Code No: F-13659/N/AICTE

FACULTY OF ENGINEERING

B.E. CSE (AI&DS) III–Semester (AICTE) (Main & Backlog) (New) Examinations, February/March 2024

Subject: Data Structures and Algorithm

Time: 3 Hours **Max. Marks: 70**

Note: (i) First question is compulsory and answer any four questions from the remaining six questions. Each question carries 14 Marks.
(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.
(iii) Missing data, if any, may be suitably assumed.

1. (a) List the features of an efficient algorithm.
   (b) Define Space Complexity.
   (c) Explain Linear Queue.
   (d) Write Linked representation of Stack.
   (e) How do you represent a Binary Tree?
   (f) What is Threaded Binary Tree?
   (g) Explain Quick Sort.

2. (a) Write about the characteristics of algorithm and explain about Asymptotic Notation.
   (b) Write about Amortized Analysis.

3. (a) Evaluate the given Prefix Expression to Infix:
   *-a/bc-/ade using Stacks. Show all steps of Evaluation.
   (b) Write about circular queue with example.

4. (a) Explain the implementation of Queue using Linked List.
   (b) Write a function to insert & delete the element in a double linked list with example.

5. (a) Construct an expression tree(in-order, pre-order and post-order) for the expression.
   A+(B-C)*D+(E*F).
   (b) Construct AVL Tree for the following data 21,26,30,9,4,14,28,18,15,10,2,3,7

6. (a) Explain BFS Operations on a Graph.
   (b) Do the merge sort for given array 14,7,3,12,9,11,6,2.

7. (a) Explain Depth First search Graph Traversal method with example.
   (b) Write a function to delete the minimum element from a binary heap.

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