

CS 302
QUIZ 5

26 October, 2015

QUESTION

(a)(5 pts) Consider the CFG given by $G = (\{E\}, \{ (,) \}, P, E)$ where the productions in P are given by $P: E \rightarrow EE \mid (E) \mid e$.

Give leftmost and rightmost derivations of the string : $(()) ()$

(b) (5 pts) State the productions P of a CFG $G = (\{S, A\}, \{0, 1\}, P, S)$ that generates the language $L = \{w \in (0+1)^* \mid w = 0^n 1^m 0^m 1^n ; n, m \geq 0\}$

ANSWERS

(a) $E \Rightarrow_{lm} EE \Rightarrow_{lm} (E)E \Rightarrow_{lm} ((E))E \Rightarrow_{lm} (())E \Rightarrow_{lm} (())(E) \Rightarrow_{lm} (())()$
 $E \Rightarrow_{rm} EE \Rightarrow_{rm} E(E) \Rightarrow_{rm} E() \Rightarrow_{rm} (E)() \Rightarrow_{rm} ((E))() \Rightarrow_{rm} (())()$

(b) $P: S \rightarrow 0S1 \mid A, A \rightarrow 1A0 \mid e$