

Day: Thursday  
Date: 15/11/2018

W-2018-2485

Time: 10.00 AM TO 01.00 PM  
Max Marks.: 60

N.B. :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data, if necessary.
- 4) Draw neat and labeled diagrams wherever necessary.

Q.1 Design an algorithm to compute the area of circle of a any circumference. (10)  
Determine the frequency count of the algorithm and express its complexity with the help of asymptotic notations.

OR

Q.1 What are the tools to measure the performance of an algorithm? Explain them in detail with suitable example. (10)

Q.2 What is the characteristic feature of exhaustive search technique? Write an algorithm for Travelling Salesman problem using exhaustive search technique. Show its mathematical analysis. (10)

OR

Q.2 What is a convex-hull? How is brute force mechanism suitable for solving this problem? State and explain the algorithm for solving convex hull using brute-force approach. (10)

Q.3 How does a divide and conquer algorithm work? State an algorithm and explain with analysis any algorithm which uses divide and conquer technique. (10)

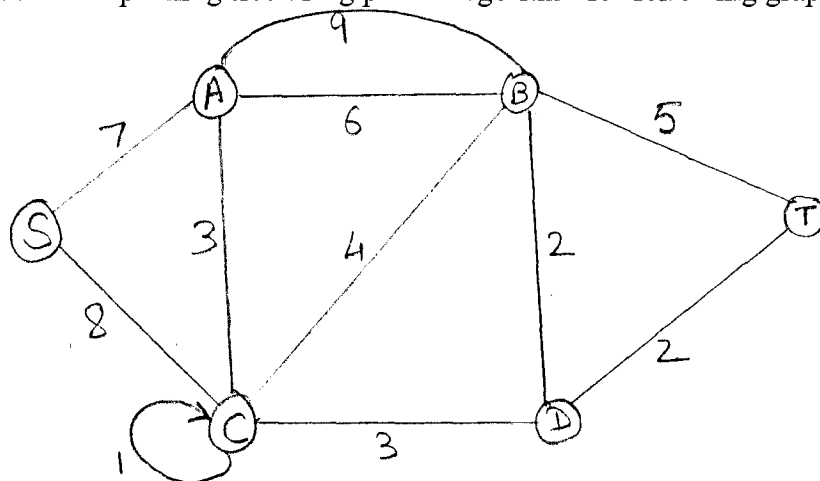
OR

Q.3 What is a heap? Explain in detail heap sorting with an algorithm and example. (10)

Q.4 Explain optimal binary search trees algorithm and derive its time and space complexity. (10)

OR

Q.4 Find the minimum cost spanning tree using prim's algorithm for following graph (10)



Q.5 What is 0/1 knapsack problem? How it is solved using backtracking approach? (10)

OR

Q.5 State and solve Hamiltonian circuit problem. Justify that it is a NP-complete. (10)

Q.6 Write and explain an algorithm for solving resource allocation problems. State whether it is P – NP or NP hard problem (10)

OR

Q.6 What are Heuristic search algorithms? State its characteristics. Explain A\* algorithm. (10)