

Model Question Paper

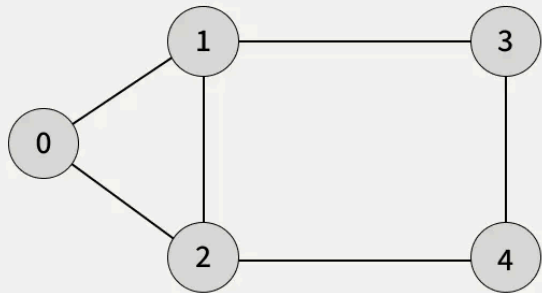
Fourth Semester BE Degree Examination

Data Structures and Algorithms

Time: 3 Hours

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.*

Module -1			M	L	C
Q1	a.	What are Data Structures? Explain with example the classification of Data Structures.	6	L2	CO1
	b.	What is a Stack? Illustrate push, pop and display operations on stack using static array with C program.	8	L3	CO1
	c.	Describe Abstract Data Type (ADT) model and explain ADT for 1D Array.	6	L2	CO1
Or					
Q2	a.	Explain the memory representation of a 2D Array with suitable example.	6	L2	CO1
	b.	What is an Ordinary Queue? Including the error conditions design a C program to perform Insert, delete and display operations on Queues using static array.	8	L3	CO1
	c.	Explain the tower of Hanoi problem with diagram.	6	L2	CO1
Module 2					
Q3	a.	Illustrate singly linked list operations INSERT, DELETE, SEARCH with C program.	6	L3	CO2
	b.	Implement stack using Linked List with an example code snippet.	8	L3	CO2
	c.	Illustrate traversing and searching in a double linked list with an example code snippet.	6	L3	CO2
Or					
Q4	a.	Illustrate addition of two polynomials using C program.	6	L3	CO2
	b.	Implement a C function for the following operation: i) Insertion of a node at the beginning of Double linked list. ii) Deletion of a node at the end of Double linked List.	8	L3	CO2
	c.	Illustrate insertion and deletion of a node at the beginning of the circular linked list with an example code snippet.	6	L3	CO2
Module 3					
Q5	a.	What is binary tree? Explain the array representation and linked representation of binary trees with an example.	10	L3	CO3
	b.	 <p>Apply the BFS traversal for the above graph and provide the recursive code snippet.</p>	10	L3	CO3

Or					
Q6	a.	Construct the Binary Search Tree by inserting the following elements in the given order: 45, 25, 70, 60, 15, 90, 10, 95 Traverse the constructed binary tree using: In-order traversal, Pre-order traversal and Post-order traversal.	10	L3	CO3
	b.	What is minimum spanning tree? Illustrate Prim's algorithm with an example.	10	L3	CO3
Module 4					
Q7	a.	List asymptotic notations. Illustrate asymptotic notations with an example.	10	L3	CO4
	b.	Implement Brute-Force String Matching using C program.	10	L3	CO4
Or					
Q8	a.	Illustrate analysis framework with an example.	10	L3	CO4
	b.	Implement merge sort program using divide and conquer technique.	10	L3	CO4
Module 5					
Q9	a.	What is Decrease by Constant Method? Illustrate insertion sort using C program.	10	L3	CO4
	b.	What is greedy approach? Illustrate real time scheduling using queues with C program	10	L3	CO4
O5					
Q10	a.	Illustrate Optimal tree problems with an example.	10	L3	CO4
	b.	Implement BFS and DFS for a grid maze using C program.	10	L3	CO4
