Task 04:

Show a complete LR(0) and SLR(1) Parsers, including conical collection of LR(0), and Parsing table, using the following grammar.

$E \to E+T^{1} \;/\; T^{2}$

$T \to TF^{3} / F^{4}$

$F \to F^{5}* / a^{6} / b^{7}$

Is this grammar LR(0) or SLR(1)? why?

⇒ LR(0) Parssing Table:

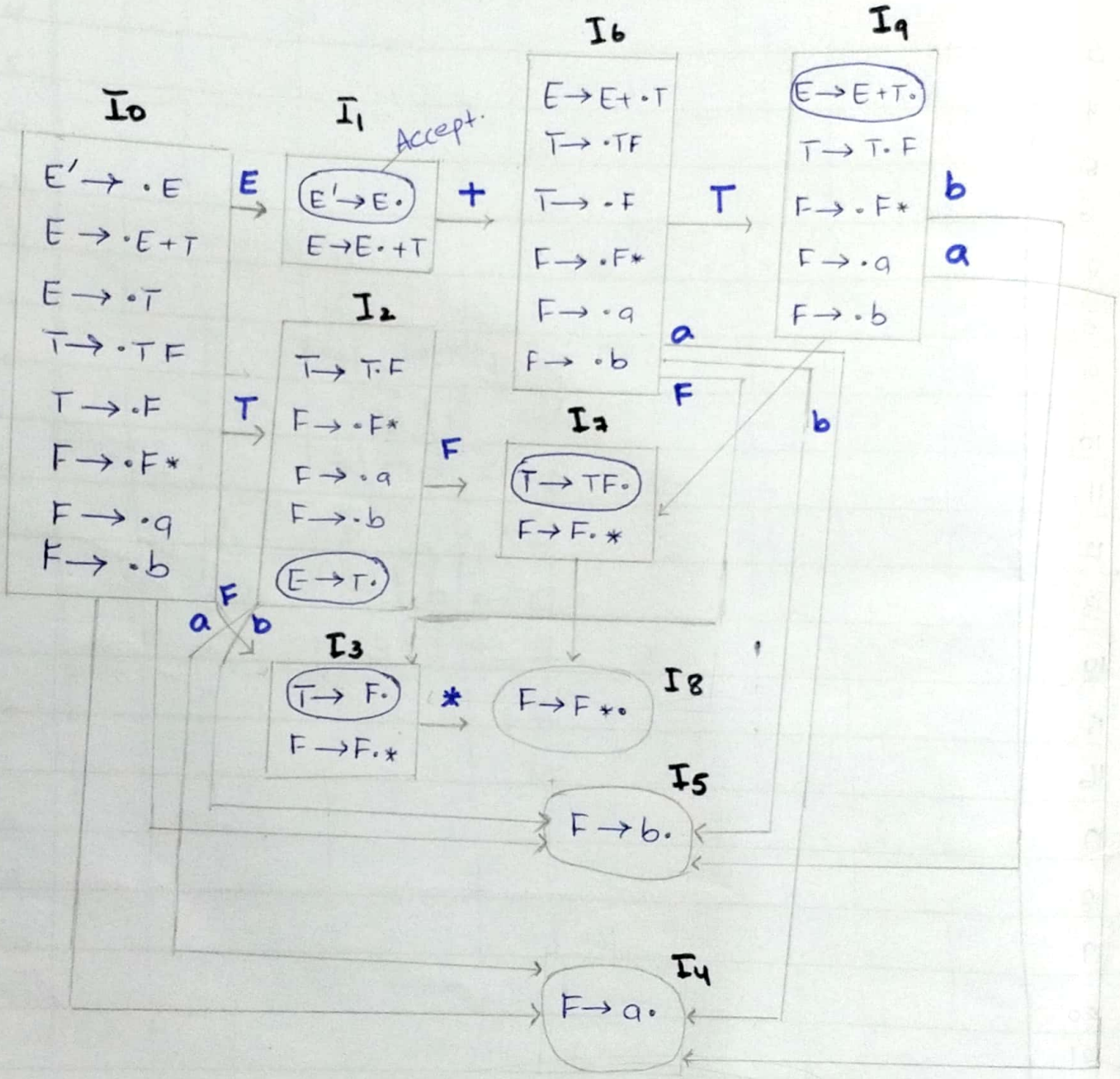
	a	b	+	*	$	E	T	F
0	S_4	S_5				1	2	3
1			S_6		Accept			
2	S_4/γ_2	S_5/γ_2	γ_2	γ_2	γ_2			7
3	γ_4	γ_4	γ_4	S_8/γ_4	γ_4			
4	γ_6	γ_6	γ_6	γ_6	γ_6			
5	γ_7	γ_7	γ_7	γ_7	γ_7			
6	S_4	S_5					9	3
7	γ_3	γ_3	γ_3	S_8/γ_3	γ_3			
8	γ_5	γ_5	γ_5	γ_5	γ_5			
9	S_4/γ_1	S_5/γ_1	γ_1	γ_1	γ_1			7

SLR(1):

For SLR(1) we will be first finding First and Follow of Terminals.

⇒ Augmented grammar:

$E' \to \cdot E$
$E \to \cdot E + T$
$E \to \cdot T$
$T \to \cdot TF$
$T \to \cdot F$
$F \to \cdot F*$
$F \to \cdot a$
$F \to \cdot b$



Canonical collection of LR(0).

	First	Follow.	
E	{a,b}	{$,+}	
T	{a,b}	{$,+,a,b}	
F	{a,b}	{$,+,a,b,*}	

⇒ Parssing Table:

	a	b	+	*	$	E	T	F
0	S_4	S_5				1	2	3
1				S_6	Accept			
2	S_4	S_5	γ_2		γ_2			7
3	γ_4	γ_4	γ_4	S_8	γ_4			
4	γ_6	γ_6	γ_6	γ_6	γ_6			
5	γ_7	γ_7	γ_7	γ_7	γ_7			
6	S_4	S_5						
7	γ_3	γ_3	γ_3	S_8	γ_3		9	3
8	γ_5	γ_5	γ_5	γ_5	γ_5			
9	S_4	S_5	γ_1		γ_1			7

⇒ Is this grammar LR(0) or SLR(1) ? Why?

The given grammar is SLR(1) grammar because if we analyse the parssing tables of both LR(0) and SLR(1) we will see that in LR(0) there is a conflict that Shifting and reduction is occuring at the same point. However this conflict is resolved

in SLR(1), So this grammar is SLR(1) grammar.