

# 6 Lecture - CS402

## Important Mcqs

1. **What is the significance of equivalent FAs in computer science?**

- a) Equivalent FAs are used in cryptography.
- b) Equivalent FAs are used in software testing.
- c) Equivalent FAs are used in computer graphics.
- d) Equivalent FAs are used in computer networking.

**Answer: b**

**Which of the following is true for equivalent FAs?**

- a) Equivalent FAs accept different languages.
- b) Equivalent FAs accept the same language.
- c) Equivalent FAs accept only regular languages.
- d) Equivalent FAs do not accept any language.

**Answer: b**

**Which of the following algorithms is used to check the equivalence of FAs?**

- a) Breadth-First Search (BFS)
- b) Depth-First Search (DFS)
- c) Hopcroft-Karp algorithm
- d) Prim's algorithm

**Answer: c**

**Can two FAs with different numbers of states be equivalent?**

- a) Yes
- b) No

**Answer: a**

**What is the time complexity of the Hopcroft-Karp algorithm?**

- a)  $O(n \log n)$
- b)  $O(n^2)$
- c)  $O(n^3)$
- d)  $O(n^4)$

**Answer: b**

**Which of the following is a property of equivalent FAs?**

- a) They have the same number of final states.
- b) They have the same alphabet.
- c) They have the same number of transitions.
- d) They have the same number of initial states.

**Answer: a**

**Which of the following is a technique used to check the equivalence of FAs?**

- a) Brute force
- b) Dynamic programming

- c) Heuristic search
- d) All of the above

Answer: d

**What is the minimum number of states required to recognize the language  $\{0, 1\}$  using an FA?**

- a) 1
- b) 2
- c) 3
- d) 4

Answer: b

**Which of the following is a necessary condition for two FAs to be equivalent?**

- a) They must have the same number of states.
- b) They must have the same number of transitions.
- c) They must accept the same language.
- d) They must have the same initial state.

Answer: c

**Which of the following is true for equivalent FAs?**

- a) They have the same transition function.
- b) They have the same set of final states.
- c) They have the same set of initial states.
- d) All of the above

Answer: d