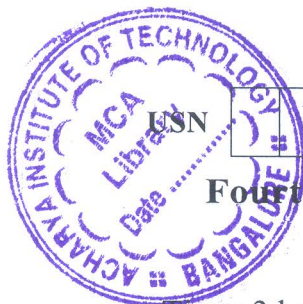


CBCS SCHEME

BEC405D



Fourth Semester B.E./B.Tech. Degree Examination, June/July 2024

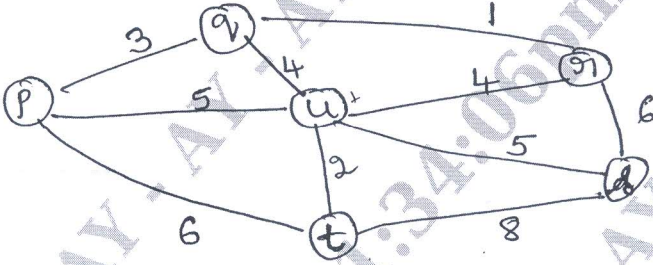
Data Structure using C

Time: 3 hrs.

Max. Marks: 100

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

Module - 1			M	L	C
Q.1	a.	Define Data Structure. Explain with neat block diagram different types of data structure.	6	L2	CO1
	b.	What is structure? Develop a C program to demonstrate the concepts of array of structure.	8	L3	CO1
	c.	Write a C program with array operation to search an element using linear search.	6	L3	CO1
OR					
Q.2	a.	With an example, explain dynamic memory allocation.	6	L2	CO1
	b.	Define Pointers? With an example, explain passing pointer variable as parameter in functions.	7	L2	CO1
	c.	Define Unions. Explain Declaration of Union and Access Union member with syntax.	7	L2	CO1
Module - 2					
Q.3	a.	Explain the different operation can performed on stack.	6	L2	CO2
	b.	Trace the algorithm for following expression to evaluate postfix expression with showing stack contents $651 - 4 * 23^+ / +$	8	L3	CO2
	c.	Discuss tower of Hanoi problem and shows the Pictorial representation.	6	L3	CO2
OR					
Q.4	a.	Construct C program to demonstrate operation of stack.	8	L3	CO2
	b.	With a suitable, example explain conversion of infix to postfix expression.	6	L3	CO2
	c.	Develop a C program to find factorial of 'n' using recursive functions.	6	L3	CO2
Module - 3					
Q.5	a.	Assume Que-size is 5. The circular queue contain 4 item 100, 200, 300, 400. Show the contents of circular queue after performing each of following operations: (i) insert 600 (ii) delete (iii) delete (iv) insert 700	6	L3	CO3
	b.	Discuss in detail Josephus problem.	7	L2	CO3
	c.	Develop a function to implement delete a node from rear end using singly linked list.	7	L3	CO3
OR					
Q.6	a.	Develop a C program to implement queue using circular list.	8	L3	CO3
	b.	Explain priority queue with example.	5	L2	CO3
	c.	Write a C routine how an element can be deleted at front end and show diagram in doubly linked list.	7	L2	CO3

Module – 4					
Q.7	a.	Define the following terms with examples: (i) Complete binary tree. (ii) Full binary tree. (iii) Level of binary tree.	6	L1	CO4
	b.	Discuss in order, pre order, post order traversal with an example.	8	L2	CO4
	c.	Write a function to perform an insert an element into Binary search tree.	6	L3	CO4
OR					
Q.8	a.	With an example, explain balanced tree.	6	L2	CO4
	b.	Construct binary tree for expression $W + (Y - Z) * P / (M - N)$ and also show the in order, post order, pre order transversal for same.	8	L3	CO4
	c.	Discuss threaded binary tree with suitable example.	6	L2	CO4
Module – 5					
Q.9	a.	Define graph. Explain the component of graph.	6	L1	CO5
	b.	Develop C program for finding minimum cost spanning tree using Prim's algorithm.	8	L2	CO5
	c.	Briefly discuss static and dynamic hashing techniques.	6	L2	CO5
OR					
Q.10	a.	Construct minimum cost spanning tree using Kruskal's algorithm for the following graph :	8	L3	CO5
		 <p style="text-align: center;">Fig. Q10 (a)</p>			
	b.	Explain in detail elementary graph operation.	6	L2	CO5
	c.	With respect to graph define following terms : (i) Adjacency list. (ii) Adjacency matrix.	6	L2	CO5
