



CBCS SCHEME

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BEC405D

Fourth Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024 Data Structures 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.	What is data structure? Explain in detail classification of data structure with example.	10	L2	CO1
	b.	Explain three dynamic memory allocation functions.	06	L2	CO1
	c.	Differentiate structure and union.	04	L2	CO1
OR					
Q.2	a.	What is array? Discuss different types of array.	05	L2	CO1
	b.	What is pointer? How to declare, initialization of pointer?	07	L2	CO1
	c.	Write a program to add two matrix that are created dynamically.	08	L2	CO1
Module – 2					
Q.3	a.	What is stack? Explain basic operations of stack with algorithm.	05	L2	CO2
	b.	Write 'C' program to implement stack using array.	05	L2	CO2
	c.	Write an algorithm to convert an infix notation to postfix notation and apply the algorithm for the following infix expression to convert it into postfix $((A + (B - C) * D) ^ E + F)$	10	L2	CO2
OR					
Q.4	a.	What is recursion? Write a program to compute factorial of n.	05	L2	CO2
	b.	Write a C program to implement tower of Hanoi problem.	05	L2	CO2
	c.	Convert the following infix expression to prefix expression: i) $((A + (B - C) * D) ^ E + F)$ ii) $X ^ Y ^ Z - M + N + P/Q$	10	L2	CO2
Module – 3					
Q.5	a.	What is queue? Explain basic operations with algorithm.	06	L2	CO3
	b.	Write 'C' program to implement linear queue using array.	07	L3	CO3
	c.	Explain different types of queues with example.	07	L3	CO3
OR					
Q.6	a.	What are linked list? Explain with algorithm inserting a new node in a linked list for the following cases: Case 1 : The new node is inserted at the beginning Case 2 : The new node after a given node	10	L3	CO3
	b.	What are circular linked list? Explain with algorithm deleting a node from a circular linked list for the following cases: Case 1 : The first node Case 2 : The last node	10	L3	CO3
Module – 4					
Q.7	a.	What are binary trees? Explain the linked representation of binary tree.	08	L2	CO4
	b.	Explain Huffman algorithm with example.	07	L2	CO4
	c.	Explain different types of binary tree.	05	L2	CO4

OR

Q.8	a.	Explain pre-order and in-order traversal with example and also write algorithm.	10	L3	CO4
	b.	Explain inserting and deleting new node in a binary search tree with algorithm and example.	10	L3	CO4

Module – 5

Q.9	a.	Explain Kruskal's algorithm with example.	10	L3	CO5
	b.	Explain Hashing with example.	10	L3	CO5

OR

Q.10	a.	Explain Prim's algorithm with example.	10	L3	CO5
	b.	Explain representation of graphs with example.	06	L3	CO5
	c.	Define the following with example: (i) Complete graph (ii) Disconnected graph (iii) Self-loop (iv) Directed graph	04	L2	CO5
