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Code No: 812AF JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD MCA II Semester Examinations, June/July - 2018 DATA STRUCTURES AND ALGORITHMS

Time: 3 Hours

Note: This question paper contains two parts A and B. Part A is compulsory which carries 20 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 8 marks and may have a, b, c as sub questions.

PART - A

5×4 Marks = 20

[4]

 5×8 Marks = 40

1.a) Write a procedure to convert infix expression to postfix expression. Apply the procedure on the following

$$((A+B)*D)\uparrow (E-F)$$

- b) Define Binary tree. Write an algorithm to insert an element in to a binary tree. [4]
- c) Write the principle of(i) Quick sort (ii) Merge sort and write their complexities. [4]
- d) Construct an AVL Tree by inserting numbers from 1 to 8. [4]
- e) Explain Kruskal's Algorithm for Minimum cost spanning trees. [4]

PART - B

2.	What is meant by stack? Write push and pop functions in C++ using an array.	[8]
3.a) b)	Write a short note on Linked List. What the various applications of linked list? Write an algorithm for deleting an element from the linked list.	[4+4]
4.	With a neat sketch explain DFS and BFS traversals with an example.	[8]
5.	Explain Binary tree ADT and its representation in Array and Linked lists.	[8]
6.	Suppose a sequence of numbers is given like: 5, 1, 6, 7, 9, 22, 10, 55, 45, and 34. numbers will be sorted using a) Insertion Sort b) Bubble sort.	How this [8]
7.	OR Write an algorithm for linear search and Binary Search and compare them in terr complexity.	ns of time [8]
8.	Explain in detail about Red-Black trees and Splay trees with examples.	[8]
9.a) b)	Show the result of inserting 3, 1, 4, 6, 9, 2, 5, 7 into an initially empty binary search Show the result of deleting the root.	ch tree. [4+4]
10.	Discuss about Job Sequencing with deadlines and Single Source Shortest path pro OR	blem.[8]
11.	Explain the Pattern matching algorithm with an example.	[8]

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Max. Marks: 60