REVENUE ANALYSIS

Most important aim of any producer is mainly to maximize the profit. Since amount of profit is difference between production cost and the sales amount, hence, maximum profit is possible if cost is as minimum as possible and sales amount is highest. The amount obtained by the producer through sale of commodity is called income or revenue. Economists use revenue word in three ways : total revenue, average revenue and marginal revenue.

(1) Total Revenue or TR : Total revenue refers to the total amount of money received by firm from sale of a given level of output. As per **Penguine Dictionary of Economics** (DOE), "Total revenue is defined as the price multiplied by the number of units sold." Thus, total revenue is amount which is found by multiplying price (average revenue) by sales amount.

Symbolically;

$$TR = P \text{ (or AR)} \times Q$$

Here,

$$TR = \text{Total Revenue}$$
$$P \text{ or } AR = \text{Price Or Average Revenue, and}$$
$$Q = \text{Total quantity of sales.}$$

For example, 20 units of commodity have been sold and price per unit is ₹ 10 then, total revenue will be 20 x ₹ 10 = ₹ 200.

(2) Average Revenue or AR : Average revenue is obtained by dividing the total revenue by the number of the units sold by the producer. According to **Penguine Dictionary of Economics** (DOE), "Average Revenue is total revenue received from the sale of a given number of units of output divided by that number of units."

In brief;

$$AR = \frac{TR}{Q}$$

Here, $AR = \text{Average Revenue,}$
$TR = \text{Total Revenue, and}$

Q = Quantity Sold

For example, by selling 15 units the total revenue received is ₹ 75 then, average revenue is ₹ $\dfrac{75}{15}$ = ₹ 5.

(3) Marginal Revenue or MR : Marginal revenue is a net addition to the total revenue when one more unit of a commodity is sold. As per **Penguine Dictionary of Economics** (DOE), "Marginal Revenue in the change in total revenue which results from changing output sold by an unit."

In formula;

$$MR = TR_n - TR_{n-1}$$

Here, MR = Marginal Revenue,

TR$_n$ = Total revenue from n units, and

TR$_{n-1}$ = Total revenue from n – 1 units

For example, total revenue form 20 units is Rs. 200. If total revenue from 19 units is Rs. 185 then marginal revenue would be 200 – 185 = ₹ 15.

Explanation from example and diagram : Above three ways of revenue can be clarified by following table and diagram.

Table-1 : Calculation of TR, AR and MR

Quantity of Production (Q)	Price (P) ₹	Total Revenue TR = Q x P ₹	Average Revenue AR = $\dfrac{TR}{Q}$ ₹	Marginal Revenue (MR) ₹
1	10	10	10	10 – 0 = 0
2	9	18	9	18 – 10 = 8
3	8	24	8	24 – 18 = 6
4	7	28	7	28 – 24 = 4
5	6	30	6	30 – 28 = 2
6	5	30	5	30 – 30 = 0
7	4	28	4	28 – 30 = –2
8	3	24	3	24 – 28 = –4

In diagram 1, three types of revenue have been shown. TR curve first increases (upto 5th units) then it becomes constant (between 5th and 6th units) and at the end (after 6 units) it starts falling. AR curve continuously decreases but is always above MR curve. MR curve is initially positive, then zero and at the end it is negative. MR curve is falling faster then AR curve. In sixth unit, TR is maximum where MR is zero and when MR becomes nega-

tive, TR also decreases. But, in practical life, firm mostly stops production expansion when MR is negative and TR falls.
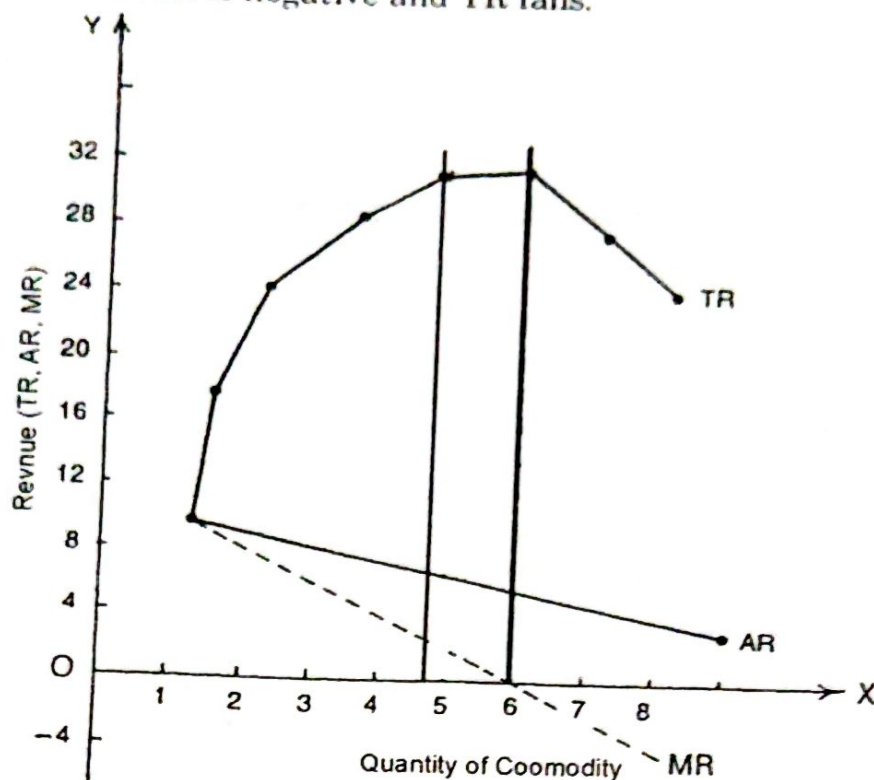

Diagram-1

RELATIONSHIP BETWEEN AVERAGE REVENUE AND MARGINAL REVENUE

Relationships between average and marginal revenue are as follows :

(1) Both are based on TR : Both average and marginal revenue are measured by total revenue. In formula;

$$\text{Average revenue} = \frac{\text{Total Revenue}}{\text{Production}}$$

$$AR = \frac{TR}{Q}$$

$$\text{Marginal revenue} = TR_n - TR_{n-1}$$

(2) If AR and MR curves are parallel to X-axis : Both average and marginal revenue curves are parallel in the case of perfect competition and in this condition AR = MR.

(3) If AR and MR both curves are falling straight lines : In case of imperfect competition, both AR and MR are falling in straight line to downwards. In this case, rate of falling of MR is double than AR. That is why in figure 2, AB = BC.

(4) If AR and MR both curves are convex : When AR and MR curves are convex to origin point, MR curve will intersect perpendicular drawn on AR curve from Y axis at more than half distance. In figure 3, MC curve cuts perpendicular AC at point B and AB > BC.
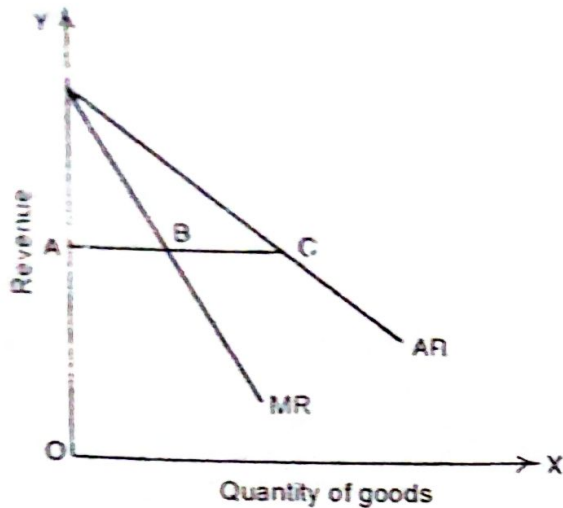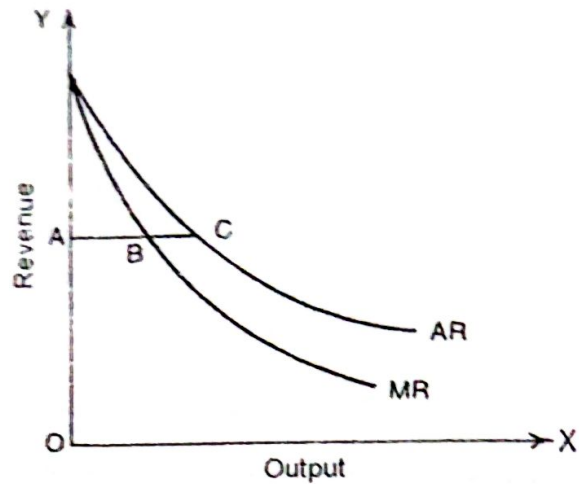
Diagram-2 **Diagram-3**

(5) If AR and MR both curves are concave : When AR and MR curve are concave to origin point then MR curve intersects perpendicular drawn on AR curve from Y axis, at less than half distance. In figure 4, MR curve cut penpendicular AC at point B and AB < BC.
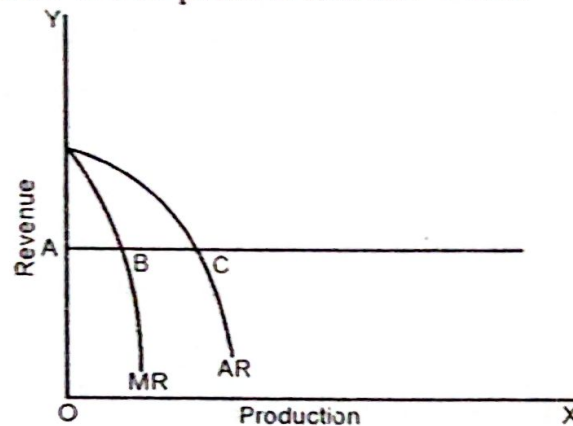

Diagram-4

A COMPARATIVE STUDY OF THE REVENUE CURVES OF DIFFERENT MARKETS

The form of AR and MR curves in different markets is as follows :

1. Perfect Competition : In perfect competition price determination is done by industry. This price is same for all the firms and firms accept this price. Hence, in perfect competition price, average revenue (AR) and marginal revenue (MR) are always same, it is shown in below table and diagram.

Revenue of Perfect Competition firm

Quantity (Q)	Price (P)	Total Revenue (TR)	Average Revenue (AR)	Marginal (MR)
₹	₹	₹	₹	₹
1	5	1 x 5 = 5	5/1 = 5	5 – 0 = 5
2	5	2 x 5 = 10	10/2 = 5	10 – 5 = 5
3	5	3 x 5 = 15	15/3 = 5	15 – 10 = 5
4	5	4 x 5 = 20	20/4 = 5	20 – 15 = 5
5	5	5 x 5 = 25	25/5 = 5	25 – 20 = 5

Table - 2