

29 Lecture - CS301

Important Mcqs

1. **A binary tree is said to be complete if:**

- a) All nodes have two children
- b) All levels are completely filled except possibly the last level
- c) All nodes have at most two children
- d) None of the above

Answer: b) All levels are completely filled except possibly the last level

2. **What is the maximum number of nodes a complete binary tree of height h can have?**

- a) 2^{h+1}
- b) $2^h - 1$
- c) h^2
- d) None of the above

Answer: b) $2^h - 1$

3. **What is the minimum number of nodes a complete binary tree of height h can have?**

- a) $2^{(h-1)}$
- b) $2^{(h-1)} - 1$
- c) $h^2 - 1$
- d) None of the above

Answer: a) $2^{(h-1)}$

4. **A complete binary tree of height h has _____ leaf nodes.**

- a) $2^h - 1$
- b) $2^{(h-1)}$
- c) $2^{(h-1)} + 1$
- d) None of the above

Answer: b) $2^{(h-1)}$

5. **What is the height of a complete binary tree with 15 nodes?**

- a) 3
- b) 4
- c) 5
- d) None of the above

Answer: b) 4

6. **A complete binary tree can be efficiently stored in an array using:**

- a) Inorder traversal
- b) Preorder traversal

- c) Postorder traversal
- d) Level order traversal

Answer: d) Level order traversal

7. **The number of internal nodes in a complete binary tree of height h is:**

- a) 2^h
- b) 2^{h-1}
- c) $2^{(h+1)}-1$
- d) None of the above

Answer: b) 2^{h-1}

8. **What is the parent of the node at index i in an array representation of a complete binary tree?**

- a) $i-1$
- b) $i/2$
- c) $2*i$
- d) None of the above

Answer: b) $i/2$

9. **A complete binary tree of n nodes has its root at index:**

- a) 0
- b) 1
- c) $n-1$
- d) n

Answer: a) 0

10. **Which of the following is NOT true about a complete binary tree?**

- a) It can have a maximum of 2^h-1 nodes
- b) It can have a minimum of $2^{(h-1)}$ nodes
- c) Its last level can have any number of nodes
- d) All levels except possibly the last level are completely filled

Answer: c) Its last level can have any number of nodes