33 Lecture - CS301

Important Mcqs

1. **What is a priority queue using a heap?**
   A) A queue where elements are arranged in the order they are inserted
   B) A queue where elements are arranged in ascending order
   C) A queue where elements are arranged based on their priority
   D) A queue where elements are arranged in descending order
   Answer: C

2. **Which operation(s) can be performed on a priority queue?**
   A) Insertion
   B) Deletion
   C) Retrieval of the highest priority element
   D) All of the above
   Answer: D

3. **What is the time complexity of insertion in a priority queue using a heap?**
   A) O(1)
   B) O(log n)
   C) O(n)
   D) O(n^2)
   Answer: B

4. **What is the time complexity of retrieval of the highest priority element in a priority queue using a heap?**
   A) O(1)
   B) O(log n)
   C) O(n)
   D) O(n^2)
   Answer: A

5. **Which data structure is used to implement a priority queue using a heap?**
   A) Array
   B) Linked list
   C) Stack
   D) Queue
   Answer: A

6. **What is the property of a heap that ensures the highest priority element is always at the top?**
   A) Heap size
   B) Heap capacity
   C) Heap order
   D) Heap property
   Answer: D

7. **Which type of heap is used to implement a priority queue?**
   A) Max heap
   B) Min heap
   C) Both A and B
   D) Neither A nor B
   Answer: A

8. **What happens when a new element is inserted into a priority queue using a heap?**
   A) The element is added to the end of the heap
   B) The element is added to the beginning of the heap
   C) The element is added to the correct position based on its priority
   D) None of the above
   Answer: C

9. **What happens when the highest priority element is removed from a priority queue using a heap?**
   A) The last element is removed
   B) The first element is removed
   C) The element in the correct position is removed
   D) None of the above
   Answer: C

10. **Which of the following statements is true about a priority queue using a heap?**
    A) The elements are arranged in ascending order
    B) The time complexity of insertion is O(n)
    C) The highest priority element is always at the top
    D) All elements have the same priority
    Answer: C