

Reg. No. \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SECOND SEMESTER MCA DEGREE EXAMINATION, APRIL 2018**

**Course Code: RLMCA104**  
**Course Name: DATA STRUCTURES**

Max: Marks: 60

Duration: 3 Hours

**PART A**

*Answer all questions. Each question carries 3 marks*

1. Differentiate Recursion and Iteration.
2. Write short notes on applications of queues.
3. Write short notes on Linked Stacks and Queues.
4. How are polynomials represented using Linked lists?
5. Write short notes on Binary tree traversals.
6. Write short notes on AVL Trees.
7. Differentiate Linear search and Binary search.
8. Compare the time complexities of Sorting algorithms.

**PART B**

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

**MODULE I**

9. What is meant by analysis of an algorithm? Explain Asymptotic Notations.

OR

10. Explain how Arrays are represented in Memory.

**MODULE II**

11. Write an algorithm to perform postfix expression evaluation using stack.

OR

12. Discuss an algorithm to convert an infix expression to postfix.

**MODULE III**

13. Discuss operations on a Circular Queue with algorithms

OR

14. Explain different types of queues. What are the limitations of a linear queue? Illustrate with an example.

**MODULE IV**

15. Describe various operations on a singly linked list.

OR

16. Describe operations on a circular linked list with algorithms.

**MODULE V**

17. Explain an algorithm to find the shortest path in graphs.

OR

18. What is a minimum spanning tree? Explain an algorithm for constructing MST.

**MODULE VI**

19. Illustrate insertion sort with suitable example. Compare the time complexities of any two sorting algorithms.

OR

20. Sort the following numbers 3,9,1,5,0,2,6,8 using Merge Sort.

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