DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination – 2022

Course: B. Tech. Branch :Computer Engineering Semester :II

Subject Code & Name: BTCOC401 Design and Analysis of Algorithms

Max Marks: 60 Date: 13/07/2023 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.		12
A)	Write down properties of algorithms.	CO1	6
B)	Explain any three asymptotic notations.	CO2	6
C)	What is max heap? Explain with example.	CO1	6
Q.2	Solve Any Two of the following.		12
A)	Explain Binary Search with its time complexity.	CO2	6
B)	Write down quick sort algorithm with its time complexity.	CO1	6
C)	Explain strassen's matrix multiplication with its performance analysis.	CO2	6
Q. 3	Solve Any Two of the following.		12
A)	Explain four queen problems and draw its state space tree.	CO2	6
B)	What is graph coloring problem? Explain with example.	CO3	6
C)	Differentiate between backtracking and branch and bound.	CO4	6
Q.4	Solve Any Two of the following.		12
A)	What is optimal merge pattern?	CO3	6
B)	Explain Huffman coding with a suitable example.	CO2	6
C)	Solve knapsack problem by greedy method where capacity of knapsack is 15kg, profits of seven object are (P1,P2,P3,P4,P5,P6,P7) (10,5,15,7,6,18,3) and weights (w1,w2,w3,w4,w5,w6,w7)(2,3,5,7,1,4,1).	CO5	6
Q. 5	Solve Any Two of the following.		12
A)	Write down characteristics of dynamic programming.	CO1	6
B)	Explain different applications of dynamic programming.	CO3	6
C)	What is complexity class P?	CO3	6