

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



UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.C.A.

SEM	CATEGORY	COMPONENT	COURSE CODE		COURSE TITLE
III	PART - III	CORE-5	U23CA303	DATA STRU	CTURES AND ALGORITHMS
Date & Session: 09.11.2024 / AN			Time	: 3 hours	Maximum: 75 Marks

Date & Session: 09.11.2024 / AN

Course Outcome	Bloom's K-level	Q. No.	<u>SECTION – A (</u> 10 X 1 = 10 Marks) Answer <u>ALL Q</u> uestions.			
CO1	K1	1.	In general, the index of the first element in an array is			
			a) 0 b)-1 c) 2 d)1			
CO1	K2	2.	What is the time complexity to count the number of elements in the linkedlist?a) O(1)b) O(n)c) O(log n)d) O(n ²)			
CO2	K1	3.	A queue followsa) FIFO (First In First Out) principleb) LIFO (Last In First Out) principlec) Ordered arrayd) Linear tree			
CO2	K2	4.	If the elements "A", "B", "C" and "D" are placed in a stack and are deletedone at a time, what is the order of removal?a) ABCDb) DCBAc) DCABd) ABDC			
CO3	K1	5.	The number of edges from the node to the deepest leaf is called ofthe tree.a) Heightb) Depthc) Lengthd) Width			
CO3	K2	6.	Which of the following is false about a binary search tree?a) The left child is always lesser than its parentb) The right child is always greater than its parentc) The left and right sub-trees should also be binary search treesd) In-order sequence gives decreasing order of elements			
CO4	K1	7.	The BreadthFirst Search traversal of a graph will result into?a) Linked Listb) Treec) Graph with back edgesd) Array			
CO4	K2	8.	 Which of the following is not an application of Depth First Search? a) For generating topological sort of a graph b) For generating Strongly Connected Components of a directed graph c) Detecting cycles in the graph d) Peer to Peer Networks 			
CO5	K1	9.	Which of the following sorting algorithms is the fastest?a) Merge sortb) Shell sortc) Insertion sortd) Quick sort			
CO5	K2	10.	If several elements are competing for the same bucket in the hash table, whatis it called?a) Diffusionb) Replicationc) Collisiond) Duplication			

Course Outcome	Bloom's K-level	Q. No.	$\frac{\text{SECTION} - B}{\text{OBSECTION} - B} (5 \times 5 = 25 \text{ Marks})$ Answer <u>ALL</u> Questions choosing either (a) or (b)	
CO1	K3	11a.	Collect the steps to insert an element at the beginning in singly linked list. (OR)	
CO1	КЗ	11b.	Use Linked List to perform Polynomial addition.	
CO2	K3	12a.	Evaluate the following expression Using stack. Postfix expression : 2 5 3 6 + * * 15 / 2 - (OR)	
CO2	K3	12b.	Prepare the steps to delete an item from Queue.	
CO3	K4	13a.	Focus on Operations of Heap data structure. (OR)	
CO3	K4	13b.	Analyze the functions of Binary Search Tree.	
CO4	K4	14a.	Illustrate the any five Terminologies of graph. (OR)	
CO4	K4	14b.	Diagram the Euler circuit with explanation.	
CO5	K5	15a.	Predict the steps to implement bubble sort. (OR)	
CO5	K5	15b.	Importance of Hashing in data structure.	

Course Outcome	Bloom's K-level	Q. No.	<u>SECTION – C (</u> 5 X 8 = 40 Marks) Answer <u>ALL Q</u> uestions choosing either (a) or (b)
CO1	K3	16a.	Organize the operations performed in Double Linked List.
CO1	K3	16b.	Collect the applications of List.
CO2	K4	17a.	Compare stack and Queue Data structure with Example. (OR)
CO2	K4	17b.	Devise the procedure to convert an infix expression to postfix notations with the following example: A*B^C+D
CO3	K4	18a.	Classify Tree traversal and explain it with suitable example. (OR)
CO3	K4	18b.	Conclude the application of trees in data structure.
CO4	K5	19a.	Predict the distinguish between BFS and DFS. (OR)
CO4	K5	19b.	Analyze the memory representation of Graph.
CO5	K5	20a.	justify binary search is more efficient than linear search. (OR)
CO5	K5	20b.	Evaluate the following example using Selection sort. 38, 25, 72, 56, 14, 7, 98, 42