VIT
Vellore Institute of Technology

SCHOOL OF ADVANCED SCIENCES

Fall Semester 2024-2025 **Continuous Assessment Test – I**

Programme Name & Branch: B.Tech & CSE **Slot: C1+TC1+TCC1**

Course Name & code: Discrete Mathematics and Graph Theory & BMAT205L

Class Number (s): VL2024250102537, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, ,2547, 2548, 2549, 2552, 2553, 2554, 2555, 2558

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Exam Duration: 90 Min. **Maximum Marks: 50**

General instruction(s): Answer ***ALL*** the following questions.

Q. No.	Question	Max Marks	CO	BL
1.	Find the PDNF and PCNF of $(p \wedge q) \vee (p \wedge r) \vee (q \wedge r)$. (i) By using Truth table (ii) without using truth table.	10	CO1	BL1
2.	(i) Prove the following "All flowers are plants. Sunflower is a flower". "Therefore, Sunflower is a plant". (5M) (ii) Show that the following statement is valid. All men are mortal Socrates is a man Therefore, Socrates is a mortal. (5M)	10	CO1	BL2
3.	"If I eat spicy food, then I have strange dreams". "I have strange dreams, if there is thunder while I sleep". "I did not have strange dreams". What relevant conclusion can be drawn from the above premises? Construct an argument to obtain your conclusion.	10	CO1	BL3
4.	*Prove that for any commutative monoid (M, *), the set of idempotent elements of M forms a submonoid.*	10	CO2	BL4
5.	Check whether the set {5, 15, 25, 35} is a group or not with respect to multiplication module 40. (i) Form the Cayley's table (ii) Find the order of the group (iii) Find the identity element of the group (iv) Find the order of each element in a group. (v) Find the inverse of each element in a group.	10	CO2	BL3