Z14 računala A, B, C; pripadni strojni jezici a, b, c

želimo: $JP_a^{l \to n}$, $JP_b^{l \to n}$, $JP_c^{l \to n}$

imamo: $JP_l^{l \to n}$, $JP_a^{l \to a}$, $JP_b^{n \to o}$, $JP_o^{o \to b}$, $JP_c^{o \to c}$

$$JP_l^{l \to n} + JP_a^{l \to a} = \boxed{JP_a^{l \to n}}$$

$$JP_l^{l \to n} + JP_a^{l \to n} = JP_n^{l \to n}$$

$$JP_n^{l \to n} + JP_b^{n \to o} = JP_o^{l \to n}$$

$$JP_o^{l \to n} + JP_c^{o \to c} = \boxed{JP_c^{l \to n}}$$

$$JP_o^{o \to b} + JP_c^{o \to c} = JP_c^{o \to b}$$

$$JP_o^{l \to n} + JP_c^{o \to b} = \boxed{JP_b^{l \to n}}$$

Z15 računala A, B; strojni jezici a, b

imamo: $JP_a^{l \to u}$, $JP_b^{n \to c}$, $JP_m^{m \to n}$, $JP_?^{m \to l}$ $\quad ? = l, m, n$

želimo: program u $m \to$ program u c (računalo C)

$$JP_l^{m \to l} + JP_a^{l \to u} = JP_a^{m \to l}$$

$$JP_m^{m \to n} + JP_a^{m \to l} = JP_l^{m \to n}$$

$$JP_l^{m \to n} + JP_u^{l \to u} = JP_a^{m \to n}$$

program u m $+ JP_a^{m \to n} =$ program u n

program u n $+ JP_b^{n \to c} =$ program u c

Z19 imamo: $JP_l^{l\to a}$, $JP_a^{p\to s}$, $JP_u^{s\to u}$, $JP_b^{l\to q}$, $JP_b^{r\to a}$, $JP_r^{q\to p}$

↓

"samopreveditelj koji prevodi (u stroјni jezik u"

želimo: $JP_a^{l\to a}$ => "izvodivi" / stroјni jezici a, b

$$JP_l^{l\to u} + JP_b^{l\to q} = JP_q^{l\to u}$$

$$JP_r^{q\to p} + JP_b^{r\to u} = JP_a^{q\to p}$$

$$JP_q^{l\to u} + JP_a^{q\to p} = JP_p^{l\to a}$$

$$JP_p^{l\to u} + JP_a^{p\to s} = JP_s^{l\to u}$$

$$JP_s^{l\to a} + JP_u^{s\to u} = JP_u^{l\to u}$$

Z43

```
import javax.swing.*;
public class FrameDemo {
    public static void main(String[] args) {
        JFrame jframe = new JFrame("Exemple");
        jframe.setSize(400,100);
        jframe.setVisible(true);
    }
}
```

KROS		IDN	KONST
1	import	1 javax	1 "Exemple"
2	.	2 swing	2 400
3	*	3 FrameDemo	3 100
4	;	4 main	4 true
5	public	5 String	
6	class	6 args	
7	{	7 JFrame	
8	static	8 jframe	
9	void	9 setSize	
10	(	10 setVisible	
11	[		
12	]		
13	)		
14	=		
15	new		
16	}		

252 nizovi : AUTO , AUTOMOBIL

ulaz AUTOMATSKIAUTOMOBIL

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

POČETAK	ZAVRŠETAK	POSLJEDNJI	IZRAZ
0	0	0	0
0	1	0	0
0	2	0	0
0	3	0	0
0	4	3	1
0	5	3	[1]
4	4	4	0
5	5	5	0
⋮	⋮	⋮	⋮
9	9	9	0
10	10	10	0
10	11	10	0
10	12	10	0
10	13	10	0
10	14	13	1
10	15	13	1
⋮	⋮	⋮	⋮
10	17	13	1
10	18	13	1
10	⊥	18	2

PREPOZNATI NIZOVI : AUTO, AUTOMOBIL

GREŠKE : MATSKI

259

r1	aab(c)*	ispiši("r1")
r2	(a)*b	ispiši("r2")
r3	abab	ispiši("r3")
r4	ab/c	ispiši("r4")
r5	abubb	uđi u stanje S; ODBACI
r6	bbb	ispiši("r6")
r7	<S>bba	ispiši("r7"), izađi iz stanje S
r8	(c)*	ispiši("r8")

1) aababcaaab

r1	aab
r4	ab
r8	c
r2	aaab

2) ccababbba

r8	cc
r5	
r3	abab
r7	bba

Z 62

r1 sedem / 7

r2 osem / 8

r3 devet / 9

r4 (a/b/.../z)* (0/1/.../9)*

a) sedem 78 ggg

r4 sedem 78

r4 ggg

b) ggg osem 8 sedam 7 devet 8

r4 gggosem 8

r1 sedem

r4 7

r4 devet 8

Z 136

PRIMJENI → izračunati skupove

$S \to a\ S\ b\ S$	a
$S \to c\ D\ A$	c
$S \to \varepsilon$	$b, \perp$
$A \to B\ c$	a, d, e
$A \to b\ a\ B$	b
$B \to a\ D$	a
$B \to d\ e\ C$	d
$B \to e\ C$	e
$C \to D\ F$	e, f
$C \to a\ B\ c$	a
$D \to e\ D$	e
$D \to \varepsilon$	$a, b, c, d, e, f, \perp$

} nije LL(1)

	ZAPOČINJE	SLIJEDI
S	$\{a, c\}$	$\{b, \perp\}$
A	$\{a, b, d, e\}$	$\{b, \perp\}$
B	$\{a, d, e\}$	$\{b, c, \perp\}$
C	$\{a, e, f\}$	$\{b, c, \perp\}$
D	$\{e\}$	$\{a, b, c, d, e, f, \perp\}$

Z 103 ukloniti lijevu rekurziju

$S \to aAbBa$

$S \to bBaAb$

$A \to AaBb$

$A \to Ba$

$A \to a$

$B \to Ab$

$B \to b$

$\Big\downarrow$

$S \to aAbBa$

$S \to bBaAb$

$A \to AaBb$

$A \to Abu$

$A \to bu$

$A \to a$

$B \to Ab$

$B \to b$

$\Big\downarrow$

$A \to bu$

$A \to a$

$A \to bu X$

$A \to a X$

$X \to aBb X$

$X \to ba X$

$X \to aBb$

$X \to ba$

$=$

$A \to bu X$

$A \to a X$

$X \to aBb X$

$X \to ba X$

$X \to \varepsilon$

Z 112

	a	b	c	d	e	⊥
S	z(dAbB) z	0	0	z(dAbB) z	z(dAbB) z	0
A	z(A) p	0	0	0	i p	0
B	z(dA) z	0	0	z(CcS) p	z(dA) z	0
C	z(C) p	i z	0	0	0	0
▽	0	0	0	0	0	p

$S \to BbAd$

$A \to aA$

$A \to e$

$B \to Ad$

$B \to dScC$

$C \to aC$

$C \to \varepsilon$

Z144 pretvoriti u S-gramatiku

$S \to C$	$S \to cX$	$S \to cX$	$S \to aY$
$S \to aAc$	$S \to aAc$	$S \to aY$	$S \to bZ$
$S \to bBa$	$S \to bBa$	$S \to bZ$	$S \to cX$
$A \to abA$	$A \to abA$	$Y \to abY$	$X \to ab$
$A \to bacA$	$A \to bacA$	$Y \to bacY$	$X \to ba$
$A \to \varepsilon$	$A \to \varepsilon$	$Y \to c$	$X \to abY$
$B \to Cc$	$B \to cXc$	$Z \to bcZ$	$Y \to bacY$
$B \to bcB$	$B \to bcB$	$Z \to cXca$	$Y \to c$
$B \to \varepsilon$	$B \to \varepsilon$	$Z \to a$	$Z \to a$
$C \to cab$	$X \to ab$	$X \to ab$	$Z \to bcZ$
$C \to cba$	$X \to ba$	$X \to ba$	$Z \to cXca$

A i B => desne rekurzija

Z gramatiku pretvoriti u LL(1) oblik

$S \to abc \mid a \mid Sab$

nizovi koje generira gramatika su oblika $a(bc \mid \varepsilon)(ab)^*$

$S \to aX$	a
$X \to bcY$	b
$X \to Y$	$a, \perp$
$Y \to abY$	a
$Y \to \varepsilon$	$\perp$

2157 Pomakni - Pronađi

$S \to aSAB$

$S \to bB$

$A \to bad$

$A \to cABe$

$B \to ab$

$B \to dAe$

SLIJEDI(S) = $\{b, c, \perp\}$ ZAPOČINJE(S) = $\{a, b\}$

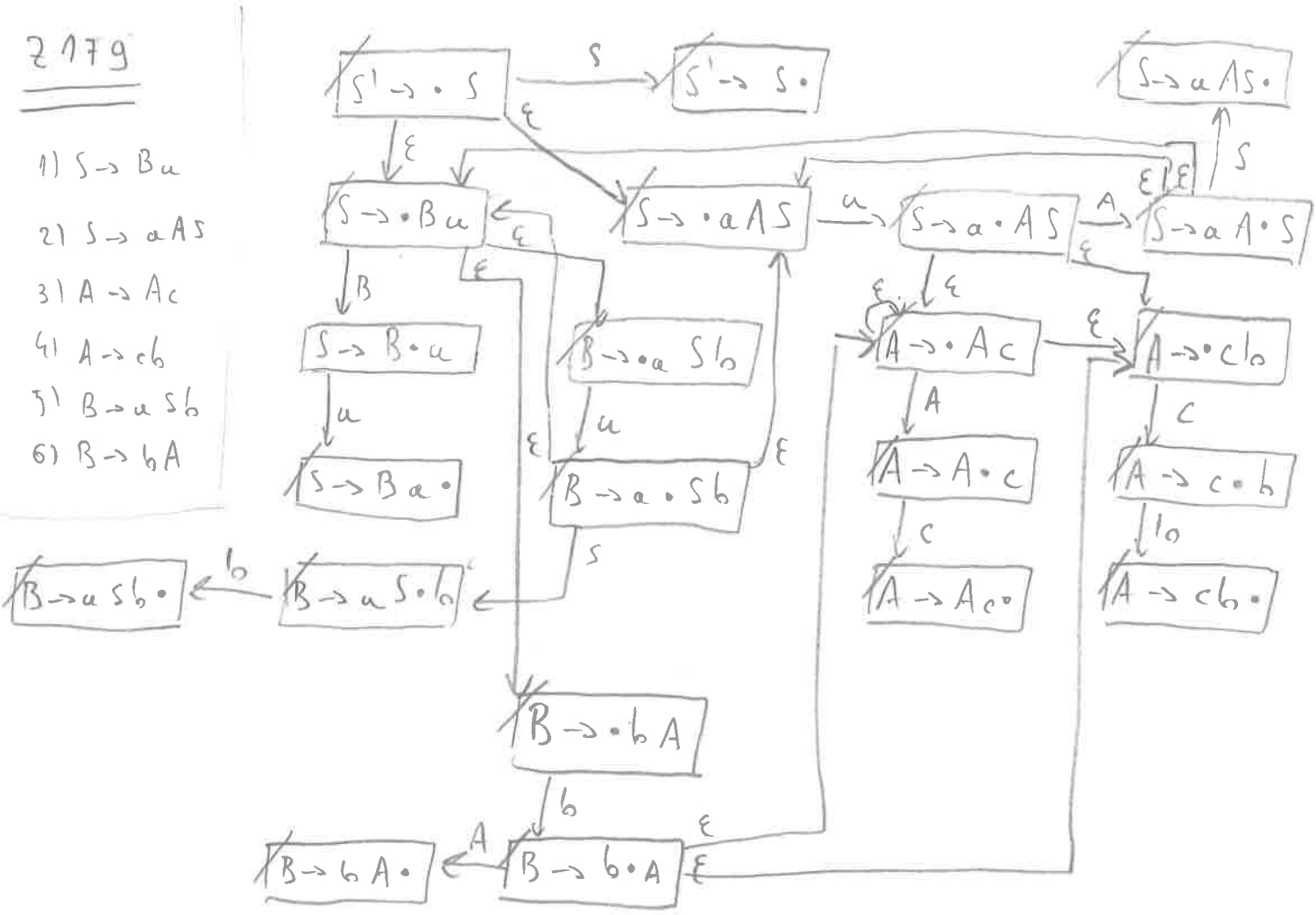
SLIJEDI(A) = $\{a, d, e\}$ ZAPOČINJE(A) = $\{b, c\}$

SLIJEDI(B) = $\{b, c, e, \perp\}$ ZAPOČINJE(B) = $\{a, d\}$

	a	b	c	d	e	$\perp$
S	O	P	P	O	O	R
A	P	O	O	P	P	O
B	O	R	R	O	P	R
a	P	P	O	P	O	O
b	P	R	R	P	R	R
c	O	P	P	O	O	O
d	R	P	P	R	R	O
e	R	R	R	R	R	R
∇	P	P	O	O	O	O

2179

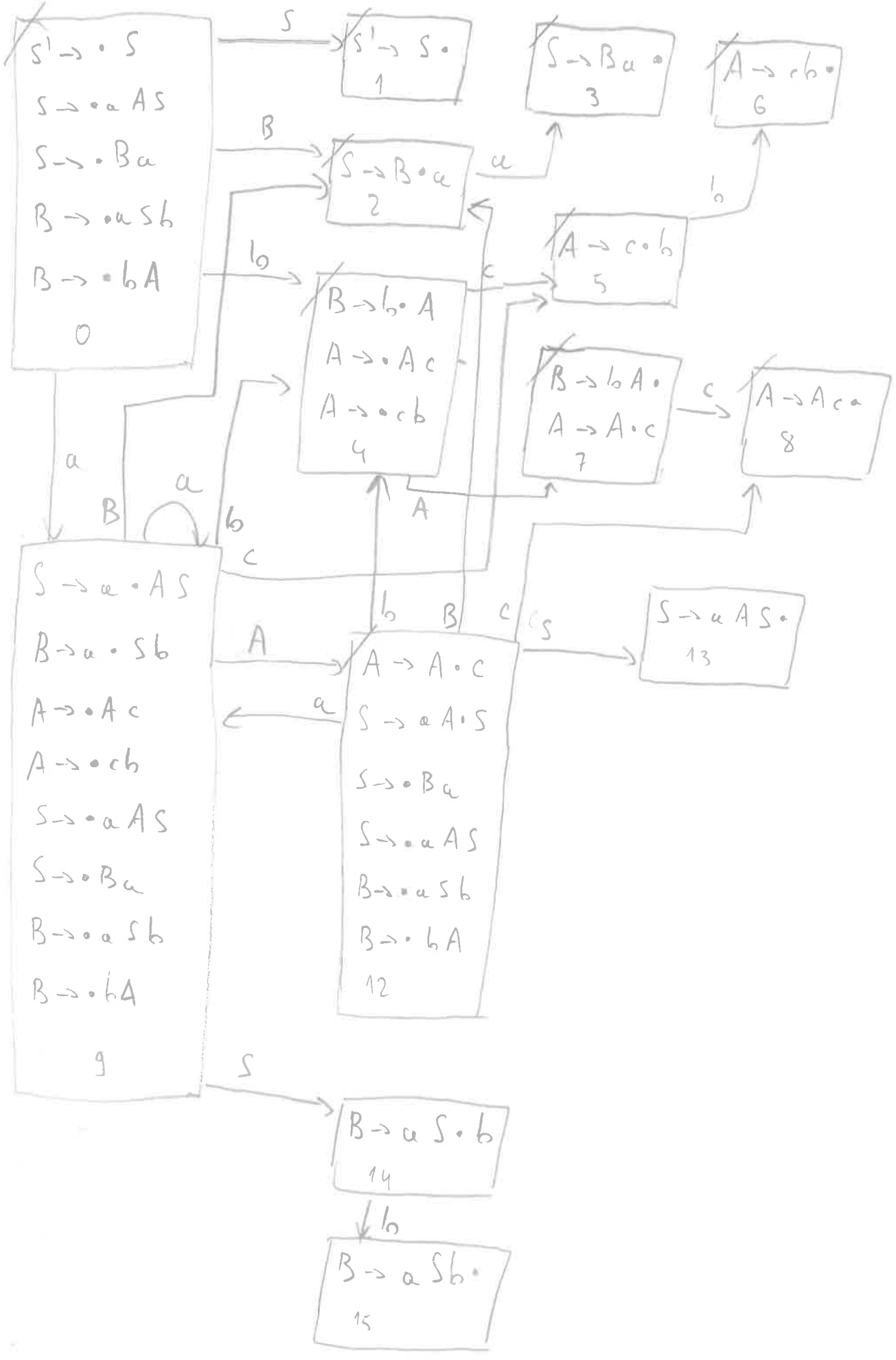
1) $S \to Bu$
2) $S \to aAS$
3) $A \to Ac$
4) $A \to cb$
5) $B \to uSb$
6) $B \to bA$



SLIJEDI(S) = $\{b, \perp\}$

SLIJEDI(A) = $\{a, b, c\}$

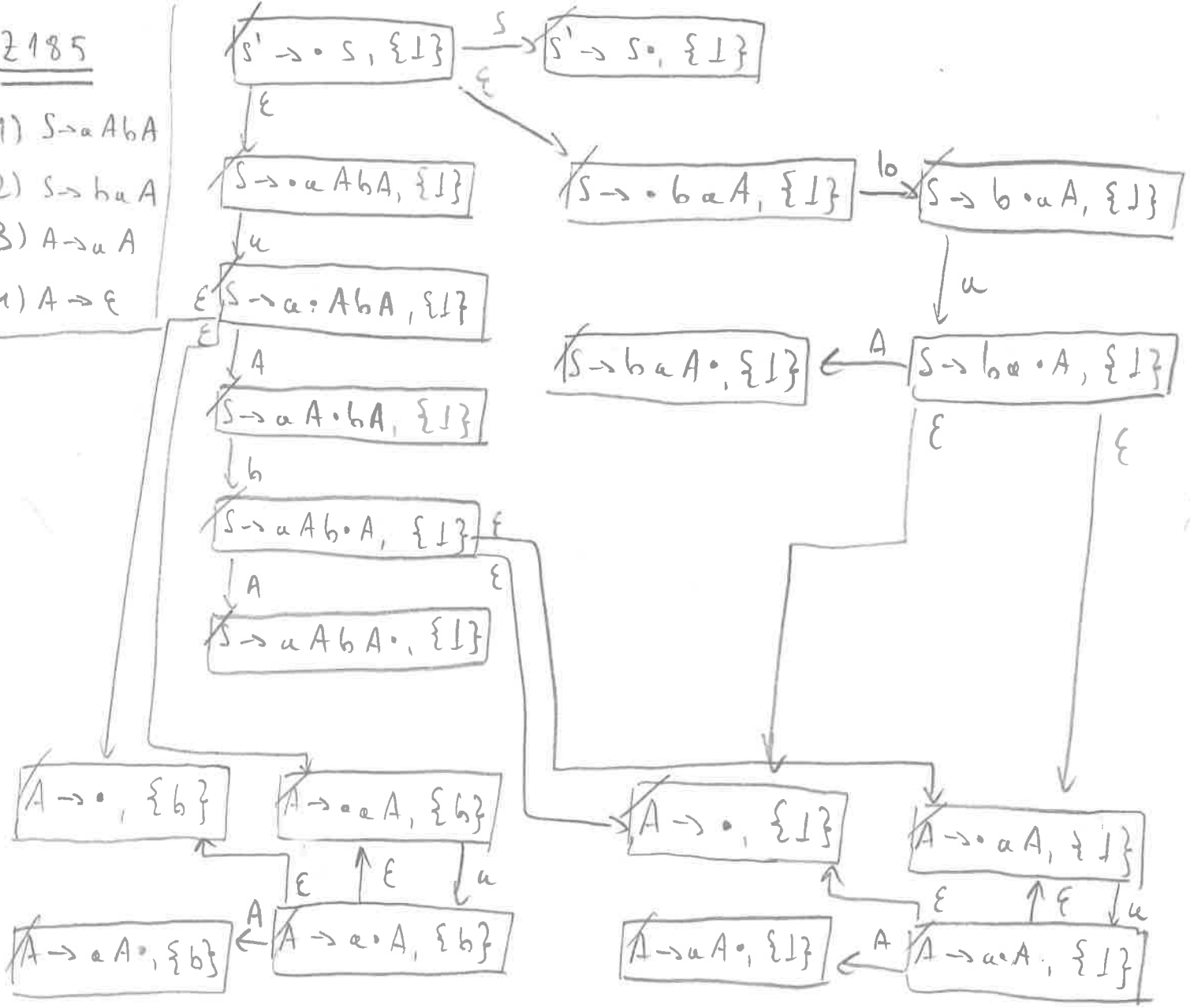
SLIJEDI(B) = $\{a\}$

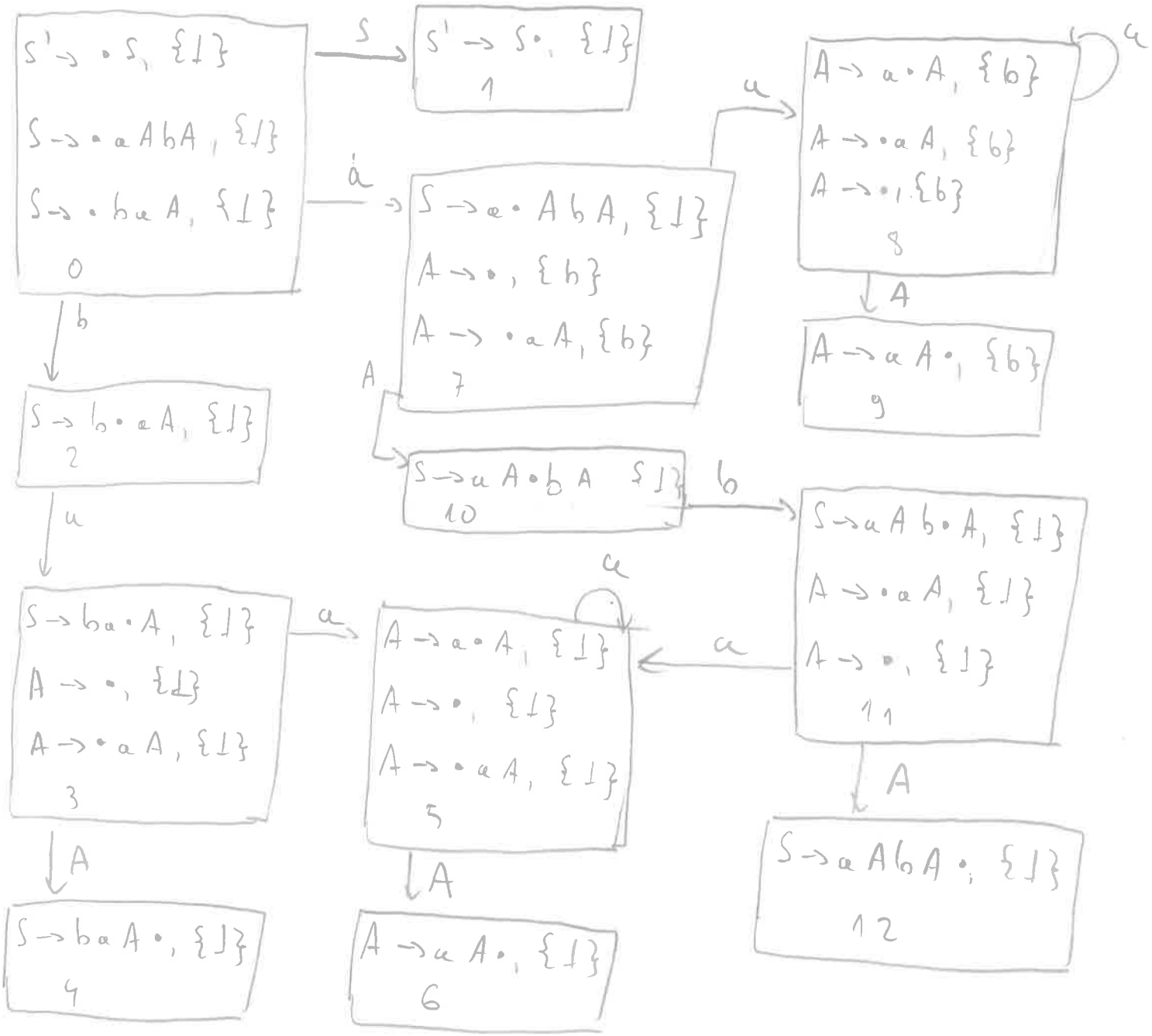

S' → · S
S → · a A S
S → · B a
B → · a S b
B → · b A
0
S
S' → S ·
1
B
S → B · a
2
a
S → B a ·
3
b
A → c b ·
6
b
B → b · A
A → · A c
A → · c b
4
c
A → c · b
5
B → b A ·
A → A · c
7
c
A → A c a
8
a
B
a
b
c
A
S → a · A S
B → a · S b
A → · A c
A → · c b
S → · a A S
S → · B a
B → · a S b
B → · b A
9
A
b
B
c
S
A → A · c
S → a A · S
S → · B a
S → · a A S
B → · a S b
B → · b A
12
a
S → a A S ·
13
S
B → a S · b
14
b
B → a S b ·
15

	a	b	c	⊥	S	A	B
0	p9	p4			s1		s2
1				PRIHVATI			
2	p3						
3		r1		r1			
4			p5			s7	
5		p6					
6	r4	r4	r4				
7	r6		p8				
8	r3	r3	r3				
9	p9	p4	p5		s12	s10	s2
10		p4	p8		s11		s2
11		r2		r2			
12		p13					
13	r5						

Z185

1) $S \to a\,A\,b\,A$
2) $S \to b\,a\,A$
3) $A \to a\,A$
4) $A \to \varepsilon$




S' → • S, {⊥}
S → • a A b A, {⊥}
S → • b a A, {⊥}
0
S
S' → S•, {⊥}
1
a
S → a • A b A, {⊥}
A → • a A, {b}
A → •, {b}
7
A → a • A, {b}
A → • a A, {b}
A → •, {b}
8
A
A → a A •, {b}
9
b
S → b • a A, {⊥}
2
A
S → a A • b A, {⊥}
10
b
S → a A b • A, {⊥}
A → • a A, {⊥}
A → •, {⊥}
11
a
A
S → a A b A •, {⊥}
12
a
S → b a • A, {⊥}
A → •, {⊥}
A → • a A, {⊥}
3
a
A → a • A, {⊥}
A → •, {⊥}
A → • a A, {⊥}
5
A
S → b a A •, {⊥}
4
A
A → a A •, {⊥}
6

	a	b	L	S	A
0	p7	p2		s1	
1			PRIHVATI		
2	p3				
3	p5		r4		s4
4			r2		
5	p5		r4		s6
6			r3		
7	p8	r4			s10
8	p8	r4			s9
9		r3			
10		p11			
11	p5		r4		s12
12			r1		

Z 19 1

$S \to vA \mid iB \quad A \to iC \mid \varepsilon \quad B \to v \mid iD \mid \varepsilon \quad C \to iD \mid \varepsilon \quad D \to i \mid \varepsilon$

$D_{VR} \to i$ $\quad VR \leftarrow 1$

$D_{VR} \to \varepsilon$ $\quad VR \leftarrow 0$

$C_{VR} \to iD_{VR1}$ $\quad VR \leftarrow VR1 + 1$

$C_{VR} \to \varepsilon$ $\quad VR \leftarrow 0$

$B_{VR,M} \to V$ $\quad VR \leftarrow 5, M \leftarrow 1$

$B_{VR,M} \to iD_{VR1}$ $\quad VR \leftarrow VR1 + 1, M \leftarrow 0$

$B_{VR,M} \to \varepsilon$ $\quad VR \leftarrow 0, M \leftarrow 0$

$A_{VR} \leftarrow iC_{VR1}$ $\quad VR \leftarrow VR1 + 1$

$A_{VR} \to \varepsilon$ $\quad VR \leftarrow 0$

$S_{VR} \to vA_{VR1}$ $\quad VR \leftarrow VR1 + 5$

$S_{VR} \to iB_{VR1,M}$ $\quad VR \leftarrow (VR1 - 1) \cdot M + (VR1 + 1) \cdot (1 - M)$

$S_{VR} \to v\ A_{VR1}\ \{X_{a,b}\}$

$a \leftarrow VR1,\ VR \leftarrow b \quad [b \leftarrow a+5]$

$S_{VR} \to i\ B_{VR1,M}\ \{Y_{a,b,c}\}$

$a \leftarrow VR1,\ b \leftarrow M,\ VR \leftarrow c \quad [c \leftarrow (a-1)\cdot b + (a+1)\cdot(1-b)]$

$A_{VR} \to i\ C_{VR1}\ \{Z_{a,b}\}$

$a \leftarrow VR1,\ VR \leftarrow b \quad [b \leftarrow a+1]$

$A_{VR} \to \varepsilon$

$VR \leftarrow 0$

$B_{VR,M} \to v$

$VR \leftarrow 5,\ M \leftarrow 1$

$B_{VR,M} \to i\ D_{VR1}\ \{W_{a,b}\}$

$a \leftarrow VR1,\ VR \leftarrow b,\ M \leftarrow 0 \quad [b \leftarrow 1+a]$

$C_{VR} \to i\ D_{VR1}\ \{Q_{a,b}\}$

$a \leftarrow VR1,\ VR \leftarrow b \quad [b \leftarrow a+1]$

$B_{VR,M} \to \varepsilon$

$VR \leftarrow 0,\ M \leftarrow 0$

$C_{VR} \to \varepsilon$

$VR \leftarrow 0$

$D_{VR} \to i$

$VR \leftarrow 1$

$D_{VR} \to \varepsilon$

$VR \leftarrow 0$

	i	V	⊥
S	z({x}B)z p	z({x}A)z p	
A	z({z}C)z p		i z
B	z({w}D)z p	i p	i z
C	z({a}D)z p		i z
D	i p		i z
∆			PRIHVATI

{x} $z'i'(\omega_2(\{x\})\omega_2)zi$

{y} $z'i'(\{y\})\omega_2)zi$

{z} $z'i'(\{z\})\omega_2)zi$

{w} $z'i'(\{w\})\omega_2)zi$

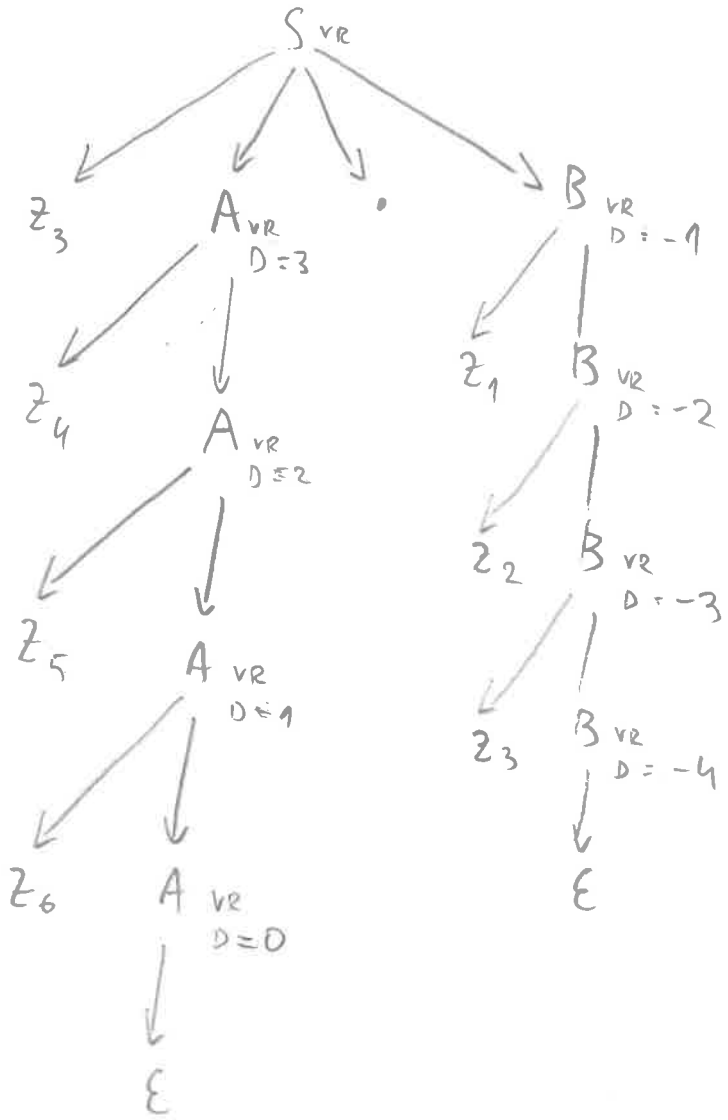
{a} $z'i'(\{a\})\omega_2)zi$

// PRIMJENI SKUPOVI

$S \to vA$	v
$S \to iB$	i
$A \to iC$	i
$A \to \varepsilon$	$\perp$
$B \to v$	v
$B \to iD$	i
$B \to \varepsilon$	$\perp$
$C \to iD$	i
$C \to \varepsilon$	$\perp$
$D \to i$	i
$D \to \varepsilon$	$\perp$

2194

$S \to z\,A\,.\,B \qquad A \to zA \mid \varepsilon \qquad B \to zB \mid \varepsilon$



3456.123

$S_{VR} \rightarrow 2 \times A_{VR1,D1} \bullet B_{VR2,D2}$

$D2 \leftarrow -1,\ VR \leftarrow VR1 + VR2 + x \cdot 8^{D1}$

$A_{VR,D} \rightarrow 2 \times A_{VR1,D1}$

$D \leftarrow D1 + 1,\ VR \leftarrow VR1 + x \cdot 8^{D1}$

$A_{VR,D} \rightarrow \varepsilon$

$VR \leftarrow 0,\ D \leftarrow 0$

$B_{VR,D} \rightarrow 2 \times B_{VR1,D1}$

$D1 \leftarrow D - 1,\ VR \leftarrow VR1 + x \cdot 8^{D}$

$B_{VR,D} \rightarrow \varepsilon$

$VR \leftarrow 0$