

Roll No.:

SGT UNIVERSITY

END TERM THEORY EXAMINATION JULY-2022

Faculty/College of Study:	Engineering & Technology	Year/Semester:	6 th Semester
Program:	B. Tech (CE)	Duration:	03:00 Hrs.
Course/Subject:	Data Structure and Algorithms	Maximum Marks:	60
Course/Subject Code:	13010618	Batch:	2019

Instructions:-

1. Write Your Roll No. on the QuestionPaper.
2. Candidate should ensure that they have been provided correct question paper. Complaint(s) in this regard, if any should be made within 15 minutes of the commencement of the exam. No complaint(s) will be entertained thereafter.
3. All Questions are compulsory. Marks are indicated against eachquestion.
4. Illustrate your answer with diagram wherever required.

SECTION-A

(Very Short Answer Type Questions)

Note: All Questions are compulsory: -

[12X1=12 Marks]

S. No.	Question	Marks Allotted
1	What is space Complexity?	1
2	What do you mean by Data Structure?	1
3	Define B+ trees.	1
4	What is binary search?	1
5	Define Linked List operations.	1
6	How do you find the time complexity of an algorithm?	1
7	How are three-dimensional arrays represented in memory?	1
8	What are the applications of queue?	1
9	Define sparse matrix.	1
10	What is a Binary Tree?	1
11	What do you understand by preorder traversal?	1
12	Define array.	1

SECTION-B

(Short Answer Type Questions)

Note: All Questions are compulsory: -

[4X2=8 Marks]

S. No.	Question	Marks Allotted
13	Differentiate between inorder and post order traversal.	2
14	Discuss Linear and Non-Linear Data Structures.	2
15	Discuss insertion sort in detail.	2
16	What is FIFO?	2

SECTION-C

(Descriptive Answer Type Questions)

Note: All Questions are compulsory: -

[4X4=16 Marks]

S. No.	Question	Marks Allotted
17	Discuss Row Major Order in array with help of example. Or Define a sparse matrix. Explain the representation of a 4X4 matrix using Linked list.	4
18	Discuss insertion and deletion a node in Linked List. Or Discuss various types of array in detail.	4
19	Difference between Array and Linkedlist. Or What is Spanning Trees? Explain Spanning Tree in detail with example.	4
20	Explain Selection Sort with the help of example. Or Write an algorithm to insert node at the beginning of linked list.	4

SECTION-D

(Long Answer Type Questions)

Note: All Questions are compulsory: -

[4X6=24 Marks]

S. No.	Question	Marks Allotted
21	What is Queue? Discuss array implementation of queue with algorithms. Or What is Graph? Discuss Graph Representation in detail.	6
22	Write an algorithm to evaluate a postfix expression and explain it with example. Or What is Data Structure? Explain various types of Data Structure in detail.	6
23	What is stack? Discuss push and pop operations in details. Or Explain various searching techniques with help of example.	6
24	Explain any two sorting techniques with the help of example. Or Discuss binary search tree with help of example.	6