40 Lecture - CS301

Important Mcqs

1. **Which of the following data structures is a probabilistic data structure?**
   A) Binary search tree
   B) AVL tree
   C) Skip list
   D) Red-black tree
   Answer: C) Skip list

2. **In a skip list, what is the maximum number of levels that a node can have?**
   A) 1
   B) 2
   C) log n
   D) Unlimited
   Answer: D) Unlimited

3. **What is the time complexity of searching for an element in a skip list?**
   A) O(n)
   B) O(log n)
   C) O(n log n)
   D) O(1)
   Answer: B) O(log n)

4. **Which of the following operations cannot be performed on a skip list?**
   A) Insertion
   B) Deletion
   C) Searching
   D) Sorting
   Answer: D) Sorting

5. **Which of the following is the main advantage of using skip lists over balanced trees?**
   A) Space efficiency
   B) Time efficiency
   C) Ease of implementation
   D) None of the above
   Answer: C) Ease of implementation

6. **Which of the following is a disadvantage of using skip lists?**
   A) High space complexity
   B) High time complexity
   C) Limited applicability
   D) None of the above
   Answer: A) High space complexity

7. **In a skip list, what is the probability of a node having k+1 levels, given that it has k levels?**

A) 1/2
B) 1/4
C) 1/8
D) 1/16
Answer: B) 1/4

8. **What is the worst-case time complexity of insertion in a skip list?**
A) O(n)
B) O(log n)
C) O(n log n)
D) O(1)
Answer: A) O(n)

9. **In a skip list, what is the maximum number of nodes that can be present in a level i, given that there are n total nodes in the skip list?**
A) n
B) n/2
C) n/log n
D) log n
Answer: B) n/2

10. **Which of the following is a disadvantage of using skip lists over hash tables?**
A) Lower space complexity
B) Higher time complexity
C) Lack of support for efficient range queries
D) None of the above
Answer: C) Lack of support for efficient range queries