

# Unit 3 - Week 2

Course outline

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Week 2

- Validity of Arguments
- Language and Grammers-I
- Language and Grammers-II
- Language and Grammers-III
- Finite- State Machines
- Quiz : Assignment 2

Week 3

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## Assignment 2

The due date for submitting this assignment has passed. **Due on 2019-08-21, 23:59 IST.**  
As per our records you have not submitted this assignment.

1) For any propositions  $p, q$  and  $r$ , which one of the following symbolic forms is modus tollens? 1 point

- $p \Rightarrow q$
- $\sim q$
- $\sim p$
- $p$
- $p \vee q$
- $p \vee q$
- $\sim q$
- $\sim p$
- $p \Rightarrow q$
- $q \Rightarrow r$
- $p \Rightarrow r$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $p \Rightarrow q$   
 $\sim q$

2) Let  $p$  : Ram is not guilty and  $q$  : Shyam is telling the truth. Then the symbolic representation of the argument : 1 point  
Either Ram is not guilty or Shyam is telling the truth.  
Shyam is not telling the truth.

- Ram is not guilty  
is
- $p \vee q$
  - $\sim p$
  - $q$
  - $p \vee q$
  - $\sim q$
  - $p$
  - $p \vee q$
  - $p$
  - $q$
  - $p \vee q$
  - $q$
  - $p$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $p \vee q$   
 $\sim q$

3) Let  $A = \{ab, bc, ca\}$ . Which of the following strings belong to  $A^*$ ? 1 point

- $abc$
- $ababab$
- $abba$
- $bcabbab$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $ababab$

4) The initial segments of  $w = bab^2$  are given by 1 point

- $\lambda, b, ba, bab^2$
- $\lambda, b, ba, ab^2, bab^2$
- $\lambda, b, ba, b^3, bab^2$
- $\lambda, b, ba, ab^2, b^3, bab^2$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $\lambda, b, ba, bab^2$

5) For the regular expression  $r = b^*ab^*ab^*$  over  $A = \{a, b\}$ ,  $L(r)$  is given by 0 points

- $\{b^m a^2 b^n : m \geq 0, n > 0\}$
- $\{b^m a^2 b^n : m \geq 0, n \geq 0\}$
- $\{b^m a^2 b^n : m > 0, n \geq 0\}$
- $\{b^m a^2 b^n : m > 0, n > 0\}$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $\{b^m a^2 b^n : m \geq 0, n \geq 0\}$

6) Let  $V_N = \{S, A, B\}$ ,  $V_T = \{a, b\}$  and  $P = \{S \rightarrow aB, B \rightarrow b, B \rightarrow bA, A \rightarrow aB\}$ . Then the Language  $L(G)$  generated by the grammar  $G$  is given by 0 points

- $L(G) = \{a^m b^n : m \geq 0, n > 0\}$
- $L(G) = \{a^m b^n : m \geq 0, n \geq 0\}$
- $L(G) = \{a^m b^n : m > 0, n \geq 0\}$
- $L(G) = \{a^m b^n : n > 0\}$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $L(G) = \{a^m b^n : n > 0\}$

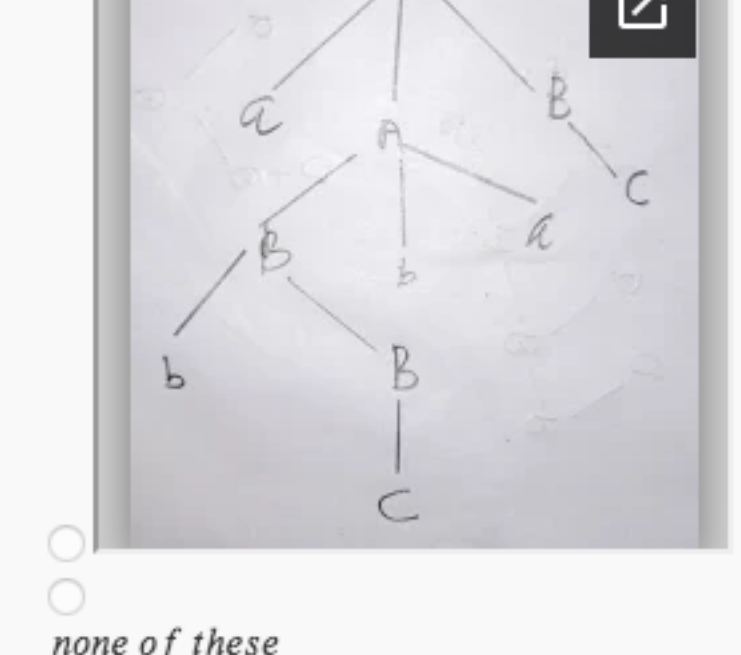
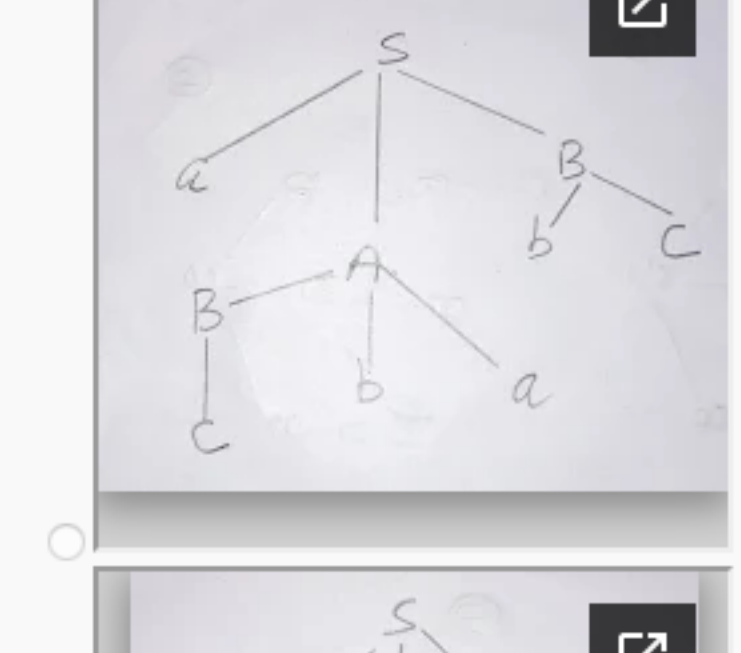
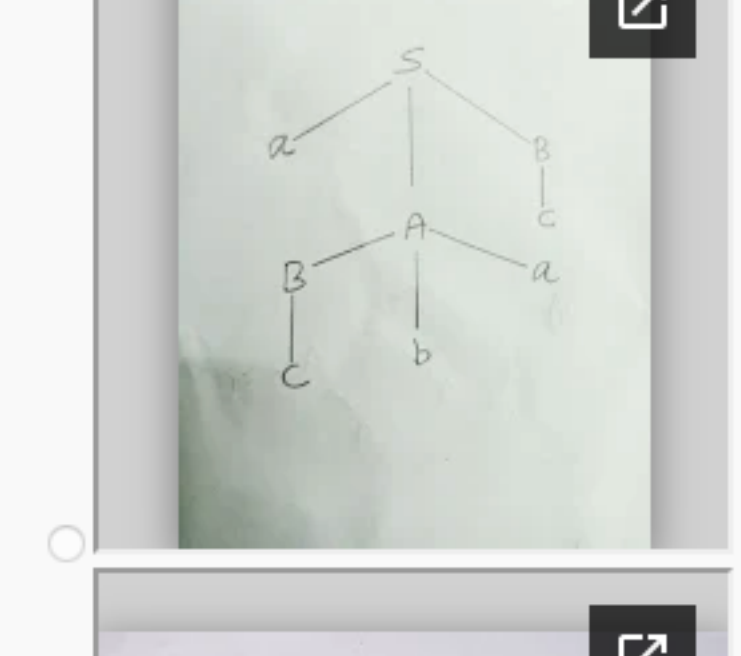
7) A regular grammar  $G$  which generate the language  $L = \{a^r b^s : r, s > 0\}$  is given by 0 points

- $V_N = \{S, A, B\}$ ,  $V_T = \{a, b\}$   
 $P = \{S \rightarrow (a, b, aB, bA), A \rightarrow (bA, aB, ab), B \rightarrow (b, bA)\}$ .
- $V_N = \{S, A, B\}$ ,  $V_T = \{a, b\}$   
 $P = \{S \rightarrow aA, A \rightarrow (aA, bB) B \rightarrow bB\}$
- $V_N = \{S, A, B\}$ ,  $V_T = \{a, b\}$   
 $P = \{S \rightarrow (b, aA), A \rightarrow (b, aA, bB), B \rightarrow (a, aB)\}$
- $V_N = \{S, A, B\}$ ,  $V_T = \{a, b\}$   
 $P = \{S \rightarrow aA, A \rightarrow aAB, B \rightarrow b, A \rightarrow a\}$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $V_N = \{S, A, B\}$ ,  $V_T = \{a, b\}$   
 $P = \{S \rightarrow aA, A \rightarrow (aA, bB) B \rightarrow bB\}$

8) Using the grammar  $G$  given as 0 points  
 $G = \{S, A, B\}$ ,  $\{a, b, c\}$ ,  $S, P$   
where  
 $P = \{S \rightarrow aAB, A \rightarrow Bba, B \rightarrow bB, B \rightarrow c\}$

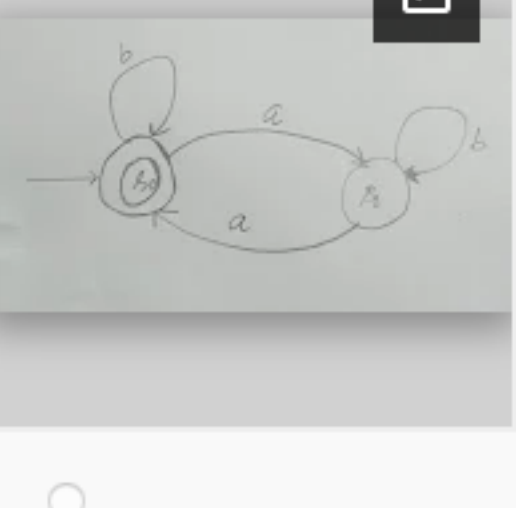


none of these

No, the answer is incorrect.  
Score: 0

Accepted Answers:

9) Let  $A = \{a, b\}$ . Then the language  $L(M)$  of the automaton  $M$  in the figure below 1 point



- consists of all words  $w$  over  $A$  which do not have two successive  $b$ 's
- consists of all words  $w$  over  $A$  which have an even number of  $a$ 's
- consists of all words  $w$  over  $A$  which end in two  $b$ 's
- consists of all words  $w$  over  $A$  which have equal number of  $a$ 's and  $b$ 's

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
consists of all words  $w$  over  $A$  which have an even number of  $a$ 's

10) Let  $A = \{a, b\}$  consider the automaton  $M$  in the figure below which of the following word is accepted by  $M$  0 points



- $ababba$
- $baab$
- $ababaa$
- $bbb$

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
 $bbb$