VIGNAN'S FOUNDATION FOR SCIENCE, TECHNOLOGY & RESEARCH
(Deemed to be University) - Estd. u/s 3 of UGC Act 1956

SCHOOL OF APPLIED SCIENCE & HUMANITIES

DEPARTMENT OF MATHEMATICS

Subject: Foundations of Engineering Mathematics | Subject Code: 25MT101

Sem. : Pre-Semester | Academic Year: 2025-2026

Section: 32 | Regulation: R25

**Assignment 2** **20 Marks**

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1. How many onto functions are possible from a set A with 4 elements to a set B with 3 elements?

2. If f: $\mathbb{N} \to \mathbb{N}$ is given by f(n) = n + 5 and g: $\mathbb{N} \to \mathbb{N}$ is given by g(n) = 2n, find:
   a. $(g \circ f)(n)$
   b. $(f \circ g)(n)$
   c. Are $g \circ f$ and $f \circ g$ equal?

3. Let f: $\mathbb{R} - \{-2\} \to \mathbb{R} - \{3\}$ be defined as: f(x) = $\frac{3x+5}{x+2}$.
   a. Prove that f is bijective.
   b. Find $f^{-1}(x)$.

4. Let f: $\mathbb{R} \to \mathbb{R}$ be defined by f(x) = $x^2 - 4x + 3$. Determine whether f is one-one, onto, or bijective. Justify your answer.

5. Let A = {1, 2, 3}. How many onto functions can be defined from A to {a, b}?