Reg. No. | | | | | | | |

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

UG DEGREE END SEMESTER EXAMINATIONS - APRIL 2025.
(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 STRUCTURES AND ALGORITHMS

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.	Which of the following data structure can't store the non-homogeneous data elements? a) Arrays b) Records c) Pointers d) Stack
CO1	K2	2.	Minimum number of fields in each node of a doubly linked list is a) 2 b) 3 c) 4 d) 1
CO2	K1	3.	The term push and pop are related to a) Arrays b) Queue c) Pointers d) Stack
CO2	K2	4.	A queue follows _____. a) FIFO b) LIFO c) Ordered array d) Linear tree
CO3	K1	5.	To represent hierarchical relationship between elements, which data structure is suitable? a) Dequeue b) Priority c) Tree d) Graph
CO3	K2	6.	The number of edges from the node to the deepest leaf is called _____ of the tree. a) Height b) Depth c) Length d) Width
CO4	K1	7.	A graph in which all vertices have equal degree is known as a) Complete graph b) Regular graph c) Multi graph d) Simple graph
CO4	K2	8.	A vertex of in-degree zero in a directed graph is called a/an a) Root vertex b) Isolated vertex c) Sink d) Articulation point
CO5	K1	9.	Finding the location of a given item in a collection of items is called ...... a) Discovering b) Finding c) Searching d) Mining
CO5	K2	10.	Quick sort is also known as _____. a) merge sort b) tree sort c) shell sort d) partition and exchange sort
Course Outcome	Bloom's K-level	Q. No.	SECTION – B (5 X 5 = 25 Marks) Answer ALL Questions choosing either (a) or (b)
CO1	K3	11a.	List the Abstract Data Types and explain it. **(OR)**
CO1	K3	11b.	Define Circularly Linked List and explain with example.

Course Outcome	Bloom's K-level	Q. No.	
CO2	K3	12a.	How arithmetic expressions are evaluated using the Prefix Notation? * / + 9 7 8 2. (Write the Steps and diagram). **(OR)**
CO2	K3	12b.	Write the steps to delete an item from Queue using dequeue operation.
CO3	K4	13a.	Define Binary Tree. Describe the types of Binary Tree. **(OR)**
CO3	K4	13b.	Focus on Operations of Heap data structure.
CO4	K4	14a.	Define Graph and illustrate the any five Terminologies of graph. **(OR)**
CO4	K4	14b.	Determine the Euler circuit with neat diagram.
CO5	K5	15a.	Binary search is more efficient than linear search. Justify the statement. **(OR)**
CO5	K5	15b.	Evaluate the radix sort on the array [170, 45, 75, 90, 802, 24, 2, 66]

Course Outcome	Bloom's K-level	Q. No.	SECTION – C (5 X 8 = 40 Marks) Answer ALL Questions choosing either (a) or (b)
CO1	K3	16a.	How to insert an element at the beginning in singly linked list? **(OR)**
CO1	K3	16b.	Write the use of Linked List to perform Polynomial Addition.
CO2	K4	17a.	Compare stack and Queue Operations with Example. **(OR)**
CO2	K4	17b.	Analyse the applications of Queue with example.
CO3	K4	18a.	Distinguish the traversal operations on Tree and explain it. **(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.	Simplify the Bi-Connectivity of Graph with suitable example.
CO5	K5	20a.	Briefly explain on how does Bubble Sort Work? **(OR)**
CO5	K5	20b.	Briefly explain the importances of Hashing in data structure.