# Shri G S Institute of Technology & Science, Indore
# CT 10702: Data Structures
# Theory Assignment III

1 Construct a B-Tree of order 4 by inserting the following keys in the order shown into an empty B-Tree:
40, 90, 50, 30, 10, 20, 60, 80, 100, 70

2 Traverse the B-Tree constructed above using In-Order, Pre-Order and Post-Order traversal.

3 Are B-Tree of order 2 full binary trees? Explain

4 Construct an AVL tree from the following keys inserted in order:
7 ,11 , 8, 10, 5, 6, 1, 3, 4, 9, 15, 20

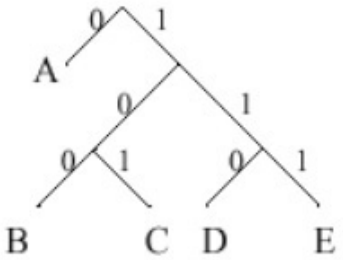
5 Explain various ways of graph representation?

6 Explain the following:
(i) Tree
(ii) Rooted Tree
(iii) Binary Tree
(iv) Complete Binary Tree
(v) Full Binary Tree
(vi) Strictly Binary Tree

7 Write the algorithm for preorder, postorder and inorder traversal in a tree?

8 Write the application of Trees?

9 (i) Consider the following Huffman Decoding Tree for a variable length code involving 5 symbols: A,B,C,D,E




Decode the following encoded message "01000111101" from the tree.

(ii) Write the Huffman Code for the following data

| Book No. | Frequency |
|---|---|
| 1 | 20 |
| 2 | 5 |
| 3 | 30 |
| 4 | 10 |
| 5 | 50 |

| | |
|---|---|
| 6 | 15 |
| 7 | 25 |
| 8 | 40 |

10 What is Threaded Binary Tree? Write a function for traversing a Threaded Binary Tree?

11 Construct Binary Tree using following traversal:
Pre-Order : a ,b ,i ,c ,f ,g ,h ,d ,k ,e
In-Order : i ,b ,a ,g ,f, d, h, k, c, e