Assignment-3

Institute/Department: AIT/CSE
Division: 6 th
Subject Name: Technical Training
Subject Code: CSY-355
Max. Marks: 12
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1. **1. The height of a BST is given as h. Consider the height of the tree as the no. of edges in the longest path from root to the leaf. The maximum no. of nodes possible in the tree is?**

a) 2^{h-1} -1
b) 2^{h+1} -1
c) 2^{h} +1
d) 2^{h-1} +1

2. The no of external nodes in a full binary tree with n internal nodes is?

a) n
b) n+1
c) 2n
d) 2n + 1

3. The difference between the external path length and the internal path length of a binary tree with n internal nodes is?

a) 1
b) n
c) n + 1
d) 2n

4. Suppose a binary tree is constructed with n nodes, such that each node has exactly either zero or two children. The maximum height of the tree will be?

a) (n+1)/2
b) (n-1)/2
c) n/2 -1
d) (n+1)/2 -1

5. Which of the following statement about binary tree is CORRECT?

a) Every binary tree is either complete or full
b) Every complete binary tree is also a full binary tree
c) Every full binary tree is also a complete binary tree
d) A binary tree cannot be both complete and full

6. Suppose we have numbers between 1 and 1000 in a binary search tree and want to search for the number 363. Which of the following sequence could not be the sequence of the node examined?

a) 2, 252, 401, 398, 330, 344, 397, 363
b) 924, 220, 911, 244, 898, 258, 362, 363
c) 925, 202, 911, 240, 912, 245, 258, 363
d) 2, 399, 387, 219, 266, 382, 381, 278, 363

7. In full binary search tree every internal node has exactly two children. If there are 100 leaf nodes in the tree, how many internal nodes are there in the tree?

a) 25
b) 49
c) 99
d) 101

8. Which type of traversal of binary search tree outputs the value in sorted order?

a) Pre-order
b) In-order
c) Post-order
d) None
9. A minimal spanning tree of a graph G is
A A spanning sub graph
B A tree
C Minimum weights
D All of above

10. A partial ordered relation is transitive, reflexive and
A Antisymmetric
B Bisymmetric
C Anti reflexive
D Asymmetric
11. The maximum degree of any vertex in a simple graph with n vertices is
A n–1
B n+1
C 2n–1
D n

12. Consider a weighted undirected graph with positive edge weights and let (u, v) be an edge in the graph. It is known that the shortest path from source vertex s to u has weight 53 and shortest path from s to v has weight 65. Which statement is always true?
A Weight (u, v) <= 12
B Weight (u, v) = 12
C Weight (u, v) >= 12
D Weight (u, v) > 12