

# 45 Lecture - CS301

## Important Mcqs

1. Which of the following is not an example of Divide and Conquer algorithm?
- a) Binary Search
  - b) QuickSort
  - c) Bubble Sort
  - d) MergeSort

Answer: c) Bubble Sort

2. What is the time complexity of QuickSort algorithm?
- a)  $O(n)$
  - b)  $O(n^2)$
  - c)  $O(n \log n)$
  - d)  $O(\log n)$

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

3. In MergeSort algorithm, what is the time complexity of merging two sorted arrays of size  $n$ ?
- a)  $O(n)$
  - b)  $O(n^2)$
  - c)  $O(\log n)$
  - d)  $O(1)$

Answer: a)  $O(n)$

4. Which of the following is not a step in the Divide and Conquer algorithm?
- a) Divide
  - b) Conquer
  - c) Combine
  - d) Increment

Answer: d) Increment

5. Which of the following is an example of a problem that can be solved using Divide and Conquer algorithm?
- a) Finding the maximum value in an unsorted array
  - b) Counting the number of occurrences of a given element in an unsorted array
  - c) Sorting an array in ascending order
  - d) Finding the shortest path between two nodes in a graph

Answer: c) Sorting an array in ascending order

6. **What is the space complexity of MergeSort algorithm?**

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

Answer: a)  $O(n)$

7. **Which of the following algorithms uses Divide and Conquer approach to find the closest pair of points in a plane?**

- a) Insertion Sort
- b) Selection Sort
- c) MergeSort
- d) Divide and Conquer algorithm for Closest Pair problem

Answer: d) Divide and Conquer algorithm for Closest Pair problem

8. **What is the worst case time complexity of Binary Search algorithm?**

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

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

9. **Which of the following is an advantage of using Divide and Conquer approach?**

- a) It is easy to implement
- b) It always gives the optimal solution
- c) It reduces the time complexity of the algorithm
- d) It is not affected by the size of the input

Answer: c) It reduces the time complexity of the algorithm

10. **Which of the following is a disadvantage of using Divide and Conquer approach?**

- a) It is not suitable for solving large problems
- b) It requires extra space for storing the intermediate results
- c) It is difficult to understand and implement
- d) It always gives the correct solution

Answer: b) It requires extra space for storing the intermediate results