AP/GLC

① $L_1 = \{a^m b^n c^k \mid k \geq m+n\}$

② $L_2 = \{a^m b^n c^k \mid k \leq m+n\}$

③ $L_3 = \{a^m b^n c^k \mid n \geq m+k\}$

④ $L_4 = \{a^m b^n c^k \mid n \leq m+k\}$

⑤ $L_5 = \{a^m b^n c^k \mid m \geq n+k\}$

⑥ $L_6 = \{a^m b^n c^k \mid m \leq n+k\}$

⑦ ao ⑫ IDEM, trocar $\begin{cases} \geq \text{ por} > \\ \leq \text{ por} < \end{cases}$

⑬ $\{w \in \{a,b\}^* \mid n_a(w) = n_b(w)+1\}$

⑭ $\{w \in \{a,b\}^* \mid n_a(w) = 2n_b(w)\}$

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① $L_1 = \{a^m b^n c^k \mid k \geq m+n\}$

$S \to aSc \mid bPc \mid C$

$P \to bPc \mid C$

$C \to Cc \mid \lambda$

② $L_2 = \{a^m b^n c^k \mid k \leq m+n\}$

$S \to aSc \mid bPc \mid A \mid B$

$P \to bPc \mid B$

$A \to aA \mid B \mid \lambda$

$B \to bB \mid \lambda$

③ $L_3 = \{a^m b^n c^k \mid n \geq m+k\}$

$S \to AB$

$A \to aAb \mid Ab \mid \lambda$

$B \to bBc \mid bB \mid \lambda$

④ $L_4 = \{a^m b^n c^k \mid n \leq m+k\}$

$S \to AB$

$S \to aAb \mid aA \mid \lambda$

$S \to bBc \mid Bc \mid \lambda$

⑤ $L_5 = \{a^m b^n c^k \mid m \geq n+k\}$

$S \to aSc \mid aPb \mid A$

$P \to aPb \mid A$

$A \to aA \mid \lambda$

⑥ $L_6 = \{a^m b^n c^k \mid m \leq n+k\}$

$S \to aSc \mid aPb \mid B \mid C$

$P \to aPb \mid B$

$B \to bB \mid C \mid \lambda$

$C \to cC \mid \lambda$

⑦ $L_1 = \{a^m b^n c^k \mid k > m+n\}$

$S \to aSc \mid bPc \mid cC$

$P \to bPc \mid cC$

$C \to cC \mid \lambda$

⑧ $L_2 = \{a^m b^n c^k \mid k < m+n\}$

$S \to aSc \mid bPc \mid bB \mid cC$

$P \to bPc \mid bB$

$B \to bB \mid Cc \mid \lambda$

$C \to cC \mid \lambda$

⑨ $L_3 = \{a^m b^n c^k \mid n > m+k\}$

$S \to AC$

$A \to aAb \mid bB$

$B \to bB \mid \lambda$

$C \to bBc \mid B$

⑩ $L_4 = \{a^m b^n c^k \mid n < m+k\}$

$S \to$

⑪ $L_5 = \{a^m b^n c^k \mid m > n+k\}$

⑫ $L_6 = \{a^m b^n c^k \mid m < n+k\}$