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