

30 Lecture - CS301

Important Mcqs

1. In a min-heap, the root node always contains the _____ element.
- a) Maximum
 - b) Minimum
 - c) Median
 - d) Random

Answer: b) Minimum

2. The worst-case time complexity for inserting an element in a min-heap is:
- a) $O(1)$
 - b) $O(\log n)$
 - c) $O(n)$
 - d) $O(n \log n)$

Answer: b) $O(\log n)$

3. Which property of a min-heap ensures that the root node always contains the minimum element?
- a) Complete binary tree property
 - b) Heap order property
 - c) Both (a) and (b)
 - d) None of the above

Answer: b) Heap order property

4. To insert an element in a min-heap, we always add it to the:
- a) Leftmost position at the deepest level
 - b) Rightmost position at the deepest level
 - c) Leftmost position at the second deepest level
 - d) Rightmost position at the second deepest level

Answer: a) Leftmost position at the deepest level

5. If we insert the elements 8, 5, 3, 9, 1, 7, 6, 2 in a min-heap, what will be the root node?
- a) 1
 - b) 2
 - c) 3
 - d) 5

Answer: a) 1

6. The height of a min-heap with n elements is:
- a) $\log n$

- b) $n/2$
- c) $n-1$
- d) n

Answer: a) $\log n$

7. Which of the following operations is NOT supported by a min-heap?

- a) Insertion
- b) Deletion
- c) Search
- d) All of the above

Answer: c) Search

8. To maintain the heap order property after inserting an element, we perform:

- a) Up-heap bubbling
- b) Down-heap bubbling
- c) Both (a) and (b)
- d) None of the above

Answer: a) Up-heap bubbling

9. If we insert an element in a min-heap, the new element will always be a:

- a) Leaf node
- b) Parent node
- c) Child node
- d) Sibling node

Answer: a) Leaf node

10. The time complexity of building a min-heap from an array of n elements is:

- a) $O(1)$
- b) $O(n)$
- c) $O(n \log n)$
- d) $O(n^2)$

Answer: b) $O(n)$