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.Sc., INFORMATION TECHNOLOGY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
II	PART-III	ELECTIVE GENERIC-II	U23IT2A2	DATA STRUCTURES

Date & Session: 03.05.2025/FN **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 data structure is used for implementing recursion? a) Stack b) queue c) list d) array
CO1	K2	2.	Which data structure is needed to convert infix notation to postfix notation? a) tree b) branch c) stack d) queue
CO2	K1	3.	Which data structure is based on the Last In First Out (LIFO) principle? a) tree b) stack c) linked list d) queue
CO2	K2	4.	What is the need for a circular queue? a) easier computations b) effective usage of memory c) implement LIFO principle in queues d) to delete elements based on priority
CO3	K1	5.	A data structure in which elements can be inserted or deleted at/from both ends but not in the middle is? a) Priority queue b) circular queue c) Dequeue d) queue
CO3	K2	6.	Which of these is not an application of a linked list? a) To implement file systems b) For separate chaining in hash-tables c) To implement non-binary trees d) Random Access of elements
CO4	K1	7.	Who published the eight queens puzzle? a) Max Bezzel b) Carl c) Gauss d) Friedrich
CO4	K2	8.	Who proposed the depth first backtracking algorithm? a) Edsger Dijkshtra b) Frank Nauck c) Max Bezzel d) Carl Friedrich
CO5	K1	9.	Which of the following sorting algorithms is the fastest for sorting small arrays? a) quick sort b) shell sort c) insertion sort d) merge sort
CO5	K2	10.	Which of the following method is used for sorting in merge sort? a) partitioning b) exchanging c) merging d) selection

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.	Discover complexity of algorithms. **(OR)**
CO1	K3	11b.	Outline the steps involved in performing a binary search.
CO2	K3	12a.	Construct briefly about queue with suitable algorithm. **(OR)**
CO2	K3	12b.	How does traversing linked list work?
CO3	K4	13a.	Illustrate the step-by-step process of inserting a new node in a linked list. **(OR)**
CO3	K4	13b.	Simplify the algorithms involved in deleting a node from a linked list.
CO4	K4	14a.	Analyse insertion sort with suitable example. **(OR)**
CO4	K4	14b.	Examine merge sort with example.
CO5	K5	15a.	Interpret about Warshall algorithm. **(OR)**
CO5	K5	15b.	Critically evaluate the effectiveness of Backtracking.

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.	Compare and contrast different type of algorithms. **(OR)**
CO1	K3	16b.	Organize linear search with suitable example.
CO2	K4	17a.	Organize the process of implementing basic stack operations. **(OR)**
CO2	K4	17b.	Simplify linked list with suitable algorithm.
CO3	K4	18a.	Analyse in detailed about binary search tree. **(OR)**
CO3	K4	18b.	Categorize in detailed about doubly linked list.
CO4	K5	19a.	Criticize the working of Heap sort with suitable example. **(OR)**
CO4	K5	19b.	Assess the efficiency of Bubble sort with an example.
CO5	K5	20a.	Conclude how to solve 8 queen problem using backtracking **(OR)**
CO5	K5	20b.	Evaluate the role of graph theory in problem solving.