

Ex - 3.1

⑥ (i) Find the values of x, y, z from the following equation :-

$$\begin{bmatrix} 4 & 3 \\ x & 5 \end{bmatrix} = \begin{bmatrix} y & z \\ 1 & 5 \end{bmatrix}$$

Soln: - As the given matrices are equal, their corresponding elements are also equal. Comparing the corresponding elements we get,

$$x = 1, y = 4, z = 3.$$

$$(ii) \begin{bmatrix} x+y & z \\ 5+z & xy \end{bmatrix} = \begin{bmatrix} 6 & 2 \\ 5 & 8 \end{bmatrix}$$

Soln: - Comparing both the matrices, we get

$$x+y = 6 \quad \text{--- (i)}$$

$$5+z = 5 \quad \text{--- (ii)}$$

$$xy = 8 \quad \text{--- (iii)}$$

$$5+z = 5$$

$$\therefore z = 0$$

from equation (i) & (iii)

$$x + y = 6 \Rightarrow x = 6 - y$$

$$\Rightarrow xy = 8$$

$$\Rightarrow (6 - y)y = 8$$

$$\Rightarrow 6y - y^2 = 8$$

$$\Rightarrow -y^2 + 6y - 8 = 0$$

$$\Rightarrow y^2 - 6y + 8 = 0$$

$$\Rightarrow y^2 - 4y - 2y + 8 = 0$$

$$\Rightarrow y(y - 4) - 2(y - 4) = 0$$

$$\Rightarrow (y - 4)(y - 2) = 0$$

$$\Rightarrow y = 4 \quad y = 2$$

Putting this in eqn (i)

$$x + 4 = 6$$

$$x = 2$$

$$x + 2 = 6$$

$$x = 4$$

$$\therefore x = 2, y = 4, z = 0$$

$$x = 4, y = 2, z = 0$$