

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) $L = \{a^n b^n \mid n \geq 0\}$.
- b) $L = \{a^n b^n c^n \mid n \geq 0\}$.
- c) $L = \{a^n \mid n \geq 0\}$.
- d) $L = \{ab \mid a, b \in \{0, 1\}^*\}$.

Answer: c) $L = \{a^n \mid n \geq 0\}$.

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.