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Vidya Jyothi Institute of Technology (Autonomous)

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R18

Subject Code:A23504

B.Tech. II Year I Semester Examination NOVEMBER -2019

SUBJECT : DATA STRUCTURES **BRANCH : CSE&IT**

Time: 3 Hours **Max. Marks:75**

Note: This question paper contains two ***Parts A and B.***

Part A is compulsory which carries 25 Marks. Answer all question in Part A.

Part B consists of 5 questions. Answer all the questions.

Bloom's Level:

Remember	L1	Analyze	L4
Understand	L2	Evaluate	L5
Apply	L3	Create	L6

	PART - A ANSWER ALL THE QUESTIONS	Bloom`s Level	25 Marks
1	What is Data Structure? Explain its types.	L1	2M
2	Distinguish statcks and queues.	L4	3M
3	Define full binary tree.	L1	2M
4	Define path,sibling,height of tree with an example	L1	3M
5	Explain the necessity of height balancing in trees.	L4	2M
6	Explain single rotations in insertion of AVL Tree.	L4	3M
7	List any two differences between graphs and trees.	L4	2M
8	Briefly explain DFS Graph Traversal.	L5	3M
9	Differentiate Linear Probing and Quadratic Probing.	L2	2M
10	Explain Dictionaries with an example	L5	3M
	PART - B **ANSWER ALL THE QUESTIONS**	**Bloom`s Level**	**50Marks**
11.i.a)	Convert the infix expression a / b – c + d * e – a *c into postfix expression and trace that postfix expression for given data a=6,b=3,c=1,d=2,e=4.	L6	6M
b)	Discuss an algorithm to insert an element in a queue.	L6	4M
	[OR]		
ii.a)	Explain advantages of circular queue over linear queue and explain its operations.	L2	6M
b)	Convert the following expression into potfix notaion. A + B * C + D – E + F	L6	4M
12.i.a)	Explain the sequential representation of a binary tree.	L2	5M
b)	Define extended binary tree. Explain tree traversal procedure of extended binary tree.	L1	5M
	[OR]		
ii.a)	What operations can be performed on binary trees? Discuss.	L1	5M
b)	Explain in-order traversal of a binary tree. Explain with example.	L4	5M
13.i.a)	Construct an AVL tree and update the height and balance factor after every insertion for the following elements 14, 17, 11, 7, 53, 4, 13, 12, 8 and remove the elements 53, 11 and 8.	L3	6M
b)	Explain Red-Black trees with appropriate example.	L4	4M
	[OR]		
ii.a)	Write a program to illustrate the insertion of a node in the Binary Search Tree	L3	5M
b)	Explain B-tree with example.	L4	5M
14.i.a)	What is graph? Explain the properties of graphs.	L1	5M
b)	Write Breadth First search traversal algorithm. Explain with an example.	L3	5M
	[OR]		
ii.a)	Write Kruskals Algorithm.	L3	5M
b)	Write Dijkstra Algorithm.	L3	5M
15.i.a)	What is hashing? Explain Double Hashing and Rehashing.	L1	5M
b)	Explain Separate Chaining and Open Addressing.	L4	5M
	[OR]		
ii.a)	Write short notes on hashing functions.	L3	5M
b)	Explain about extensible hashing.	L4	5M