Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (IT) (Sem–4)

DESIGN & ANALYSIS OF ALGORITHMS

Subject Code : BTIT-403-18

M.Code : 77540

Date of Examination : 16-06-2023

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) Asymptotic analysis

b) Recurrence relation

c) Backtracking

d) Dynamic Programming

e) Shortest path algorithm

f) Network flow

g) Intractable Problems

h) Cook's Theorem

i) Computability Classes

j) Heuristics.

SECTION-B

2. Explain the general principle of Greedy method and also list the applications of Greedy method.

3. Elaborate the asymptotic analysis of an algorithm with an example.

4. What is Minimum cost spanning tree? Explain an algorithm for generating minimum cost spanning tree.

5. Give solution to Subset sum problem using Backtracking technique.

6. Discuss the various characteristics of heuristics with suitable examples.

SECTION-C

7. Write an algorithm to compute 0/1 Knapsack problem using dynamic programming and explain it.

8. "*A topological ordering of a directed graph is a linear ordering of its vertices in which 'u' occurs before V in the ordering for every directed edge 'uv' from vertex 'u' to vertex V. Topological sorting has many applications, particularly in ranking issues like the feedback arc set.* " Justify.

9. Define an Algorithm. Discuss the key characteristics of algorithm.