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Code No: 821AF JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD MCA II Semester Examinations, December - 2019 DATA STRUCTURES AND ALGORITHMS

Time: 3hrs

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

	5×5 Ma	arks = 25
1.a)	Write an algorithm to insert an element in a single linked list	[5]
b)	List and explain the applications of non linear data structures	[5]
c)	Give a brief note on collision resolution methods.	[5]
d)	Define a binary search tree and what are the properties of binary search tree.	[5]
e)	What do you mean by a spanning tree.	[5]
	PART - B	
	5 × 10 Mark	s = 50
2.a)	Explain the Sequential and Linked allocation.	
b)	Compare and contrast exponential time complexity with polynomial time complex	exity
		[5+5]
	OR	
3.	Analyze the best, average and worst-case time complexities of linear search with	an
	example list of size n.	[10]
	Xo	
4.	Write algorithm to implement depth-first search and explain with example.	[10]
	OR	
5.a)	Explain the threaded binary trees.	
b)	Write disjoint set union and find algorithms.	[5+5]
<i>c</i>		1 [10]
6.	Search for the element 3 in the array that contain 1,3,5,2,4,6,8 using binary searc	h. [10]
7		[10]
1.	Explain hash tables and hash functions.	[10]
0	Construct hinary search tree for given date and write the different traversals of tr	22
0.	$(100\ 150\ 125\ 25\ 12\ 50\ 135\ 75\ 62\ 175)$	[10]
	(100 130 125 25 12 30 135 75 02 175).	[10]
9	Explain insertion and deletion operations on a B-Tree	[10]
).	Explain insertion and detetion operations on a D-free.	[10]
10.a)	Device an algorithm m to find the optimal order of multiplying n matrices using	dynamic
1014)	programming technique.	
b)	Give a brief note on Suffix tries.	[5+5]
,	OR	
11.	Find the shortest tour of traveling salesperson for the following cost matrix using	g
	Dynamic Programming	[10]
	∞ 12 5 7	

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