22 Lecture - CS402

Important Mcqs

1. **Which of the following statements is true regarding equivalent machines?**
   a) Two machines are equivalent if they recognize different languages.
   b) Equivalent machines cannot be simplified.
   c) Equivalent machines recognize the same language.
   d) None of the above.
   Answer: c) Equivalent machines recognize the same language.

   Which of the following is an example of equivalent machines?
   a) A DFA and a NFA that recognize the same language.
   b) A DFA and a NFA that recognize different languages.
   c) Two DFAs that recognize different languages.
   d) Two NFAs that recognize different languages.
   Answer: a) A DFA and a NFA that recognize the same language.

   Which of the following is used to show that two machines are equivalent?
   a) Transition diagram.
   b) Regular expression.
   c) Kleene star.
   d) Myhill-Nerode theorem.
   Answer: d) Myhill-Nerode theorem.

   Which of the following is an example of a language that can be recognized by equivalent machines?
   a) L = {a^n b^n | n ? 0}.
   b) L = {a^n b^n c^n | n ? 0}.
   c) L = {a^n | n ? 0}.
   d) L = {ab | a, b ? {0, 1}*}.
   Answer: c) L = {a^n | n ? 0}.

   Which of the following is true regarding the minimization of equivalent machines?
   a) Minimization cannot be done for equivalent machines.
   b) Minimization reduces the number of states in equivalent machines.
   c) Minimization changes the language recognized by equivalent machines.
   d) None of the above.
   Answer: b) Minimization reduces the number of states in equivalent machines.

   Which of the following is an example of a non-deterministic machine that can be converted to an equivalent deterministic machine?
   a) NFA.
   b) PDA.
   c) Turing machine.
   d) All of the above.
   Answer: a) NFA.

   Which of the following is true regarding equivalent machines in terms of language

recognition?
a) Equivalent machines always recognize the same language.
b) Equivalent machines may recognize different languages.
c) Only DFAs can be equivalent machines.
d) None of the above.
Answer: b) Equivalent machines may recognize different languages.

Which of the following is an example of equivalent machines that have different number of states?
a) Two DFAs that recognize the same language.
b) Two NFAs that recognize different languages.
c) A DFA and a NFA that recognize different languages.
d) A DFA and a NFA that recognize the same language.
Answer: a) Two DFAs that recognize the same language.

Which of the following algorithms is used to check the equivalence of two machines?
a) Brzozowski's algorithm.
b) Hopcroft's algorithm.
c) Subset construction algorithm.
d) All of the above.
Answer: b) Hopcroft's algorithm.

Which of the following is true regarding equivalent machines and language recognition?
a) Equivalent machines always have the same number of states.
b) Equivalent machines always recognize different languages.
c) The language recognized by equivalent machines is always regular.
d) None of the above.
Answer: c) The language recognized by equivalent machines is always regular.