

**Time: 3 Hours****Max. Marks: 60****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**

- 1.a) Write briefly about Abstract Data Type. [4]
- b) Write a short note on Graph Representations. [4]
- c) When quick sort will take more time to sort the list? Give an example. [4]
- d) Discuss briefly about B-Tree. [4]
- e) Write about Knuth-Morris-Pratt algorithm. [4]

PART - B**5 × 8 Marks = 40**

2. Write an algorithm to convert a valid arithmetic Infix Expression into it equivalent Postfix Expression. Trace your algorithm for A-B/C+D*E+F. [8]

OR

- 3.a) Explain the difference between Stack and Queue. [4+4]
- b) Write an algorithm of operation of doubly linked list. [4+4]

4. Define Disjoint Set? Explain the Operations that are performed on Sets. [8]

OR

5. What is Heap? Construct the max heap of the following list of elements 50,30,60,80,40,20,90. [8]

6. Explain about Merge Sort? Why Merge Sort is considered as External Sort. [8]

OR

7. Discuss Radix Sort with suitable example. [8]

8. Explain about Red Black tree and AVL tree? Which is better AVL or Red Black Tree? [8]

OR

9. Define Binary Search Tree? With example explain operations of Binary Search. [8]

10. Considered the following jobs:

Job ID	Deadline	Profit
A	4	20
B	1	10
C	1	40
D	1	30

Find the Maximum Profit using Job Sequencing with Deadlines? [8]

OR

11. Describe All Pair Shortest Path with suitable example? [8]

