Identify the type of the following grammar:

1. S → aSb | ε
2. S → aS S → aSb S → ε
3. S → aSbS | aS | b
4. S → aA A → aB B → b
5. S → ab | aSb A → aAb | ab
6. S → abS S → ε A → B B → bA
7. S → aABC AB → ba BC → bA

1. Finite automata accept
a) Regular language
b) Recursive language
c) Both (a) and (b)
d) None of these

2. A context sensitive language is accepted by
a) Finite automata
b) Linear bounded automata
c) Both (a) and (b)
d) None of these

3. Unrestricted grammar is also known as
a) Type 0
b) Semi-thue grammar

c) Phrase structure grammar
d) All of these

4. A grammar G = (V, T, P, S) in which V is
a) Set of variables
b) Set of terminals
c) Set of variables and terminals
d) None of these

5. A grammar G = (V, T, P, S) in which T is
a) Set of variables
b) Set of terminals
c) Set of variables and terminals
d) None of these

6. The language generated by the following grammar is
A0 -> aA1
A1 -> ab
a) Type 0
b) Type 1
c) Type 2
d) Type 3

7. Which of the following is more powerful?
a) PDA
b) Turing machine
c) Finite automata
d) Context sensitive language

□

8. Which machine can recognize the languages generated by Type-1 grammars in the Chomsky hierarchy?
A. Deterministic Finite Automaton (DFA)
B. Non-deterministic Pushdown Automaton (NPDA)
C. Linear Bounded Automaton (LBA)
D. Universal Turing Machine

9. Which of the following statement is wrong?
a) Chomsky hierarchy originally define only two grammars
b) Type 0 grammar is called unrestricted grammar
c) Type 0 is recognized by turing machine
d) All of these

10.Which of the following is not a category in the Chomsky hierarchy?
A. Regular grammar
B. Context-free grammar
C. Recursive grammar
D. Recursive enumerable grammar

11.Which of the following grammars has the least computational power in the Chomsky hierarchy?
A. Type 0 (Recursively enumerable)
B. Type 1 (Context-sensitive)
C. Type 2 (Context-free)
D. Type 3 (Regular)

12.Which of the following is equivalent to a Type-2 grammar in the Chomsky hierarchy?
A. Regular grammar
B. Context-free grammar
C. Context-sensitive grammar

D. Recursively enumerable grammar

13.Which automaton can recognize languages generated by regular grammars (Type 3)?
A. Pushdown Automaton
B. Turing Machine
C. Finite Automaton
D. Linear Bounded Automaton

14.What type of grammar in the Chomsky hierarchy can be recognized by a Turing Machine?
A. Regular Grammar
B. Context-free Grammar
C. Context-sensitive Grammar
D. Recursively Enumerable Grammar

15.Which machine can recognize the languages generated by Type-1 grammars in the Chomsky hierarchy?
A. Deterministic Finite Automaton (DFA)
B. Non-deterministic Pushdown Automaton (NPDA)
C. Linear Bounded Automaton (LBA)
D. Universal Turing Machine