

**M. SC. (Computer Science) SEM – I (Choice Based Credit & Grade
System) : WINTER - 2018**

SUBJECT: ALGORITHM DESIGN PATTERNS

Day : Tuesday
Date : 09/10/2018

W-2018-1040

Time : 03.00 PM TO 06.00 PM
Max. Marks :60

N. B. :

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
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Q.1 Elaborate Prim's and Kruskal's algorithms to find minimum cost spanning tree (15)
for a graph.

OR

What is 'Divide and Conquer' strategy? Also write Max-Min algorithm to find maximum and minimum of n numbers using 'Divide and Conquer' algorithm.

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

- i) What is meant by optimal storage on tapes?
- ii) Describe NP - Complete problem in detail.

B) Answer **ANY ONE** of the following: (07)

- i) Describe the concept of Backtracking in detail.
- ii) Elaborate Travelling Salesman Problem.

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

- a) Define DFS. Also Explain DFS with example.
- b) Discuss space and time complexities.
- c) What is flow shop scheduling?
- d) Explain with example mergesort algorithm.
- e) What is Cook's Theorem?

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

- a) Knapsack problem
- b) AND/OR graph
- c) Optimal binary search tree
- d) Greedy Strategy
- e) Operations on Sets

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