Mumbai Education Trust's

# INSTITUTE OF ENGINEERING, NASHIK.

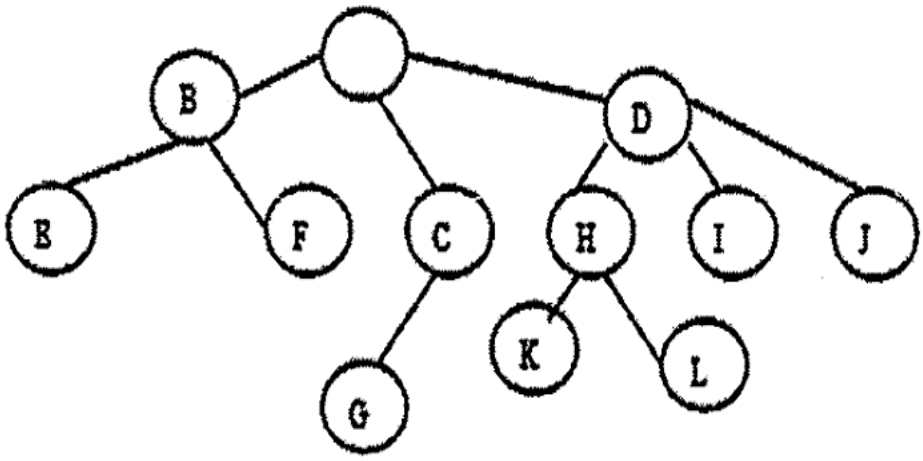
## COMPUTER ENGINEERING DEPARTMENT

**Subject :** DSA **ASSIGNMENT NO – 02** **Unit - II**

1. Define **Basic Terminologies of Trees** with example.
2. Explain **the Binary tree with its Types(examples)**.
3. Explain **Representation of binary tree using sequential and linked organization.**
4. **Write a non-recursive function to display data in Binary Search Tree in descending**
5. Write an **algorithm to delete a node from Threaded binary Search Tree**.
6. Explain **Tree Traversal with it recursive algorithms and example**.
7. With suitable example , Explain step for **conversion of a general tree into binary tree.**

   **Note : Consider root as A**

Convert the given general tree to its equivalent binary tree.




8. Explain the **Binary Search Tree in details with following example.**

   **Contruct Binary Search Tree(BST) for the following** :

   a) J, R, D, G, T, E, M, H, P, A, F, Q

   b) MAR, MAY, NOV. AUG, APR, JAN, DEC, JUL, FEB, JUN, OCT, SEPT

9. The **following numbers are inserted into an empty binary search tree in the given order :** G, C, B, A , D, E, F, I, H. Construct tree step by step. Represent the constructed tree using static memory allocation.

10. Explain **Threaded Binary Tree** with its advantages and disadvantages.

For the binary tree represented as an array, perform in-order threading on the tree : [4]

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | B | C | D | E | F | G | | H | I | | | | J | K | | | | | | | | | | | | | L |

**11.** Write a short notes on **Huffman Coding.**

**Construct Huffman's Tree and the prefix free code for all characters :**

| **Symbol** | A | C | E | H | I |
|---|---|---|---|---|---|
| **Frequency** | 3 | 5 | 8 | 2 | 7 |

12. Let characters a, b, c, d, e, f has probabilities 0.07, 0.09, 0.12, 0.22, 0.23, 0.27 respectively. **Find an optimal Huffman code and draw Huffman tree.**

**13.**

**a) From the given traversals construct the binary tree :**

**Inorder :** EICFJBGDKHL **postorder :** IEJFCGKLHDB

**Draw the binary tree** and write preorder traversal.

**b) From the given traversals construct the binary tree.**

**Pre-order :** G, B, Q, A, C, K, F, P, D, E, R, H

**In-order :** Q, B, K, C, F, A, G, P, E, D, H, R

**c)**

**Generate binary tree for the following pre-order and in-order traversals :**

**Pre-order :** E A C K F H D B G

**In-order :** F A E K C D H G B

**d)**

Construct a binary tree from given *two* traversals : [6]

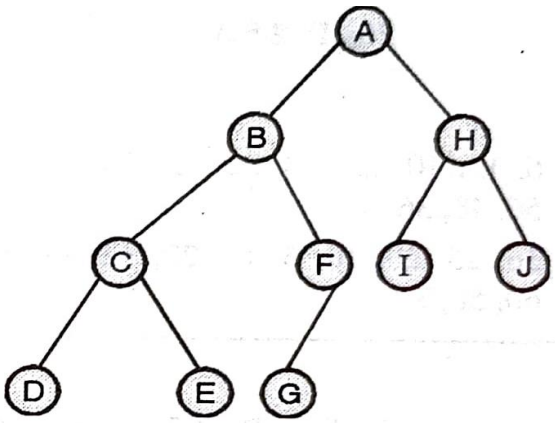
Inorder Traversal—1 2 3 14 7 10 11 40 30

Postorder Traversal–1 3 2 7 10 40 30 11 14

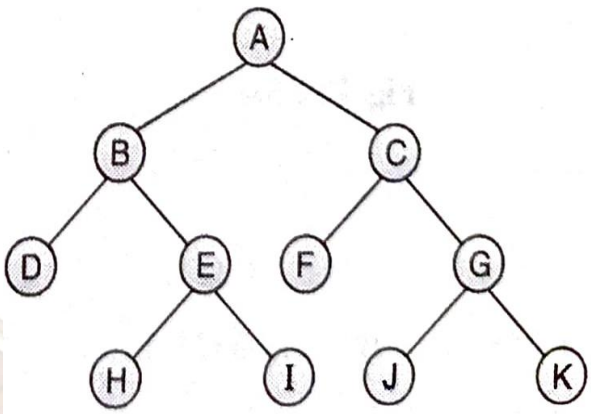
14. **Construct threaded binary tree** step by step if the **preorder traversal** is G, B, D, C, A, K, Q, P, R & in-order traversal is B, A, C, D, G, K, P, Q, R. Delete G and redraw a tree.

15. **Solve following Tree traversal examples. Perform inorder , preorder and postorder traversal of binary tree.**

**1.**




**2.**

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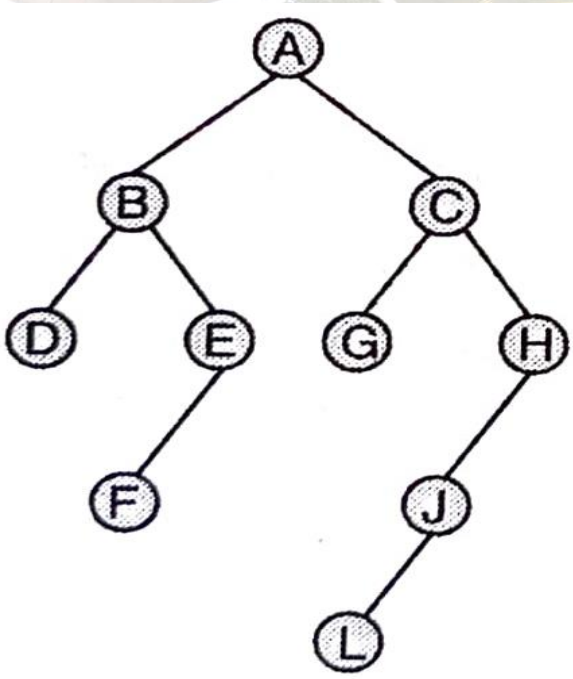
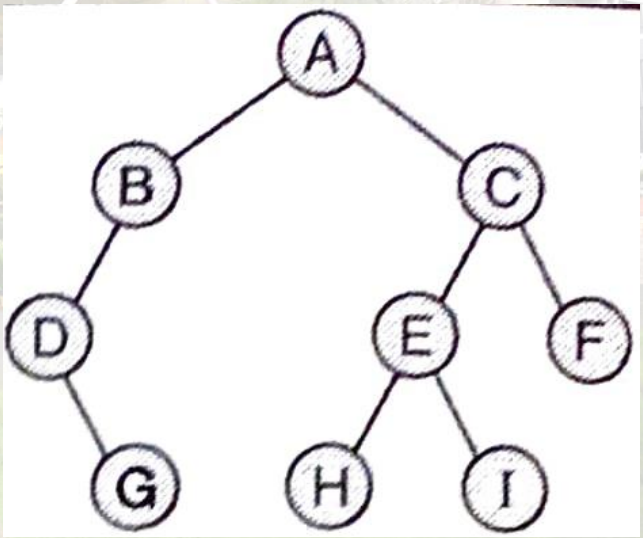



**4.**




********** **Best of Luck** **********