

Q.3. Find values of  $a$  and  $b$  if  $A=B$ , where.

$$A = \begin{bmatrix} a+4 & 3b \\ 8 & -6 \end{bmatrix}_{2 \times 2} \text{ and } B = \begin{bmatrix} 2a+2 & b^2+2 \\ -8 & b^2-5b \end{bmatrix}_{2 \times 2}$$

Soln. We have,  $A = \begin{bmatrix} a+4 & 3b \\ 8 & -6 \end{bmatrix}_{2 \times 2}$  and

$$B = \begin{bmatrix} 2a+2 & b^2+2 \\ 8 & b^2-5b \end{bmatrix}_{2 \times 2}$$

Given  $A=B$ .  
 $a_{ij} = b_{ij}$  for all  $i$  and  $j$

$$a_{11} = b_{11} \Rightarrow a+4 = 2a+2 \Rightarrow a = 2$$

$$a_{12} = b_{12} \Rightarrow 3b = b^2+2 \Rightarrow b^2-3b+2=0 \Rightarrow b=1, 2$$

$$a_{22} = b_{22} \Rightarrow -6 = b^2-5b \Rightarrow b^2-5b+6=0 \Rightarrow b=2, 3$$

$a=2$  and  $b=2$  (common value).