Code No: R1632024 **R16** SET - 1

III B. Tech II Semester Supplementary Examinations, November -2019

DATA STRUCTURES

(Electrical and Electronics Engineering)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A (14 Marks)

1.	a)	Define Data Structure. Write some applications of data structure.	[2M]
	b)	Define stack. What are the stack operations?	[2M]
	c)	What is the importance of void pointer?	[2M]
	d)	Write some properties of binary tree.	[3M]
	e)	Explain graph ADT.	[3M]
	f)	Define sorting. List out some sorting techniques.	[2M]

PART –B (56 Marks)

2.	a)	How to calculate space and time complexity of an algorithm? Illustrate.	[7M]
	b)	Write a short note on multi-dimensional arrays.	[7M]
3.	a)	Show the detailed contents of stack to evaluate the given postfix expression: {1 2 3 + * 3 2 1 – + *}.	[7M]
	b)	Write an algorithm to find factorial of a given number using recursion.	[7M]
4.	a)	List out the differences between array and linked list.	[7M]
	b)	Write the procedure to add two polynomials using linked list.	[7M]
5.	a)	Define a Max Heap. Construct a max heap for the following: {12, 15, 9, 8, 10, 18, 7, 20, 25}.	[7M]
	b)	How can we make an unbalanced tree as a balanced one? Explain various rotations that are involved in it. Give examples for each rotation.	[7M]
6.	a)	Differentiate BFS and DFS.	[7M]
	b)	Explain Kruskal's algorithm with an example.	[7M]
7.	a)	Explain quick sort algorithm and simulate it for the following data: 20, 35, 10, 16, 54, 21, and 25.	[7M]
	b)	Write an algorithm for linear search.	[7M]

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