	ADAMAS UNIVERSITY		
	END-SEMESTER EXAMINATION : MAY 2021		
	(Academic Session: 2020 – 21)		
Name of the Program: (Example: B. Sc./BBA/MA/B.Tech.)	B.Tech	**Semester:** (I/III/ V/ VII/IX)	IV
Paper Title :	Design and Analysis of Algorithm	**Paper Code:**	ECS42112
Maximum Marks :	**40**	**Time duration:**	3Hours
Total No of questions:	8	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)	1. At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. 2. All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. 3. Assumptions made if any, should be stated clearly at the beginning of your answer.		

Answer all the Groups
Group A
Answer all the questions of the following $5 \times 1 = 5$

1. a) Explain Asymptotic Tight Bound notation.

b) What type of algorithm is used to solve 8-Queens problem is?

c) What is the running time of Kruskal's algorithm?

d) What data structure is used to solve BFS algorithm?

e) What do you mean by Dynamic Programming?

GROUP –B
Answer *any three* of the following $3 \times 5 = 15$

2. Discuss Job sequencing problem with deadline with an example

3. Differentiate between fractional Knapsack and 1/0 Knapsack

4. State the master theorem and apply it to solve the following recurrence relation

$T(n)=3T(n/2)+n$

5. Define classes P and NP

6. Compare between BFS and DFS. Discuss with example Djikstra's algorithm for single source shortest path problem.   (3+7)

7. Derive the time complexity required for Strassen's Matrix Multiplication. Find the minimum number of operation required for the following matrix chain multiplication using dynamic programming:

A(10 x 20) * B(20 x 50) * C(50 x 1) * D(1 x 100)   (4+6)

8. Discuss Travelling Salesman Problem using dynamic method. Discuss the algorithm for 8-Queen problem.   (5+5)

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