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)