

Identify the language generated by the grammar

$S \rightarrow XY$

$X \rightarrow aX/a$

$Y \rightarrow bY/b$

- a) $anbm \mid nm > 0$
- b) $anbm \mid nm \geq 0$**
- c) $anbm \mid m \geq n$
- d) $bnam \mid nm > 0$

For the given language $L = \{0^x 1^y \mid x, y \geq 1\}$, choose the grammar for the language.

- a) $S \rightarrow XY \mid \epsilon, X \rightarrow 0X \mid \epsilon, Y \rightarrow 1Y \mid 1$
- b) $S \rightarrow XY, X \rightarrow 0X \mid 0, Y \rightarrow 1Y \mid \epsilon$
- c) $S \rightarrow XY, X \rightarrow 0X \mid \epsilon, Y \rightarrow 1Y \mid 1$**
- d) None of above mentioned

Which of the following statement is true about regular grammar?

- a) Regular grammar and context free grammar are the same entity
- b) All context free grammar are regular grammar but not vice versa
- c) All Regular grammar are context free but not vice versa**
- d) All of above mentioned

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

Construct a CFG for the language $L = \{a^2 n b^n \mid n \geq 1\}$

- a) $S \rightarrow aSbb \mid abb$
- b) $S \rightarrow aaSbb \mid aabb$



c) $S \rightarrow aaSb \mid aab$

d) $S \rightarrow asbb \mid \epsilon$

Which of the following satisfies the given language $L = a^x b^y c^z \mid y > x + z$

a) abbbbcccc

b) abbbbccc

c) abbbccc

d) none of above mentioned

What does the given CFG defines as:

$S \rightarrow aSbs \mid bSaS \mid \epsilon$

a) WW^r

b) WSW

c) $n_a(w) = n_b(w)$

d) None of above mentioned

It the partial derivation tree contains the root as the starting variable, the form is known as:

a) Chomsky hierarchy

b) Sentential Form

c) Root Form

d) Non of above mentioned

Choose the right set of terminals from the given production rules of grammar as

$S \rightarrow (S) aA \mid \epsilon$

$A \rightarrow A+B \mid a$

$B \rightarrow B*C \mid b$

$C \rightarrow c$

a) $T = (, a, b,), +, *$

b) $T = (, a, b,), +, *, c$



c) $T = a, b, c$

d) None of the above mentioned

Consider the Grammar, G. with the production rule: $S \rightarrow aS \mid bs \mid \epsilon$ Which of the following is generated by G?

a) $\{a^n b^m \mid m, n \geq 0\}$

b) $\{w \in \{a, b\}^*, w \text{ has equal number of a's and b's}\}$

c) $\{a, b\}^*$

d) $\{a^n \mid n \geq 0\} \cup \{b^n \mid n \geq 0\} \cup \{a^n b^n \mid n \geq 0\}$

**Which of the following relates to Chomsky hierarchy?
(options are in decreasing order)**

a) CSL Unrestricted CFL Regular

b) CFL CSL Unrestricted Regular

c) Regular CFL CSL Unrestricted

d) None of the mentioned

A regular expression over a, b having the second last symbol is b

a) $(b+a)^* (ba+bb)$

b) $(b+a)^* (ba.)$

c) $b^* a^* + ba.bb$

d) $(b+a)^* (aa+bb)$

If P is any regular expression then which option is false from the following?

a) $PP^* + \epsilon = P^*$

b) $(P^*)^* = P^*$

c) $P, \epsilon = P$

d) $(P^*)^* = P^+$

A CFG G is given with the following productions where S is the start symbol, A is a non-terminal and a an are terminals.



$S \rightarrow aS \mid A$

$A \rightarrow aAb \mid bAa \mid \epsilon$

- a) aabbaba
- b) aabaaba
- c) abababb
- d) aabbaab

**Find the right choice of a CFG for the regular expression
 $(0+1)^*001(0+1)^*$**

- a) $S \rightarrow X001X, X \rightarrow \epsilon \mid 0X \mid 1X$
- b) $S \rightarrow S001S \mid \epsilon$
- c) $S \rightarrow SS \mid S001 \mid \epsilon$
- d) none of above

