SP-240

Total No. of Pages :2

Seat No.	

Third Year B.Tech. (Computer Science and Engineering) (AIML) (Semester-V) (CBCS) Examination, December - 2023

COMPUTER ALGORITHM

Sub. Code : 92004

Day and Date :Monday, 04 - 12- 2023 **Total Marks : 70**

Time : 10.30 a.m. to 1.00 p.m.

Instructions :
1) **Question no. 6 is compulsory**
2) **Solve any four questions from Q. No.1 to Q. No. 5**
3) **Assume suitable data wherever necessary**
4) **Figures to the right indicate full marks**

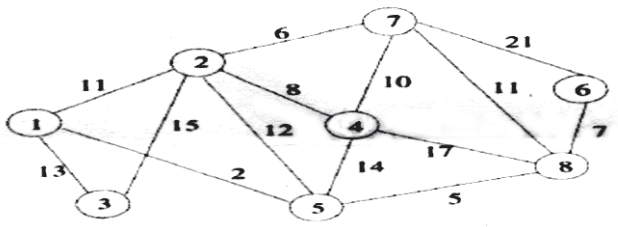
Q1) a) What is performance evaluation? Give the difference between performance analysis and performance measurement. **[8]**

b) Illustrate merge sort algorithm with example and discuss its time complexity. **[7]**

Q2) a) Define Greedy Knapsack. Find the optimal solution of the knapsack instance n=7.
m=15, (p1, p2, ..., p7) = (10, 5, 15, 7, 6, 18, 3) and
(wl, w2,...., w7) = (2, 3, 5, 7, 1, 4, 1) **[8]**

b) How to find shortest paths from source to all vertices using Dijkstra's algorithm? Give example. **[7]**

Q3) a) Compute a minimum cost spanning tree for the graph below using
i) Prim's algorithm and
ii) Kruskal's algorithm **[8]**



b) Describe about reliability design with an example. **[7]**

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Q4) a) Write and explain the iterative back tracking algorithm. Draw the state space tree for 4-queens problem and give the solution tuples. **[8]**

b) Compare BFS and DFS algorithm with an example graph and denote its time complexities. **[7]**

Q5) a) Discuss in detail about the class P, NP, NP-hard and NP-complete problems. Give examples for each class. **[8]**

b) What is Backtracking? Where Backtracking is used to solve the problem. **[7]**

Q6) Write short notes on: (Any two) **[10]**

a) Game trees

b) Computational Model of PRAM algorithms

c) Bi connected components of the graph.

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