Gramatika G1

(1) $I \to aCa$

(2) $C \to aCBa$

(3) $C \to b$

(4) $aB \to Ba$

(5) $bB \to bb$

Rešenje 1:

$$I \xrightarrow{(1)} aCa \xrightarrow{(2)} aaCBaa \xrightarrow{(2)} aaaCBaBaa \xrightarrow{(2)} \ldots \xrightarrow{\text{posle } k \text{ primena pravila (2)}} a^{k+1}C(Ba)^k a \xrightarrow{(3)} a^{k+1}b(Ba)^k a$$

$$= a^{k+1}bBa(Ba)^{k-1}a \xrightarrow{(5)} a^{k+1}bba(Ba)^{k-1}a \quad - \text{posle } 1. \text{ iteracije postupka}$$

$$= a^{k+1}bbaBa(Ba)^{k-2}a \xrightarrow{(4)} a^{k+1}bbBaa(Ba)^{k-2}a \xrightarrow{(5)} a^{k+1}bbbaa(Ba)^{k-2}a = a^{k+1}b^3a^2(Ba)^{k-2}a \quad - \text{posle } 2. \text{ iteracije postupka}$$

$$= a^{k+1}bbbaaBa(Ba)^{k-3}a \xrightarrow{(4)} a^{k+1}bbbaBaa(Ba)^{k-3}a \xrightarrow{(4)} a^{k+1}bbbBaaa(Ba)^{k-3}a \xrightarrow{(5)} a^{k+1}b^4a^3(Ba)^{k-3}a \quad - \text{posle } 3. \text{ iteracije postupka}$$

$$\vdots$$

$$= a^{k+1}b^k a^{k-1}Baa \xrightarrow{(4)} a^{k+1}b^k a^{k-2}Ba^3 \xrightarrow{(4)} a^{k+1}b^k a^{k-3}Ba^4 \xrightarrow{(4)} \ldots \xrightarrow{\text{posle } k-1 \text{ primena pravila (4)}} a^{k+1}b^k Ba^{k+1} \xrightarrow{(5)} a^{k+1}b^{k+1}a^{k+1} \quad - \text{posle } k-\text{te iteracije}$$

$k \geq 0$

Rešenje 2:

$$I \xrightarrow{(1)} aCa \xrightarrow{(2)} aaCBaa \xrightarrow{(2)} aaaCBaBaa \xrightarrow{(2)} \ldots \xrightarrow{\text{posle } k \text{ primena pravila (2)}} a^{k+1}C(Ba)^k a \xrightarrow{(3)} a^{k+1}b(Ba)^k a$$

$$= a^{k+1}bBaBa \ldots Baa = a^{k+1}bB(aBa \ldots B)aa = a^{k+1}bB(aB)^{k-1}a^2 \xrightarrow{(5)} a^{k+1}b^2(aB)^{k-1}a^2 \quad - \text{posle } 1. \text{ iteracije postupka}$$

$$\xrightarrow{\text{posle } k-1 \text{ primena pravila (4)}} a^{k+1}b^2(Ba)^{k-1}a^2 = a^{k+1}b^2BaBa \ldots Baa^2 = a^{k+1}b^2B(aB)^{k-2}a^3 \xrightarrow{(5)} a^{k+1}b^3(aB)^{k-2}a^3 \quad - \text{posle } 2. \text{ iteracije postupka}$$

$$\xrightarrow{\text{posle } k-2 \text{ primena pravila (4)}} a^{k+1}b^3(Ba)^{k-2}a^3 = a^{k+1}b^3BaBa \ldots Baa^3 = a^{k+1}b^3B(aB)^{k-3}a^4 \xrightarrow{(5)} a^{k+1}b^4(aB)^{k-3}a^4 \quad - \text{posle } 3. \text{ iteracije postupka}$$

$$\vdots$$

$$\xrightarrow{(4)} a^{k+1}b^k Baa^k \xrightarrow{(5)} a^{k+1}b^k baa^k = a^{k+1}b^{k+1}a^{k+1} \quad - \text{posle } k-\text{te iteracije}, k \geq 0$$