

31 Lecture - CS301

Important Mcqs

1. What is the time complexity of BuildHeap algorithm?

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

Answer: c) $O(n)$

2. Which data structure is created by BuildHeap algorithm?

- a) Array
- b) Linked List
- c) Tree
- d) Heap

Answer: d) Heap

3. What is the maximum number of swaps required in BuildHeap algorithm?

- a) $n-1$
- b) n
- c) $n/2$
- d) $\log n$

Answer: b) n

4. Which sorting algorithm uses BuildHeap internally?

- a) Insertion Sort
- b) Merge Sort
- c) Quick Sort
- d) Heap Sort

Answer: d) Heap Sort

5. What is the worst-case time complexity of HeapSort?

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

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

6. Which property does a heap satisfy?

- a) All nodes are greater than their parent nodes
- b) All nodes are less than their parent nodes

- c) All nodes are equal to their parent nodes
- d) None of the above

Answer: a) All nodes are greater than their parent nodes

7. **What is the index of the last non-leaf node in a binary heap?**

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

Answer: b) $(n-2)/2$

8. **Which operation is used to remove the root element from a heap?**

- a) Delete
- b) ExtractMin/ExtractMax
- c) Pop
- d) Remove

Answer: b) ExtractMin/ExtractMax

9. **Which data structure is best suited for implementing a priority queue?**

- a) Stack
- b) Queue
- c) Heap
- d) Linked List

Answer: c) Heap

10. **What is the worst-case time complexity of inserting an element in a heap?**

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

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