Assign#6 Key

1. $L = \{a^n b^m c^t \mid n<m \text{ OR } m>t \text{ OR } n=t\}$

$G = (\{S, T_1, T_2, U_1, U_2, V_1, V_2\}, \{a, b, c\}, R, S)$

R: $S \to T_1 \mid U_1 \mid V_1$

$T_1 \to T_1 c \mid T_2$
$T_2 \to a T_2 b \mid T_2 b \mid b$ } $n<m$

$U_1 \to a U_1 \mid U_2$
$U_2 \to b U_2 c \mid b U_2 \mid b$ } $m>t$

$V_1 \to a V_1 c \mid V_2$
$V_2 \to b V_2 \mid \lambda$ } $n=t$

2. $G = (\{S, S1, S2, B, C\}, \{a, b, c\}, R, S)$

R: $S \to S1 \mid S2$
$S1 \to aS1b \mid S1b \mid b$
$S2 \to cCaB$
$C \to cCa \mid ca \mid a$
$B \to aBb \mid \lambda$

(i) NULLABLE = {B}

$S \to S1 \mid S2$
$S1 \to aS1b \mid S1b \mid b$
$S2 \to cCaB \mid cCa$
$C \to cCa \mid Ca \mid a$
$B \to aBb \mid ab$

(ii) CHAIN(S) = {S, S1, S2} ; ALL OTHERS ARE SELF ONLY

$S \to aS1b \mid S1b \mid b \mid cCaB \mid cCa$
$S1 \to aS1b \mid S1b \mid b$
$S2 \to cCaB \mid cCa$ $\quad C \to cCa \mid Ca \mid a$
$B \to aBb \mid ab$

(iii) PRODUCTIVE = {S, S1, C, B, S2}

NO CHANGE

(iv) REACHABLE = {S, S1, C, B}

$S \to aS1b \mid S1b \mid b \mid cCaB \mid aCa$
$S1 \to aS1b \mid S1b \mid b$
$C \to cCa \mid Ca \mid a$
$B \to aBb \mid ab$

3. $G = (\{S, T, B\}, \{a, b\}, R, S)$

R: $S \to ST \mid TS \mid a$

$T \to BS \mid b$

$B \to BT \mid SS \mid b$

	b	a	a	b	a
1	BT	S	S	BT	S
2	ST	B	S	ST	
3	BS	B	BS		
4	BS	BT			
5	BBT				

ACCEPTED AS S IN FINAL SLOT