TY-IT

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Mid Semester Examination – Sept. 2019

Course: B. Tech in Information Technology **Sem: V**

Subject Name: Design and Analysis of Algorithms **Subject Code: BTITC502**

Max Marks: 20 **Date: 19/09/2019** **Duration:- 1 Hr.**

Instructions to the Students:

1. **Assume suitable data wherever necessary.**

		(Level/CO)	Marks
Q.1	Select any one option from the following questions.		6
	1. Which of the following standard algorithms is not a Greedy algorithm?	CO2	
	a) Dijkstra's shortest path algorithm b) Prim's algorithm c) Kruskal algorithm d) Huffman Coding e) Bellmen Ford Sbortest path algorithm		
	2. Tbe 0-1 Knapsack problem can be solved using Greedy algorithm.	CO2	
	a) True b) False		
	3. Time required to merge two sorted lists of size m and n, is	CO3	
	a) O(m | n) b) O(m + n) c) O(m log n) d) O(n log m)		
	4. Wbat is tbe worst-case time for binary search finding a single item in an array?	CO3	
	a) Linear time b) Quadratic time c) Logarithmic time d) constant time		
	5. What is the worst-case time for quick sort to an array of n elements?	CO3	
	a) O(log n) b) O(n log n) c) O(n) d) $O(n^2)$		
	6. Which of the following is/are the operations performed by kruskal's algorithm.	CO2	
	i) sort the edges of G in increasing order by length ii) keep a subgraph S of G initially empty iii) builds a tree one vertex at a time		
	a) i, and ii only b) ii and iii only c) i and iii only d) All i, ii and iii		
Q.2	Solve Any Two of the following.		3 X 2
(A)	Write an algorithm for knapsack problem using greedy metbod. What is its time complexity?	CO1	
(B)	Explain quick sort with respect to its:	CO2	
	(a) Best case behavior		
	(b) Worst case behavior		
	(c) What is the time complexity of it?		
(C)	Sort the following no. using merge sort: 10, 50, 87, 73, 64, 92, 23, 34, 54, 18, 36.	CO3	
Q.3	Solve Any One of the following.		8
(A)	We want to merge some sorted files where the no. of records are: {12, 34, 56, 73, 24, 11, 34, 56, 78, 91, 34, 91, 62} what is optimal way to merge them?	CO3	

(B) Solve the travelling salesmen problem for the graph given below, adjacency matrix for the graph is CO4

	1	2	3	4
1	0	4	1	3
2	4	0	2	1
3	1	2	0	5
4	3	1	5	0

*** End ***

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