9 Lecture - CS502

Important Mcqs

1. **What is the 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)

   What is the space complexity of bubble sort algorithm?
   a. O(1)
   b. O(n)
   c. O(n^2)
   d. O(log n)
   Answer: a. O(1)

   Which complexity class does the problem of factoring large integers belong to?
   a. P
   b. NP
   c. NP-hard
   d. NP-complete
   Answer: d. NP-complete

   Which complexity class does the problem of finding the shortest path in a graph belong to?
   a. P
   b. NP
   c. NP-hard
   d. NP-complete
   Answer: a. P

   What is the worst-case time complexity of the brute-force algorithm for the traveling salesman problem?
   a. O(n!)
   b. O(2^n)
   c. O(n^2)
   d. O(log n)
   Answer: a. O(n!)

   Which of the following is not a complexity class?
   a. PSPACE
   b. PTIME
   c. EXP
   d. NPSPACE
   Answer: d. NPSPACE

   What is the time complexity of the merge sort algorithm?
   a. O(1)

b. O(n)
c. O(n log n)
d. O(n^2)
Answer: c. O(n log n)

Which of the following is an example of a decision problem?
a. Sorting a list of integers
b. Finding the shortest path in a graph
c. Determining whether a number is prime
d. Factoring a large integer
Answer: c. Determining whether a number is prime

Which of the following complexity classes is believed to be strictly larger than P?
a. NP
b. PSPACE
c. EXP
d. NP-complete
Answer: c. EXP

What is the time complexity of the naive algorithm for matrix multiplication?
a. O(1)
b. O(n)
c. O(n^2)
d. O(n^3)
Answer: d. O(n^3)