DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary Examination – Summer 2022

Course: B. Tech. **Branch : Computer Science & Engineering**

Semester :IV

Subject Code & Name: (BTCOC401), Design and Analysis of Algorithm

Max Marks: 60 **Date:** **Duration: 3 Hr.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	Define algorithm and explain properties of algorithm.		**6**
B)	Explain different asymptotic notations.		**6**
C)	Solve given recurrence relation by recursion tree method $T(n) = 3T(n/4)+cn^2$		**6**
Q.2	**Solve Any Two of the following.**		
A)	Write an algorithm for merge sort and apply merge sort on following array A= 5, 1, 10, 7, 9, 8, 6, 4)		**6**
B)	Explain binary search with example.		**6**
C)	Write an algorithm for quick sort.		**6**
Q. 3	**Solve Any Two of the following.**		
A)	Give n=6 weights w={ 5, 10, 12, 13, 15, 18} and M=30 find all possibal subset for which sum=M using sum of subsets algorithm.		**6**
B)	Obtain Huffman tree for following data characters: a, b, c, d, e Frequency: 6, 11, 19, 35, 50		**6**
C)	Comparisons between backtracking and branch and bound.		**6**
Q.4	**Solve Any Two of the following.**		
A)	Compare greedy strategy, Dynamic programming and Divide & conquer approach.		**6**
B)	What is state space tree? Using state space tree show that there exists a solution to 4 queens problem.		**6**

C)	Explain job sequencing with deadline using example.		**6**
Q. 5	**Solve Any Two of the following.**		
A)	Compute longest common subsequence using dynamic programming approach for sequence X & Y if X= A, B, C, B, D, A, B and Y= B, D, C, A, B, A,		**6**
B)	What are P class and NP class? Show relationship between them.		**6**
C)	Explain polynomial time reduction.		**6**
	***** End *****		

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