Reg. No. :

Question Paper Code: 94802

B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

Fourth Semester

Information technology

19UIT402- DESIGN METHODS AND ANALYSIS OF ALGORITHM

(Regulations 2019)

Duration: Three hours   Maximum: 100 Marks

Answer All Questions

PART A - (10x 2 = 20 Marks)

1.	Define the term Algorithm	CO1- U
2.	Find GCD(31415, 14142) by applying Euclid's algorithm	CO3- App
3.	Write the steps involved in the string matching algorithm and its algorithm analysis.	CO1- U
4.	Write the procedure for binary search algorithm and its algorithm analysis.	CO2- App
5.	How do you compute a binomial coefficient for an equation?	CO2- App
6.	Write an algorithm to find optimal binary search tree with its analysis for efficiency	CO2- App
7.	List the procedure used in recursive backtracking algorithm.	CO1- U
8.	Write the steps involved in Knapsack Problem with its analysis	CO1- U
9.	Give some examples of P and NP problems.	CO1- U
10.	Define the terms Clique and Vertex Cover.	CO1- U

PART – B (5 x 16= 80Marks)

11. (a) Discuss in detail about the calculation of time efficiency for the algorithm to place the largest to smallest disc in a Tower C, provided that Tower A and Tower B with 3 disc s and 2 discs respectively.   CO2-App   (16)

Or

(b) Discuss the fundamentals of algorithmic problem solving. Examine how time efficiency of an algorithm can be calculated to find the given number in the list.   CO2-App   (16)

12. (a) 40,55,63,17,22,68,89,97,72   CO3-Ana (16)
        Sort the elements using Merge Sort and Quick Sort and analyze
   which one provides the optimal solution

                                    Or

    (b) Write an algorithm to find the Shortest path and compare your   CO3-Ana (16)
        algorithm with BFS and DFS. Analyze and Justify which one
        provides the optimal solution with an example

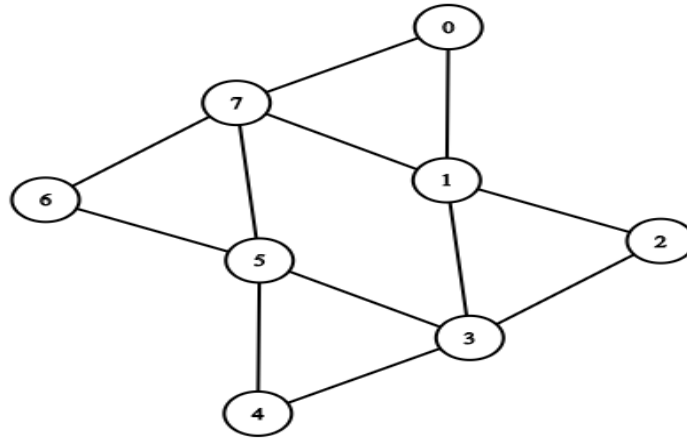13. (a) Write an algorithm to find the shortest path using Dijkstras   CO2-App (16)
        algorithm
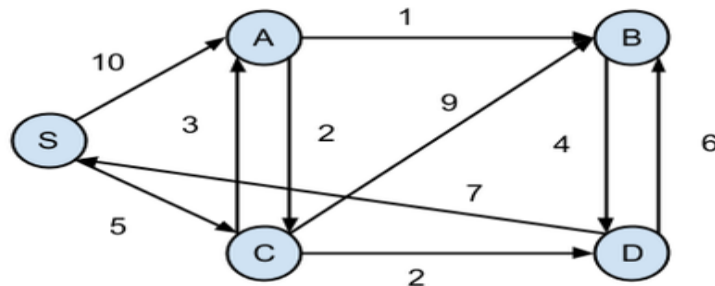
                                    Or

    (b) Apply the Floyd- Warshall algorithm for the given graph and find CO2-App (16)
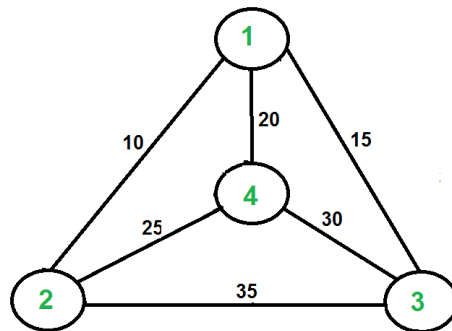   out the entire pairs shortest path.
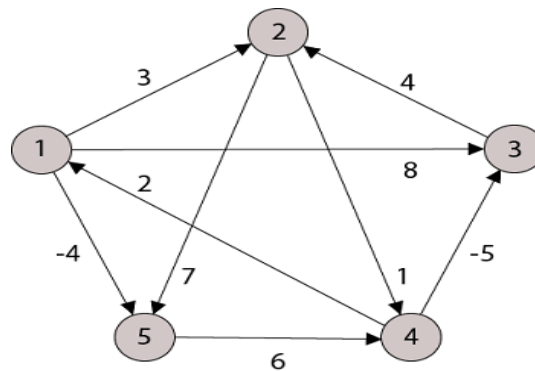
14. (a) Apply the backtracking to the problem of finding Hamiltonian CO2- App (16) cycle in the following graphs

Or

(b) Apply the branch-and-bound algorithm to solve the travelling sales CO2- App (16) man problem for the following graph. Start node=1

15. (a) Explain in detail about the P, NP, NP complete and NP hard classes CO1- U (16) with a diagram

Or

(b) Discuss in detail about the models for Parallel Computing with a CO1- U (16) neat diagram.

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