

SUBJECT : ALGORITHM DESIGN PATTERNS

Day : Monday
Date : 08/04/2019

S-2019-1229

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 Describe Greedy method with the help of greedy algorithm. Also give an appropriate example. (15)

OR

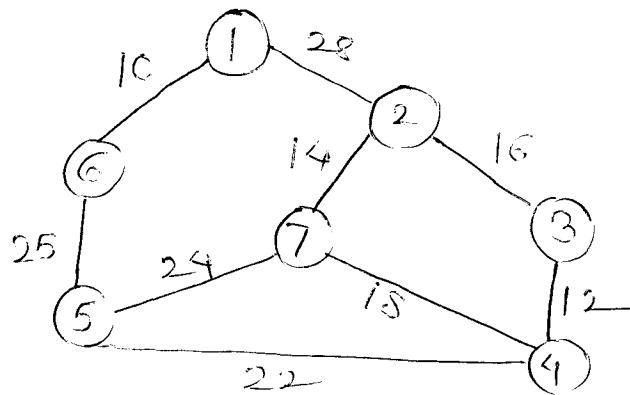
Elaborate branch and bound strategy and also explain TSP (Travelling Salesman Problem) in detail.

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

- i) Differentiate between IFOBB and FIFOBB with help of suitable example.
- ii) What is solution generated by the JS function when $n = 7$,
 $(P_1, P_2, P_3, P_4, P_5, P_6, P_7) = (3, 5, 20, 18, 1, 6, 30)$ and
 $(d_1, d_2, d_3, d_4, d_5, d_6, d_7) = (1, 3, 4, 3, 2, 1, 2)$

B) Answer any ONE. (07)

- i) Find maximum and minimum of 'n' numbers stored in sorted array using 'DandC' strategy.
- ii) Find minimum cost spanning tree using Prim's and Kruskal algorithms of the following graph.



Q.3 Answer any THREE: (15)

- a) Explain time complexity and space complexity in detail.
- b) What is meant by Multistage graph?
- c) Comment on relation in order notation for the following function:
 $f(n) = 5n + 6$
 $g(n) = 3n^2$
- d) Explain flow shop scheduling in detail.
- e) Write 'Greedy Knapsack' algorithm.

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

- a) Optimal merge pattern
- b) Cook's theorem
- c) Graph Coloring Problem
- d) Priority queues
- e) Recursive algorithm