Code No: E-5498/N/BL/AICTE

FACULTY OF ENGINEERING

B.E. CSE(AI & ML/ IoT) IV - Semester (AICTE) (Main & Backlog) (New) Examination, September /October 2023

Subject: Design Analysis and Algorithms

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

Note: (i) First question is compulsory and answer any four questions from the remaining six questions. Each questions 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) Why an algorithm analysis is required?
   b) State about 'union' and Find operation.
   c) Mention the drawbacks of Greedy Method.
   d) Define the term Branch and bound.
   e) State 4 Queens Problem.
   f) Define Least Count Search.
   g) What is clique Decision problem?

2. a) Write the algorithm for simple union simple find.
   b) Write the algorithm for collapsing find.

3. a) Write and explain the control abstraction for Divide and conquer.
   b) Write the prims algorithm? And find its time complexity.

4. a) Explain Traveling sales person problem with an example.
   b) Show that the computing time of algorithm OBST is O(n2).

5. a) Explain the BFS algorithm with an example.
   b) Write about different Tries with examples.

6. a) Explain the satisfiability problem and write the algorithm for the same.
   b) Differentiate between NP-complete and NP-Hard.

7. a) What are best case, average case, and worst-case performance? Explain
   b) Write the non recursive algorithm for finding the Fibonacci sequence and derive its time complexity.

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