

No.-2 Explain some uses of the concept of price elasticity of demand.

**1.9    Reference**

1.    Ahuja H.L 1986. Analysis of economic systems aud Micro economic theory. S. Chand aud Co New Delhi.

2.    Stanier aud Hague "A Text Book of Economic Theory ELBS Edition London.

3.    Economic theory, IGNOU School of Management Studies.

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**NOTES**

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# UNIT – II
# LESSON – 2
# THE LAWS OF RETURNS TO SCALE

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2.0   OBJECTIVES

After studding the lesson one should be able to

(a)   Explain the laws of returns to scale

(b)   Describe an isoquant and isocort curve.

(c)   Identify least cost combination of factors.

(d)   Outline the relation between isoquants and returns to scale.

## II,2.1 INTRODUCTION

In this lesson we will learn the nature of laws of returns to scale where all the factors are increased in a given proportion. We shall discuss how a producing firm decides about the least cost combination of factors.

## II.2.2 THE LAWS OF RETURNS TO SCALE

The long-run production theory which is another name to the laws of returns to scale is an attempt to study the changes in output as consequence of changes in the scale. More precisely the laws of returns to scale explain on how a simultaneous and proportionate increase in all the inputs affects to the total output at its various level.

## II.2.2 STATEMENT OF THE LAWS OF RETURNS TO SCALE

When a producing unit increases all its inputs proportionately, technically, there are three possibilities, i.e., the total output may increase proportionately, more than proportionately, or less than proportionately. Accordingly, we have three laws of returns to scale which are as follows —

(a)   Constant returns to scale : If increase in the total output is proportional to increase in inputs, it means a situation of constant returns to scale. If input increases by 100% and

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the total output increases by 100%, then it implies existence of constant returns to scale.

(b) Increasing returns to scale : If a producing unit increases its inputs by X% and the total output increases by more than X%, then it implies the existence of increasing returns to scale.

(c) If increase in output is less than proportionate to increase in outputs it means that a situation of diminishing returns to scale is exists.

## II.2.2.2 PRODUCTION FUNCTION AND RETURNS TO SCALE

The production function can be expressed as QX=f (K.L.)

Where QX denotes quantity of commodity. X, K. stands for capital and 1 for labour employed. Let us assume K.L increased in the same proportion say P. It is quite likely that if all the inputs are increased in proportion say P, the total output may not increase in P proportion. Suppose we represent the proportion by which output rises by h then production function may be expressed as

hQX=f (PK, PL)

Where h denotes the h-time increase is QX as a result of P-time increase in inputs, K. and L. The proportion of h may be equal to, greater than, or less than P. Accordingly, it brings out three laws of returns to scales.

(i)   If h = P, the production function reveals constant returns to scale.

(ii)  If h is greater than (h>P) The production function revels increasing returns to scale.

(iii) If h is <P, the production function reveals diminishing P returns to scale.

## II.2.3 ISOQUANTS AND ISOCOSTS

## II.2.3. 1ISOQUANTS

An isoquant is a curve on which the various combinations of two factors say labor and capital give us the same level of output per unit of time. Table - II.2.3.1 below shows hypothetical isoquant schedule of a firm producing 100 units of a commodity.

Combination Labour input Capital input Total output

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| | | | |
|---|---|---|---|
| a | 5 | 9 | 100 |
| b | 10 | 6 | 100 |
| c | 15 | 4 | 100 |
| d | 20 | 3 | 100 |

The table has been represented in the diagram. Labour units are measured along the X axis and capital units on the Y axis. Points a, b, c, d represent different combinations of labour and capital yielding same output. If we join points a, b, c, d we get a curve known as an isoquant.

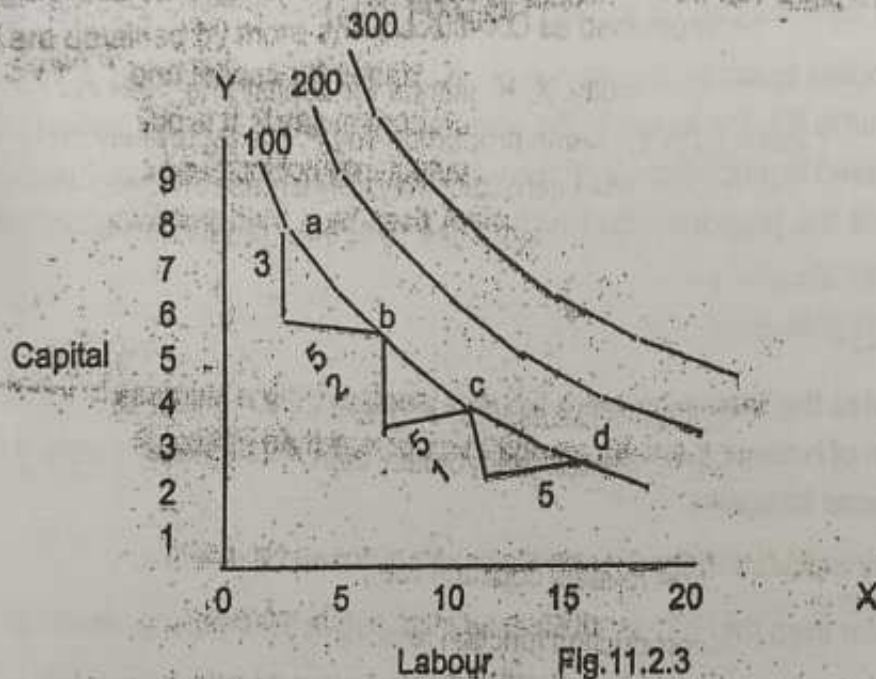A number of isoqunts representing different amounts of output are known as isoquant map.



Fig. 11.2.3

## II.2.3.2 MARGINAL RATE OF TECHNICAL SUBSTITUTION

The movement along an isoquant indicates substitution of one factor to another. Movement from point a to b means that 5 units of labour is substituted for 3 units of capital or the rate at which one factor can substitute another is called marginal rate of technical substitution. In general terms, marginal rate of technical substitution of labour for capital may be defined as the amount of capital which can be replaced by one unit of labour, the level of

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(14)⁰

output remains the same.

It is worth noting that marginal rate of technical substitution of labour for capital keeps falling as we move along an isoquant from a to d. The rate at which the marginal rate of technical substitution diminishes, when we move along an isoquant from left to right, is a measure of the extent to which the two factors can be substituted for each other.

## II.2.3.3 PROPERTIES OF AN ISOQUANT

(a) An isoquant slopes downwards from left to the right or it has a negative slope. This is so because when the quantity of one input is increased, the quantity of the other input must be reduced so as to keep total output constant.

(b) Two isoquants cannot intersect each other. If they do intersect it will mean that at interaction point a given combination of two inputs will give two different levels of output. But this is quite absurd.

(c) An isoquant is convex to the origin. The convexity of an isoquant is due to the diminishing marginal rate of technical substitution. The diminishing marginal technical substitution occurs, due to the fact that different factors are imperfect substitutes of each other in the production of a commodity.

## II.2.3.4 ISOCOSTS

The prices of factors are represented by an isocost line. The knowledge of isocost line is important in determining what combination of factors a producing unit will choose to produce a given level of output. An isocost line shows various combinations of two factors or inputs which a producing unit can buy with a given money or budget. This line is shown in figure II.2.3.4



Fig. II.2.3.4
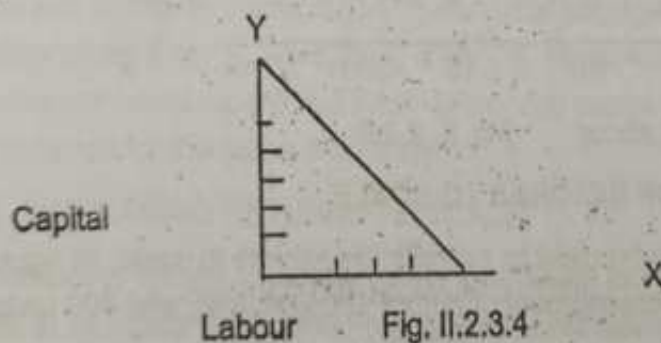
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Thus, an isocost line depends upon two things

(I) Prices of the factors of production, and

(II) The total outlay which a producing unit has to make on the factors.

## II.2.3.5 LEAST COST COMBINATION OF FACTORS

Given isoquant map, by representing the technical conditions of production and iscost map, representing various levels of outlay (given the prices of labour and capital) we can get a producer's equilibrium in regard to choice of inputs. The equilibrium of the producer is represented at point P in the figure II2.3.5 at which 10 units of labour and 2.5 units of capital are employed to get a level of out put Q1.

The level of output QI can be produced by any factor combination such as P, P1, P2 lying on the isoquant Q1. The total cost will be minimum at point P at which the isocost line MN is tangent to the isoquant re-presenting Q1 output. At no there point, the cost is minimum. So it is clear that tangency point of the given isoquant with an isocost line gives us the least cost combination of factos for producing a given output Q1.



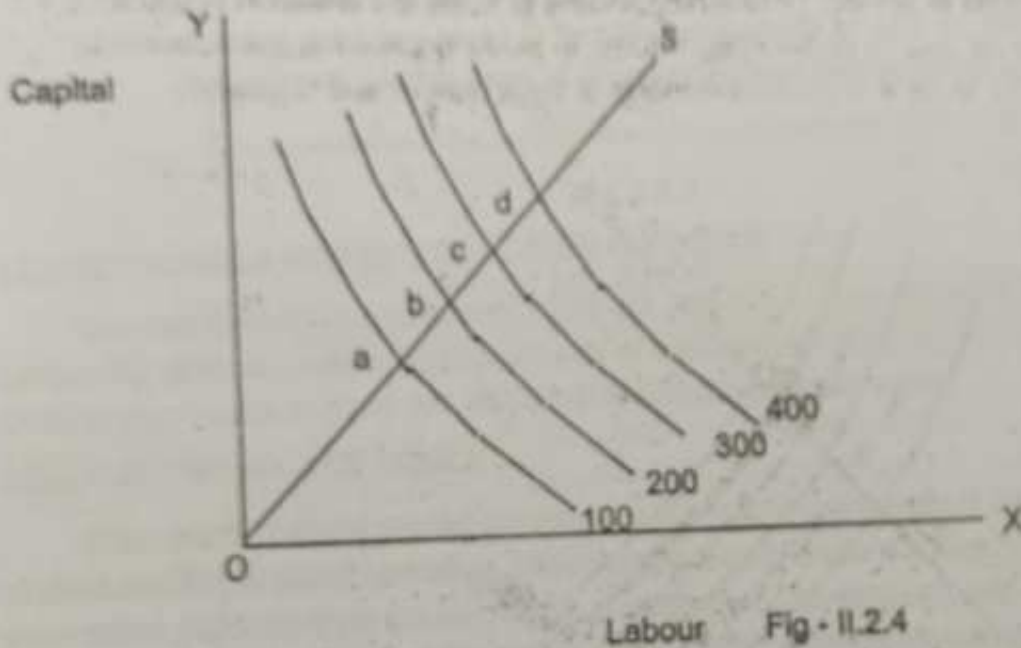Fig. II. 2.3.5
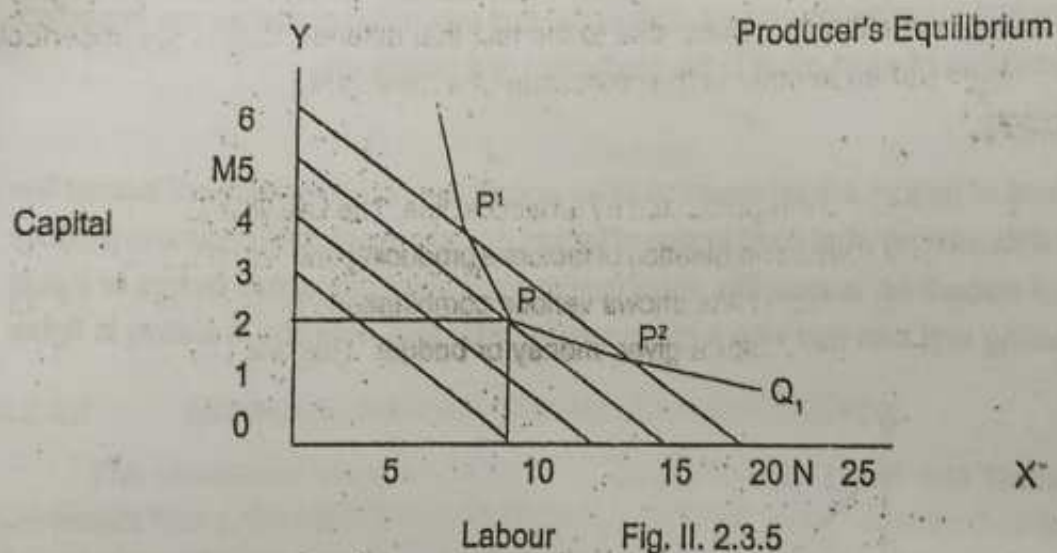
## II.2.4 ISOQUANTS AND LAWS OF RETURNS TO SCALE

The concept of isoquants can be used to express the returns to scale. In figure II2.4 four isoquants have been drawn showing level of output 100,200, 300, and 400 units. Line

**NOTES**

OS has been drawn passing through the origin O. As we move along OS, the in puts of labour and capital vary. But since OS line passes through the origin, the ratio between labour and capital remains the same through out, thought absolute amounts of labour and capital keep rising.

## II.2.4.1 CONSTANT RETURNS TO SCALE

Returns to scale are constant if output increases in the same proportion as the increase in all factors. Constant Returns to scale are shown with the help of isoquants.



Labour    Fig - II.2.4

Four isoquants representing output 100, 200, 300, 400 units are shown by taking labour in X axis and capital in Y axis. It can be seen that successive isoquants are equidistant from each toher along a ray S. Thus along a ray OS, ab=bc=cd. The same distance between the successive isoquants means that if both labour and capital are increased in a given proportion, output expands by the same proportion.

## II.2.4.2 INCREASING RETURNS TO SCALE

Increasing returns to scale means that output increases in a greater proportion than increase in all inputs or factors. Four Isoquants representing output 100,200,300,400 units

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are drawn by taking labour an X axis and capital an Y axis. The ray OS drawn from the origin. It can be seen that the successive isoquants lie at decreasing smaller distances along the ray OS. We notice that bc<ab, cd is < than bc. (Fig. II2.4.2). We regard this as a case of increasing returns to scale because equal increases in output are obtained by smaller and smaller increments inputs 9Labour in a capital)

## II.2.4.3 DIMINISHING RETURNS TO SCALE

When output increases in a smaller proportion than the increase in all inputs, diminishing returns to scale are said to prevail. Diminishing returns to scale are shown in figure II2.4. We regard this care as one of diminishing returns to scale because equal incremer output are obtained by more and more increments in input (labour and Capital).
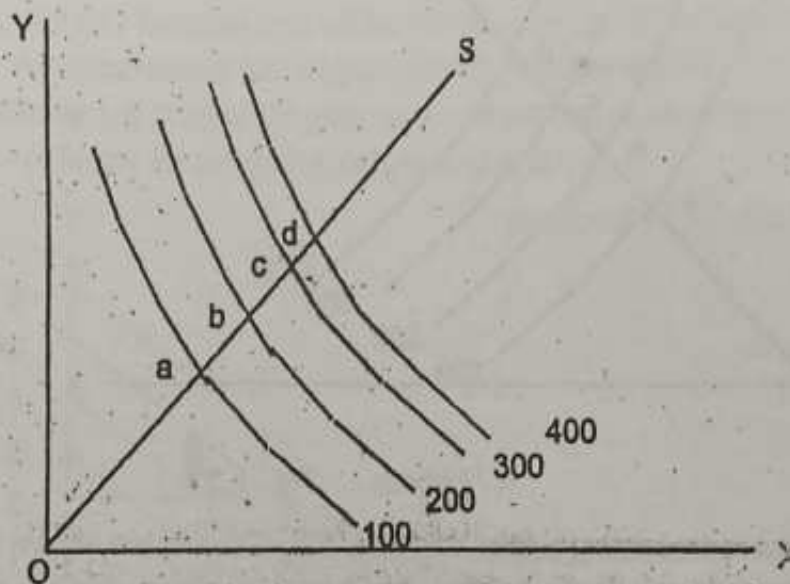


Fig. II.2.4.2

When a producing firm starts production in the long-run or it's scale increases, first it witnesses increasing returns to scale, then a phase of constant returns and beyond a point eventually as the firm continues its expansion, decreasing returns sets in.
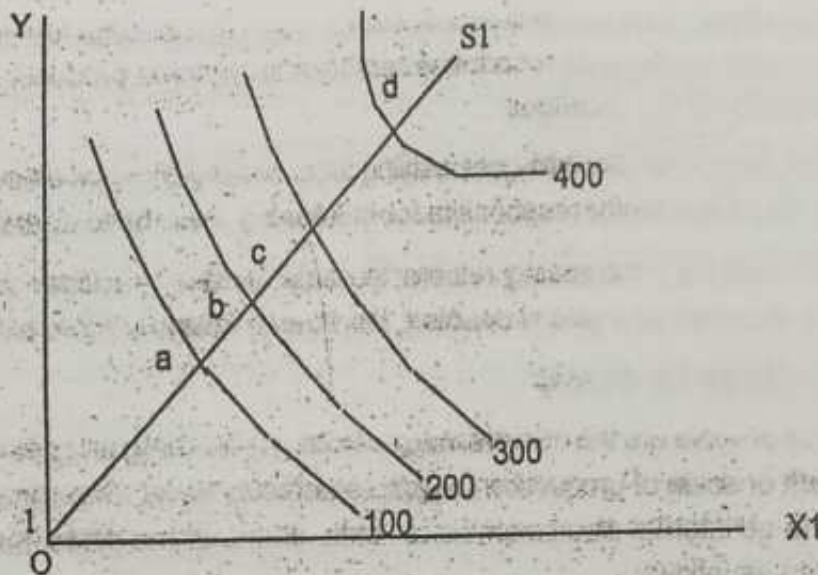
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Fig. 2.4.3

## II.2.5 ECONOMIES AND DISECONOMIES OF SCALE

The existence of economies of scale are said to be responsible for the emergence of increasing returns to scale. But economies of scale cannot continue indefinitely thereby the diminishing returns to scale are attributed to diseconomies of scale.

## II.2.5.1 ECONOMIES OF SCALE

Economies of scale are the advantages of producing unit enjoys by expanding the size of plant and the scale of operation. These economies of scale are also referred to as internal economies because they are peculiar to a particular producing unit and are enjoyed by it by expansion of its own scale of production. Some of the economies are given as follows.

(a) Higher degree of specialization and division of labour. As scale of production expands higher degree of specialization of both machine and labour becomes possible. Their cumulative effects contribute to increasing returns to scale.

(b) Technical indivisibilities – Because of indivisibility of mechanical equipment thay have to be employed in less than optimum capacity even if scale of production is relatively small. Therefore, when scale of production is increased by increasing all inputs, productivity of indivisible factor increases considerably and thus in turn results in increasing returns to scale.

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(c)   Marginal Economies : Like specialized machines, managerial skills are also indivisible. The extent to which managerial economies can be enjoyed by a producing unit depends upon the efficiency of the manager.

(d)   Superior machinery : The possibility, of installing technologically more efficient machinery is an equally important factor responsible for increasing returns to operate.

(e)   Dimensional relations : Increasing returns to scale is also a matter of dimensional relations, If a diameter of a pipe is doubled, the flow of water is more than doubled.

### II.2.5.2  DISECONOMIES OF SCALE

Diseconomies of scale are the disadvantages which a producing unit gets by expanding the size of the plant or scale of production beyond a particular level. Diseconomies of scale are also referred to as internal diseconomies of scale. Some of the diseconomies of scale can be enumerated as follows :

(a)   Limitation to efficient management. As the scale of plant expands beyond a particular point, top management is forced to delegate responsibility and authority to lower management. This leads to loosening of control and thus efficiency of operation begins to decline.

(b)   Limited uses of natural resources. Doubling the fishing fleet may not double the fish output because the availability of fish may decrease when fishing is carried out on an increasing scale.

### II.2.6 LET US SUM UP

The long-run production theory is concerned with input output relationship under the condition that all the inputs or factors are variable factors. The laws of returns to scale take three forms (i) constant returns to scale (ii) increasing returns to scale and (iii) Diminishing returns to scale.

An isoquant is a curve on which the various combinations of two factors say labour and capital give us the same level of output per unit of time.

Given an isoquant and a map of isocost a producer can findout that combination of factors which will minimize his total cost of production such that total profits get maximized. The laws of returns to scale can be represented with the help of isoquants.

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## II.2.7 KEYWORDS

(a) Isoquants : Curve on which the various combinations of two factos give the same output.

(b) Isocost line : Various combinations of two factors which can be bought with a given money or budget.

(c) Returns to scale. A simultaneous and proportionate increase in all the inputs affecting the total output.

(d) Technical indivisibility : A factor which cannot be divided into small units as one likes.

## II.2.8 MODEL QUESTIONS

(1) Explain return to scale with the help of production function.

(2) Distinguish between increasing and diminishing returns to scale with the help of isoquants.

(3) Explain with the help of isoqunat and isocost the least cost combination of factors to achieve a given level of output.

(4) What is meant by economies of scale ? How do they explain increasing returns to scale?

(5) What are the properties of isoquants ?

## II.2.9 References

Same as referred earlier.

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# UNIT – III
## LESSON –1
## PERFECT COMPETITION

**Structure**

**III.1.0    Objective**

A systematic study of this unit will enable us to

a)  Define P.C

b)  Explain how price is determined under p.c

c)  Explain the equilibrium of the firm in the short-run + long run

**NOTES** Introduction

A firm's objective is to maximize profits or to reach the equilibrium position. It is very interesting to study how a firm under perfectly competitive condition reaches equilibrium both in the short-run and long-run.

### III.1.2 Meaning of P.C

Perfect competition among sellers is said to exist when certain pre-requisite characteristics are present.

### III.1.2.1 Characteristics

(a) Very large number of buyers and tellers no individual buyer or seller influence the price. The punition is just like a drop in the ocean.

**Homogeneous Product**

The product of all the firms are identical in each and every respect. It is homogeneous.

**Perfect Knowledge**

In such a market the buyers and sellers have perfect knowledge of the market.

**Free entry and free exit**

In such a market there is complete freedom for the entry of new firms the market and exit of existing firms from the market. This condition applies for the long-run only.

**Divisibility of the factors of production**

In a perfect competitive market all the factors of production are perfectly divisible into small homogeneous units. A firm can vary its output.

### III.1.2.2 Implications of the characteristics

The characteristics of perfect competitive market imply for a single producer that –

(a) He can sell any number of units of output within his capacity at one and the same price. He has no influence on price of the product which in determined y the forces of market demand and market supply.

(b) If he attempts to charge more than the market price he will loose all his customers and he will not charge on lower price because he can sell any quantity at the given price

(c) A firm can earn normal profit in the long-run.

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## III.1.3 Prince Determination under Perfect Competition

Price of a product in a perfectly competitive market is determined for the market as a whole by the forces of market demand and market supply. This can be explained through the help of a market demand and supply schedule.

| Q.S | Price | Q.O |
|---|---|---|
| 70 | 12 | 30 |
| 60 | 11 | 40 |
| 50 | 10 | 50 |
| 40 | 9 | 60 |
| 30 | 8 | 70 |

The schedule explains that equilibrium can be established (between demand and supply) at Rs.10/- and at any price other than Rs.10 no equilibrium can be attended.

The schedule can be diagrammatically be represented as follows :

## Diagramatic Representation

X axis measures the quantity (demanded and supplied) and Y axis measure the price. DD' is the market demand curve which shows the market demand for the prduct at different prices. SS is the market supply curve which shows the market supply (supply of all firms together) at different prices. At price market demand and market supply are equal and this is the price that will prevail in the market this is called the market price or equilibrium price. Once this price is determined by the forces and market demand and market supply this becomes the price or an individual seller who can sell his output at this price and cannot change this price.
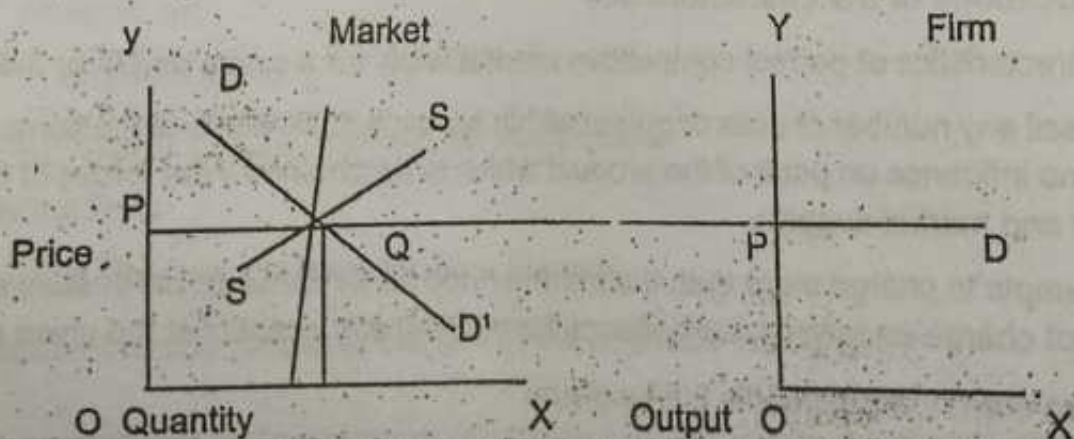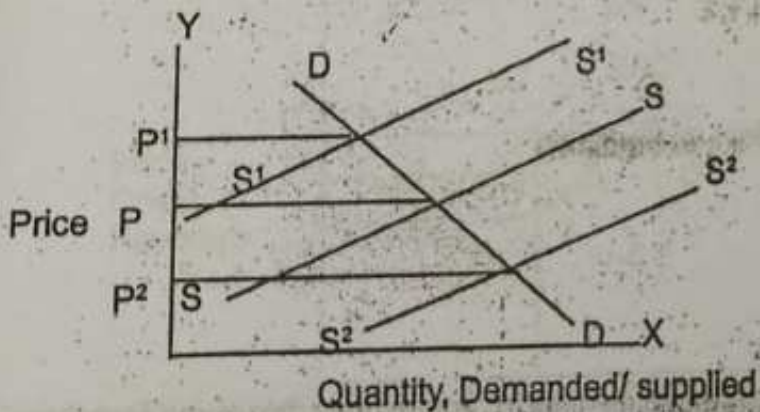


NOTES

Price determination under perfect competition.

However, it does not mean that equilibrium price can never change. Changes occur. If market demand increases i.e. DD curve shifts upward then equilibrium price will rise and a decrease in demand or downward shift in DD curve will reduce the market price. The new market price will then be the given price for the individual producer. This is shown in the figure III.1.2.2, similarly if the market supply decreases (SS curve shifting downwards or market supply falls (SS curve shifting, upwards) then the equilibrium price will fall. This is shown in the diagram:
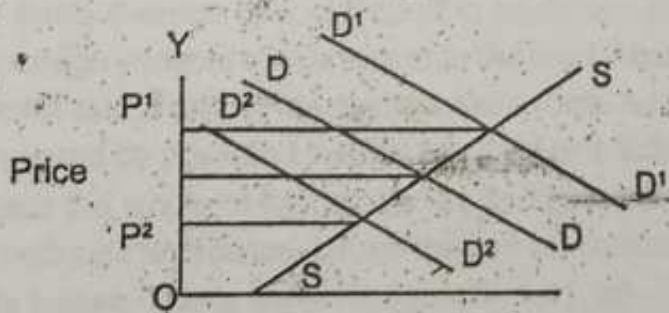


Quantiry Fig. III 1:2.2  X

Increase or decrease in market demand and its effects on prices.



Quantity, Demanded/ supplied

Increase or decrease in market supply and it effect on price

NOTES

(25)

### III.1.4 Equilibrium of the firm

The price for firm under perfect competition is given. The firm has no role in determining this price, nor it can change this price. The individual firm has to decide how much to produce so that it's profits may be maximum. In other words the firm has to achieve an equilibrium level of output.

Price is the same as average revenue (AR). So AR is constant at all levels of output of a firm. When AR is constant MR is equal to AR. So under perfect competition a firm's AR curve is a horizontal straight line parallel to X axis. MR curve coincides with it. This is shown in figure III.1.4
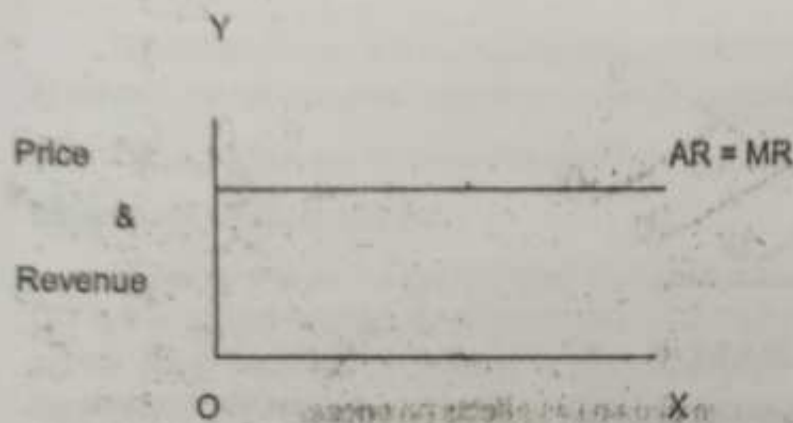


Quantity (output) Fig. III.1.4.

Demand curve of a firm under perfect competition.

**Conditions of equilibrium :**

   (a)  MC must be equal to MR

   (b)  MC must cut MR from below.

The equality of MC and MR does determine the level of output that a firm should produce. The study of equilibrium of a firm can be comprehensive if we study equilibrium for short-run and for long-run.

**NOTES**

### III.1.4.1 Short-run Equilibrium

In the short-run there are three possibilities.

(a)  If the firms average cost (AFC + AVS) of production of equilibrium output is less then the price then the firm would be earning super normal profits and is placed in the most advantageous situation. This is shown in figure III 1.4.1 (a)

(b)  If the firms average cost of producing equilibrium output is just equal to the price at which this output can be sold, then the firm would earn only normal profit as normal profit is a part of cost of production. This is shown in figure III. 1.4.1 (b)

(c)  If firm's average cost of producing equilibrium output is greater than the price but the average variable cost is less than the price. Then the price cover the average variable costs and a part of the average fixed costs. A part of the average fixed cost is not be covered by price and the firm has to bear it. It the firm closes down then it will have to bear the whole of fixed costs. So its losses will be more than the losses it incurs if it continues to produce. Hence the firm will continue producing the product as it reduces its losses. This is shown in figure III. 1.41. (c)
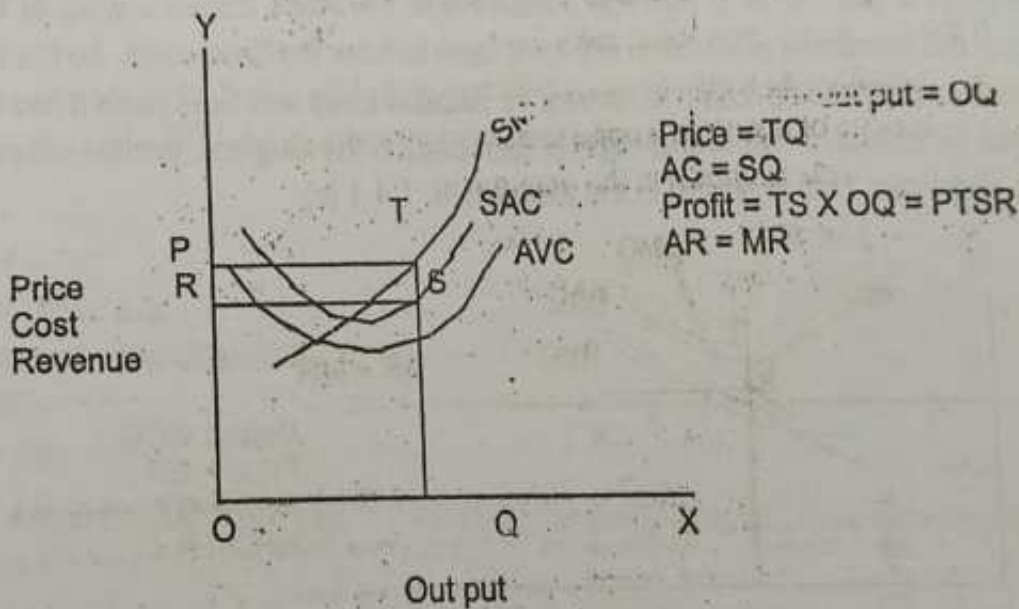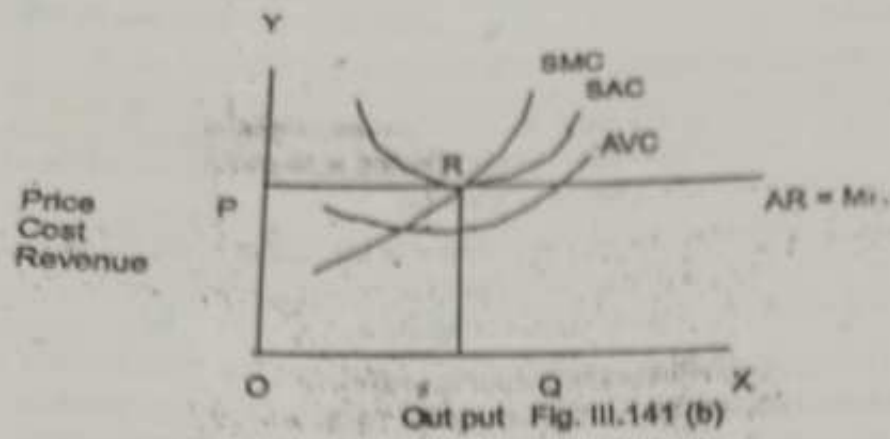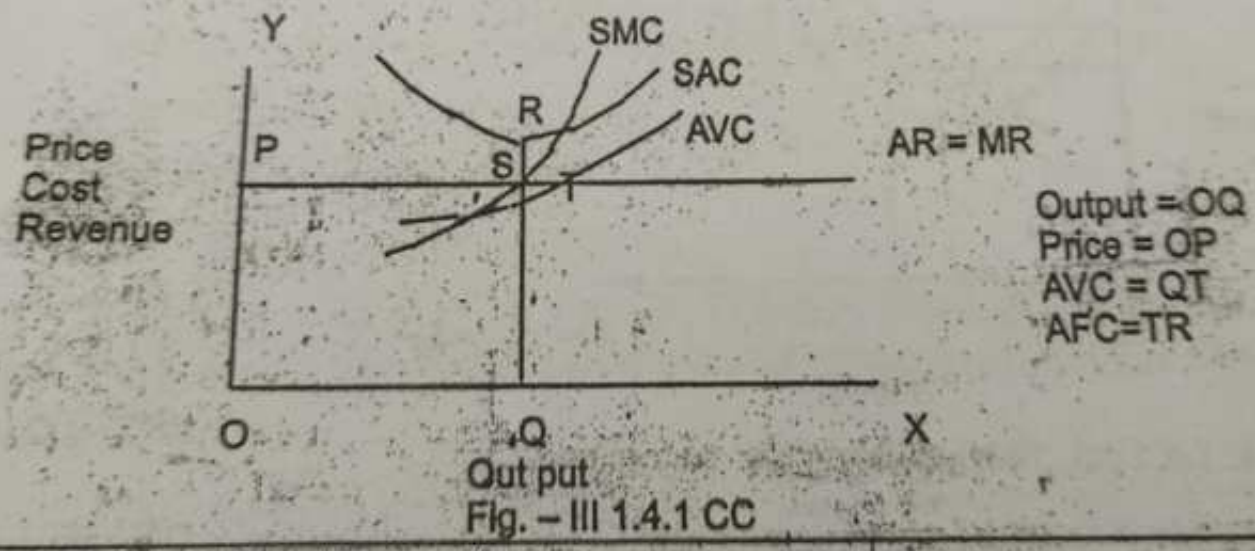


put = OQ
Price = TQ
AC = SQ
Profit = TS X OQ = PTSR
AR = MR

Figure III, 1.4.1 (a)  Firm earning super-normal profits.

### NOTES

Out put   Fig. III.141 (b)

Output = OQ
Price = OP or RQ
AC = RQ
Price = OP
Profit = Normal

(d) If the price is just equal to average variable cost the firm's losses are equal to fixed costs. If the firm stops production still it will have to incur the fixed costs. So the firm will continue to produce as it able to recover its variable costs and fixed costs it has to bear whether produces or not. With a hope to earn profit in the long-run, the firm will produce in the short-run. This is shown in the diagram III. 1.4.1 (c).



Output = OQ
Price = OP
AVC = QT
AFC=TR

Out put
Fig. – III 1.4.1 CC

**NOTES**

RS is that part of the AFC which the firm is not able to cover. Firm covering only a part of fixed cost.

(e) If price is less than the average variable cost then the firms' losses are equal to the fixed costs plus a part of variable costs. This means that if the firm remains in production, it will increase its losses because it is not able to cover even the variable costs. It can minimize its losses by not producing. This is shown in figure III. 1.4.1 (e). The figure III. 1.4.1 (d) shows that the firm will continue to produce as it is able to get back the variable costs. But if price falls below that the firm will shut down.
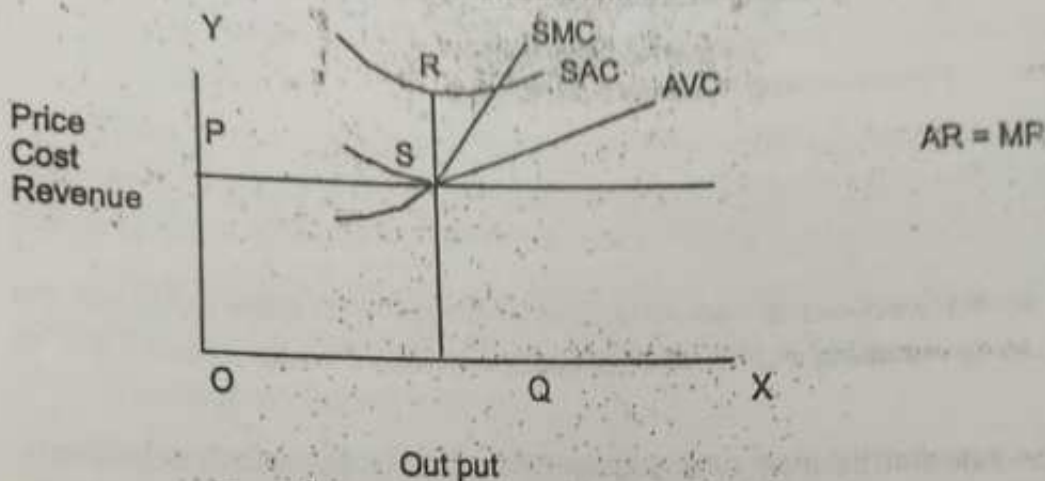


Fig. III. 1.4.1(d) Firm covering only variable cost.

Out put = OQ

Price = OP or SQ
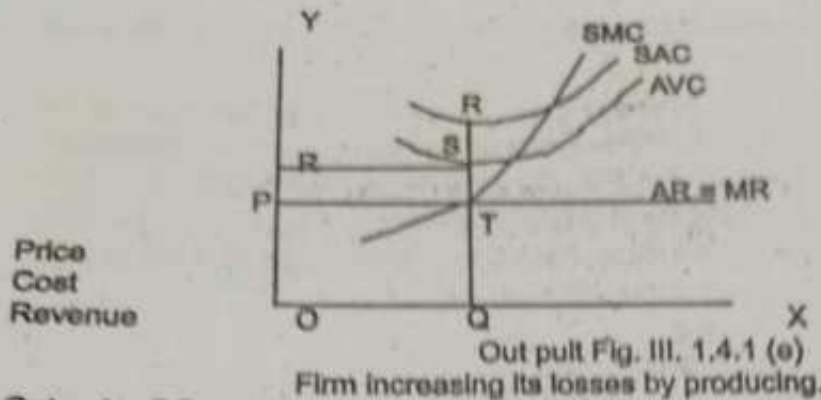
AVC of producing OQ = SQ

AC = QR

AFC = RS

Since price SQ is equal to AVC (SQ) the firm is not able to cover any part of its fixed cost.

Minimization of losses by not producing of the price is less than AVC. This can be explained by the figure III. 1.4.1 (e)

NOTES

Out pult Fig. III. 1.4.1 (e)
Firm increasing its losses by producing.

Out put = OQ
Price = OP
AVC = SQ
AC= RQ
AFC = RS

Likewise the firm produces its loss would be equal to fixed costs and a part of varl ble costs. (KSTP). So by remaining in production its losses are more than the losses if it si no production.

We can conclude that the short-run equilibrium of the firm, under perfect competition, not a particular situation but a range of all situations in which the price is at least equal to the average variable cost.

## III.1.4.2   Long-run

In the long-run, the firm has the oppu... all costs are variable in the long-run. In the long-run a firm must recover the entire long-run average cast lest it should quit the industry.

An important characteristics of long period peculiar to perfect competition, is that there is freedom of entry to firms into industry. New firms enter an industry when there are prospects of super normal profits. Their entry raises the output of the industry and has adverse effect on price. The price continues to fall till all the firms are earning just normal profits. Firms leave the industry when they are facing losses. Their exit reduces the output of the industry

**NOTES**

( 30 )

and lead to rise in price till all the firms are earning at least the normal profits. So in perfect competition, in the long-run, a firm earns neither supernormal profits nor losses but just normal profit. In this situation long-run average cost is equal to average revenue.

**Conditions of Equilibrium :**

To be in equilibrium in the long-run conditions must be fulfilled.

1. Price must be at least equal to or greater than average total cost.

2. Marginal cost = marginal revenue

3. Marginal cost must be greater than marginal revenue beyond the MC = MR output level.

These three conditions are fulfilled at point E where LAC curve is tangent to the AR curve at its minimum point. This tangency is peculiar to perfect competition and implies that AR = AC at the equilibrium out put level. At equilibrium MC = MR = AR = AC

The equality between AR and AC in perfect competition in the long-run leads to an interesting, result. The result in derived in the following manner.

We are given that AR = MR (a)

At equilibrium MC = MR (condition) (b)

And AC=AR (outcome) (c)

From (a) (b) and (c) we find that MC=MR = AR = AC.

This equality is peculiar to perfect competition that too in case of long-run equilibrium of a firm only.

### III.1.5 Let us sum up

Perfect competition is a market structure having certain characteristics. No single firm can influence the price. The price is determined for the market as a whole and this price is given price for a firm.

A firm will produce that level of output at which MC=MR and this equality must be achieved during the missing phase of MC curve. This level is known as the equilibrium level

**NOTES**

of output. In the short-run another condition of equilibrium of the firm is that AR (price) must be atleast be equal to AVC, i.e. price = AR\ AVC. In the long-run the second equilibrium condition for a firm is equality of AR (price) and AC. In the long-run equilibrium under perfect competition a firm's AC= MC=AR=MR are all equal.

### III.1.6 Keywords

(a) Equilibrium out put : That level of out put at which the producer gets maximum profits.

(b) Shut down point : The point at which price is equal to average variable cost.

(c) Super normal profit : Positive difference between price and AC.

### III.1.7 Questions

(a) Define perfect competition. How is price determined under perfect competition.

(b) What is meant by equilibrium level of out put ? State the conditions of short-run equilibrium of a firm under perfect competition.

(c) Explain "under perfect competition a firm can earn normal prefect in the long-run".

### III.1.8 References

Some as noted in unit – I

**NOTES**

# UNIT – III
# MONOPOLOY

**STRUCTURE**

## 3.2.0  Objectives

After studying this unit we should be able to

(a)   Defining monopoly

(b)   Explain how price is determined under monopoly

**NOTES**

(c) Discuss the conditions of price discrimination

(d) Explain the equilibrium of discriminating monopoly

(e) Compare perfect competition and monopoly

### 3.2.1 Introduction

The word monopoly is a Latin word. It is composed of two words (i) Mono which means single, (ii) Poly which means a seller. Thus monopoly is a form of market organization for a commodity in which there is only one seller or one producer of the commodity. There is no close substitute for the commodity.

### 3.2.2 MEANING OF MONOPOLY

Monopoly is typical market form or organization in which there is a single producer or seller of the product. The monopolist's product has no close substitute in the market. Further, there are strong barriers to entry into the industry. As a result, seller or producer has full control over the supply of the commodity. This the monopolist is the price maker.

Features : -

(a) There is a single producer or seller of the product in the market. The existence of single seller of one product rules out or eliminates the difference between the firm and the industry. The monopolist is a firm as well as an industry.

(b) There are no close substitute in the market of the product produced by the monopolist Prof. Boker says "the privilege of being the one seller of a product does not by itself make one a monopolist in the sense of possessing the power to set the price. As the one seller, he may be a king without a Crown". In this monopoly exists when the cross-reactivity of demand for the product of a single seller is very small or zero.

(c) There are barriers to the entry of new firm into the market so that no new firm can enter the market.

(d) Nature of demand Curve : In monopoly the demand curve slopes downward which means that a monopolist can sell more of his output only at a lower price. On the contrary, if he raises the price of his product, his sales will be reduced.

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The downward sloping demand curve tells us that average revenue or price goes on falling as sales are increased when average revenue (AR) slopes downward, marginal revenue (MR) always lies below AR. In other words MR curve of a monopolist also slopes downward from left to the right and it lies below AR curve.

### 3.2.3 PRICE DETERMINATION UNDER MONOPOLY

A monopolist has power to influence the market price. He can rain the price by reducing his output and reduce the price by increasing his output. This is possible because the demand curve for his product is downward falling which means that buyers buy more at a lower price and less at a higher price.

Price and Revenue



Output  Demand curve of monopolist.
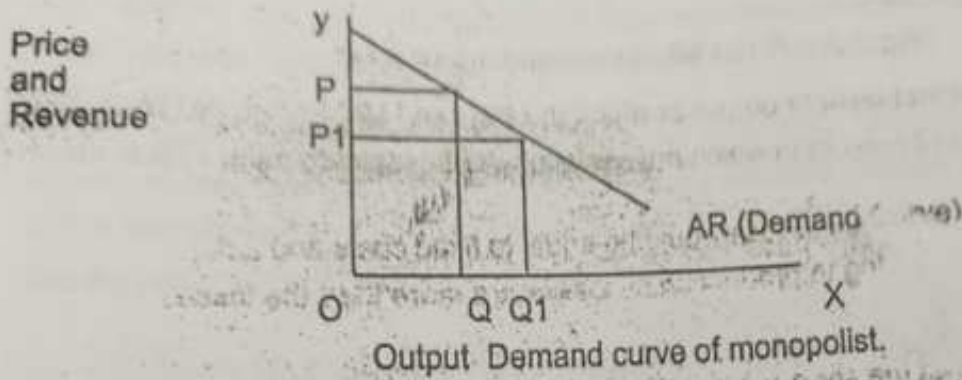
The price and output in a monopoly market are interdependent. In the figure of the demand curve AR. The curve is downward falling. At OQ output the price is OP and at OQ1 output the price is OP1. The output and price are simultaneously determined. The monopolist is faced with decisions regarding the price and output and he can take only one decision at a point of time. Either he fixes the price and sells the Quantity that will be bought by the buyers or he fixes the quantity and sells it at a price at which it will be bought by the buyers.

In fact a monopolist chooses a combination of price and output that can give him maximum profit.

### 3.2.4 MONOPOLY EQUILIBRIUM

The main objective of any firms is to earn maximum profits. So also a monopolist wants o earn maximum profits. When a firm is earning maximum, it is said to be in equilibrium. To ind out the equilibrium position of a monopoly firm, it is necessary to know the revenue.

**NOTES**

We have studied in previous section that demand curve or AR curve is downward falling. MR is less than MR at all levels of output and slope of MR curve is twice the slope of AR curve. The AR and MR curves under monopoly are shown in the figure 3.2.4.
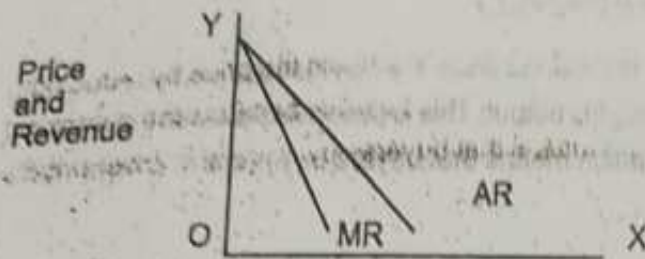


Fig.3.2.4. AR all MR curves under monopoly

A firm produces that level of output at which the MR. and MC are equal. This equally should be at such level of output in which any variation will be less profitable. This is shown in figure III.2.4.1.
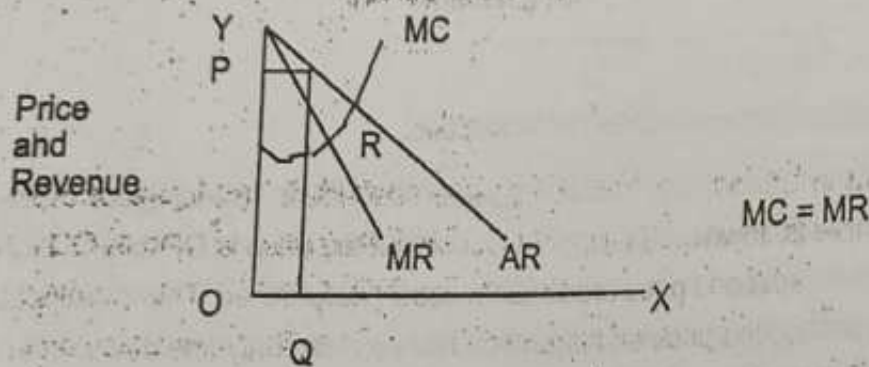


$$MC = MR$$

Determination of output equilibrium level of output.

The monopolist firm will produce at a point where MC=MR. If the firm produces less than OQ output MR. would be greater than MC, so the firm will be losing some profits. If it produces more than OQ output hten MC would be greater than MR. so the firm will be incurring losses. So OQ is the equilibrium output. OQ will be sold at OP or RQ price (AR). By producing OQ output and selling at OP price the firm may earn super normal profit or normal profit or incur losses in the short-run and, long-run. This study we may be divided into two parts, i.e. short-run equilibrium and long-run equilibrium.

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## 3.2.4.1 SHORT-RUN

In short period of time, there are two types of factors of production i.e. the fixed factors (machine) and variable factors (raw-materials). In the short period, supply can be changed only by changing the variable factors of production. Fixed factors cannot be changed (time constraint). In this period the volume of production can be changed but the capacity of the plant cannot be changed.

The aim of monopolist is to earn maximum profit or to suffer minimum losses if he is compelled to do so. To achieve the aim a monopolist compares his marginal revenue (MR.) and marginal cost. The correct point of price output determination for a monopolist is that there marginal revenue is equal to marginal cost.
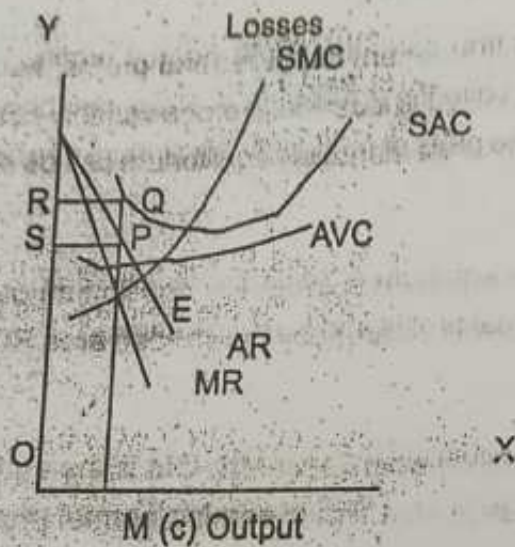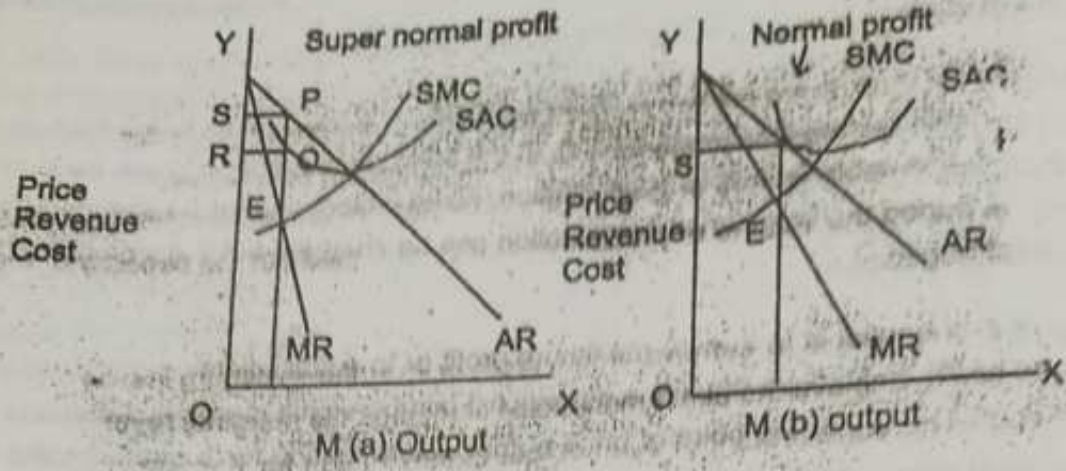
In the short period a monopolist firm can earn super normal profits, normal profit, or losses. In case of losses, price must be covering at least the average variable costs. Otherwise in the firm will stop production. The three parts of monopoly equilibrium can be shown through the figures drawn below.

In figure (a) a monopolist is in equilibrium at point E. His equilibrium output is OM. In this situation, he is earning super normal profits shown by the shaded area RQPS. Since AR exceed SAC which is equal to QM.

In figure (b) E is the point of equilibrium where MC=MR. OM is the equilibrium output. Price PM is equal to short-run average cost. The firm is earning normal profit since normal profit is a part of cost of production.

In figure C the firm is at a loss. Minimisation of loss is achieved by the equality between MR and MC at point E. OM is the equilibrium output. Price is fixed at PM. Monopolist firm is earning losses shown by the should PQRS since SAC exceeds price. At the price PM the firm will continue production since price is higher than average variable cost. Thus equilibrium is established by minimizing loss. If the firm stops production the loss will increase as the firm is to bear the fixed cost as well.

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Y | Super normal profit

SMC
SAC
P
S
R
Q
Price
Revenue
Cost
E
MR
AR
O
M (a) Output

Y | Normal profit
SMC
SAC
S
Price
Revenue
Cost
E
AR
MR
O
M (b) output

Y | Losses
SMC
SAC
R
Q
S
P
AVC
E
AR
MR
O
M (c) Output

### III.2.4.2 LONG-PERIOD

Long period is a time period, in which there is a long enough that fully adjus... supply to the demand of a product. In this period, all factors of production are variable. Volume as well as capacity of production can be changed. Monopolist firm in the long-run also is in equilibrium at a point where its marginal revenue is equal to its marginal cost. In this short period a firm can earn profit as well as losses. But in the long period, a monopolist firm earns only profit. Either normal or abnormal. Firm can make all types of necessary changes in its

**NOTES**

costs when there are strict barrier on the entry of new firms. Monopoly firm can fully exploit the situation. The long period equilibrium of a monopolist can be shown through a figure below.

The figure shows that the price is fixed by the equality between MR, and long-run MC at point E. OM is the output. Firm is earning supernormal profit equal to PQRS since its AR exceeds AC by PQ. This is due to the monopoly power of the firm. This is why, the long period supernormal profits are called monopoly profit.
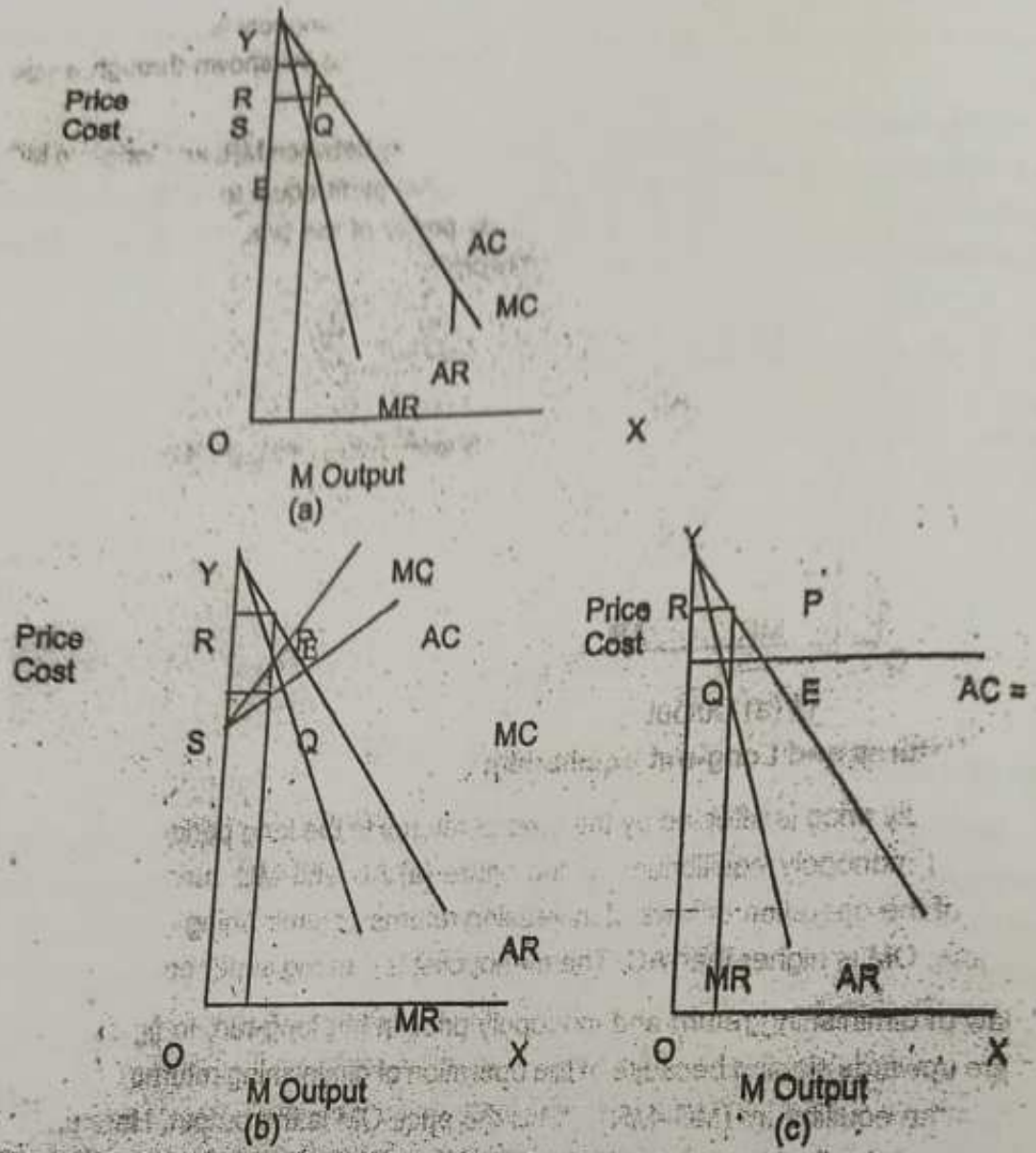


Supernormal Profit (PQRS)

M (a) Output
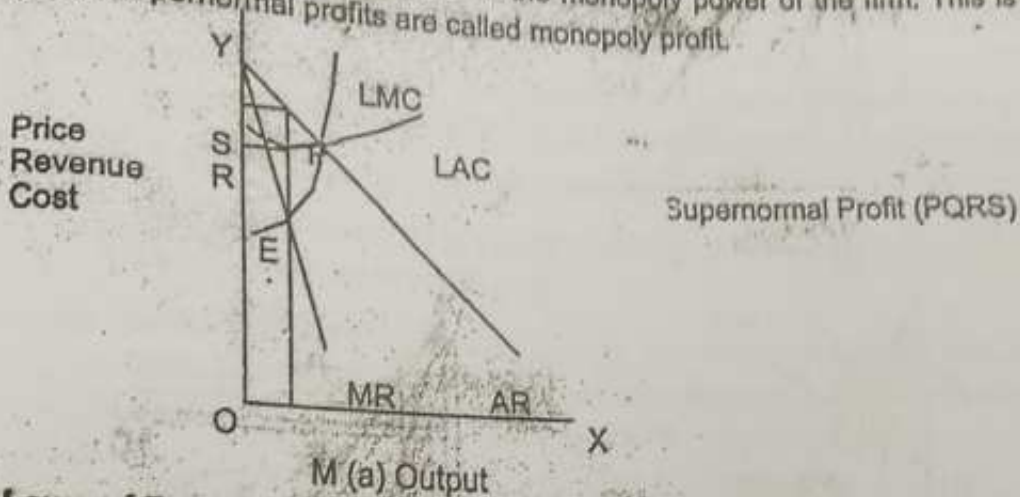
**Laws of Returns and Long-run Equilibrium :**

Monopoly price is affected by the laws of returns in the long period. Law of increasing returns and monopoly equilibrium. In the figure (a) AC and MC curves scope downward because of the operation of laws of increasing returns or diminishing cost. E is the point of equilibrium, OM is higher than AC. The monopolist is earning super normal profit PQSE.

(b) law of diminishing return and monopoly price in the long-run. In figure(b) MC and AC are upwards sloping because of the operation of diminishing returns or increasing cost. E is the equilibrium (MC=MR). PM is the price OM is the output, Here profit is PQSR. The monopolist is earning maximum profit only by producing a lower Quantity of output and selling at a higher price.

(c) Law of Constant Returns and monopoly equilibrium. In figure C, AC=MC because of constant cost. E is the equilibrium (MR=MC) PM is the equilibrium prices and OM is the output. The monopolist is earning supernormal profit equal to the area PEQR.

**NOTES**

Price
Cost

AC

MC

AR

MR

O

M Output

(a)

Price
Cost

MC

AC

MC

AR

MR

O

M Output

(b)

Price
Cost

P

AC =

AR

MR

O

M Output

(c)

## 3.2.5 PRICE DISCRIMINATION UNDER MONOPOLY

### 3.2.5.1 Meaning :

Mr. Joan Robinson has described price discrimination as "the act of selling the same article produced under single control at different price to the different buyers".

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**Kinds of price discrimination :**

Price discrimination under monopoly can take many forms.

(i) It may be reflect to the income or purchasing power of the buyers. For example, a doctor charges higher fees to the rich and lower fees to the poor.

(ii) It may be to the location of the purchaser. Higher price at village and lower price at urban areas or higher price may be charged at home and lower price in a foreign market (dumping).

(iii) It may vary to the timing of the use of the product. Rates of trunk calls are different at night from those during day time, lesson Sundays than on other days.

### 3.2.5.2 CONDITIONS OF PRICE DISCRIMINATION

(i) Existence of monopoly. Discrimination is possible only if monopoly exists and there is no competitions in the market.

(ii) Division of market into sub-markets. The market is distinctly divisible into various parts among which the product cannot be exchanged, example a home and foreign market separated by governmental restrictions or by tariff walls.

(iii) If the price discrimination is to be profitable, the elasticity of demand should be different in different market.

(iv) Product differentiation. Sometimes a monopolist's market consist of rich and poor consumers. The monopolist takes advantage of the whims of the rich and offers the same commodity in a deluxe packing.

(v) Legal sanction. Sometimes government permits the public utility services like the railways to charge different prices from different consumers.
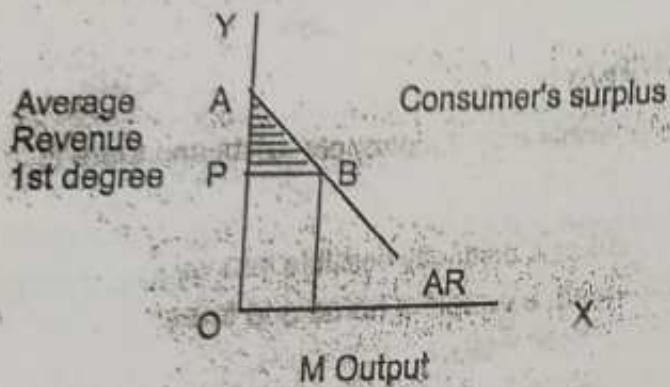
**Degrees of Price Discrimination :**

Prof. A.C. Pigou has discussed various degrees of price discrimination.

(a) First degree price discrimination. In discrimination of the firms degree the monopolist is supposed to know the maximum amount of money each consumer will pay for any Quantity. He then extracts from each consumer the entire amount of his consumer's

**NOTES**

surplus. A doctor varying the charges on their customers according to their income status. In the figure the consumers could have purchased OM units of output in the absence of price discrimination by spending the amount shown by the area OPBM, the uniform price charged being OP. Since the perfectly discriminating monopolist is able to charge every consumer a price which he is willing to pay rather than go without the monopolist product, the monopolist is able to extract the total revenue equal to the area ABMO under the AR curve from O to M.



**Second Degree Price Discrimination :**

It occurs when a monopolist sets different prices for different customers but does not fully exploit their potential demand prices so that the monopolist captures only parts of his customer surpluses. The schedules of rates typically charged by public utilities like railways can be regarded a form of second degree discrimination.

The figure illustrates here record the degree price discrimination. It is assumed that the monopolist charges the price OP for OM units of output and OP2 for OM2 and OP3 for OM3 units. The monopolist will extra a part of the consumer's surplus shown will be enjoyed by different groups of consumers (PIAK by OM group LAB by MIM2 group and NBC by M2M3 group).

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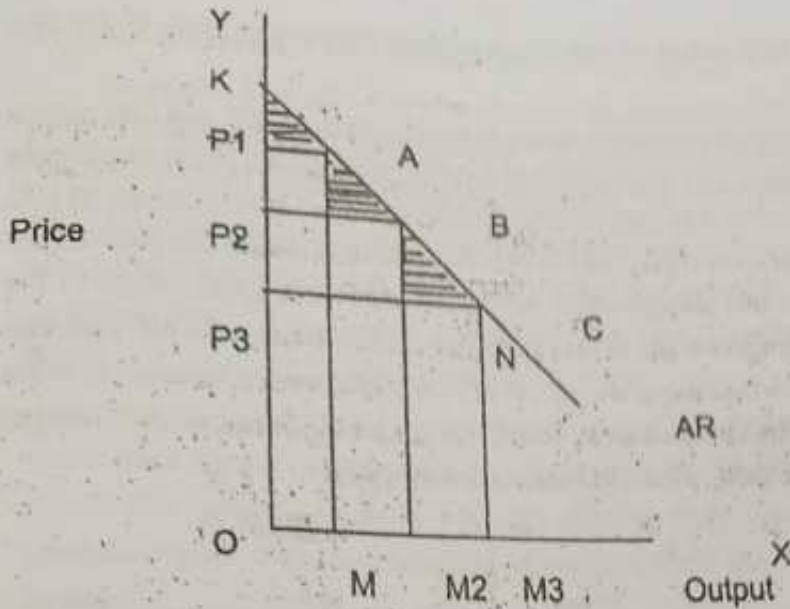
**Third Degree Price Discrimination :**

In third degree price discrimination the monopolist divides its customers into two or more classes or groups on the basis of the elasticity of demand for the product and charges a different price to each class of buyers. Each group is a separate market.

In discrimination of the third degree, the monopolist makes some attempt to benefit from the difference in the elasticities of demand for the product on the part of different groups of buyers.

Suppose, the discriminating monopolist divides his total market into two sub-markets, sub-market with low price elasticity of demand and sub-market B with relatively more elastic demand for the product. For equilibrium in two markets two basic conditions must be fulfilled.

**3.2.5.2 Conditions**
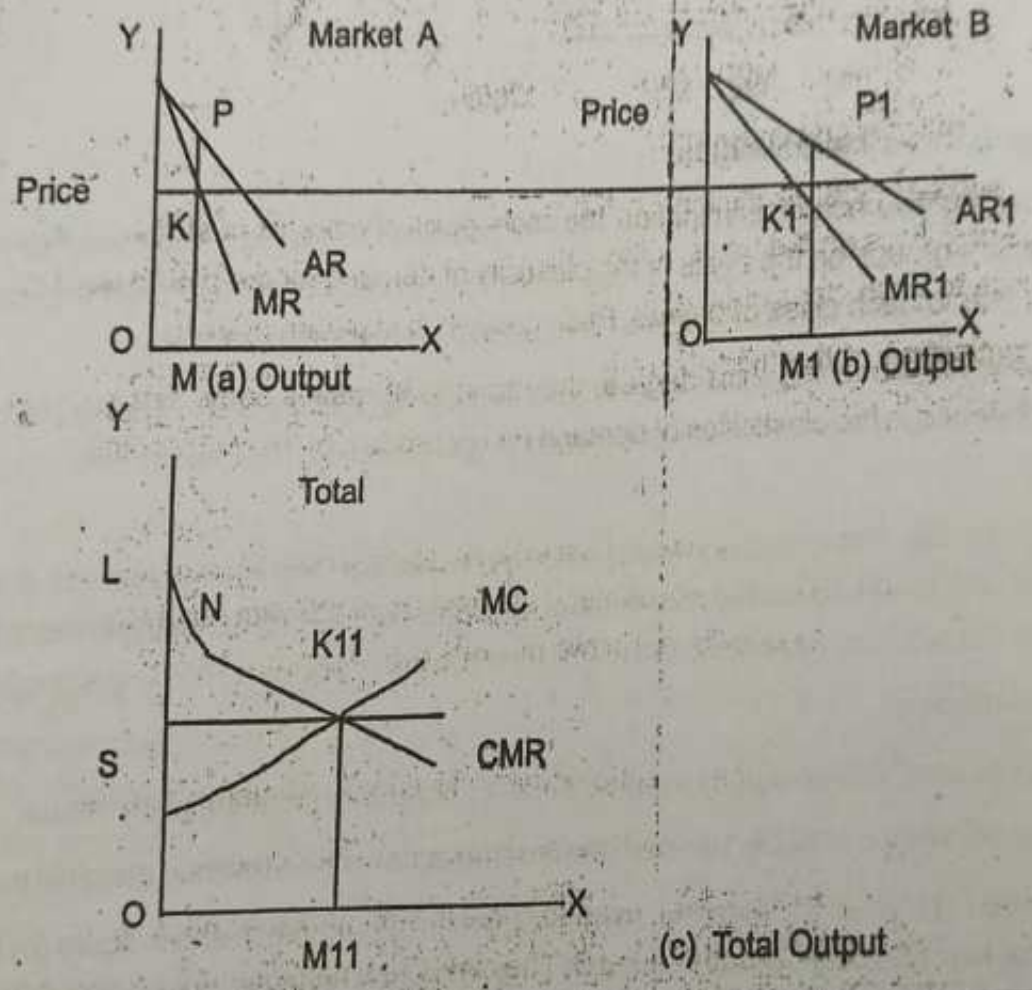
(a) marginal cost of total output must be equal to his combined marginal revenue.

(b) Marginal revenue in all the sub-markets must be equal to the combined marginal revenue.

In figure (a) MR1 is the marginal revenue curve in sub-market A and in figure (b) MR1 is the marginal revenue curve us sub-market B. The combined marginal curve of the monopolist

**NOTES**

can be obtained by the lateral summation of the two marginal revenue curves in the two markets, shown in figure (C).

In figure (C) the combined marginal revenue curve is intersected by MC and OM output is determine and total profit is LNK's. The monopolist is a profit maximiser. He is to allocate output OM in the submarkets in such a way that the marginal revenue in both is equal to MK. He will sell output OM in submarket A and output OM in submarket B since with this distribution of output the marginal revenue in both is the same MK=M1K1=M11K11 and equal to the combined marginal revenue at the total output O11M11. Price in submarket A is MP and that in submarket B is M1P1. it is higher in submarket A than in B. In submarket A demand is less elastic, therefore the monopolist restricts his sale in it and charges a higher price, submarket B, demand being more elastic, more output is sold but at a lower price.

Market A

Market B

Price

P

K

AR

MR

O

M (a) Output

Y

Price

P1

K1

AR1

MR1

O

M1 (b) Output

Y

Total

L

N

K11

MC

S

CMR

O

M11

X

(c) Total Output

**Equilibrium output and Price under Dumping :**

Dumping is a special type of price discrimination in which a monopolist fixes a higher price for his product in the home market and a lower price for the same product in the foreign market so as to capture the foreign market Figure explains the equilibrium position.

The producer is a monopolist in the home market ARH is the average revenue curve and MPH the marginal revenue curve in the home market. The foreign market is characterized by pure competition so that in this market the average and marginal revenue curve (ARF/MRF) is horizontal or paralleled to the X axis.

For output OM it pays to sell in the home market, because the marginal revenue is more than what could be earned for the same output in the foreign market. When more are produced, it pays to sell in the foreign market rather than home market because in the foreign market marginal revenue remains constant while the monopolist's home market it continues to fall.

The monopolist must allocate its output among the two markets that the marginal revenue in the tow is equal to the marginal cost of production which is M1P1. Accordingly, output sold, in the home market is determined at OM and the remaining output MM1 is sold in the foreign market. Price in home market is MP while that in the foreign market is M1P1.



Equilibrium (Dumping)

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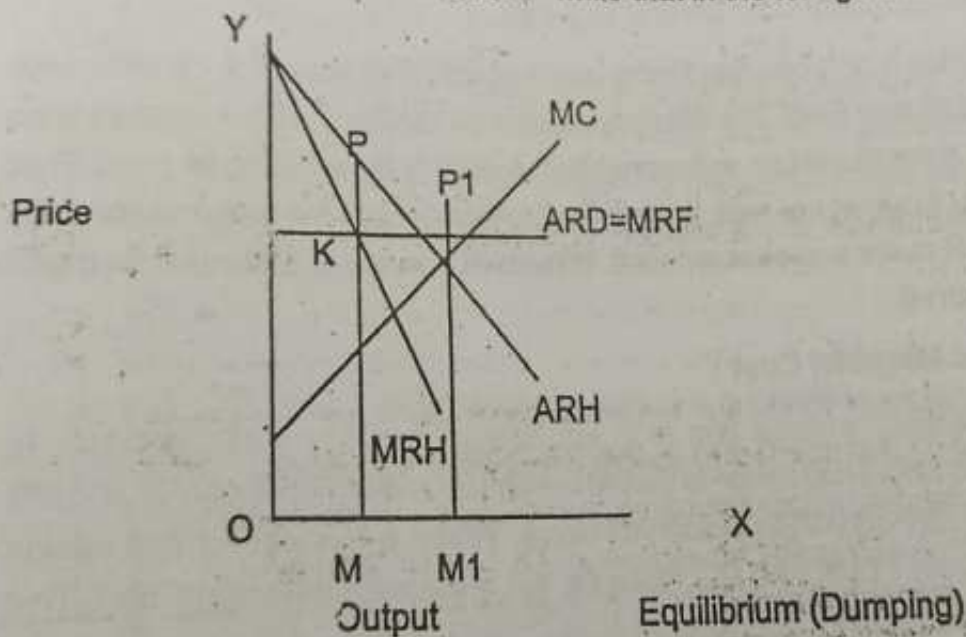
**NOTES**

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### 3.2.6 Comparison between Monopoly and Perfect Competition :

Perfect competition is the type of market in which there are a large number of sellers and buyers. The sellers sell identical goods. Firm is a price taker since it produces only a fraction of total production of the industry. On the contrary, monopoly is a form of market organization in which the seller of the product is one and the buyer's number is large. Monopoly is a price maker.

Firm under perfect competition and firm under monopoly are similar in the sense that both aim at maximizing their profits or minimizing their losses in the short-period. The principle of equalizing MC with MR is followed by both the market structures. Despite their similarity these two forms of market organization differ from each other in respect of their characteristics of market, the demand and revenue conditions, the equilibrium conditions, and profit acquisition.

### (a) Comparison of Demand and Revenue Conditions :

Under perfect competition, a firm produces a fraction of the total production produced by the industry firm is unable to influence the price. It is only a price taker. Since the price remains the same whatever the quantities sold, average revenue (AR) and MR are one and the same. In other words, under perfect competition AR curve and MR curve are the same and the curve is a horizontal straight line parallel to X axis.

Under Monopoly, there is only one firm facing a large number of buyers. It can influence the price. The firm is the industry itself. The difference between the firm and the industry is no more under monopoly. A monopolist can sell more his output only by lowering its price. That is why as more quantities of output are sold, price fails. For this reason the demand curve for the monopolist seller or AR curve slopes downward. When AR curve falls MR curve also falls and it lies below the AR curve.

### Comparison of price and Marginal Cost :

Under perfect competition, when a firm is in equilibrium its price = AR=MR=MC. In other words price is equal to MC. The reason is that AR=MR but under monopoly AR and MR are downward-sloping and MR curve lies below AR curve. When a monopolist firm attains equilibrium through the equality of MR and MC, price i.e. AR is more than marginal cost. This difference can be illustrated through a figure.

**NOTES**

Perfectly competitive firm
(a)

Firm under monopoly
(b)
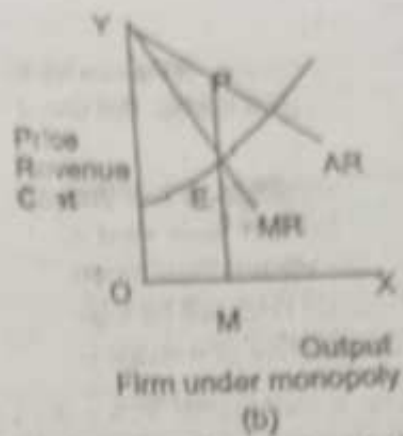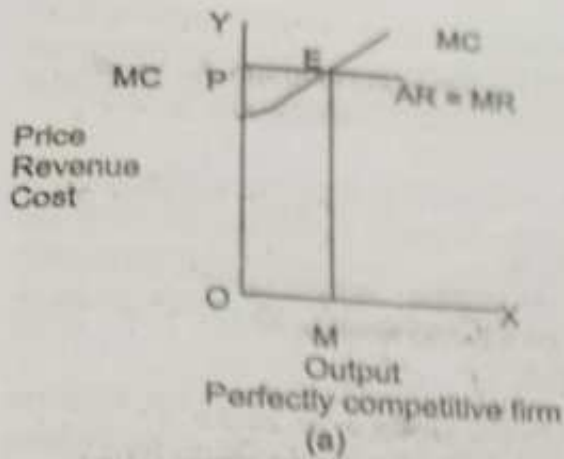
In the figure (a) the perfectly competitive firm is shown. E is the point of equilibrium of a firm where its MR and MC cut each other and MC is rising also. On this point of equilibrium price OP=marginal cost.

In figure (b) the monopolist firm is shown and equilibrium at point E is shown, where MC interests MR. Price is PM but the marginal cost is EM, PM is greater than EP. (Price is greater than marginal cost).

## Comparison of Equilibrium Conditions :

A firm under perfect competition is in equilibrium where its marginal cost curve cuts marginal revenue curves from below. In other words, a perfectly competitive firm is in equilibrium only where its MC=MR and MC is rising. Not necessary the condition for a firm under monopoly to be in equilibrium. Under monopoly equilibrium, marginal cost may be falling constant or rising.

## Comparison of size of firms

Under perfect competition, in the long run, a firm is in equilibrium where price in equal to marginal cost as well as minimum average cost (Price=MC=Minimum AC). It produces at its full capacity in the long-run. A perfectly competitive firm in the long-run is of optimum size. But under monopoly the point of equilibrium is still falling. Equilibrium takes place before the minimum average cost point. Under monopoly full capacity of the firm is not utilized. There remains some excess capacity under monopoly.

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### Entry of Firms :

Under perfect competition, firms can freely enter the market in the long-run. Firms can leave the market if they suffer losses. But under monopoly, there are restrictions on the entry of other firms.

Under perfect competition, a firm only earns normal profit in the long-run because of free-entry and exit of firms. If firms earn more than normal profit, new firms will enter the market and wipe out the supernormal profits. In case of loss existing firms will quit the market the supply will be reduced Price will be increased and firms will start earning normal profit. In this way, perfectly competitive firm earns only normal profit.

On the contrary, a monopolist firm enjoys super normal profits even in the long-run because it is the single seller in the market. There are strict barriers on the entry of firms under monopoly. That is why a firm goes on earning super normal profits even in the long-run.

### Price Discrimination :

Under perfect competition, the number of sellers and buyers is large. The sellers are found selling identical goods. No individual firm can influence the price, it is only a price taker. A firm cannot charge different prices from different buyers.

On the other hand, a monopolist is the sole seller of his product. He exploits the market conditions for his own benefit. He can charge different prices different from customers.

### Comparison of Price and output :

The most significant difference between perfectly competitive firm and a monopolist firm is that, monopoly price is higher and output lower than that of a competitive firm. This can be shown by comparing a competitive Industry with a Monopoly Industry. In the figure DD'(AR) is the demand curve SS1 is the supply curve or the marginal cost curve of the industry. Under perfect competition price output is determined by the interaction of the forces of demand and supply of the industry. P1 is the point of intersection. Therefore P1M1 is the equilibrium price and OM1 is the equilibrium output under perfect competition.

Now, suppose all firms combine and merge to form a monopoly, E becomes the equilibrium (MC=MR) Price becomes MP and output OM. OM output is lower than OM1

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( 48 )

output under perfect competition. Similarly, price OQ or PM is higher under monopoly than the price P1M1 (perfect competition). Thus monopoly price is higher and output smaller than that of perfectly competitive firm.



Output
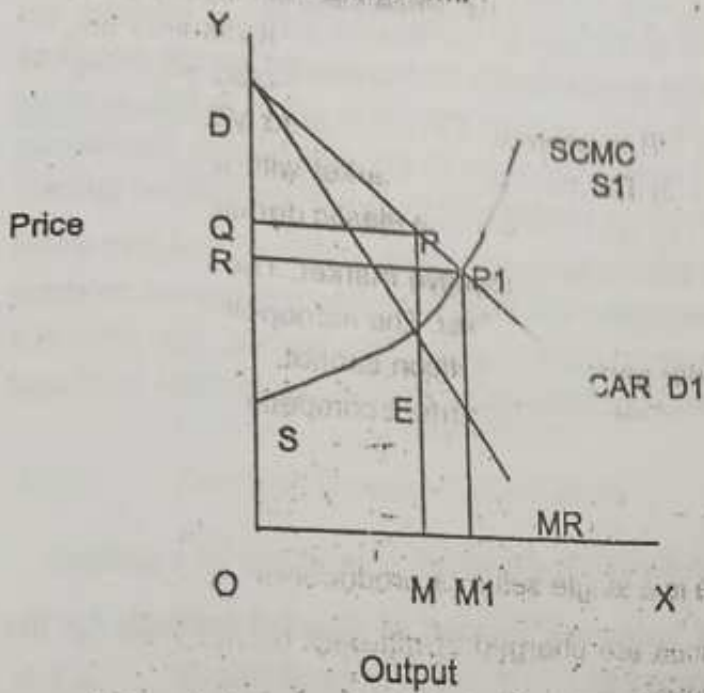
It is not always necessary that monopoly price is higher than the price likely to prevail under perfect competition. A monopolist being the sole seller of his product can lower his costs of production with the help of economics of scale, research etc. Moreover monopolist may be afraid of the boycott from the consumers. The monopolist may have some distinct or remote substitutes for his predict which may threaten his sales at a high price. Government may regulate the price is it is too high.

### 3.2.7 Let us Sum up

In a monopoly market there is a single producer or seller controlling the whole supply of a commodity for which there is no class substitute. A monopolist can fix any price of his product but he can not sell any quantity he wants to sell at the price fixed by him.

The equilibrium level of output under monopoly is determined by equality of MC and MR. In short-run the monopolist must be able to cover at least his variable costs. (MC=MR,

**NOTES**

price or AR ? AVC). In the long-run the equilibrium conditions under monopoly are MC=MR and AR ? AC. A monopolist can earn supernormal profits in the long-run.

A monopolist can charge different prices for his product (Price Discrimination). Price discrimination is profitable only when the elasticities of demand in different markets are different. To get maximum profits with price discrimination as monopolist should distribute his output in two markets in such a way that MR in each market is equal to MC. In other words MR in each market should be the same. The price in the market with less elastic demand curve will be higher than the price in the market with more elastic demand curve.

Monopoly market can be compared with perfectly competitive market. The firm under perfect competition is a price taken with monopolist is a price fixer. The monopolist can earn abnormal profits in the long-run but a firm under perfect competition cannot. The price is a monopoly market is always greater than MC but price under perfect competition is always equal to MC.

### 3.2.8 Key Words :

(a) Monopoly : A market form in which there is a single seller or producer of a product.

(b) Price discrimination : When different prices are charged at different markets for the same product, it is called price discrimination.

(c) Dumping : It is a special type of price discrimination in which a monopolist fixes a higher price for his product in the home market and a lower price for the same product in the foreign market.

### 3.2.9 Questions :

1. Explain monopoly equilibrium in short-run and in long-run.

2. What do you mean by price discrimination. Explain the equilibrium position under discriminating monopoly.

3. What is monopoly? How it is different form perfect competition.

### 3.2.10 References :

Same as referred in Unit – I

NOTES

( 50 )

# UNIT - IV
# LESSON-1
# MONOPOLISTIC COMPETITION

## STRUCTURE

**NOTES**

## 4.1.0. Objectives

We should be able to

(a) Explain the characteristics of monopolistic competition.

(b) Explain the nature of demand curve and cost curves in monopolistic competition.

(c) Explain the conditions of equilibrium of monopolistic competition in the short-run and long run.

(d) Analyse the utilisation of capacity in monopolistic competition in monopolistic competition

(e) Compare equilibrium of firm under monopolistic competition with equilibrium under perfect competition

(f) Compare equilibrium of firm under monopolistic competition with equilibrium under monopoly.

## 4.1.1. Introduction

Perfect competition and monopoly are two extreme forms of market structure. In between there lies a whole range of imperfectly competitive markets. Monopolistic

**NOTES**

competition is a market structure in imperfectly competitive market. The source of imperfection or monopoly element in monopolistic competition is differentiated products produced by large number of close rival.

### 4.2.2 Meaning and Characteristics

### 4.2.2.1 Meaning

Monopolistic competition is a market situation in which there are many sellers of a particular product, but the product of each seller is in some why differentiated in the minds of consumers from the product of every other seller.

The products are differentiated through trade marks, attractive packets, brands, colours etc. The firm producing a particular brand enjoys the monopoly power because it is the only firm which produces this brand. The firm is the monopolist of brand but not of the product. Examples of monopolistic competition are colgate toothpaste, bajaj scooter etc. A firm though a monopolist of brand, faces competition from close substitutes produced by a large number of rival firms in the market. It explains why such a market is considered as monopolistic competition a curious mixture of competition and monopolists power

### 4.2.2.2 Characteristics

(a) A large number of sellers the number of firms is so large that actions to individual firm in influencing the market are ignored.

(b) Differentiated product. Differentiation of the product may be real or fancied. Real or physical differentiation is done through differences in material used, design colour or workmanship. Or physical product may be the same and imaginary differences can be created through packing, advertising, use to trade marks and brand names. The differentiation of a product may be linked with conditions of his sale I.e. the location of the shop, the courteous and smiling disposition of its salesman, or a reputation for fair dealing etc.

(c) Free entry and exit of firms. Entry and exit into the industry in unrestricted. New firms are able to commence production of very close substitutes for the existing brands of the product even though they cannot, make items which are identical in the eyes of the purchasers of the existing brand.
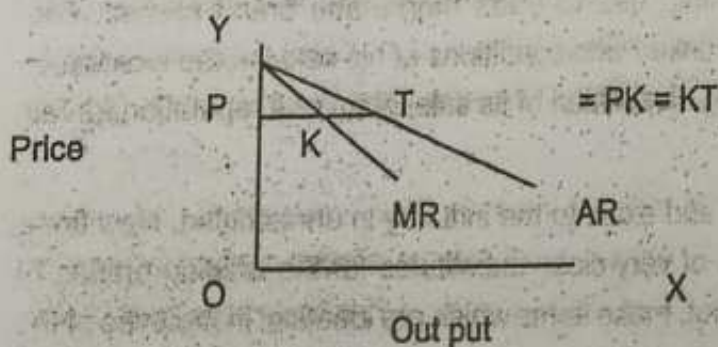
**NOTES**

(d) **Price policy of a firm.** The firm has a price policy under monopolistic competition. In perfect competition a firm is a price taker. Under monopolistic competition a firm has its own price policy.

(e) **Non-price competition.** No price competition is adopted to win over customers. There are definite methods of competing rivals other than price. It may be a guarantee for repairs within a particular time after sales service, a gift scheme with particular purchase, a discount in price, or transport free of cost.

(f) **Selling costs.** Every firm tries to promote its own product be expenditure on advertisement. The advertisement expenditure or different methods of appealing to the customers to purchase it's brand of the product.

(g) **Imperfect knowledge.** The existence of monopolistic competition depends upon imperfect knowledge of the buyers. Much of the selling cost or advertisement cost is simply meant to create imaginary superiority in the minds of the consumers.

### 4.1.3 Demand Curves and Cost Curves

### 4.1.3.1 Demand Curve

Demand for a firm's product under monopolistic competition is downward sloping. It implies that if a firm wants to sell more, it can sell more only by lowering the price of the product. The firm derives the power to influence the price because its product is differentiated by the consumers from the other close substitutes available in the market. Demand curve is also the average revenue (AR) curve. Marginal revenue (MR) curve is also downward sloping and lies at the centre of horizontal distance between Y axes and AR curve. Comparison with perfect competition and monopoly.



**NOTES**

## (I) With perfect competition

Demand curve of a perfectly competitive firm is parallel to x axis. In comparison the demand curve far a firm's product is monopolistic competition is downward sloping. Price elasticity of ranges from infinity to zero.

## (II) With monopoly

A firm's demand curve is downward sloping both under monopoly and monopolistic competition. Demand curve or AR under monopolistic competition is more elastic then under monopoly. The difference is due to the degree of competition faced by each type of firm.

· The relative positions of the three demand curves under three market forms are given in the figure
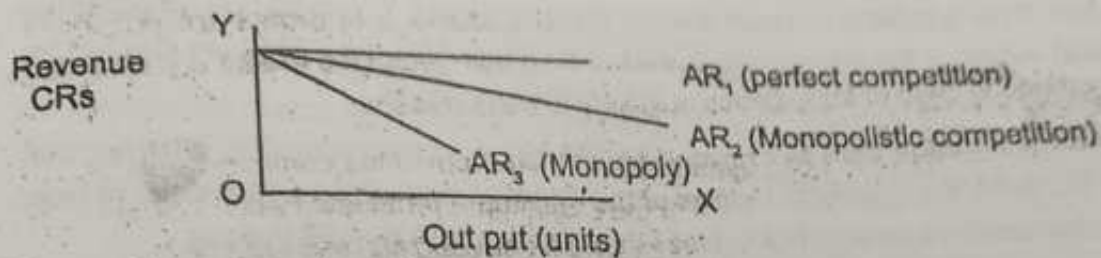


Demand curves under various market situations.

### 4.1.3.2 Cost Curves

In the theory of price determination, the behaviour of costs is taken to be the same in all market forms. The economies and diseconomies in the cost of production affect all the firms irrespective of their status in the market.

### 4.1.4 Equilibrium of firm in the short-run

#### 4.1.4.1 Introduction

A firm can incur loss in the short run. If loss exceed fixed costs the firm stops production to limit its losses to fixed cost only. For this it is necessary that price must be atleast equal to AVC.

#### 4.1.4.2 Equilibrium Conditions

Equilibrium means maximum profit output level of a firm. In case of loss, it means _____

## NOTES

minimum loss out put level. The attempt of the firm is to earn profits but may be forced to incur losses. Whether a firm earns profit or incur losses the main equilibrium conditions are the following.

    (a)  Price must be equal to or greater than AVC i.e. AR $^3$ AVC

    (b)  MC = MR.

    (c)  MC becomes greater than MR beyond MC = MR output level.

 (a)  **Price or AR $^3$ AVC**. The condition implies that in case of loss the firm must be able to recover at lest its variable costs. The firm is prepared to face loss only upto fixed costs. If the price is les than AVC, the loss will exceed fixed cost and the firm can conveniently limit its losses to fixed cost by stopping production.

 (b)  **MC = MR**. This condition ensures that no more additions to profits are possible by increasing output. If the firm produces more than this output, its profits are likely to be reduced and in case of loss, losses are likely to be increased.

 (c)  MC becomes greater than MR beyond MC=MR out put. This condition ensures that MC=MR out put is the equilibrium level or the maximum profit level and in case of loss, it is the minimum loss level, If MC is less than MR beyond MC=MR out put.

### 4.1.4.3   Diagramatic Representation

(a)  *Equilibrium when a firm is earning profits.*
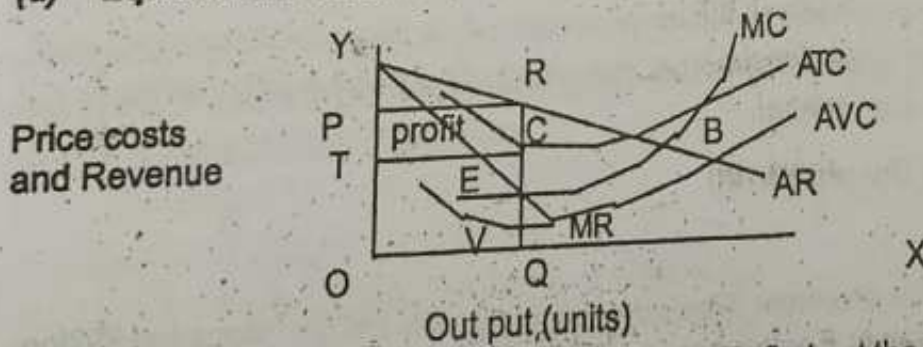


Equilibrium when a firm is earning profits. To find out the equilibrium point in the figure just look at the intersection of MC and MR curves. The intersection is at E. At this point MC=MR. Draw a perpendular on X axis passing through E and cutting across all other revenue and cost curves to find output, price MC, AVC, ATC, MR and AR.

**NOTES**

Outcome of Equilibrium
Equilibrium point = E
Equilibrium output = OQ
Equilibrium price = OP or RQ
Equilibrium AVC = VQ
Equilibrium AR = RQ
Equilibrium ATC = CQ

MC curve cuts MR curve from below at point E. RQ and CQ are AR and ATC respectively. Execs of RQ over CQ i,e RQ-CQ is profit per unit of output. Total output is OQ. Total profit is equilibrium output multiplied by per unit profit, i.e. OQ X RC. Rectangular PRCT represents total profit because OQ = TC. The shaded area is the total profit earned by the firm.

**(b)** *Equilibrium when a firm is incurring loss.*

A firm incurs loss when AR is less than AC at equilibrium. AC – AR is the per unit loss. So when a firm is incurring loss ATC curve must lie above AR at equilibrium. But AVC must lie below AR. If AVC curve also lies above AR curve, loss will exceed fixed cost and firm will stop production to reduce loss.

The equilibrium of the firm is at the intersection of MC and MR curves i,e at point E. To find out all information about output, price cost and revenue at equilibrium, we draw a perpendular on X axis passing through E and cutting all cost and revenue curves.



NOTES

Outcome of equilibrium

Equilibrium point = E

Equilibrium price = RQ = OP

Equilibrium AR = QR

Equilibrium output = OQ

Equilibrium AVC = VQ

Equilibrium ATC = CQ

Total loss is, equilibrium output OQ multiplied by per unit loss CR i.e. OQ X CR.

The shaded area of the rectangle PRCT represents total loss.

## 4.1.5 Equilibrium of Firm in the Long-run

### 4.1.5.1 Introduction

Long-run equilibrium is different from short run equilibrium in two respects. First, a firm does not incur loss in the long run a firm expects a price which cover long run average cont LAC. If a firm does not cover LAC it will not under take production.

### 4.1.5.2 Second

A firm under monopolistic competition earns just the normal profits in the long-run because of the characteristic feature of free entry of firms.

### 4.1.5.3 Diagramatic Representation

The outcome of long run equilibrium is that LAC = AR. As such LAC curve must be tangent to AR curve at equilibrium. If it is tangent to AR, it means that LAC = AR and the firm is earning just the normal profits. Since normal profit is a part of LAC, normal profit implies zero profit or to be more appropriate zero abnormal profit.
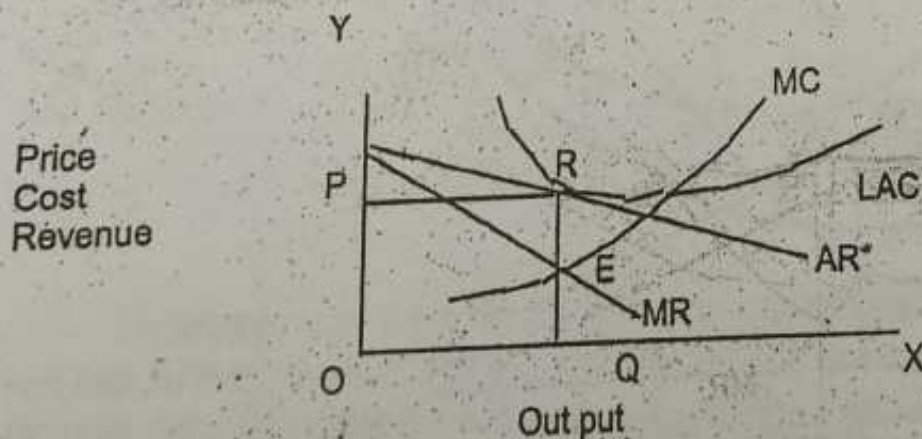


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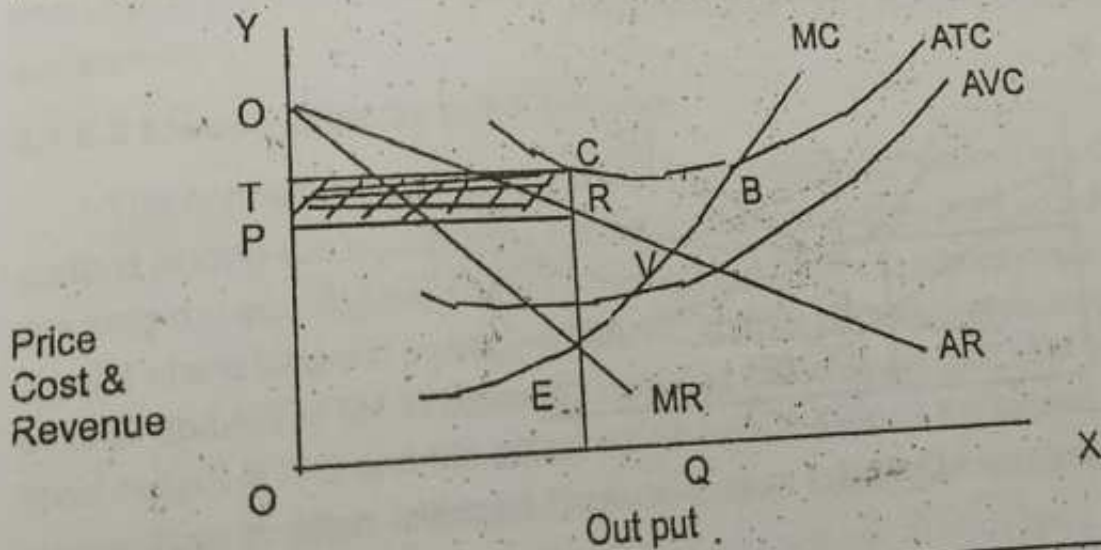
Outcome of Equilibrium

Equilibrium point = E

Equilibrium output = OQ

Equilibrium price = RQ

Equilibrium AR = RQ

Equilibrium ATC = RQ

Mc curve cuts MR from below at point E.

## 4.1.6 Equilibrium of firm and utilization of capacity

### 4.1.6.1 Meaning of capacity

The level of output that corresponds to the minimum level of average cast is often called capacity or capacity output. If actual output produced is lower than the capacity output, it is referred to as the excess capacity. If actual output is higher than the capacity output, it is called above capacity out put.

### 4.1.6.2 Excess capacity in the short-run

Capacity output in the short-run corresponds to minimum level of short-run average total cost (S.A.T.C). It is also called optional capacity or plant capacity. Excess capacity in the short-run is the difference between optimal capacity output and actual output in the short-run equilibrium.

### 4.1.6.3 Excess capacity in the long-run

The concept of excess capacity in monopolistic competition is most often used in the context of long-run equilibrium . it is the difference between ideal output and actual output in the long-run equilibrium. The long-run equilibrium of a firm in monopolistic competition is at a point where long-run average cost (LAC) is equal to average revenue (AR). It is the tangency of LAC and AR at M1 In figure the output at the minimum LAC at M is the ideal output. The ideal output is OQ and the actual output is OQ1, QQ1 in the excess capacity. Monopolistic competition in often criticized because excess capacity or unutilized capacity is called as waste from the angle of society.

## NOTES

Excess Capacity
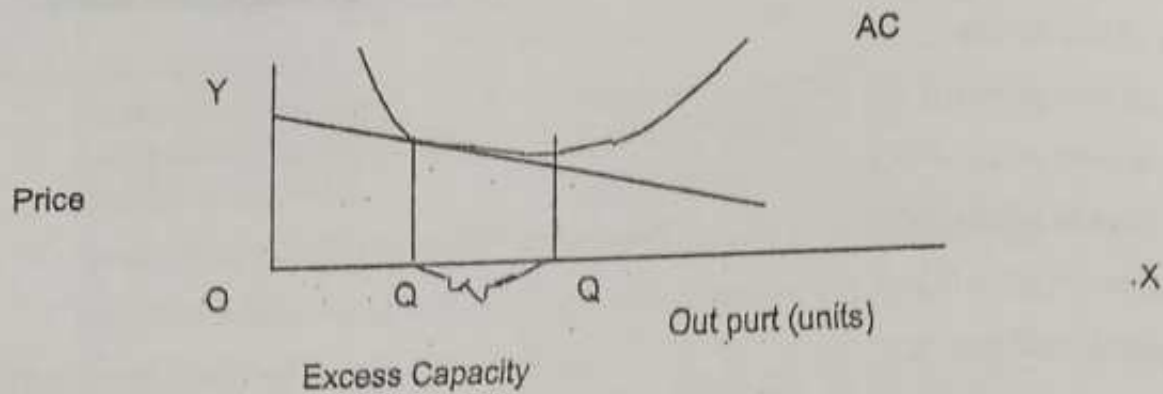
## 4.17. Equilibrium of firm

### 4.1.7.1 Monopolistic competition Vs. perfect competition

**Similarities**

1. Both are characterized by large number of firms, perfect knowledge about market and technology and free entry and exit of firms.

2. Both have same equilibrium conditions.

3. Only normal profit arise in both the markets in the long-run.

**Dissimilarities**

1. In monopolistic competition products produced by different firms are differentiated in perfect competition the products are homogeneous.

2. In monopolistic competition an individual firm can influence the market price in perfect competition it cannot. Consequently, the firm's demand curve in monopolistic competition is downward sloping. While in perfect competition in it is parallel to X axis.

3. Equilibrium output in monopolistic competition is below the capacity or the ideal output and there is excess capacity. In perfect competition it is at ideal output and there is no excess capacity.

4. Given the same conditions equilibrium output in lower and price higher in monopolistic competition as compared to perfect competition.

5. In monopolistic competition equilibrium price is greater than marginal cost. In perfect competition it is equal to marginal cost.

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Out put
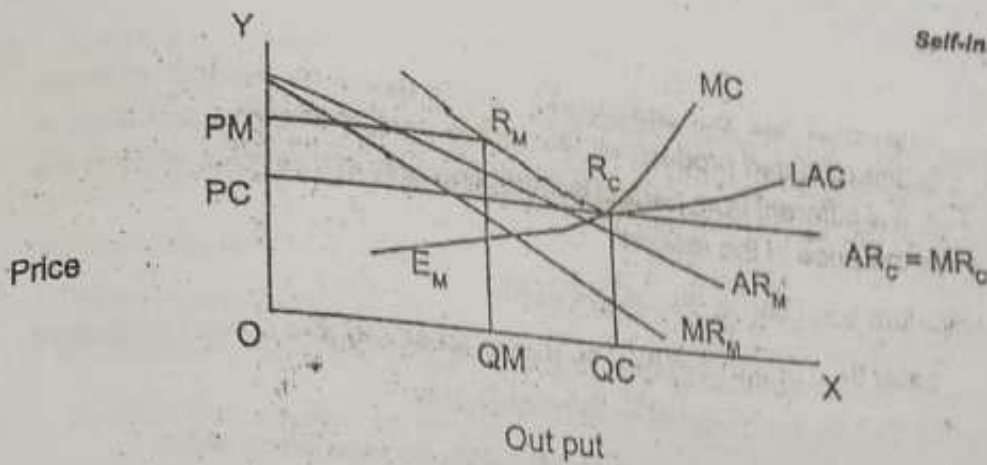
### 4.1.7.2 Equilibrium of firm : Monopolistic competition Vs. Monopoly

**Similarities**

1. Both have same equilibrium conditions

2. In both the markets individual firms can influence the market price.

3. There is excess capacity in both.

4. In both the equilibrium price is greater than marginal cost.

**Dissimilarities**

1. In monopolistic competition there are large number of firms. In monopoly there is early one firm.

2. In monopolistic competition there are large number of close substitutes. In monopoly there are no close substitute.

3. There is free entry and exit of firms in monopolistic competition. In monopoly there are barriers to entry of new firms.

4. in monopolistic competition there are no abnormal profits in the long-run. In monopoly there are abnormal profits.

5. Demand curve or AR curve of firm is more elastic under monopolistic competition as ompared to monopoly.

**NOTES**

### 4.1.8 Let us sum up

Monopolistic competition has four characteristics. There are large number of firms, each firm is producing differentiated product, all firms have perfect knowledge and there is free entry and free exit. It is different from perfect competition only in one respect. It gives the firm power to influence the price in the market.

The main equilibrium condition in the short-run are

1.   Price or AR is greater than or equal to AVC so that at least variable costs are recovered and in care of losses, losses are confined to fixed cost only.

2.   MC=MR so that no more additions to profits are possible by producing more.

3.   MC becomes greater than MR beyond MC = MR output level so that any addition to output beyond MC=MR level leads to decline in profits.

In the long-run the three conditions are

i)   Price or AR is greater than or equal to LAC.

ii)   MC = MR

iii)   MC > MR beyond MC = MR output.

No losses are possible in the long-run. At equilibrium only normal profits are earned by the firm.

The firm in monopolistic competition has excess capacity both in the short-run and long-run. Excess capacity, unutilized capacity. Implies that if execs capacity is avoided, output would be higher and price lower.

### 4.1.9 Key words

(a)   **Capacity :**

Out put at minimum average cost level.

(b)   **Differentiated product :**

Close substitutes differentiated on the basis of design, packet trade mark etc.

**NOTES**

**(c)   Excess capacity :**

In the short-run it is the difference between optimal or plant capacity output and actual output at equilibrium. In the long-run it is the difference between ideal output and ctual output at equilibrium.

## 4.1.10 Questions

1.   Show that equilibrium output is lower and price is higher in monopolistic competition as compared to perfect competition.

2.   Explain the equilibrium position of a firm under monopolistic competition.

3.   Explain the characteristics and equilibrium position of a firm of monopolistic competition.

## IV.1.11 References

Same as in unit – I

**NOTES**

# UNIT – IV
## LESSON – 2
## OLIGOPOLY

**Structure**

## 4.20 Objectives

The study of this lesson on oligopoly will enable to

(a)  Define oligopoly and enlist its characteristics.

(b)  Describe various models of oligopoly

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( 64 )

(c) Explain why oligopolists try to collude amongst themselves rather than compete

(d) Explain the implications of collusion.

### 4.2.1 Introduction

Oligopoly is a form of market structure in which a few sellers sell differentiated or homogeneous products and each seller commanding a Substantial share of the market. Oligopoly refers to an imperfect market.

### 4.2.2 Meaning and Characteristics of oligopoly

Oligopoly market is identified by (i) a relatively small number of firms (ii) difficulties in entry and (iii) a product that in either Standardized or differentiated. Every seller influences and is influenced by the behaviour of other firms and therefore producers under oligopoly are mutually dependent upon one another.

The basic characteristics of oligopolistic market structure are as follows.

### Competition

The characteristics fewness of their number brings oligopolists in keen competition with one another. Under oligopoly the number of sellers is so small that any move by one seller immediately affects the rival seller. As a result each firm keeps a close watch on the activities of the rival firms and prepare itself with a number of defensive marketing strategies.

### Inter-dependence

Competition among the oligopolists make them interdependent in respect of decision making. A change in output or price by one firm evokes reaction from other firms.

### Difficult Entry

In the long run, an oligopolistic market structure is also characterized by strong barriers to entry of new firms in the industry. Some barriers to entry are economies of scale, price cuts, existence of excess capacity etc. These factors prevent the entry of new firm and help oligopoly to remain.

### Types of Oligopoly

Oligopoly is of two types.

NOTES

(a) Discriminatory oligopoly

(b) Pure Oligopoly

**Discriminations oligopoly**

In the case of discriminatory oligopoly different producers of the product sell goods similar to one another. From the consumer's point of view the difference in the goods can be both real and imaginary. The differences on account of size shape, quality and design etc. are real while differences on account of trade mark and brand name of the goods are imaginary.

**Pure Oligopoly**

In case of pure oligopoly all firms produce identical products which means that producers donot indulge in product differentiation. Consumer's decision to purchase the good of a particular producer are influenced by the price considerations.

**4.2.3 Non-collusive oligopoly**

There always exists an uncertainty in respect of behaviour pattern of a firm under oligopoly. Due to this uncertainty which a rises out of their unpredictable action and reaction, a systematic analysis of oligopoly becomes difficult. Under these circumstances, a wide variety of behaviour pattern may emerge. Based on different behaviourial assumptions, economists have developed a variety of models, which can be classified as (i) non-collusive models and (ii) collusive model.

The non-conclusive models of oligopoly explain the price and out put determination in a market structure in which oligopotests recognize their interdependence.

**4.2.3.1 Sweezy's model (kinked demand curve**

This approach was put forward by Paul M Sweezy, an American economics and by Hall and Hitch, Oxford economists.

According to kinked demand curve approach, the demand curve facing an oligopotest has a kink at the prevailing price. The kink is formed at the prevailing price level because the segment of the demand curve above the price level in more elastic and the segment of the demand curve below the prevailing price level is less elastic. According to the kinky oligopoly demand curve theory, each oligopolist believes that if he lower the price below the prevailing

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level his competitors will follow him and if he raises the price above the prevailing leveld his competitors will not follow this price increase.

The kinked demand curve helps to explain why oligopolists prices demand to be inflexible under the assumptions of the kinked demand curve, a price rise would lead to a sharp reduction in sale conversely a price reduction would attract few new customers. Thus, once a price is established, it remains inflexible for extended periods of time. However the theory does not explain how the price has been established.

Diagramatic representation of kinked demand curve. A kinked demand curve dD with a kink at point K has been shown. The prevailing price level is QK and the firms output level is OQ. Now the upper segment dK of the demand curve is more elastic then the lower, segment KD. This difference in elasticties is due to the competitive reaction pattern assumed by the kinky oligopoly demand curve hypotheses kinked demand curve under oligopoly.



Kinked demed course under oligopoly

## Duopoly Models

A special case of oligopoly calls duopoly exists when there are only two sellers of a product. A classical models of duopoly is -

### 4.2.3.2    Cour not's model

Augustine Cournot, a French economist was first to develop a formal duopoly model in 1938. The assumptions of the model are

(a)    There are two firms A + B

(b)    Both operate their product at zero M.C

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(c) Both face a downward sloping straight line demand curve.

(d) Each seller acts on the assumption that his competitor will not react to his decision to change his output and price.

Therefore Cournot in his model assumed that each oligopolistic firm would set its output in the belief that its rival firm's output remain constant. But this model ignores the oligopotestic interdependence in providing a solution for the price and output under oligopoly. The assumption of zero marginal cost is also unrealistic.

### 4.2.4 Collusive oligopoly

#### 4.2.4.1 What in Collusion

Different oligopolistic firms arrive at a tacit or formal agreement an a common policy. It collusive is an agreement among firm to avoid various competitive practices particularly price reductions. It may involve either formal agreements or merely tacit recognition that competitive practices will be self defeating in the long-run.

#### 4.2.4.2 Factors determining collusive oligopoly

The major factors behind collusion are

(a) Collusion reduces the degree of competition

(b) It reduces the oligopolestic uncertainty

(c) Collusion becomes a kind of barrier to the entry of new firms.

#### 4.2.4.3 Cartel

Cartel is a formal agreement of different oligopoly firms which stands for perfect form of collusion. Under this perfect cartel type of collusive oligopoly, the price and output determination of the whole industry as well as each member firm is determined by the common administrative authority so as to achieve maximum joint profit.

Cartels do not necessarily create the conditions for price stability in an oligopolistic market. There is no binding on the members under cartel agreements. Cartels do not prevent the possibility of new firms as there is no legal provision.

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### 4.2.4.4 Price Leadership

Under price leadership, prices set by a leading firm are imitated by the other firms in the market simply by self interests, not by formal agreement. Sometimes price leadership results from a formal meeting and agreement between the competing firms in which they choose a leader and agree to follow him setting price. "

### Types of Price Leadership

There are three types of price leadership

(i)     Price leadership by a dominant firm

(ii)    Price leadership by a low cost firm

(iii)   Barometric price leadership

(i)    Under price leadership by a dominant firm one of the few firms in the industry may be producing large proportion of the total production and may therefore dominate. The market of the product the dominant firm estimates its own demand curve and fixes a price which maximizes is its profit. The small firms follow the dominant firm, accept the price set by him and adjust their output accordingly.

(ii)   The second kind of price leadership is by a small firm with a low cart of production. The advantage of such a firm is that it can charge a lower price without being looser. The large firms may accept the small firms at the price leader because they may already be in a tight position due to their high cost.

(iii)  Finally under barometric price leadership, an old experienced or most respected firm assumes the role of a leader/ custodian who protects the interest of all. The barometric firm assess the charge in the market condition with regard to demand cost of production, competition from the related production etc and announces price charges which are best from the point of view of all the firms in the industry and other firms follow him willingly.

There are certain limitations in maintaining the price leadership they are

(i)    The success of price leadership of a firm depends upon the accuracy of its estimation of reaction of his followers.

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(ii) There may be secret price cuts to capture market.

(iii) The rivals may indulge in non-price competition to increase their sales.

· Thus the price leader may not be able to maintain his leadership for a long time.

### 4.2.5 Let us sum up

Oligopoly is an important from of imperfect competition. No individual firm under oligopoly can be sure of the demand curve it faces though the demand curve of the industry is known. This uncertainty is due to oligopolists being so much interdependent rather than independent. In such circumstances an oligopolist can not determine the product price that will deliver maximum profit. Because of the predicament of the individuals firm it is impossible to determine the precise price and output policy that will emerge in oligopolistic industries.

The kinked demand curve helps to explain why oligopolistic prices tend to be inflexible. However, It only explains why an oligopoly price has been determined would remain rigid. But it does not explain how the prevailing price has been determined.

Oligopolists try not to have a price competition and there fore often prefer to collude than compete. Collusion can be formal or, informal. In formal collusion, they fix up one price which all of them should charge. The price is determined in such a way that there will be joint profit maximization. When collusion is informal, price is determined by a price leader. A price leader could be both a large firm or a small firm depending upon the criterion the oligapolists like to apply to the choice of their leader. Price leadership models attempt to explain the firms behavior of changing prices in step with each other.

### 4.2.6 Key words

*Cartel :* A formal agreement in which price of the commodity and showing of the markets are commonly, decided but the organizational control of a firm is in its own hand.

*Kinked Demand Curve :* A seller facing a demand curve in which increase in price above the prevailing price levels makes his demand more elastic but decrease In price below the prevailing price level makes his demand inelastic.

### 4.2.7 Questions

(1) What is inter dependence in an oligoposistic market? What kind of problems does it create in determining price and output under oligopoly?

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(2) What is joint profit maximization how at is it sought to be achieved under oligopoly.

(3) A kinked demand curve may help to understand why oligopoly price tends to be rigid but it does not explain how the price has been determined.

(4) Explain the concept of price leadership. Does acceptance of price leadership solve all problems of oligopoly equilibrium ?

### 4.2.8 References

Same as mentioned in unit – I

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# UNIT – V
## LESSON

**Structure :**

## 5.0   Objectives

After study of this lesson one should be able to

(a)    Describe what is rent

(b)    Explain how rent arises

(c)    Distinguish rent from Economic Rent

## 5.1   Introduction

In common usage rent is a return on land. But the Economics same economists consid. it as a surplus by certain categories of land due to the fact that its supply is inelastic. An factor having this quality of land can thus earn some things which will be of the nature of rent Some other economists assert that any income received by a factor over and above it:

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opportunity cost will be rent. There are some complex issues which will be answered in this lesson.

## 5.2 Theory of Rent

There are two approaches to rent. The first one is the classical approach, according to which rent is the return on land to the landlord. The chief exponent of this approach was David Ricardo who defined rent as that portion of the produce of the earth which is paid to the landlord for the original and indestructible power of the soil. David Ricardo gave a restricted meaning of rent. His theory revealed an essential truth that any factor fixed in supply will earn something of the nature of rent. This helped in developing the concept of quari-rent.

• Modern economists reject the Ricardian approach. They say that rent does not accrue to land only. In their opinion it is a kind of surplus that accrues to all the factors of production. Joan Robinson is considered to be the chief exponents of this approach. She has stated "The essence of the conception of rent is the conception of surplus earned by a particular part of a factor of production over and above the minimum earnings necessary to induce it to do its work".

Joan Robinson argues that each factor expects a certain minimum income as a return for the work it does in production. The actual earnings, however may be equal to these minimum earnings or may be more than that. In case they exceed the minimum earnings which the factor had expected, the surplus would be rent.

After knowing the concept of rent we shall now first discuss on rent as a return on land (classical approach) and then economic rent as a surplus over transfer earnings which are the same as minimum earnings necessary to induce a factor to remain in its existing use.

### 5.1.1 Rent of Land

David Ricardo viewed rent as a return on land. He was of the view that rent did not arise until only the most fertile efficient land was under cultivation. However, once this land was exhausted and due to the increase in the demand for food grains, farming had to be extended to somewhat less fertile land (owing to scarcity of most fertile land) rent emerged on the most fertile land. The amount of rent in this case was to be equal to the value of excess output on the most fertile land over that on the less fertile land. Further pressure of population creations

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additional demand for food grains in course of time could exhaust even the supply of the second best land and thus still less fertile land was to be brought under cultivation. In this situation, rent not only increased on the most fertile land, but also emerged on the second best land. Following this logic of there are several types of land with different levels of fertility under cultivation, then rent will not occur only on the least fertile land, that is, on the marginal land on all other types of land, rent will be paid equal to the value of their surplus output over that on the marginal land.

Ricardo's concept of rent can be represented by a diagram.
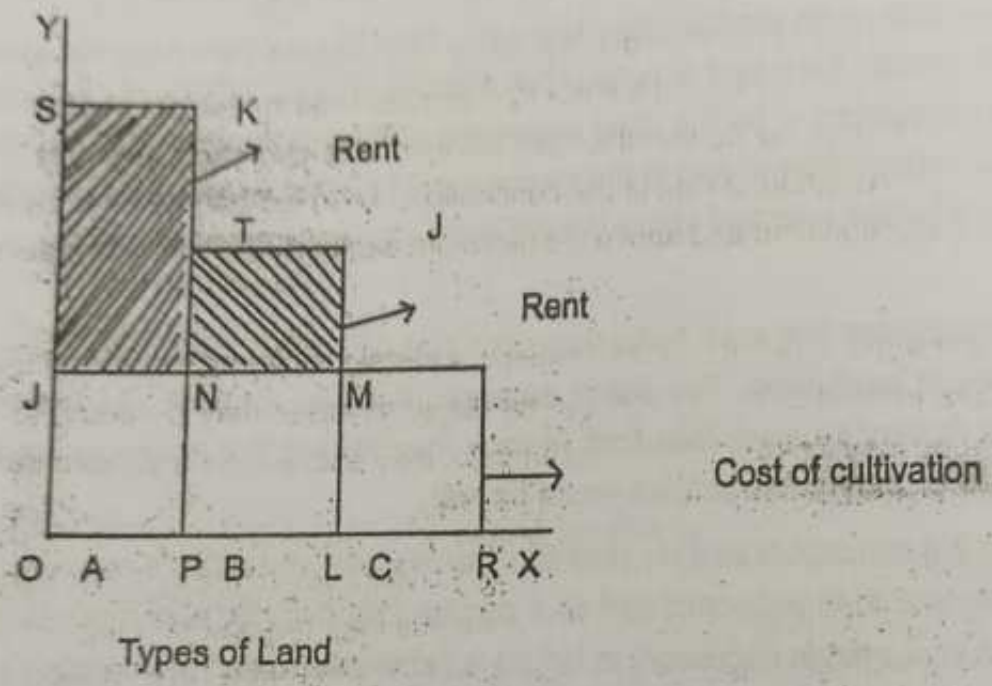


Figure 5.2.1 Rent as determined by Ricardo

On the x axis, we take various types of land A.B.C. and y axis is given the output of wheat per acre. The output on land A. is represented by rectangle OSKP, on B land by rectangle PTJL and on C land by rectangle LMTR. Since cost of cultivation is represented by rectangles OJNP or PNML, the C land is no rent land, Rent on A land is given by the shaded rectangle JSKN and on B, land by shaded rectangle NTJM.

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Ricardo did not use any empirical evidence to propound his theory of rent. He relieved entirely on deductive reasoning for this purpose and based is theory on certain assumptions. They are as follows :

(a) The most efficient and fertile land was brought under cultivation first, less efficient lands were cultivated later.

(b) Scarcity is a unique quality of land and rent on land arise due to this quality.

(c) Land is not homogeneous.

(d) Land has certain original and indestructible powers which determine its quality in terms of fertility.

(e) Marginal land is no rent land

Some of these assumptions are unrealistic. Various economists criticized the Recordian theory of rent for making Questionable assumptions.

Ricardo based his theory ion original and indestructible power of the soil (fertility) original fertility of the soil can not be determined since one can not differential original fertility from man made fertility. Since original fertility is indeterminate the rent accruing from original fertility is also indeterminate. Again it is highly improper to assume indestructibility of the soil in an age of nuclear physics. Again Ricardo did not describe the order in which various types of land were cultivated correctly. Ricardo based his theory with the assumption that most fertile land was cultivated first and inferior fertile land subsequently. But from a historical stand point the theory can not be tenable. Finally no rent land is found nowhere and, therefore it is wrong to say that marginal land is no rent land.

### 5.1.2 Economic Rent & Transfer Earnings

Economic Rent is a surplus that accrues to a factor of production over and above a minimum return that induces it to remain in its present use. The minimum payment to a factor of production is called its transfer earnings. The payment to a factor of production may be equal to it's transfer earnings or may be even more than that. In case the return to a factor of production is equal to its transfer earnings, it does not earn any rent. However quite often the remuneration to a factor of production is greater than its transfer earnings and in all such

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cases a part of the earnings of a factor concerned is of the nature of rent and the other part is its transfer earnings. Thus the actual return to a factor of production normally contains both transfer earnings and rent. However there are two limiting cases. In the first limiting cases. In the first limiting case the total earnings of the factor of production are transfer earnings. In the second limiting case the entire payment to the factor of production is rent. This can be clear from the following illustrations.

No.2 person B is a Dental Surgeon and trained for a specific job such as dental surgery. The person can not do any other job requiring special skill and will voluntarily not accept inferior jobs wanting no particular skill. Therefore his transfer earnings are just nil and the entire salary amounting Rs.5,000/- which he receives as a dental surgeon will be economic rent.

No. 3 In reality, rarely a factor of production is completely specific consider the case of a High court Judge. C The present salary is Rs.10,000 per month. As an advocate this person could earn Rs.8,000 per month. Thus the transfer earnings of this person C therefore are Rs.8,000 per month and in his monthly salary there is an economic rent of Rs.2,000/-

Thus we can conclude from thse illustrations that economic rent is inversely related to the elasticity of supply of a factor of production. Let us first consider the case of a non-specific factor which gets the same return in all the possible uses to which it can be put. The supply of such a factor will be perfectly elastic as shown in figure 5.2.2. This implies that this factor is available only at a fixed price and if reward to it is even a little less than that, then not even one unit o it will be available to the producer. In the figure RS is the supply curve showing that at OR factor price supply of the factor in question is perfectly elastic. The demand curve for the factor DD intersects it at E which means that Quantity of the factor employed in ON and the total earning are OREN. In this case since OR is the transfer earnings, the entire income earned by the factor is transfer earnings.

Now let us consider the case of a factor which is completely specific. Its supply will be perfectly inelastic. The transfer earnings thus will be zero. This case is illustrated in figure 5.3. We can observe that factor price or the rate of return to the in this case is OW and the total earnings of the factor are OWFM Since in this case the transfer earnings of the factor are nil, the entire income learned by it is an economic rent.
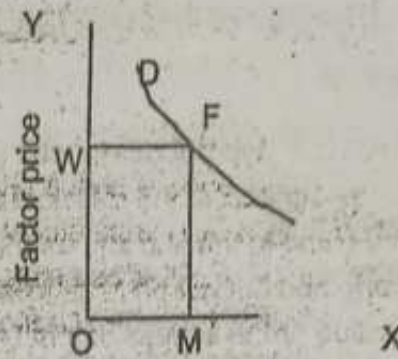
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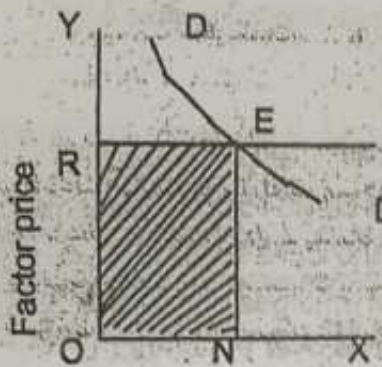
Quantity of the Factor
Figure 5.2
All the income of the factor is
transfer earning

Quantity of the factor
Figure 5.3
All the income of the factor is
an economic rent.

In case of elastic supply of a factor, the supply curve fr it has a positive slope as shown in figure 5.4. The demand curve for the factor DD intersects the supply curve TS at E and the equilibrium factor price is LE or OP. It is clear that the last unit of the factor, which is OLth unit, gets the return equal to its supply price which is same as its transfer earnings. Other units of course, get something over and above their transfer earnings.

For example Okth unit's transfer earnings are KF or OR. Hence its income contains an economic rent amounting to RP. Considering all the units of te factor together, the total income is OPEL. This includes transfer earnings of all the units amounting to OTEL, and thus the economic rent earned by all the units is TPE.
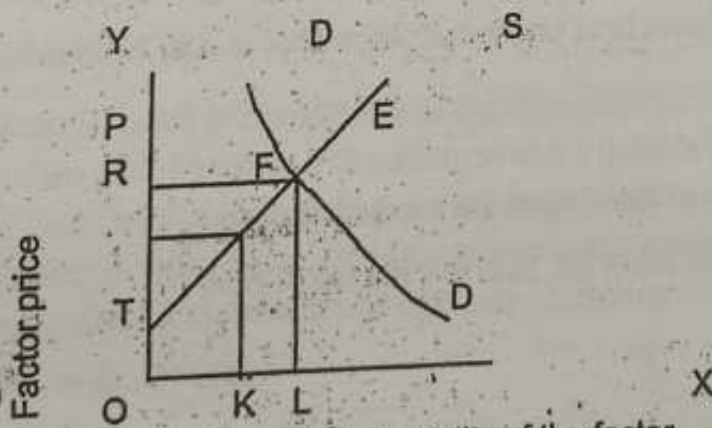


Figure 5.4 Quantity of the factor

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Earnings of the factor include both transfer earnings and economic rent.

## 5.2 Let us sum up

There are two main approaches to rent. (1) The classical approach and (2) The modern approach. The chief architect of the classical approach is David Ricardo, according to whom rent is the return on land to the and lord for the original and indestructible powers of the soil. Rent is price determined but not price determining. Rent emerges on more fertile lands and equal to money value of the excess output on these lands over the output on the marginal land. Marginal land is considered as no rent land.

Ricardo's theory of rent is based on highly questionable assumptions and is therefore not acceptable to the modern economists.

Modern economists call rent as economic rent. It is the surplus that accrues to a factor of production over its transfer earnings. Transfer earnings refer to the return to a factor, which will induce it to remain in its existing employment. Joan Robinson who is the chief exponent of the modern approach to rent asserts that it is not specific t land. In other words, rent can be earned by all factors of production. It depends on the elasticity of supply of a factor of production and is in fact inversely related to it. This implies tht in case of supply of a factor being perfectly elastic, its total earnings will eb transfer earnings, and in the opposite case when the supply is perfectly inelastic, the total earnings of the factor will be rent.

## 5.3 Keywords

Economic Rents : The surplus over transfer earnings of a factor of production.

Marginal Land. The least efficient land under cultivation that is able to cover only the cost of cultivation.

## 5.4 Questions

1. Discuss the Ricardian Theory of Rent, what are its assumptions.

2. Explain the concept of transfer earnings. How is it related to rent.

## 5.5 References

Same as referred in Unit-I.

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PROFIT

## Structure

### 5.1.0 Objectives

After studying this lesson we can be able to describe the concept of profit.

List the sources of Profit.

### 5.1.1 Introduction

Broadly, profit is the income of the entrepreneur. The Question arises why should an entrepreneur earn profit is a Question on which there is little agreement among economists. We will learn in this lesson that disagreement among economists on this question arises from the fact that profit earned by the entrepreneur arise from more than one source and it is not always clear as to which one of these sources is most important.

### 5.1.2 Concept of Profit

The concept of profit is not easy to explain an account of much controversy about it.

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The best thing in such a situation that one can do is to discuss all those view points which have got some acceptability.

Let us consider F.B. Hawley's view point. In his opinion profits are the returns to the entrepreneur for his risk bearing function in production. Hawley has identified broadly four types of risk. These are (1) risk associated with the depreciation of the plant and machinery, (II) their obsolescence due to technological change, (iii) marketability of the product and (iv) the various unforeseen factors in the business.

F.H.Knight does not agree with Hawley. He distinguished between risks which can be anticipated and risk which can not be anticipated. The risks which can be anticipated are insurable and profit is not a reward for bearing such risks. Unexpected risk which in his opinion are the uncertainties which are non insurable and profit is earned by the entrepreneur for bearing only them. Most economists consider knights theory to be more appropriate.

J.B.Clark defines profit as a dynamic surplus. In a dynamic society due to changes occurring in the size and composition of population, human wants, supply of capital, production techniques and forms of business organisation, money value of the output is never equal to the costs of the factors of production other than enterprise. The firm in these changing conditions can always hope to earn a surplus which goes to the entrepreneur as his profit. However, the possibilities of getting losses can not be ruled out altogether.

J.A. Schumpeter has argued that the entrepreneur plays a ery positive role in production as innovator. In his opinion, profit is a reward to the entrepreneur for making innovations. In his opinion an innovation implies adoption of a new technique in production, introduction of a new product, capturing new markets for the product, securing control over an entirely new source of some important raw material and introducing a new organizational structure in the firm.

Joan Robinson totally disagrees with the above mentioned approaches. According to him profit is a non-functional income and it emerges due to imperfections in the market. Perfect competition has never existed in any market and the presence of monopoly element in them enables an entrepreneur to earn profit.

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### 5.1.3 Sources of Profit

Profits do not arise due to a single factor. A careful analysis of profit clearly reveals that a part from risk or uncertainty there are some other important factors which give rise to profits. Among there, the more important sources of profit are the innovations done by the entrepreneur, the monopoly power enjoyed by the firm and exploitation of labour.

### (1) Risk and uncertainty

The risk element associated with production is an important source of profit. Production involves various kinds of risk. Anticipation of demand with accuracy is a difficult risk involving procedure price escalation and change in govt.'s fiscal policy are non-insurable risks. The probability of loss due to these unpredictable non-insurable uncertainties can never be ruled out.

### (2) Innovations

Schumpeter attributes occurrence of profit solely to the introduction of innovations either in the production process or the marketing of the product. Innovations are not to be confused for technological changes. The concept innovations cover the five following cases. (1) The introduction of a new good (2) the introduction of a new method of production, (3) the opening of a new market, (4) the conquest of the new source of supply of raw materials or half manufactured gods (5) the carrying out of the new organisation of an industry, like the creation of a monopoly position.

Profits resulting from a particular innovation are essentially transitional. They are eliminated in course of time by the attempts of other firms to share them. Therefore innovations activity has to be carried out continually if profits are to be earned on a regular basis from it.

### (3) Monopoly Power

M.Kalicki and many othr economists like A.P.Lerner assert that the source of profit is the monopoly power that an entrepreneur enjoys in the market Greater the monopoly power that an entrepreneur can exercise, larger will be amount of profit that accrues to him. The degree of monopoly as Lerner measures is in fact reciprocal of elasticity of demand.

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### (4) Exploitation of Labour

According to Joan Robinson, the difference between labour's marginal revenue productivity and the wage rate is the measure of workers exploitation by the employer. It is in fact an illegitimate gain to the entrepreneur because it is not the result of any effort made by the entrepreneur. None the less it emerges as one of the components of his profit.

The profit form this source is however, reduced if workers resort to collective bargaining through trade unions.

### 5.1.4 Let us Sum up

Profit is the return to entrepreneur for his services in production. But what exactly these services are, on this question economists do not seem to be in agreement, Hawley viewed profit as a reward for risk bearing Knight considered profit as the reward for bearing non-insurable risks which he considered uncertainties. J.B.Clark considered profit as a dynamic surplus. Schumpeter viewed profit as a return to the entrepreneur for his innovating activities. These concepts propounded by different economists are complementary and some times overlapping.

Among the sources of profit the more important ones are risks and uncertainties which any producer faces in the production and the marketing of the product, the Innovations made by him, the monopoly power that he exercises in the market and the exploitation of labour.

### 5.1.5 Key words

Uncertainties : Risks which are of non-insurable nature.

### 5.1.6 Questions

(1) Explain the concept of profit. Do you think that profit is a reward for uncertainty bearing?

(2) What are the various sources of profit?

### 5.1.7 References

Same as Unit-I.

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