2 Lecture - CS502

Important Mcqs

1. **What is the purpose of using asymptotic notation in the analysis of algorithms?**
   a) To focus on the growth rate of the function
   b) To consider constant factors and lower order terms
   c) To provide precise measurements of algorithm efficiency
   d) To identify the fastest algorithm
   Answer: a) To focus on the growth rate of the function

   Which asymptotic notation represents the upper bound of a function?
   a) Big O
   b) Omega
   c) Theta
   d) None of the above
   Answer: a) Big O

   Which asymptotic notation represents the lower bound of a function?
   a) Big O
   b) Omega
   c) Theta
   d) None of the above
   Answer: b) Omega

   Which asymptotic notation represents both the upper and lower bounds of a function?
   a) Big O
   b) Omega
   c) Theta
   d) None of the above
   Answer: c) Theta

   Which of the following statements is true about Big O notation?
   a) It represents the exact running time of an algorithm
   b) It represents the best-case running time of an algorithm
   c) It represents the worst-case running time of an algorithm
   d) It represents the average-case running time of an algorithm
   Answer: c) It represents the worst-case running time of an algorithm

   Which of the following notations is used to describe the best-case running time of an algorithm?
   a) Big O
   b) Omega
   c) Theta
   d) None of the above
   Answer: b) Omega

   Which of the following notations is used to describe the average-case running time of an

algorithm?
a) Big O
b) Omega
c) Theta
d) None of the above
Answer: d) None of the above (average-case running time is typically not described using asymptotic notation)

Which of the following functions has a higher growth rate: f(n) = n^2 or g(n) = 2^n?
a) f(n) = n^2
b) g(n) = 2^n
c) They have the same growth rate
Answer: b) g(n) = 2^n

Which of the following functions has a lower growth rate: h(n) = log n or j(n) = n?
a) h(n) = log n
b) j(n) = n
c) They have the same growth rate
Answer: a) h(n) = log n

Which of the following notations can be used to describe an algorithm with a constant running time?
a) Big O
b) Omega
c) Theta
d) None of the above
Answer: c) Theta (since constant time is both an upper and lower bound)