BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)

B. Tech. Sem - IV Computer Science & Engineering-AI & ML : WINTER : 2024

SUBJECT: ALGORITHMS ANALYSIS & DESIGN

Day : Monday
Date : 25/11/2024

W-23948-2024

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.

1. All questions are **COMPULSORY**.
2. Figures to the right indicate **FULL** marks.
3. Neat diagrams must be drawn **WHEREVER** necessary.
4. Assume suitable data, if necessary.

Q.1 Explain recurrences and various methods to solve recurrences? **(10)**

OR

Write an algorithm to solve N Queens problem. Show its working for N = 4. **(10)**

Q.2 Explain with example how divide and conquer strategy is used in binary search algorithm? **(10)**

OR

Solve sum of subsets problem for following **(10)**
N=6 W={3,5,7,8,9,15} & M=20 Also write the Algorithm for it.

Q.3 Write Kruskal's algorithm and show its working by taking suitable example of graph with 5 vertices. **(10)**

OR

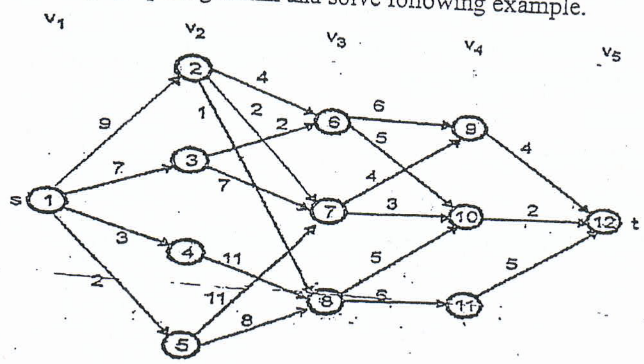
Write algorithm for greedy knapsack and obtain the solution to following knapsack problem where n=7, m=15, (p1,p2,....p7) = (10,5,15,7,6,18,3), (w1,w2,...w7)= (2,3,5,7,1,4,1). **(10)**

Q.4 Describe the Travelling sales person problem and discuss how to solve it using dynamic programming with example. **(10)**

P.T.O.

OR

Write multistage graph algorithm and solve following example. **(10)**



Q.5 Rewrite and Compare Rabin Karp and Knuth Morris Pratt Algorithms. Give the pseudo code for the KMP string matching algorithm. **(10)**

OR

Obtain the solution to knapsack problem by Greedy method N=7, M=15 (p1,p2,..,p7)=(10,5,15,7,6,18,3), (w1,w2,..,w7)=(2,3,5,7,1,4,1). **(10)**

Q.6 What do you understand by NP Complete? Explain Is Subset sum problem NP complete? If so explain. **(10)**

OR

Prove that vertex cover problem is NP complete. **(10)**

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