MASTER OF SCIENCE (COMPUTER SCIENCE) (CBCS-2018 COURSE)
M.Sc. (Computer Science) Sem-I : WINTER- 2022
SUBJECT : ALGORITHM DESIGN PATTERNS

Day : Wednesday | Time : 02:00 PM-05:00 PM

Date : 4/1/2023 | **W-20033-2022** | Max. Marks : 60

N.B

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Draw diagrams wherever necessary.

Q.1 **a)** Describe Greedy Strategy in detail. Also discuss knapsack problem with the help of suitable example. **(15)**

OR

b) Explain 'Divide and Conquer' strategy. Discuss 'MaxMin' algorithm with example.

Q.2 **a)** Answer **ANY ONE** of the following. **(08)**

i) What is Backtracking? Example 4- queen's problem.

ii) Illustrate BFS and DFS with suitable example.

b) Answer **ANY ONE** of the following. **(07)**

i) Differentiate between Prim's and Kruskal's algorithms for finding minimum cost spanning tree.

ii) Write a note on Algorithm Analysis.

Q.3 Answer **ANY THREE** of the following. **(15)**

a) Obtain sequence of Job by maximizing profit for j=7 such as:

P_i= { 30,20,18,6,5,3,1}

d_i = {7,3,4,6,2,3,5}

b) Explain sum of subsets problem.

c) Illustrate 'mergesort' with an appropriate example.

d) Discuss Cook's theorem .

e) Explain optimal binary search tree with example.

Q.4 Write short notes **ANY THREE** of the following. **(15)**

a) Binary Search

b) Optimal Storage on tapes

c) Game tree

d) NP-HARD graph problem

e) Flow-shop scheduling

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