# 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

# 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