MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL
MINI TEST, August, 2024

B.Tech (Second Year) SEMESTER: III

Branch: CSE
SUBJECT: MATHEMATICS III   **PAPER: MTH 231**
Time: 60 minutes

Max. Marks: 10

Instructions:

(1) Attempt all questions.
(2) Use usual notations.
(3) Figures to the right indicate marks.
(4) Write all the steps and show calculations of each step.
(5) Take blank sheets of paper and write your admission/roll number, name, Paper number on the top of the sheet and sign on each page with page numbers
(6) Simply write Question number and your answer on the sheet.

S.No.	Question	Marks
1	What is a Partially Ordered Set (POSET)? Draw the Hasse diagram of the relation $R= \{(x,y) : |x-y| \leq 2 \ \forall \ x, y \in A\}$ where $A= \{1, 2, 3, 4, 5, 6\}$ .Determine whether R is a Poset	2.5
2	Given R is a binary relation on the set of all multiples of 2 such that $R= \{(a,b): b$ is multiple of a, where a and b are multiples of 2$\}$. Determine whether R forms a lattice w.r.t. above operation b is multiple of a	2.5
3	Define group? Prove that the identity element and inverse are unique in a group.	2.5
4	Let $G= \{f_1, f_2, f_3, f_4\}$, where $f_1(x) = x$, $f_2(x) = - x$, $f_3(x) = 1/x$, $f_4(x)= -1/x$ and o be the composition of functions. Show that $\{G, o\}$ is an abelian group with respect to operation o.	2.5