GYANMANJARI INNOVATIVE UNIVERSITY

GYANMANJARI INSTITUTE OF TECHNOLOGY

M. Tech.-End Semester Examination (ESE)- Summer-2026

Enrollment No.: ____ ____ ____

Subject Code: METCE12510 **Date: 16-05-2026**

Subject Name: Advance Algorithms **Semester: 02**

Time: 10:30 AM to 01:30 PM **Total Marks: 100**

Instructions:

1. **Question No. 1 is compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	(a)	Analyze correctness and time complexity of DFS-based graph traversal.	10
	(b)	Explain Minimum Spanning Tree using Greedy Approach.	10
Q.2	(a)	Compare BFS and DFS for shortest path computation.	10
		OR	
	(a)	Compare Prim's and Kruskal's Algorithm analytically.	10
	(b)	State and prove Max-Flow Min-Cut Theorem.	10
		OR	
	(b)	Explain Floyd-Warshall Algorithm using dynamic programming.	10
Q.3	(a)	Explain LUP Decomposition with steps.	10
	(b)	Explain principle of Optimal Substructure and Overlapping Subproblems.	10
		OR	
Q.3	(a)	Define NP-Complete and NP-Hard problems with examples.	10
	(b)	Discuss emerging data structures for searching.	10
Q.4	(a)	Propose a novel approach for solving large-scale problems.	10
	(b)	Design algorithm to find maximum weight independent set in matroid.	10
		OR	
Q.4	(a)	Analyze time complexity of Strassen's Matrix Multiplication.	10
	(b)	Explain Randomized Algorithms with example.	10
Q.5	(a)	Describe Edmond's Blossom Algorithm with augmenting paths.	10
	(b)	Explain Ford-Fulkerson Method with example.	10
		OR	
Q.5	(a)	Compare Floyd-Warshall with Dijkstra for all-pairs shortest path.	10
	(b)	State and prove Chinese Remainder Theorem.	10