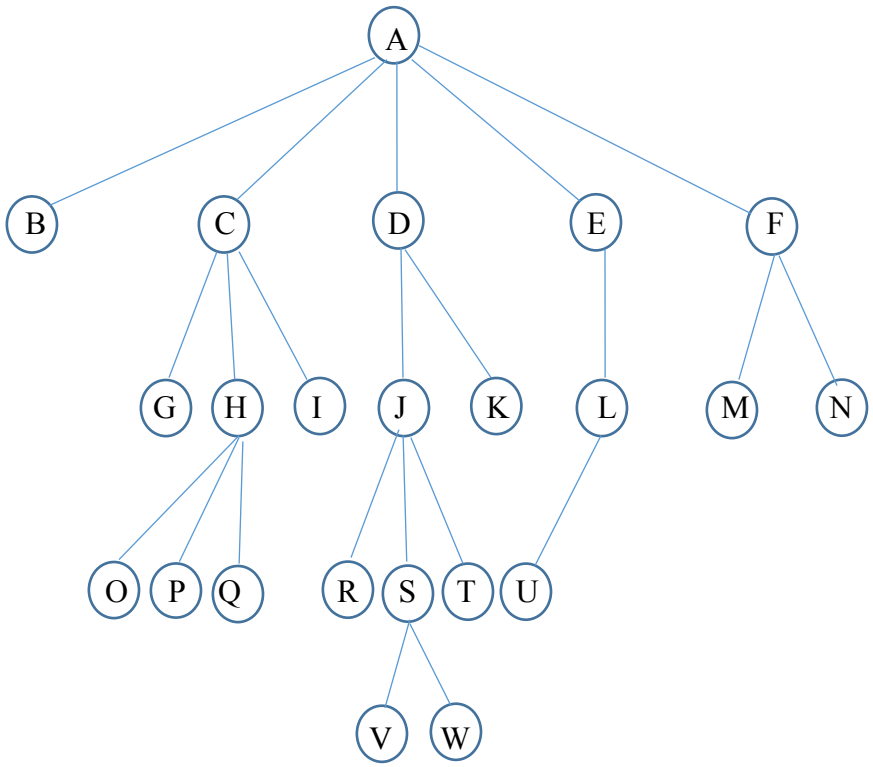
Class Exercise #5
COSC600 Advanced Data Structures and Algorithm Analysis

Name _____

1. Consider the following conceptual diagram of a tree. (A label of each node is a node label.)



a) Draw an implementation diagram of first child/next sibling representation of this tree.

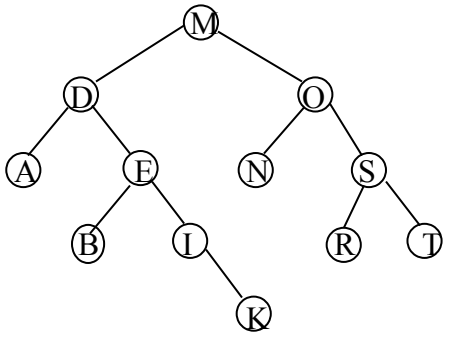
b) For a DFS(Depth First Search) tree traversal, draw a stack with labels of nodes when a node P is visiting. Repeat this for visiting a node V and a node U.

c) List the sequence of all visiting nodes in DFS traversal method.

d) For a BFS(Breadth First Search) tree traversal, draw a queue with labels of nodes when a node E is visiting. Repeat this for visiting a node K and a node T.

e) List the sequence of all visiting nodes in BFS traversal method.

2. Consider the following **binary tree**,



a) List the sequence of visiting nodes using a preorder traversal method.

b) List the sequence of visiting nodes using an inorder traversal method.

c) List the sequence of visiting nodes using a postorder traversal method.

3. Show that the maximum number of nodes in a binary tree of height h is $2^{h+1} - 1$.