Manipal Institute of Technology, Department of E and C Engineering

VI Semester **II Sessional --- Data Structure and Algorithms** **Max Marks: 15**

1. What are null nodes filled with in a threaded binary tree? **1 Marks**
2. Construct Binary Search Tree using the following postorder traversal: 5,6,3,34,23,78,65,45,22,15,10 **2 Marks**

Index	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Values	3	5	9	6	8	20	10	-	-	9	-	-	-	-	-

3. A Construct a binary tree from the following array representation:

3 Marks

4. The prototype of the member function of class **BTREE** is as follows: void insert (node *root, node *temp); Write function to insert a node into the binary tree. First and second arguments corresponds to root and new node to be inserted into the binary tree respectively. **3 Marks**

5. Discuss the methods to construct the binary trees from the postfix expression. Also construct the binary tree for the following postfix expression: abc*+de*f+g*+. Clearly show all the steps. **3 Marks**

6. A company uses a compression technique to encode the message before storing in a file. Suppose the message contains the characters with their frequency given in the table.Note that each character in input message takes 1 byte. If the compression technique used is Huffman Coding, how many bits will be saved in the message?

Character	a	b	c	d	e	f
Frequency	5	9	12	13	16	45

3 Marks

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