Reg. No. : | | | | | | | | | | |

Question Paper Code: 94802

B.E./B.Tech. DEGREE EXAMINATION, NOV 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.	Evaluate the recurrence relation x (n) = x (n-1) + 5 for n>1.	CO2- App
2.	Find GCD(50,25) by applying Middle-school procedure algorithm	CO2- 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.	Write an algorithm to find the shortest path using Prims algorithm with its analysis.	CO2- App
6.	How do you compute a binomial coefficient for an equation?	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.	Analyze the time complexity of pointer doubling algorithm?	CO3- Ana
10.	Write the difference between Deterministic & Non Deterministic algorithms with an example.	CO3- Ana

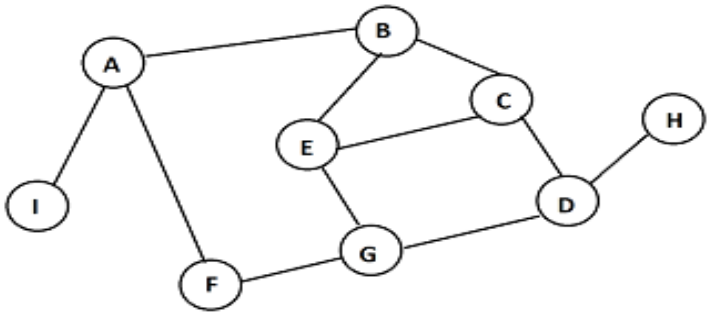
PART – B (5 x 16= 80Marks)

11.	(a)	Design an algorithm to find all the common elements in two sorted lists of numbers. For example, for the lists 2, 5, 5, 5 and 2, 2, 3, 5, 5, 7, the output should be 2, 5, 5.What is the maximum number of comparisons your algorithm makes if the lengths of the two given lists are m and n, respectively?	CO3-Ana	(16)

Or

(b) Given two n × n matrices A and B, find the time efficiency of the definition-based algorithm for computing their product C = AB. By definition, C is an n × n matrix whose elements are computed as the scalar (dot) products of the rows of matrix A and the columns of matrix B. CO3-Ana (16)

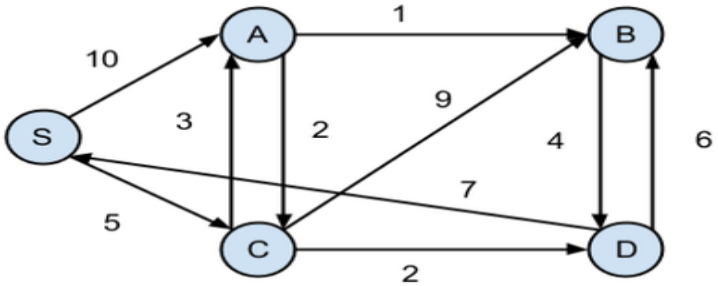
12. (a) Apply the BFS based algorithm to find whether the graph is cyclic or not and calculate the complexities for this algorithm CO3-Ana (16)



Or

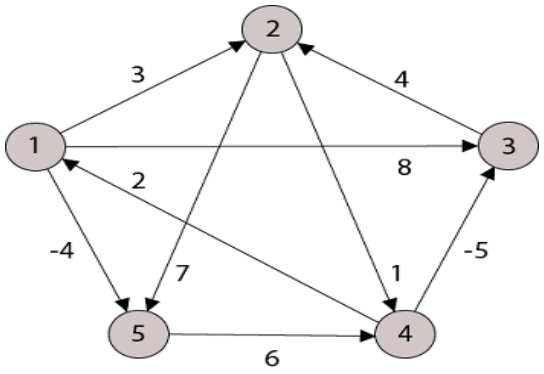
(b) Build a Program to sort an array of strings using Selection Sort CO3-Ana (16)
Given an array of strings, sort the array using Selection Sort.
Examples:
Input : paper true soap floppy flower
Output : floppy, flower, paper, soap, true

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



Or

(b) Apply the Floyd- Warshall algorithm for the given graph and find out the entire pairs shortest path. CO2-App (16)



14. (a) Write down the Backtracking Algorithm to implement the backtracking for the better solution to place 8 queens in a 8*8 board. CO2- App (16)

Or

(b) Consider the problem of assigning five jobs to five persons. The assignment costs are given as follows. Determine the optimum assignment schedule. CO2- App (16)

		Job 1	2	3	4	5
Person	*A*	8	4	2	6	1
	B	0	9	5	5	4
	C	3	8	9	2	6
	D	4	3	1	0	3
	E	9	5	8	9	5

15. (a) Explain the different types of Complexity Classes with an example CO1- U (16)

Or

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

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