NO. _____

DATE _____

Marvin B. Waro BSCS 3B

1) That accepts a string containing any number of A's and B's on $\Sigma = \{a, b\}$

$S = aS \mid bS$

$S = \lambda$

2) That accepts a string containing at least 2B's on $\Sigma = \{a, b\}$

$S = aS, bb$

$S_1 = aS, b \mid \lambda$

3) $L(G) = \{a^n b^m : n \geq 3, m \geq 1\}$

$S = A, S, B$

$S_1 = aS, b \mid \lambda$

$A_1 = aA$

$B = bB \mid \lambda$

$A = a \mid \lambda$

4) $L(G) = \{a^n b^m c^n : n, m \geq 1\}$

$S = ABC$

$A = aA \mid \lambda$

$B = bB \mid \lambda$

$C = cC \mid \lambda$

5) $L(G) = \{a^{2n} b^m : n \geq 0, m \geq 0\}$

$S = AB$

$A = aaA \mid \lambda$

$B = bB \mid \lambda$

6) $L(G) = \{wcw^R : w \in \{a, b\}^*\}$

$S = aSa$

$S = bSb$

$S = c \mid \lambda$

NO. _____
DATE _____

7) Derive atleast 3 sentences from the CFG in problem 3 using leftmost and rightmost derivation

Leftmost Derivation

S → A,S,B → aAS, B → aaS, B → aaaS, bB → aaaaS, bbB → aaaabbbB → aaaabbb

S → A,S,B → aaS,B → aS, B → aB → abB → ab

Rightmost Derivation

S → A,S,B → A, S, → A, aS, b → A, ab → aAab → aaab

S → A, S, B → A,S,bB → A, S, bbB → A,S, bb → A, bb → aAbb → abb

S → A, S, B → A, S, bB → A, S, b → AaS, bb → A, aaS, bbb → A, aaaS, bbbb →

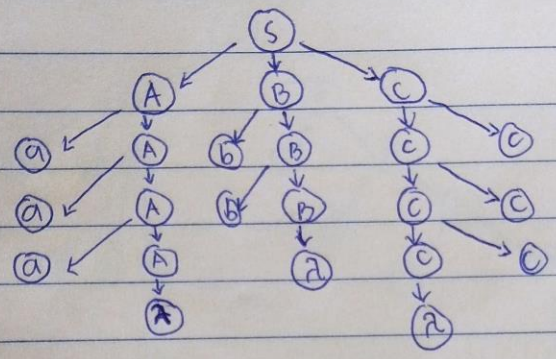
→ A, aaabbb → aA aaabbbb → aaaabbbb

NO. _____

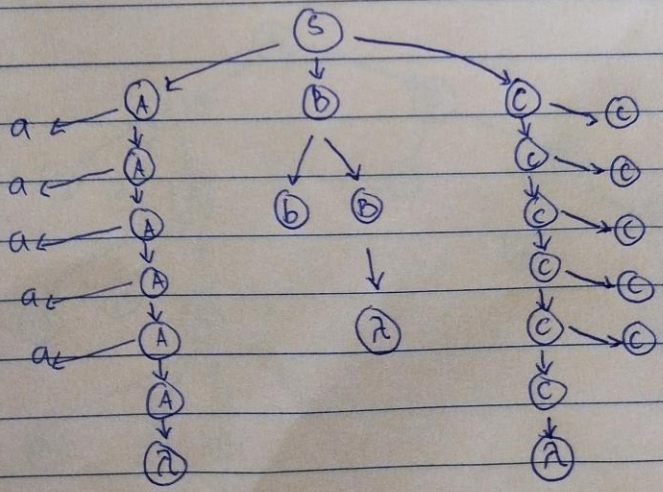
DATE _____

8.) Derive the sentences 'aaa bb ccc' and aaaaabccccc from the CFG in problem 7 using derivation tree

'aaa bb ccc'



'aaaaabccccc'

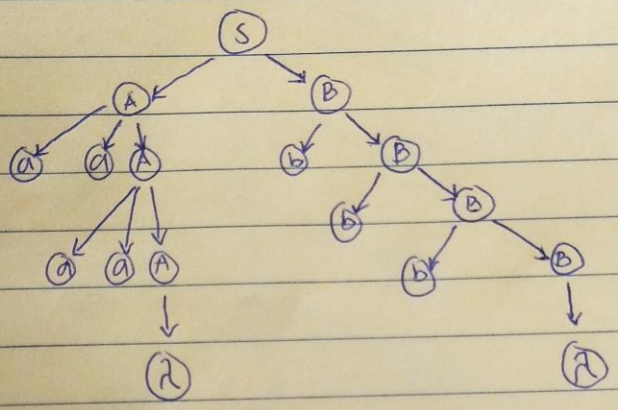


NO. _____

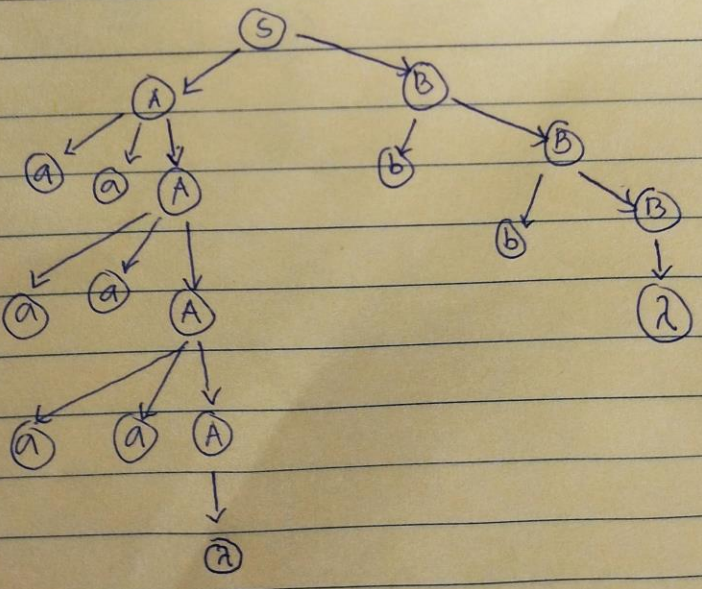
DATE _____

a) Derive the sentences aaaa bbb and aaaaaa bb from the CFG in problem 5 using derivation tree

'aaaa bbb'



'aaaaaa bb'



NO. _____

DATE _____

10. Derive the sentence babaa c aabab from the CFG in problem 6 using derivation tree