

ASSIGNMENT 01

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- **Question:**

A Manufacturer produces three products x,y,z which he sells in two markets. Annual sales are indicated below:

MARKET	PRODUCTS		
I	10000	2000	18000
II	6000	20000	8000

a) if unit sale prices of x,y and z are Rs 2.50, Rs 1.50 and Rs 1.00 respectively, find the total revenue in each market with the help of matrix algebra.

b) if the unit cost of the above three commodities are Rs 1.00 and 50 paise respectively. Find the gross profit.

• **SOLUTION:**

a)

Applying Matrix Algebra,

FROM MARKET I

$$\begin{bmatrix} 10000 & 2000 & 18000 \end{bmatrix} * \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} TOTAL & REVENUE \end{bmatrix}$$

$$\begin{bmatrix} 10000 & 2000 & 18000 \end{bmatrix} * \begin{bmatrix} 2.5 \\ 1.5 \\ 1 \end{bmatrix} = \begin{bmatrix} TOTAL & REVENUE \end{bmatrix}$$

$$\begin{bmatrix} 10000 * 2.5 + 2000 * 1.5 + 18000 * 1 \end{bmatrix} = \begin{bmatrix} TOTAL & REVENUE \end{bmatrix}$$

Therefore,

Total Revenue= Rs 46000

FROM MARKET II

$$\begin{bmatrix} 6000 & 20000 & 8000 \end{bmatrix} * \begin{bmatrix} 2.5 \\ 1.5 \\ 1 \end{bmatrix} = \begin{bmatrix} TOTAL & REVENUE \end{bmatrix}$$

$$\begin{bmatrix} 6000 * 2.5 + 20000 * 1.5 + 8000 * 1 \end{bmatrix} = \begin{bmatrix} TOTAL & REVENUE \end{bmatrix}$$

Therefore,

Total Revenue= Rs 53000

b)

Total Gross Profit:

MARKET I AND MARKET II

$$\begin{bmatrix} 10000 \\ 2000 \\ 18000 \end{bmatrix} + \begin{bmatrix} 6000 \\ 20000 \\ 8000 \end{bmatrix}$$

=

TOTAL ITEMS FROM I,II

$$\begin{bmatrix} 16000 \\ 22000 \\ 26000 \end{bmatrix}$$

UNIT SELL PRICE, UNIT COST PRICE AND UNIT PROFIT

$$\begin{bmatrix} 2.5 & 1.5 & 1 \end{bmatrix} - \begin{bmatrix} 2 & 1 & 0.5 \end{bmatrix} = \begin{bmatrix} 0.5 & 0.5 & 0.5 \end{bmatrix}$$

Now,

$$\begin{bmatrix} 16000 \\ 22000 \\ 26000 \end{bmatrix} * \begin{bmatrix} 0.5 & 0.5 & 0.5 \end{bmatrix} = \begin{bmatrix} GROSS & PROFIT \end{bmatrix}$$

$$\begin{bmatrix} 0.5 * 64000 \end{bmatrix} = \begin{bmatrix} GROSS & PROFIT \end{bmatrix}$$

Therefore,

Total Gross Profit = 32000