



VIT

Vellore Institute of Technology
(Deemed to be University) - Auto Sector, Vellore, Tamil Nadu, India

SCHOOL OF ADVANCED SCIENCES
CONTINUOUS ASSESSMENT TEST - I
FALL SEMESTER 2025-2026

REG.NO.:

SLOT: F1+TF1

Programme Name & Branch : UG Freshers (3 Years spl.)
Course Code and Course Name : UMAT101L (Discrete Mathematics)
Faculty Name(s) : Dr. Pallavee Gupta, Mr. Elumalai R, Mr. Deepak Maria Singh M,
Mr. Prathap T.
Class Number(s) : VL2025260105537, 05538, 6087, 6088
Date of Examination : 22/08/2025
Exam Duration : 90 minutes
Maximum Marks: 50

General instruction(s): Answer All Questions

Q. No	Question	M	CO	BL
1.	Find the number of integers between 1 and 100 both inclusive that are (i) not divisible by any of the integers 7 or 11 or 13. (ii) divisible by 3 but not by 7	10	CO1	BL2
2.	How many bit strings of length 10 contains (i) Exactly four 1's (ii) At most four 1's (iii) At least four 1's (iv) An equal number of zero's and one's	10	CO1	BL2
3.	a) Find the number of distinct permutations that can be formed from all the letters of each word: (i) RADAR (ii) UNUSUAL (iii) MISSISSIPPI b) State Pigeon's hole principle and show that if 25 dictionaries in a library contain 40,325 pages, then one of the dictionaries has 1,613 pages.	5 5	CO1	BL3
4.	a) Without using a truth table, Check $((P \rightarrow Q) \wedge P) \rightarrow Q$ is tautology or not? b) Construct the truth table for $\neg(P \vee (Q \wedge R)) \Leftrightarrow ((P \vee Q) \wedge (P \vee R))$	5 5	CO2	BL3
5.	(a) Using truth table, Check $P \rightarrow (Q \rightarrow P) \Leftrightarrow \neg P \rightarrow (P \rightarrow Q)$ is logically equivalent or not? (b) Without using truth table, Check $P \rightarrow (Q \vee R) \Leftrightarrow (P \rightarrow Q) \vee (P \rightarrow R)$ is logically equivalent or not?	5 5	CO2	BL3
