



Class Test

Student ID :

Program : ~~sci~~

– semester : Summer- 2025

Course Code : MAT101

Course Title : Mathematics I

Section : 69-A

Date : 26/05/25

Class Test No. : 01

Signature of the Course Teacher :

Time: 30 minutes

Q1.

i. If

$$R = \{(1, 2), (2, 3), (1, 3)\}$$

$$S = \{(4, 7), (4, 8), (5, 9), (7, 11)\}$$

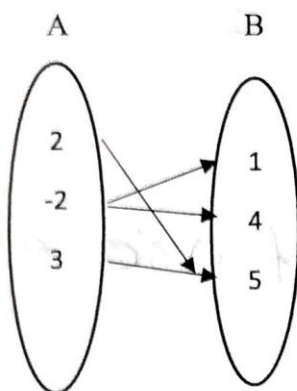
$$T = \{(3, 10), (-3, 10), (5, 26), (6, 37)\}$$

Which relation is a function and why?

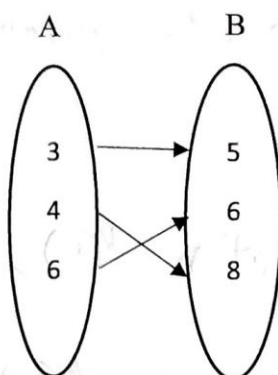
2

ii. Which Relation is an Injective, Surjective, and Bijective Function and why:

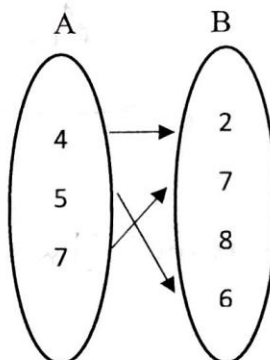
a)



b)



c)



3

Q2. State the factor theorem .Find the roots of the equation $x^4 - 16x^3 + 86x^2 - 176x + 105 = 0$

By using remainder theorem.

5

Q3. Examine the Differentiability of the following function at the point $x = \frac{\pi}{2}$

5

$$f(x) = \begin{cases} 1; & x < 0 \\ 1 + \sin x; & 0 \leq x < \frac{\pi}{2} \\ 2 + \left(x - \frac{\pi}{2}\right)^2; & x \geq \frac{\pi}{2} \end{cases}$$

Start from here