Reg. No.:

G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.

PG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.
(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: M.Sc., COMPUTER SCIENCE

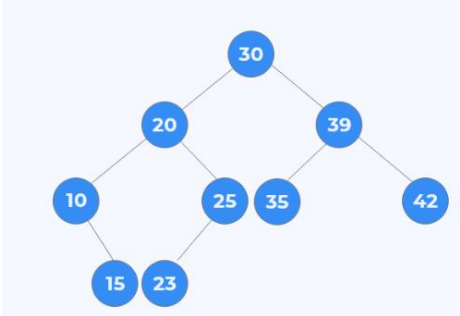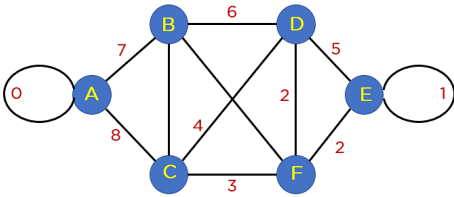| SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
I	PART - III	CORE - 1	P23CS101	ANALYSIS AND DESIGN OF ALGORITHM

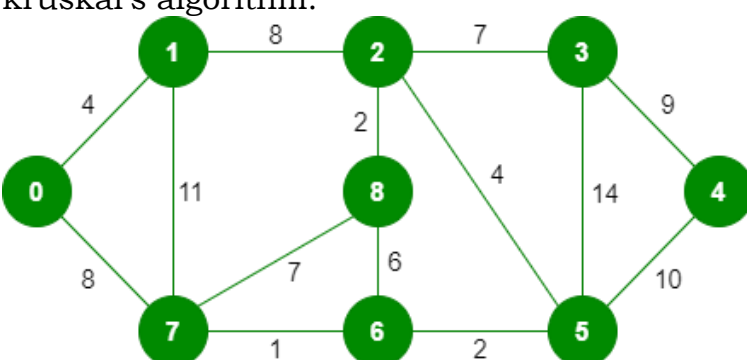**Date & Session: 24.04.2025/AN** **Time: 3 hours** **Maximum: 75 Marks**
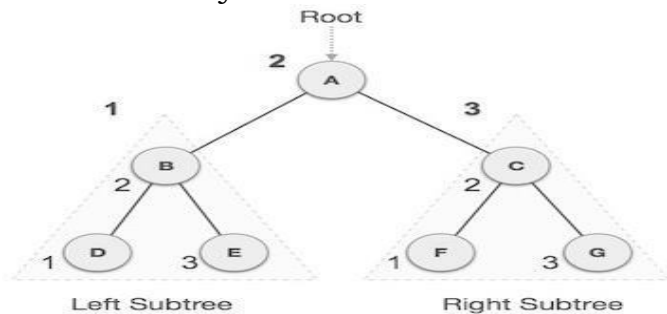
Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer ALL Questions.
CO1	K1	1.	A queue follows _____. a) FIFO (First In First Out) principle b) LIFO (Last In First Out) principle c) Ordered array d) Linear tree
CO1	K2	2.	Which of the following is false about a binary search tree? a) The left child is always lesser than its parent b) The right child is always greater than its parent c) The left and right sub-trees should also be binary search trees d) In order sequence gives decreasing order of elements
CO2	K1	3.	If locality is a concern, you can use _____to traverse the graph. a) Breadth First Search b) Depth First Search c) either BFS or DFS d) Both BFS and DFS
CO2	K2	4.	Select the best description to explain what a binary search algorithm is _____. a) Put the elements in order, check each item in turn b) Elements do not need to be in order, compare to the middle value, split the list in order and repeat c) Elements do not need to be in order, check each item in turn d) Put the elements in order, compare with the middle value, split the list in order and repeat
CO3	K1	5.	The spanning tree of connected graph with 10 vertices contains _____ edges. a) 10 b) 19 c) 9 d) 11
CO3	K2	6.	Identify the approach used to find prim's algorithm for finding the minimum spanning tree. a) Divide and Conquer b) Dynamic Programming c) Greedy Method d) Backtracking
CO4	K1	7.	Select the method used to find the travelling salesman problem. a) A spanning tree b) A minimum spanning tree c) Bellman-Ford algorithm d) DFS traversal

CO4	K2	8.	Which of the following methods can be used to solve the Knapsack problem? a) Brute force algorithm b) Recursion c) Dynamic programming d) All the mentioned
CO5	K1	9.	Backtracking involves: a) Starting from the end of the problem b) Going back to a previous step if the current step doesn't work c) Using a stack to keep track of solutions d) Iterating through all elements in a list
CO5	K2	10.	What is a subset sum problem? a) Finding a subset of a set that has sum of elements equal to a given number b) Checking for the presence of a subset that has sum of elements equal to a given number and printing true or false based on the result c) Finding the sum of elements present in a set d) Finding the sum of all the subsets of a set

Course Outcome	Bloom's K-level	Q. No.	**SECTION – B (5 X 5 = 25 Marks)** **Answer ALL Questions Choosing either (a) or (b)**
CO1	K2	11a.	What is stack? How insertion and deletion can be performed on stack? **(OR)**
CO1	K2	11b.	How will you represent graphs?
CO2	K2	12a.	 Write Inorder , Preorder and Postorder for the above graph. **(OR)**
CO2	K2	12b.	Write an algorithm to sort the elements in ascending order using merge sort.
CO3	K3	13a.	Determine Minimum Cost Spanning Tree using kruskal algorithm for the given graph Graph G(V, E) **(OR)**
CO3	K3	13b.	Write down the algorithm for Knapsack problem using greedy method.
CO4	K3	14a.	Explain all pairs shortest path with example.

Course Outcome	Bloom's K-level	Q. No	
			(OR)
CO4	K3	14b.	Explain flow shop scheduling using dynamic programming.
CO5	K4	15a.	Explain graph coloring with example.
			(OR)
CO5	K4	15b.	Explain Hamiltonian Cycle with example.

Course Outcome	Bloom's K-level	Q. No	**SECTION – C (5 X 8 = 40 Marks)** **Answer ALL Questions Choosing either (a) or (b)**
CO1	K4	16a.	Illustrate binary search tree with the given elements 45, 15, 79, 90, 10, 55, 12, 20, 50.
			(OR),
CO1	K4	16b.	Analyse Heap sort algorithm with the given elements 81,89,9,11,14,76,54,22
CO2	K5	17a.	Perform binary tree traversal for the following graph. **(OR)**
CO2	K5	17b.	Sort the following using quick sort algorithm 65 70 75 80 85 60 55 50 45
CO3	K5	18a.	Find the minimum cost spanning tree for the following graph using kruskal's algorithm. **(OR)**
CO3	K5	18b.	Evaluate knapsack problem with the given items.

Item	A	B	C	D
Profit	2	4	7	10
Weight	1	3	5	7

W = 8

Course Outcome	Bloom's K-level	Q. No	
CO4	K5	19a.	Apply optimal binary search tree for the given elements

			10, 20, 30, 40, 50, 60, 70
			(OR)
CO4	K5	19b.	Explain travelling sales man problem with example.
CO5	K6	20a.	Explain 8-queen's problem using backtracking.
			(OR)
CO5	K6	20b.	Explain branch and bound algorithm.