```
WhileLoop → while Expression: Statement else Statement Expression → Expression or AndExpression | AndExpression AndExpression → AndExpression and Term | Term Term → ID | CONST
Statement → WhileLoop | ID := Expression;
```

- (1) WhileLoop → while Expression: Statement else Statement
- (2) Expression → Expression **or** AndExpression
- (3) Expression  $\rightarrow$  AndExpression
- (4) AndExpression → AndExpression and Term
- (5)  $AndExpression \rightarrow Term$
- (6) *Term* → **ID**
- (7)  $Term \rightarrow CONST$
- (8)  $Statement \rightarrow WhileLoop$
- (9) Statement  $\rightarrow$  **ID** := Expression ;
- (1)  $WL \rightarrow \text{while } E : S \text{ else } S$
- (2)  $E \rightarrow E$  or AE
- (3)  $E \rightarrow AE$
- (4)  $AE \rightarrow AE$  and T
- (5)  $AE \rightarrow T$
- (6)  $T \rightarrow \mathbf{ID}$
- (7)  $T \rightarrow \mathbf{CONST}$
- (8)  $S \rightarrow WL$
- (9)  $S \to ID := E$ ;

```
l_1: goto(l_0, WL): l_2: goto(l_0, while): WL \rightarrow .WL
WL \rightarrow .while \ E : S \ else \ S
E \rightarrow .E \ or \ AE
E \rightarrow .AE \ AE \rightarrow .AE \ and \ T
E \rightarrow .ID
E \rightarrow .CONST
```

 $l_0$ :

 $T \rightarrow \mathbf{CONST}$ .

Redukciono - S7

```
l_3:
           goto(l_2, E):
                                                         l_4:
                                                                    goto(l_3,:):
                                                                                                                  l<sub>5</sub>:
                                                                                                                              goto(l_4, S):
                                                                     WL \rightarrow while E : .S else S
           WL \rightarrow  while E :: S  else S
                                                                                                                              WL \rightarrow  while E : S .else S
           E \rightarrow E \cdot or AE
                                                                    S \rightarrow .WL
                                                                    S \rightarrow .ID := E;
                                                                    WL \rightarrow .while E : S else S
                                                                                                                              goto(l_4, WL):
l_6:
           goto(l_5, else):
                                                         l<sub>7</sub>:
                                                                    qoto(l_6, S):
                                                                                                                   l_8:
                                                                    WL \rightarrow while E : S else S.
                                                                                                                              S \rightarrow WL.
           WL \rightarrow  while E : S  else .S
           S \rightarrow .WL
                                                                    Redukciono - S1
                                                                                                                              Redukciono - S8
           S \rightarrow .\mathbf{ID} := E :
           WL \rightarrow .while E : S else S
l_9:
           goto(l_4, \mathbf{ID}):
                                                                    goto(l_9, :=):
                                                                                                                   l_{11}:
                                                                                                                              goto(l_{10}, E):
                                                         l_{10}:
           S \rightarrow \mathbf{ID} := E;
                                                                    S \rightarrow \mathbf{ID} := .E;
                                                                                                                              S \rightarrow \mathbf{ID} := E.;
                                                                    E \rightarrow .E \text{ or } AE
                                                                                                                              E \rightarrow E \cdot or AE
                                                                    E \rightarrow AE
                                                                    AE \rightarrow AE and T
                                                                    AE \rightarrow .T
                                                                    T \rightarrow .ID
                                                                    T \rightarrow .CONST
l_{12}:
           goto(l_{11}, ;):
                                                         l_{13}:
                                                                    goto(l_3, or):
                                                                                                                   l_{14}:
                                                                                                                              goto(l_{13}, AE):
                                                                                                                              E \rightarrow E or AE.
           S \rightarrow \mathbf{ID} := E ;
                                                                    E \rightarrow E or AE
           Redukciono - S9
                                                                                                                              Redukciono - S2
                                                                    AE \rightarrow .AE and T
                                                                    AE \rightarrow .T
                                                                                                                               AE \rightarrow AE .and T
                                                                    T \rightarrow .\mathbf{ID}
                                                                    T \rightarrow .CONST
                                                                    goto(l_{14}, \mathbf{and}):
l_{15}:
           goto(l_2, AE):
                                                         l_{16}:
                                                                                                                   l_{17}:
                                                                                                                              goto(l_{16}, T):
           E \rightarrow AE.
                                                                    AE \rightarrow AE and .T
                                                                                                                              AE \rightarrow AE and T.
           Redukciono - S3
                                                                    T \rightarrow .ID
                                                                                                                              Redukciono - S4
           AE \rightarrow AE .and T
                                                                    T \rightarrow .CONST
l_{18}:
           goto(l_2, T):
                                                         l_{19}:
                                                                    goto(l_2, \mathbf{ID}):
                                                                                                                              goto(l_2, CONST):
                                                                                                                   l_{20}:
```

 $T \to \mathbf{ID}$ .

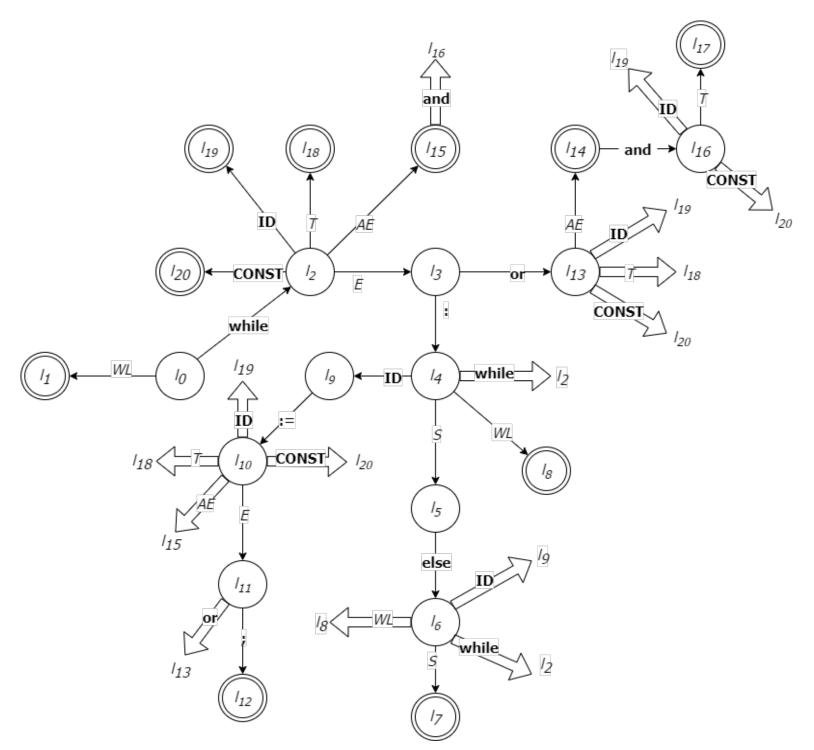
Redukciono - S6

 $AE \rightarrow T$ .

Redukciono - S5

 $goto(l_4, \mathbf{while}) = l_2$   $goto(l_{11}, \mathbf{or}) = l_{13}$   $goto(l_{10}, \mathbf{CONST}) = l_{20}$  $goto(l_{15}, \mathbf{and}) = l_{16}$   $goto(l_6, \mathbf{while}) = l_2$   $goto(l_{10}, AE) = l_{15}$   $goto(l_{13}, T) = l_{18}$  $goto(l_{16}, \mathbf{ID}) = l_{19}$ 

 $goto(l_6, \mathbf{ID}) = l_9$   $goto(l_{10}, T) = l_{18}$   $goto(l_{13}, \mathbf{ID}) = l_{19}$  $goto(l_{16}, \mathbf{CONST}) = l_{20}$   $goto(l_6, WL) = l_8$   $goto(l_{10}, ID) = l_{19}$  $goto(l_{13}, CONST) = l_{20}$ 



Rbr. Smene	Redukciono Stanje	Smena A → α	First(α)	Follow(A)	
0.	$l_1$	WL' → WL	while	#	
1.	$l_7$	$WL \rightarrow $ while $E : S $ else $S$	while	# else	
2.	$l_{14}$	$E \rightarrow E \text{ or } AE$	ID CONST	or:;	
3.	$l_{15}$	E → AE	ID CONST	or:;	
4.	$l_{17}$	$AE \rightarrow AE$ and $T$	ID CONST	or:; and	
5.	$l_{18}$	AE → T	ID CONST	or:; and	
6.	$l_{19}$	$T \to \mathbf{ID}$	ID	or:; and	
7.	$l_{20}$	$T \rightarrow \mathbf{CONST}$	CONST	or:; and	
8.	$l_8$	$S \rightarrow WL$	while	# else	
9.	$l_{12}$	$S \rightarrow \mathbf{ID} := E;$	ID	# else	

	AKCIJE									PRELAZI					
	while	:	else	;	or	and	ID	CONST	:=	#	WL	E	S	AE	T
0	s2										1				
1										acc					
2							s19	s20				3		15	18
3		s4			s13										
4	s2						s9				8		5		
5			s6												
6	s2						s9				8		7		
7			r1							r1					
8			r8							r8					
9									s10						
10							s19	s20				11		15	18
11				s12	s13										
12			r9							r9					
13							s19	s20						14	18
14		r2		r2	r2	s16									
15		r3		r3	r3	s16									
16							s19	s20							17
17		r4		r4	r4	r4									
18		r5		r5	r5	r5									
19		r6		r6	r6	r6									
20		r7		r7	r7	r7									