**Binary Tree Review Questions and Exercises**

**Short Answer**

1. Each node in a binary tree may point to how many other nodes?

2. How many predecessors may each node other than the root node have?

3. What is a leaf node?

4. What is a subtree?

5. What initially determines the shape of a binary tree?

6. What are the three methods of traversing a binary tree? What is the difference between

these methods?

**Fill-in-the-Blank**

7. The first node in a binary tree is called the \_\_\_\_\_\_\_\_\_\_.

8. A binary tree node’s left and right pointers point to the node’s \_\_\_\_\_\_\_\_\_\_.

9. A node with no children is called a(n) \_\_\_\_\_\_\_\_\_\_.

10. A(n) \_\_\_\_\_\_\_\_\_\_ is an entire branch of the tree, from one particular node down.

11. The three common types of traversal with a binary tree are \_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_,

and \_\_\_\_\_\_\_\_\_\_.

**Algorithm Workbench**

12. Write a pseudocode algorithm for inserting a node in a tree.

13. Write a pseudocode algorithm for the inorder traversal.

14. Write a pseudocode algorithm for the preorder traversal.

15. Write a pseudocode algorithm for the postorder traversal.

16. Write a pseudocode algorithm for searching a tree for a specified value.

17. Suppose the following values are inserted into a binary tree, in the order given:

12, 7, 9, 10, 22, 24, 30, 18, 3, 14, 20

Draw a diagram of the resulting binary tree.

18. How would the values in the tree you sketched for Question 17 be displayed in an

inorder traversal?

19. How would the values in the tree you sketched for Question 17 be displayed in a preorder

traversal?

20. How would the values in the tree you sketched for Question 17 be displayed in a

postorder traversal?

**True or False**

21. T F Each node in a binary tree must have at least two children.

22. T F When a node is inserted into a tree, it must be inserted as a leaf node.

23. T F Values stored in the current node’s left subtree are less than the value stored

in the current node.

24. T F The shape of a binary tree is determined by the order in which values are

inserted.

25. T F In inorder traversal, the node’s data is processed first, then the left and right

nodes are visited.