

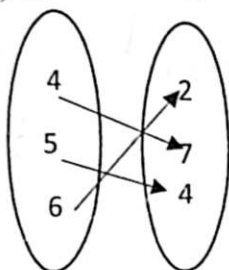
Marks Distribution 6+5+4

1.(a) If $R = \{(a,b), (b,c), (a,c)\}$ and $S = \{(3,7), (4,8), (5,9), (7,11)\}$ Which Relation is a Function and why?

(b) Classify the Relation as Injective, Surjective and Bijective Function and Why.

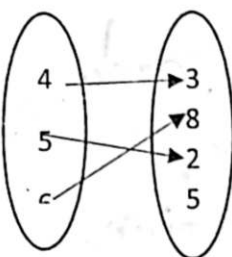
i) A

B



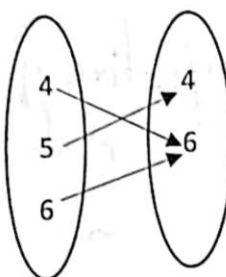
ii) A

B



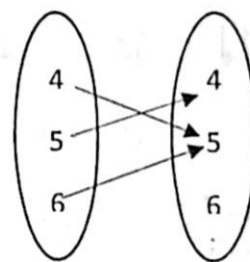
iii) A

B



iv) A

B



$$2. \text{ Test the Differentiability of } f(x) = \begin{cases} 5; & \text{when } x < 0 \\ 2 + \sin x; & \text{when } 0 \leq x < \frac{\pi}{2} \\ 3 + \left(x - \frac{\pi}{2}\right)^2; & \text{when } x \geq \frac{\pi}{2} \end{cases} \quad \text{at } x = \frac{\pi}{2}$$

3.

Solve the equation $4x^3 - 24x^2 + 23x + 18 = 0$ using Remainder theorem