

$$\begin{aligned} \textcircled{1} \quad S &\rightarrow aXYb \\ X &\rightarrow c|e \\ Y &\rightarrow d|e \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad S &\rightarrow AbC|ad \\ A &\rightarrow eS|Cr|e \\ C &\rightarrow b|p|e \end{aligned}$$

$$\begin{aligned} \textcircled{3} \quad F &\rightarrow XYZa \\ X &\rightarrow x|e \\ Y &\rightarrow y|e \\ Z &\rightarrow z|e \end{aligned}$$

$$\begin{aligned} \textcircled{4} \quad S &\rightarrow aAB|bA|e \\ A &\rightarrow aAb|e \\ B &\rightarrow bB|c \\ &\text{OR} \\ B &\rightarrow bB|e \end{aligned}$$

$$\begin{aligned} \textcircled{5} \quad E &\rightarrow I*T|5+T \\ T &\rightarrow PS \\ S &\rightarrow QP|E \\ Q &\rightarrow +|* \\ P &\rightarrow a|b|c \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad S &\rightarrow XZY|zbY|Ya \\ X &\rightarrow da|YZ \\ Y &\rightarrow g|e \\ Z &\rightarrow h|e \end{aligned}$$

$$\textcircled{7} \quad S \rightarrow \cancel{ACB|cbb|Ba}$$

$$A \rightarrow da$$

$$\begin{aligned} \textcircled{7} \quad S &\rightarrow aBDh \\ B &\rightarrow cC \\ C &\rightarrow bC|e \\ D &\rightarrow EF \\ E &\rightarrow g|e \\ F &\rightarrow h|e \end{aligned}$$

$$\textcircled{8}$$

$$S \rightarrow aBcd|dCBe$$

$$B \rightarrow bB|e$$

$$C \rightarrow ca|ac|e$$

$$\textcircled{9}$$

$$S \rightarrow aSbS|bSaS|e$$

$$\textcircled{10}$$

$$S \rightarrow AaAb|BbBe$$

$$A \rightarrow e$$

$$B \rightarrow e$$

$$\begin{aligned} \textcircled{10} \quad S &\rightarrow AB \\ A &\rightarrow a|e \\ B &\rightarrow b|e \end{aligned}$$

$$\begin{aligned} \textcircled{11} \quad S &\rightarrow aB|e \\ B &\rightarrow bC|e \\ C &\rightarrow cS|e \end{aligned}$$

$$\begin{aligned} \textcircled{12} \quad S &\rightarrow aSA|e \\ A &\rightarrow c|e \end{aligned}$$

$$\begin{aligned} \textcircled{13} \quad S &\rightarrow A \\ A &\rightarrow Bb|Cd \\ B &\rightarrow aB|e \\ C &\rightarrow cC|e \end{aligned}$$

$$\begin{aligned} \textcircled{14} \quad S &\rightarrow aAa|e \\ A &\rightarrow abS|e \end{aligned}$$

$$\begin{aligned} \textcircled{15} \quad S &\rightarrow iEtSS'|a \\ S' &\rightarrow eS|e \\ E &\rightarrow b \end{aligned}$$

$$\begin{aligned} \textcircled{16} \quad S &\rightarrow IAB|e \\ A &\rightarrow IAC|OC \\ B &\rightarrow OS \\ C &\rightarrow I \end{aligned}$$

$$\begin{aligned} \textcircled{17} \quad S &\rightarrow a|(CT) \\ T &\rightarrow ST' \\ T' &\rightarrow ,ST'|e \end{aligned}$$