

## QUIZ WORKSHEET: Trees and Terminology

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Class: \_\_\_\_\_ Marks: \_\_\_\_\_

### Part A: Multiple Choice Questions (1 mark each)

1. Which of the following is true about tree data structures?
  - a) Trees always have cycles
  - b) Trees can have more than one root
  - c) Every child node has exactly one parent
  - d) Trees are linear data structures
2. Which node is at level 0 in a tree?
  - a) Any internal node
  - b) The leftmost node
  - c) The root node
  - d) A leaf node
3. What is the number of edges in a tree with 8 nodes?
  - a) 6
  - b) 7
  - c) 8
  - d) 9
4. If a tree has height = 3, the number of levels is:
  - a) 2
  - b) 3
  - c) 4
  - d) 5
5. What is the degree of a node?
  - a) Number of ancestors
  - b) Number of levels under it
  - c) Number of children
  - d) Number of siblings

### Part B: True or False (1 mark each)

6. The height of a tree is the length of the longest path from the root to a leaf. \_\_\_\_\_
7. All leaf nodes have a degree of 1. \_\_\_\_\_
8. Internal nodes always have at least one child. \_\_\_\_\_
9. A tree with only one node has height 0. \_\_\_\_\_
10. Siblings in a tree must be on the same level. \_\_\_\_\_

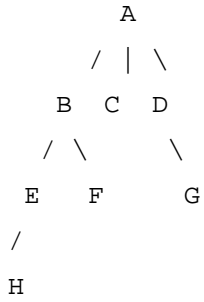
### Part C: Short Answer Questions (2 marks each)

11. Define the following in your own words:
  - a) Level: \_\_\_\_\_
  - b) Degree: \_\_\_\_\_
  - c) Depth: \_\_\_\_\_
  - d) Height: \_\_\_\_\_
12. How many edges are there in a tree with 15 nodes?
13. What is the difference between:
  - a) Height of a node and depth of a node?
  - b) Leaf node and internal node?
14. Can a node be both a child and a parent? Explain with an example.

### Part D: Based on the Given Tree

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Use this tree diagram to answer questions 15 to 23:



15. What is the root of the tree?
16. List all the leaf nodes:
17. What is the degree of node A?
18. What is the level of node H?
19. What is the height of the tree?
20. Which nodes are at level 2?
21. Identify all internal nodes:
22. What is the degree of node B and node D?
23. What is the height of node B?

### Part E: Match the Following (1 mark each)

Write the matching letter.

Column A	Match	Column B
24. Degree	_____	A) Node with no children
25. Level	_____	B) Number of edges from root to node
26. Leaf Node	_____	C) Node with at least one child
27. Internal Node	_____	D) Number of children a node has