39 Lecture - CS402

Important Mcqs

1. **Which of the following is true about PDAs and CFGs?**
   a) Every PDA corresponds to a CFG.
   b) Every CFG corresponds to a PDA.
   c) Some PDAs correspond to CFGs.
   d) PDAs and CFGs are not related.
   Solution: b) Every CFG corresponds to a PDA.

   Which of the following is a necessary component of a PDA?
   a) Finite set of states
   b) Input tape
   c) Transition function
   d) All of the above
   Solution: d) All of the above

   The stack in a PDA allows the PDA to:
   a) Store input symbols
   b) Store nonterminal symbols
   c) Store both input and nonterminal symbols
   d) None of the above
   Solution: b) Store nonterminal symbols

   The transition function in a PDA is based on:
   a) Current state
   b) Symbol on the input tape
   c) Symbol at the top of the stack
   d) All of the above
   Solution: d) All of the above

   Which of the following is necessary for a PDA to accept a string?
   a) It must reach an accepting state.
   b) It must have a nonempty stack.
   c) It must have a stack that contains only input symbols.
   d) It must have visited every state.
   Solution: a) It must reach an accepting state.

   Which of the following is true about PDAs and regular languages?
   a) PDAs can recognize all regular languages.
   b) PDAs cannot recognize any regular languages.
   c) PDAs can recognize some but not all regular languages.
   d) PDAs and regular languages are not related.
   Solution: a) PDAs can recognize all regular languages.

   The complement of a context-free language is:
   a) Always context-free.

b) Always regular.
c) Always non-context-free.
d) None of the above.
Solution: c) Always non-context-free.

The language {0^n1^n | n ? 0} is:
a) Context-free but not regular.
b) Regular but not context-free.
c) Both context-free and regular.
d) Neither context-free nor regular.
Solution: a) Context-free but not regular.

Which of the following is true about PDAs and CFGs?
a) PDAs can recognize all languages generated by CFGs.
b) PDAs can recognize some but not all languages generated by CFGs.
c) PDAs can recognize no languages generated by CFGs.
d) PDAs and CFGs are not related.
Solution: a) PDAs can recognize all languages generated by CFGs.

Which of the following is true about PDAs and deterministic PDAs (DPDAs)?
a) PDAs are always non-deterministic.
b) DPDAs are always non-deterministic.
c) PDAs can be either deterministic or non-deterministic.
d) PDAs and DPDAs are not related.
Solution: c) PDAs can be either deterministic or non-deterministic.