Name of the Student. Nikil Jodhi Scholar Number. 241120111129

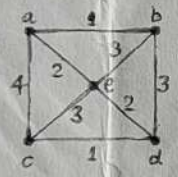
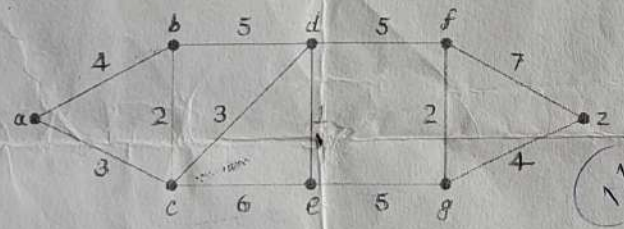
MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

EXAMINATION: Mid Term **MONTH and YEAR: Sep 2025**

Course: B. Tech.	**Semester: 3rd**	**Branch: CSE**	**Subject Code: CSE 24231**
Subject Name: Discrete Mathematics			**Maximum Marks: 20**
Duration: 01 hour		**Date: 29 Sep 2025**	**Time: 09:30 AM to 10:30 AM**

Note: *All questions are compulsory.*
Assume suitable data if needed.
Answer all parts of question at one place

Q. No.	Questions	Marks	COs
1	Construct a truth table for each of these compound propositions. (a) $(p \vee \neg t) \wedge (p \vee \neg s)$ (b) $(p \rightarrow q) \leftrightarrow (\neg q \rightarrow \neg p)$ (c) $(p \leftrightarrow q) \oplus (p \leftrightarrow \neg q)$	03	CO1
2	Determine whether the compound proposition is satisfiable or not. $(p \vee q \vee \neg r) \wedge (p \vee \neg q \vee \neg s) \wedge (p \vee \neg r \vee \neg s) \wedge (\neg p \vee \neg q \vee \neg s) \wedge (p \vee q \vee \neg s)$	02	CO1
3	Find the solution to the recurrence relation $a_n = 2a_{n-1} + 5a_{n-2} - 6a_{n-3}$ with $a_0 = 7$, $a_1 = -4$, and $a_2 = 8$.	03	CO2
4	The "complete tripartite graph" $K_{r,s,t}$ consists of three sets of vertices with an edge joining them if an only if they lie in different sets. (a) What is the number of edges in $K_{3,4,5}$? (b) What is the maximum number of edges in a complete tripartite graph with 12 vertices?	04	CO4
5	Use Prim's algorithm to find a minimum spanning tree for the given weighted graph. 	03	CO4
6	Find the shortest path from a to z using Dijkstra's shortest path algorithm. 	05	CO4

**********END**********