Q.P. Code: 18CS0504 **R18**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations Feb-2021

DATA STRUCTURES & ALGORITHMS

(Common to CSE & CSIT)

Time: 3 hours Max. Marks: 60

PART-A

(Answer all the Questions **5 x 2 = 10** Marks)

1	**a**	Differentiate singly linked list and doubly linked list.	**2M**
	b	List the applications of priority queues	**2M**
	c	What do you mean by level of the tree and height of Tree?	**2M**
	d	Define Directed graph and undirected graph?	**2M**
	e	What are different types of internal sorting?	**2M**

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2	**a**	What is the difference between the arrays and linked list? Give an example	**5M**
	b	Write an algorithm to Count the number of nodes on a single linked list.	**5M**
		OR	
3	**a**	Explain double linked list with an example.	**5M**
	b	Explain any two operations on double linked list.	**5M**

UNIT-II

4	**a**	What is a stack?	**2M**
	b	Write a program to perform basic operations on stack	**8M**
		OR	
5	**a**	Write an algorithm to implement queue operations.	**5M**
	b	Write Short notes on Circular Queue.	**5M**

UNIT-III

6	**a**	Define Binary Tree.	**3M**
	b	Explain node structure and Representation of binary Tree.	**7M**
		OR	
7	**a**	What is an AVL Tree?	**3M**
	b	Describe how the following elements are into AVL tree: 3,4,13,5,16,7,8,19,10,11,14,15	**7M**

UNIT-IV

8		Explain the two graph traversals techniques.	**10M**
		OR	
9	**a**	Explain binary search algorithm with suitable example.	**4M**
	b	Write linear search algorithm. Explain the time complexity.	**6M**

UNIT-V

10	**a**	What is sorting?	**2M**
	b	Explain the bubble sort algorithm with an example.	**8M**
		OR	
11		Describe selection sort with an example.	**10M**

END