

# Online Assessment (Even Sem/Part-I/Part-II Examinations 2019 - 2020)

Course Name - Formal Language and Automata

Course Code - BCSE404(BL)

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Answer all the questions. Each question carry one mark.

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

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- 4
- 5
- 6
- Unlimited

10. 2. Transition function maps

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- $\Sigma * Q \rightarrow \Sigma$
- $Q * Q \rightarrow \Sigma$
- $\Sigma * \Sigma \rightarrow Q$
- $Q * \Sigma \rightarrow Q$

11. 3. Language of finite automata is

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Type 0

Type 1

Type 2

Type 3

12. 4. Number of final state require to accept  $\Phi$  in minimal finite automata

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1

2

3

None of these

13. 5. Regular expression for all strings starts with ab and ends with bba is

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$aba^*b^*bba$

$ab(ab)^*bba$

$ab(a+b)^*bba$

None of these

14. 6. How many DFA's exists with two states over input alphabet  $\{0,1\}$  ?

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16

26

21

64

15. 7. Number of states require to simulate a computer with memory capable of storing '3' words each of length '8'

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$3 \cdot 2^8$

$2^{(3 \cdot 8)}$

$2^{(3+8)}$

None of these

16. 8. A regular language over an alphabet  $a$  is one that can be obtained from

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union

concatenation

kleene

All of these

17. 9. Regular expression  $\{0,1\}$  is equivalent to

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- $0 \cup 1$
- $0 / 1$
- $0 + 1$
- All of these

18. 10. Push down automata accepts which language

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- Context sensitive language
- Context free language
- Recursive language
- None of these

19. 11. Moore Machine is an application of:

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- Finite automata without input
- Finite automata with output
- Non- Finite automata with output
- None of these

20. 12. What is the output for the given language? Language: A set of strings over  $\Sigma = \{a, b\}$  is taken as input and it prints 1 as an output "for every occurrence of a, b as its substring. (INPUT: abaaab)

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- 0010001
- 0101010
- 0111010
- 0010000

21. 13. It is less complex to prove the closure properties over regular languages using

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- NFA
- DFA
- PDA
- Can't be said

22. 14. Which of the following is an application of Finite Automaton?

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- Compiler Design
- Grammar Parsers
- Text Search
- All of these



23. 15. To derive a string using the production rules of a given grammar, we use:

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- Scanning  
 Parsing  
 Derivation  
 All of these

24. 16. The transition a Push down automaton makes is additionally dependent upon the:

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- stack  
 input tape  
 terminals  
 None of these

25. 17. A PDA machine configuration  $(p, w, y)$  can be correctly represented as

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- current state, unprocessed input, stack content)  
 (unprocessed input, stack content, current state)  
 (current state, stack content, unprocessed input)  
 None of these

26. 18. If the PDA does not stop on an accepting state and the stack is not empty, the string is:

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- rejected
- goes into loop forever
- both rejected & goes into loop forever
- None of these

27. 19. A language accepted by Deterministic Push down automata is closed under which of the following?

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- Complement
- Union
- both Complement and Union
- None of these

28. 20. The format:  $A \rightarrow aB$  refers to which of the following?

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- Chomsky Normal Form
- Greibach Normal Form
- Backus Naur Form
- None of these

29. 21. Which of the following does not have left recursions?

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- Chomsky Normal Form
- Greibach Normal Form
- Backus Naur Form
- All of these

30. 22. Every grammar in Chomsky Normal Form is:

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- regular
- context sensitive
- context free
- All of these

31. 23. In which of the following, does the CNF conversion find its use?

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- CYK Algorithm
- Bottom up parsing
- Preprocessing step in some algorithms
- All of these

32. 24. Which of the following do we use to form an NFA from a regular expression?

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- Subset Construction Method
- Power Set Construction Method
- Thompson Construction Method
- Scott Construction Method

33. 25. Which among the following can be an example of application of finite state machine(FSM)?

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- Communication Link
- Adder
- Stack
- None of these

34. 26. Predict the number of transitions required to automate the following language using only 3 states:  $L = \{w \mid w \text{ ends with } 00\}$

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- 3
- 2
- 4
- cannot be said

35. 27. The total number of states to build the given language using DFA:  $L = \{w \mid w \text{ has exactly 2 a's and at least 2 b's}\}$

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- 10  
 11  
 12  
 13

36. 28.  $L_1 = \{w \mid w \text{ does not contain the string } tr\}$   $L_2 = \{w \mid w \text{ does contain the string } tr\}$  Given  $\Sigma = \{t, r\}$ , The difference of the minimum number of states required to form  $L_1$  and  $L_2$ ?

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- 0  
 1  
 2  
 cannot be said

37. 29. The output alphabet can be represented as:

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- $\delta$   
  $\Delta$   
  $\Sigma$   
 None of these

38. 30. In mealy machine, the O/P depends upon?

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- State
- Previous State
- State and Input
- Only Input

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