

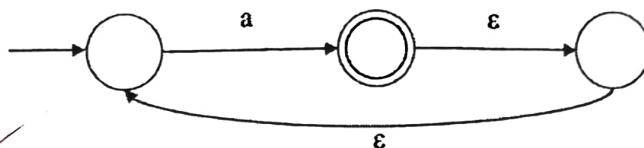
Roll No:

Name:

SOLUTION

Multiple Choice Questions. Write your choice in the given space (in the next page) only.

1. What is the complement of language accepted by the following NFA, where $\Sigma = \{a\}$ and ϵ is the empty string



- (A) Φ (B) ϵ (C) a (D) $\{a, \epsilon\}$

2. Which of the following is not a valid proof technique. (A) Proof by contradiction; (B) Proof by induction; (C) Proof by construction; (D) Proof by positive example;
3. What is the total number substrings of the string $w = \text{TEA}$ (A) 6 (B) 7 (C) 8 (D) 9
4. Given, $L = \{ab, aa, baa\}$, which of the following string is in L^4 ? (A) abaabaabaaa; (B) aaaabaaa; (C) baaaaabaaaa; (D) baaaaabaa;
5. For NFA with 4 states, what is the maximum possible number of states in an equivalent DFA found with subset construction? (A) 16; (B) 20; (C) 8; (D) 4;
6. The smallest finite automata which accepts the language $\{x \mid \text{length of } x \text{ is divisible by 3}\}$ has : (A) 4 States; (B) 2 states; (C) 3 states; (D) 1 states;
7. Which of the following is true: (A) Every NFA has an equivalent DFA; (B) NFAs can represent more languages than DFA; (C) DFAs can represent more languages than NFA; (D) Some NFAs cannot be converted to equivalent DFA;
8. Let the language $L_1 = \Phi$ and $L_2 = \{a\}$ which of the following is $L_1 L_2^*$: (A) $\{\epsilon\}$; (B) a^+ ; (C) a^* ; (D) Φ ;
9. Which of the following statement is not true
 (A) The expressive power of NFA and DFA is same
 (B) One Regular language can be generated by only one Regular expression.
 (C) One Regular expression generates only one Regular Language.
 (D) Regular expressions can be converted to Finite Automata.
10. Which of the following languages is not a regular language over an alphabet $\{a, b\}$?
 (A) $L = \{a, b\}$ (B) $L = \{(ab)^n \mid n \geq 0\}$ (C) $L = \{a^n b^n \mid n \geq 0\}$ (D) $L = \{a^n b^n \mid 1 \leq n \leq 5\}$