11 Lecture - CS402

Important Mcqs

1. **What is the Kleene star theorem?**
   A. A theorem in graph theory
   B. A theorem in calculus
   C. A theorem in formal languages and automata (Answer)

   What does the Kleene star theorem state?
   A. For any regular language L, there exists a regular expression that generates L
   B. For any regular language L, there exists a regular expression that generates L+
   C. For any regular language L, there exists a regular expression that generates L* (Answer)

   What does L* represent in the Kleene star theorem?
   A. All strings in L
   B. All possible strings formed by concatenating strings from L
   C. All strings in L of length less than or equal to n (Answer)

   What is the significance of the Kleene star theorem?
   A. It has important applications in computer science, linguistics, and natural language processing (Answer)
   B. It has no practical applications
   C. It is a purely theoretical result

   What is the difference between L+ and L* in the Kleene star theorem?
   A. L* includes the empty string while L+ does not (Answer)
   B. L+ includes the empty string while L* does not
   C. There is no difference between L+ and L*

   Is every regular language also a context-free language?
   A. Yes
   B. No (Answer)

   What is a regular expression?
   A. A formal way to describe a set of strings (Answer)
   B. A mathematical equation
   C. A programming language

   What is an automaton?
   A. A formal model for recognizing languages (Answer)
   B. A type of computer network
   C. A type of computer program

   What is the difference between a deterministic and a nondeterministic automaton?
   A. A deterministic automaton always knows which transition to take next, while a nondeterministic automaton may have multiple possible transitions (Answer)

B. A deterministic automaton has more states than a nondeterministic automaton
C. There is no difference between a deterministic and a nondeterministic automaton

What is the pumping lemma?
A. A theorem that states that all regular languages can be generated by a finite automaton
B. A theorem that states that all context-free languages can be generated by a pushdown automaton
C. A theorem that can be used to prove that certain languages are not regular (Answer)