CD Lab Assignment - 8 19CS01065

2.1.1

Grammar for handling arithmetic operation.

(G)

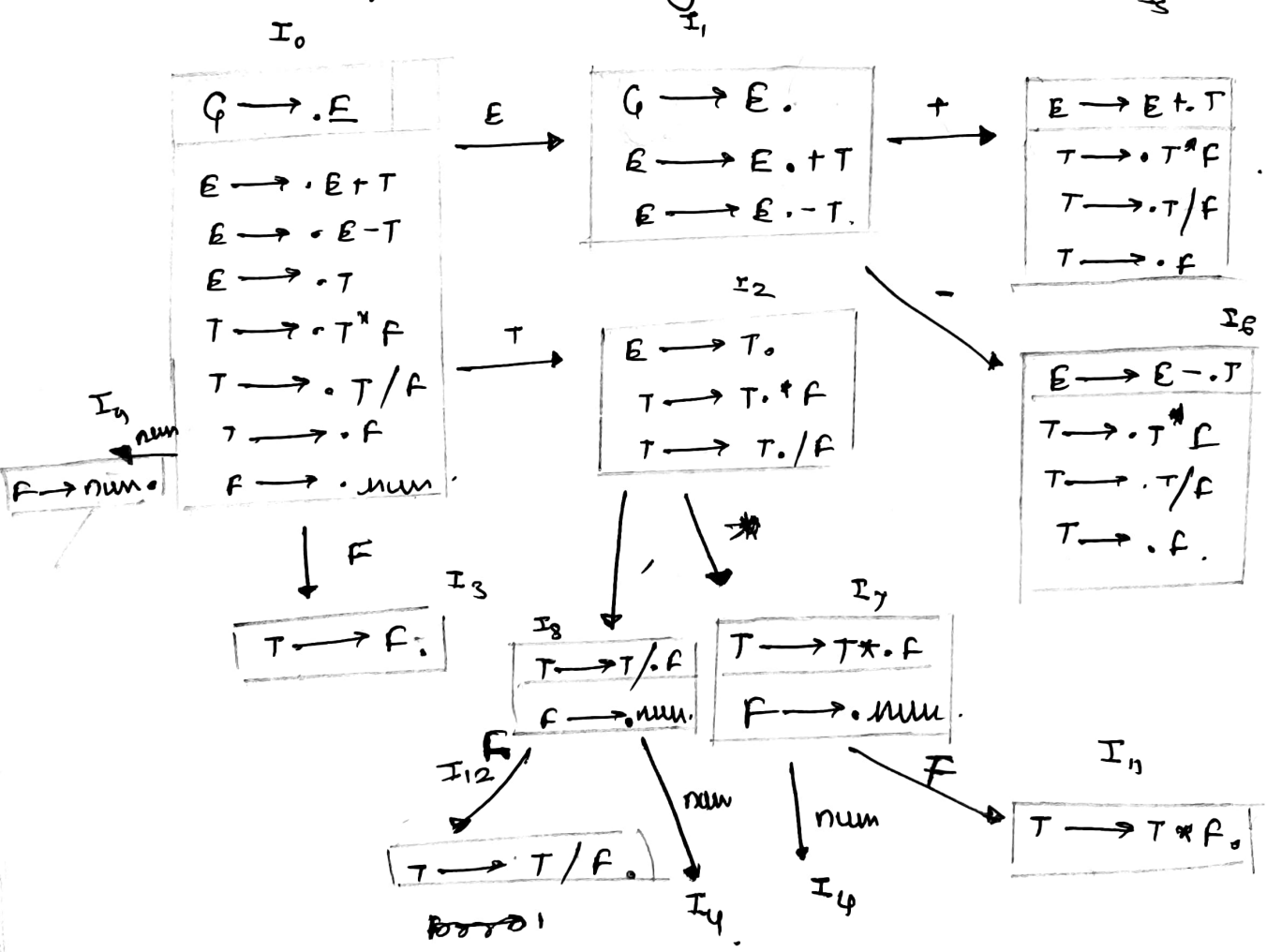
$G_{add} \rightarrow E$ (1)

$E \rightarrow E + T$ (2) $\mid E - T$ (3) $\mid T$ (4)

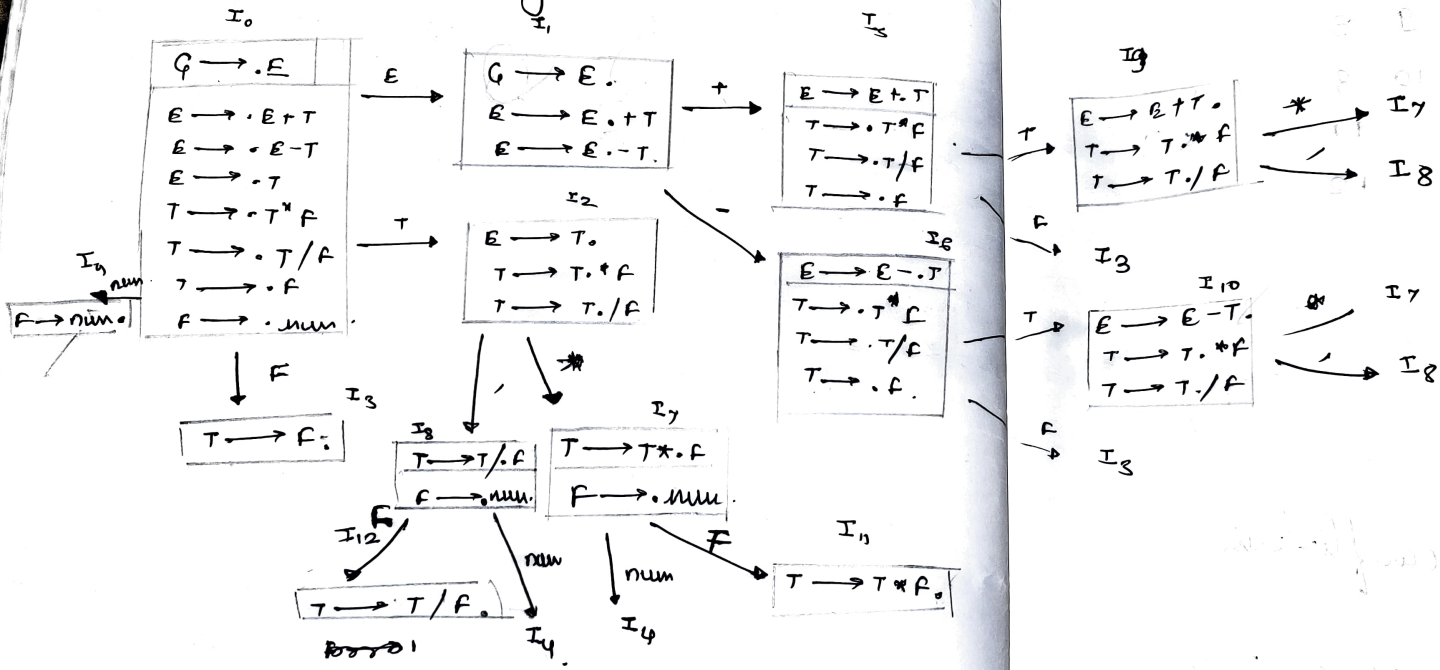
$T \rightarrow T * F$ (5) $\mid T / F$ (6) $\mid F$ (7)

$F \rightarrow num$ (8) . where num means a real number.

∴ To check for LR Parsing,



∴ To check for LR Parsing.



(1)

(2)

- The grammar has S-R conflicts, thus not LR(0)
- checking for SLR(1).

Follow sets of

Follow(Q) = { $ }
Follow(E) = { +, -, $ }
Follow(T) = { +, -, *, /, $ }
Follow(F) = { +, -, *, /, $ }

State	Action						Goto		
	+	-	*	\	num	$	E	T	F
0					S4		1	2	3
1	S5	S6				Accept R(1)			
2	R(4)	R(4)	S7	S8		R(4)			
3	R(7)	R(7)	R(7)	R(7)		R(7)			
4	R(8)	R(8)	R(8)	R(8)		R(8)			
5							9	3	
6							10	3	
7					S4			11	
8					S4			12	
9	R(2)	R(2)	S7	S8		R(2)			
10	R(3)	R(3)	S7	S8		R(3)			
11	R(5)	R(5)	R(5)	R(5)		R(5)			
12	R(6)	R(6)	R(6)	R(6)		R(6)			

As we can see there are no conflicts in SLR(1) Table,

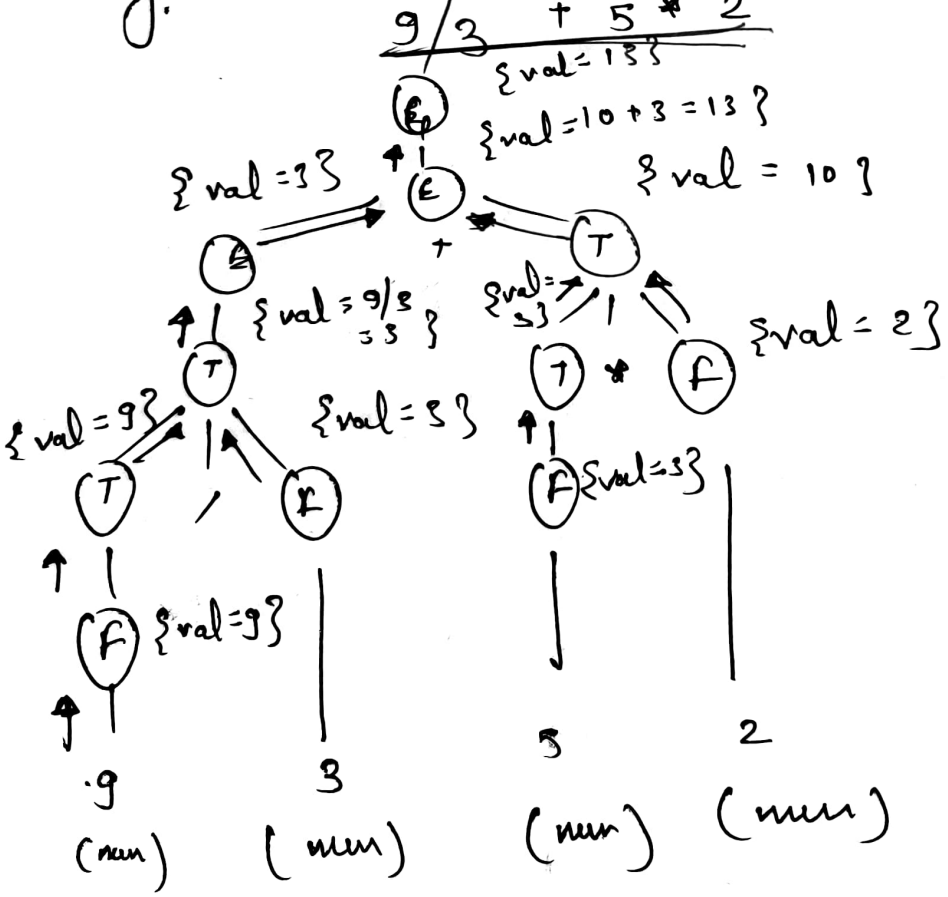
thus the Grammer is fit for LR parsing.

Q.12 Assigning Attributes

AS(G) = AS(E) = AS(T) = AS(F)
= { val ↑ : int }

$G \rightarrow E$	{ G.val ↑ = E.val ↑ }
$E_1 \rightarrow E_2 + T$	{ E_1.val ↑ = E_2.val ↑ + T.val ↑ }
$E_1 \rightarrow E_2 - T$	{ E_1.val ↑ = E_2.val ↑ − T.val ↑ }
$E \rightarrow T$	{ E.val ↑ = T.val ↑ }
$T_1 \rightarrow T_2 * F$	{ T_1.val ↑ = T_2.val ↑ * F.val ↑ }
$T_1 \rightarrow T_2 / F$	{ T_1.val ↑ = T_2.val ↑ / F.val ↑ }
$T \rightarrow F$	{ T.val ↑ = F.val ↑ }
$F \rightarrow$ num	{ F.val ↑ = num.lexval }

Eg.



G.val = 13 final result.