CS 302
QUIZ 6

9 November, 2015

QUESTION

(a)(5 pts) Describe the language generated by the following CFG
$G = (\{S,A\},\{a,b,c\}, P, S)$ where $P : S \rightarrow aSc \mid A \mid e \;;\; A \rightarrow bA \mid e$

ANSWER

(a) $L = (a^n b^m c^n \; ; n,m \geq 0)$

QUESTION

(b) (5 pts) State the transitions of a PDA that accepts the language $L = (a^n b^m c^n \; ; n,m \geq 0)$ either by **empty stack** or by **final state** .

ANSWER

(b) $Q=(q_0, q, p, f)$, $\Sigma = (a,b,c)$, $\Gamma=(a,c,Z_0)$, $F = \{f\}$,
$(q_0, a, X) \rightarrow (q_0, aX)$ for $X=a$ or $X=Z_0$
$(q_0, b, X) \rightarrow (q, X)$ for $X=a$ or $X=Z_0$
$(q_0, e, X) \rightarrow (q, X)$ for $X=a$ or $X=Z_0$
$(q, b, X) \rightarrow (q, X)$ for $X=a$ or $X=Z_0$
$(q, e, X) \rightarrow (p, X)$ for $X=a$ or $X=Z_0$
$(p, c, a) \rightarrow (p, e)$
$(p, e, Z_0) \rightarrow (p, e)$ OR $(p, e, Z_0) \rightarrow (f, Z_0)$