Reg. No._____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SECOND SEMESTER MCA DEGREE EXAMINATION, AUG 2017

RLMCA104: DATA STRUCTURES

Max Marks: 60 Duration: 3 hours

PART A

Answer all questions. Each question carries 3 marks.

1. Explain the advantages of linked lists over arrays.
2. List any 6 application of stack.
3. What is a Dequeue?
4. Define Linked list. List any four types of linked list.
5. Define an AVL tree.
6. What do you mean by minimum cost spanning tree?
7. What is the difference between Binary Search and Linear Search?
8. Compare selection sort and insertion sort.

PART B

Answer any one question from each module. Each question carries 6 marks

MODULE I

9. What is meant by time complexity of an algorithm? Explain any 2 asymptotic notations.

OR

10. How are arrays represented in the memory? Explain.

MODULE II

11. Write an Algorithm to convert an Infix expression to a Postfix expression. Trace the algorithm using example data set.

OR

12. Define Stack. Write the insertion and deletion algorithm for stack.

MODULE III

13. What is priority queue? Write the array implementation of priority queue.

OR

14. What is a circular queue? Write the Insertion algorithm for circular queue..

MODULE IV

15. Write an algorithm to insert an element into a singly linked list.

OR

16. Write an algorithm to add two polynomials using linked list.

MODULE V

17. What is a binary search tree? Create a binary search tree using the following elements.
    50, 20, 70, 10, 5, 4, 30, 28, 80, 40, 25, 45, 29, 98, 100, 42

OR

18. Write the algorithm for Depth first search (DFS).

MODULE VI

19. Explain partition exchange sorting method with example.

OR

20. Sort the following elements using Heap sort.
    20, 10, 5, 80, 2, 1, 35, 40, 55, 70, 33, 18

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