VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

Vellore – 632014, Tamil Nadu, India
DEPARTMENT OF MATHEMATICS
SCHOOL OF ADVANCED SCIENCES
FALL SEMESTER 2022-2023

CONTINUOUS ASSESSMENT TEST – I

Programme Name & Branch	: B.Tech	
Course Code	: BMAT205L	
Course Name	: Discrete Mathematics and Graph Theory	
Slot	: A1+TA1+TAA1	
Date of the Examination	: 28.08.2022	
Duration	**: 90 minutes**	**Max. Marks : 50**

General instruction(s): ANSWER ALL QUESTIONS

Q. No	Question	Marks	Course Outcome (CO)	Bloom's Taxonomy (BL)
1.	Find the principal conjunctive normal form and principal disjunctive normal form of $S \Leftrightarrow (P \rightarrow \neg Q) \wedge (Q \rightarrow R) \wedge \neg(P \wedge \neg R) \wedge (P \vee \neg R)$ and hence find whether S is a Tautology or Contradiction?	10	CO1	L3
2.	Determine the validity of the following argument: For students to do well in a discrete mathematics course, it is necessary that they study hard. Students who do well in courses do not skip classes. Therefore students who do well in a discrete mathematics course do not skip classes	10	CO1	L4
3.	(i) Negate the following statements: (a) Some integers are natural number (b) Every city in Canada is clean (ii) Demonstrate the following implication $\neg(x)\big(P(x) \wedge Q(x)\big),\ (x)P(x) \Rightarrow \neg Q(x)$	10	CO1	L2
4.	Write down the composition tables for $(Z_7, +_7)$ and $(Z_7^*, \times_7)$ where $Z_7^* = Z_7 - \{[0]\}$ and verify whether they are groups.	10	CO2	L3
5.	State and prove the necessary and sufficient condition for a nonempty subset H of G to be a subgroup of the group $(G,*)$	10	CO2	L4

****