

SUBJECT : ALGORITHM DESIGN PATTERNS

Day : Tuesday
Date : 09/10/2018

W-2018-1034

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.

Q.1 Elaborate the concept of Backtracking with the help of 'n-queens' problem. (15)

OR

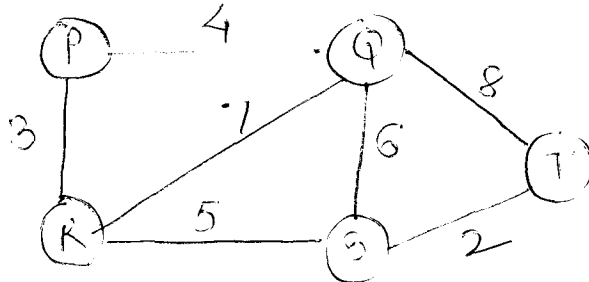
What is binary search? Give 'bsearch' algorithm. Consider the following 'n' elements and search '23' in the data: 7, 10, 13, 15, 18, 19, 23, 25, 28, 31, 35.

Q.2 A) Answer any **ONE**. (08)

- i) Explain 'BFS' algorithm with appropriate example.
- ii) What is flow shop scheduling? Explain with example.

B) Answer any **ONE**. (07)

- i) Find feasible solution for following knapsack instance of the knapsack problem $n = 3, m = 20, (P_1, P_2, P_3) = (25, 24, 15)$ and $(w_1, w_2, w_3) = (18, 15, 10)$
- ii) Write Prim's algorithm to find minimum cost spanning tree.



Also find the minimum cost spanning tree using Prim's algorithm.

Q.3 Answer any **THREE**: (15)

- a) Define –space and time complexity.
- b) Explain 'Mergesort' algorithm with example.
- c) What is Binary Search Tree? Build BST for $n = 8$ and values are 13, 5, 15, 8, 17, 10, 12, 11
- d) What is algorithm analysis? State the criteria of good algorithm.
- e) Explain asymptotic notations in detail.

Q.4 Write Shorts Notes on (any **THREE**): (15)

- a) Cook's Theorem
- b) Optimal storage on tapes
- c) Multistage graphs
- d) Branch and bound strategy
- e) Job sequencing with deadlines