

# 14 Lecture - CS402

## Important Mcqs

1. **Which of the following is true regarding converting an FA to an NFA?**

- a) The NFA will always have fewer states than the FA
- b) The NFA will always have more states than the FA
- c) The number of states in the NFA can be equal to or greater than the number of states in the FA
- d) The number of states in the NFA can be equal to or less than the number of states in the FA

**Answer: c**

**What is the purpose of converting an FA to an NFA?**

simplify the FA

- a) To create a smaller machine
- b) To account for non-deterministic behavior
- c) To reduce the number of states
- d) To reduce the number of states

a) To

**Answer: c**

**Which of the following is a valid method for converting an FA to an NFA?**

- a) Add new transitions for every input symbol in each state
- b) Add new transitions for every input symbol in the start state only
- c) Add epsilon transitions to allow for non-deterministic behavior
- d) Remove all transitions from the FA and start over

**Answer: c**

**In an NFA, which of the following is true regarding transitions?**

- a) Each input symbol can have multiple transitions from a single state
- b) Each input symbol can have only one transition from a single state
- c) Transitions can only be made to the next state in the input sequence
- d) Transitions can only be made to states that are adjacent to the current state

**Answer: a**

**Which of the following is true regarding the language accepted by an FA and its equivalent NFA?**

- a) The languages accepted by the two machines are always different
- b) The languages accepted by the two machines are always the same
- c) The languages accepted by the two machines can be different or the same
- d) The language accepted by the NFA cannot be determined

**Answer: b**

**When converting an FA to an NFA, which of the following is a possible result?**

- a) The NFA can have fewer accepting states than the FA
- b) The NFA can have more accepting states than the FA
- c) The NFA can have the same number of accepting states as the FA
- d) The NFA cannot have any accepting states

**Answer: b**

**In an NFA, which of the following is true regarding epsilon transitions?**

- a) They allow the machine to transition to multiple states at once

- b) They can only be used in the start state
- c) They can only be used in the accepting state
- d) They are not necessary in an NFA

Answer: a

**When converting an FA to an NFA, which of the following is a valid step?**

- a) Remove any transitions that have multiple output symbols
- b) Add new transitions for every input symbol in the accepting state
- c) Add epsilon transitions to allow the NFA to transition to multiple states at once
- d) Remove any accepting states in the FA

Answer: c

**Which of the following is an example of a non-deterministic behavior that can be accounted for in an NFA?**

- a) Determining the shortest path through the machine
- b) Accepting a string if it starts and ends with the same symbol
- c) Accepting a string if it contains at least one repeated symbol
- d) Accepting a string if it contains an odd number of symbols

Answer: c

**Which of the following is true regarding the conversion of an FA to an NFA?**

- a) The process always results in a machine that accepts the same language