# 1. There are \_\_\_\_\_\_\_\_ tuples in finite state machine.

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. 4

b. 3

**c. 5**

d. 7

# 2. Regular expression for all strings starts with ab and ends with bba is?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Aba\*b\*bba

b. Aba(b)\*bba

**c. Ab(a+b)\*bba**

d. All of the mentioned

# 3. What is the purpose of a formal proof?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. To verify the correctness of mathematical statements**

b. To find counterexamples to mathematical statements

c. To generate random numbers

d. To solve differential equations

# 4. What can finite automata recognize?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Regular languages**

b. Context-free languages

c. Turing-complete languages

d. Undecidable languages

# 5. Which type of automaton has a unique transition for every input symbol in every state?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Deterministic finite automaton**

b. Non-deterministic finite automaton

c. Both a and b

d. None of above

# 6. Non-deterministic finite automata can be more powerful than deterministic finite automata in terms of recognizing languages because they can

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Recognize more languages

b. Recognize larger input strings

c. Recognize languages in exponential time

**d. Recognize languages with multiple accepting paths**

# 7. Which type of automaton can recognize more languages?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Deterministic finite automaton (dfa)

**b. Non-deterministic finite automaton (nfa)**

c. Both dfa and nfa recognize the same languages

d. Finite automata cannot recognize languages

# 8. There are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ state in theory of computation.

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. 3**

b. 2

c. 1

d. 5

# 9. Tuple  Σ state for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Transition

**b. Input symbol**

c. Finite states

d. A and b both

# 10. DFA Stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Determinate finite automata

b. Determine final automata

**c. Deterministic finite automata**

d. Deterministic final automata

# 11. NFA stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Non-deterministic finite automata**

b. Non finite automata

c. Non-determine finite automata

d. Non-determination finite automata

# 12. Which of following is true language for above transition diagram?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Dfa with ∑ = {0, 1} accepts all strings starting with 1.**

b. Dfa with ∑ = {0, 1} accepts all strings starting with 0.

c. Dfa with ∑ = {0, 1} accepts all strings ending with 0.

d. None of above

# 13. Which is the following use for initial state?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Qo**

b. a

c. Qn

d. A and b

# 14. Which is symbol use for final state?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Circle

b. Circle with line

**c. Double circle**

d. Double circle with line

# 15. Which of above is final state?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Q0

b. Q1

**c. Q2**

d. Q1 and q2

# 16. Which language suitable for above diagram?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Dfa with ∑ = {0, 1} accepts all ending with 0.**

b. Dfa with ∑ = {0, 1} accepts all ending with 1.

c. Both a and b

d. None of above

# 17. Meaning of union L U M

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. L u m = {s | s is in l or s is in m}**

b. L u m = {s | s is in l and s is in m}

c. L u m = {s | s is in l }

d. L u m = {s | s is in m}

# 18. Write the regular expression for the language accepting all combinations of a's, over the set ∑ = {a}

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. A\***

b. A+

c. A and b

d. None of the above

# 19. Write the regular expression for the language accepting all the string containing any number of a's and b's

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. (a + b)\***

b. (a + b)

c. Abab

d. Sabab

# 20. Write the regular expression for the language accepting all the string which are starting with 1

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. 101**

b. 01111

c. Ab01

d. None of above

# 21. Languages of a automata is

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. If it is accepted by automata**

b. If it halts

c. If it empty

d. If it is in final state

# 22. Number of final state require to accept Φ in minimal finite automata.

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. 1

b. 2

c. 3

**d. None of the above**

# 23. Can a DFA simulate NDFA?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. No

**b. Yes**

c. Some times

d. Never

# 24. Find the wrong statement

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. The language accepted by finite automata are the languages denoted by regular expression

b. Every dfa has a regular expression denoting its language

**c. For a regular expression r, there does not exists ndfa with  ant transit that accept**

d. None of the mentioned

# 25. Find the true statement

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. The language accepted by finite automata are the languages denoted by regular expression**

b. For a regular expression r, there does not exists ndfa

c. Both a and b

d. None of above

# 26. In Language a/b denotes which of the following set?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. (a}

b. {€,a,b}

**c. {a,b}**

d. {ab}

# 27. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a simple idealized machine used to recognize patterns within input taken from some character set (or alphabet)

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Fa**

b. Automata

c. Transition

d. None of above

# 28. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is nothing but a machine which accepts the strings of a language L over an input alphabet Σ

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Automata**

b. Transition

c. Fa

d. None of above

# 29. Automata theory is also known as a  \_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Finite automata

b. Flow chart

**c. Theory of computation**

d. Theory of symbol

# 30. What is the purpose of using inductive proofs?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. To prove statements about infinite sets

**b. To prove statements about finite sets**

c. To prove statements about continuous functions

d. All of above

# 31. Which of the following is a characteristic of a finite automaton?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. It can recognize any language

b. It has an infinite number of states

c. It uses a stack for memory

**d. It operates on finite inputs**

# 32. What is the purpose of using additional forms of proof in theory of computation?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. To verify the correctness of algorithms**

b. To analyze the time complexity of algorithms

c. To classify problems into complexity classes

d. To determine the decidability of languages

# 33. In a direct proof, how is a statement typically proven?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. By using logical deductions from given statements and established rules**

b. By assuming the opposite and showing a contradiction

c. By proving the contrapositive

d. By dividing the proof into cases

# 34. What is a finite automation?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. A machine with an infinite number of states

b. A machine that can recognize any language

**c. A machine that operates on finite inputs**

d. A machine that can solve any computational problem

# 35. Which of the following is true about the states in a finite automaton?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. There is a unique start state**

b. There can be multiple start states

c. There is no start state

d. The number of states can vary depending on the input

# 36. What is the purpose of the transition function in a finite automaton?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. It determines the start state of the automaton

b. It defines the set of input symbols

**c. It specifies the behavior of the automaton based on the current state and input symbol**

d. It determines the final state of the automaton

# 37. What is the primary purpose of a finite automaton?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. To simulate natural languages

**b. To recognize patterns in strings or languages**

c. To implement complex algorithms

d. To represent real-world objects

# 38. In a finite automaton, which component(s) define(s) the transition from one state to another?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. Input symbol

b. Current state

c. Next state

**d. All of the above**

# 39. Which type of finite automaton allows for a unique transition for each input symbol and current state?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

**a. Dfa**

b. Nfa

c. Both a and b

d. None of the above

# 40. Which of the following is an example of a context-free language?

### Category: Theory Of Computation, Point: 1, Type: Single Choice, Difficulty: Easy

a. The set of all strings over {0, 1} containing an equal number of 0s and 1s

b. The set of all strings over {a, b} where the number of a's is greater than the number of b's

**c. The set of all palindromes over the alphabet {a, b}**

d. The set of all strings that can be generated by a regular expression