Name :- Sumit Kumar Yadav
Roll No.:- 18CS3004-2

Assignment-3.

(1) (a) $a + b * c + (d * e)$

$\Rightarrow$ $abc * + de * +$

(b) $a - b - c$

$\Rightarrow$ $ab - c -$

(c) $a * (b+c)/d$

$\Rightarrow$ $abc + * d /$

(d) $(a+(b*c)) / (d-e)$

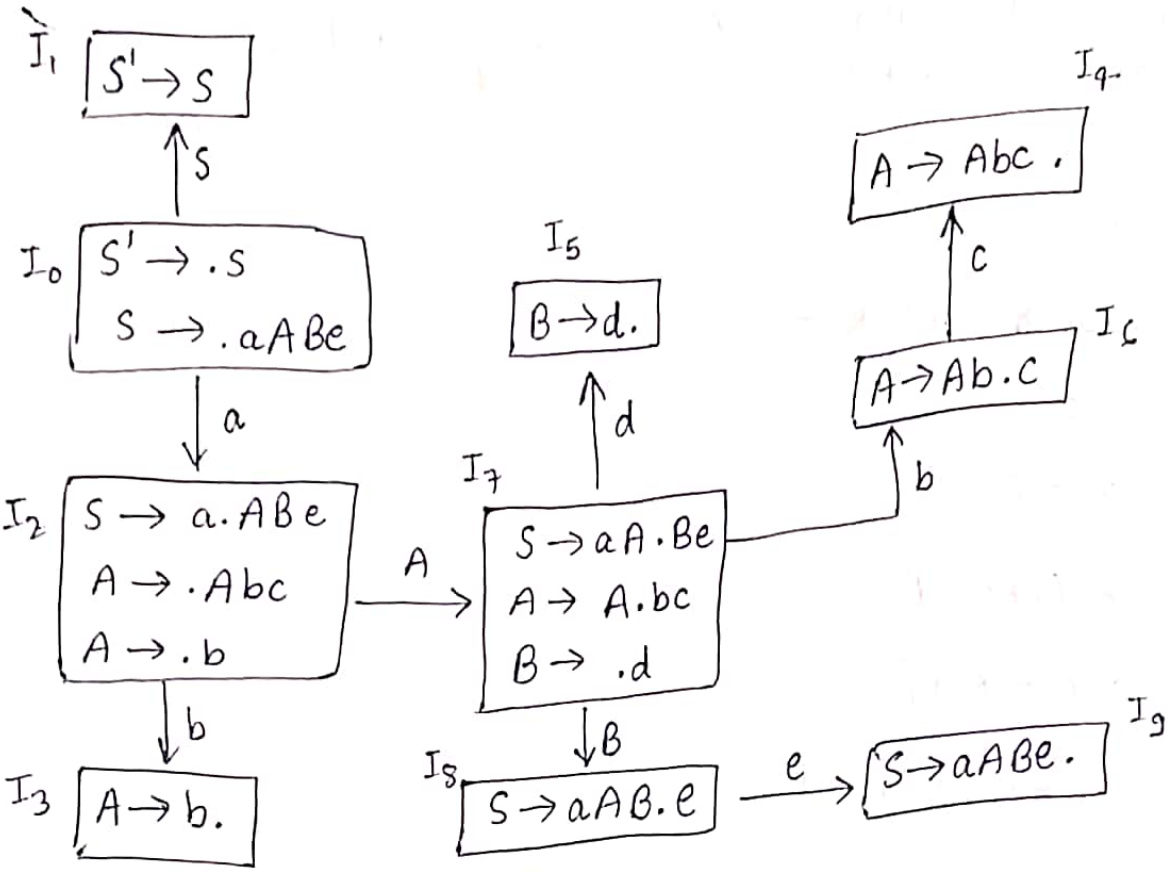
$\Rightarrow$ $abc * + de - /$

(2) Grammar:

0: $S' \rightarrow S$
1: $S \rightarrow aABe$
2: $A \rightarrow Abc$
3: $A \rightarrow b$
4: $B \rightarrow d$

Terminals : a, b, c, d, e, $

Non-terminal :- S, A, B



	a	b	c	d	e	$	S	A	B
0	S2						1		
1						accept			
2		S3						7	
3	r3	r3	r3	r3	r3	r3			
4	r2	r2	r2	r2	r2	r2			
5	r4	r4	r4	r4	r4	r4			
6			S4						
7		S6		S5					8
8					S9				
9	r1	r1	r1	r1	r1	r1			

For the input string : abbcde

S.No.	Stack	Symbols	Input	Action
0	0		abbcde$	S2
1	02	a	bbcde$	S3
2	023	ab	bcde$	$r_3 : A \rightarrow b$
3	027	aA	bcde$	S6
4	0276	aAb	cde$	S4
5	02764	aAbc	de$	$r_2 : A \rightarrow Abc$
6	027	aA	de$	S5
7	0275	aAd	e$	$r_4 : B \rightarrow d$
8	0278	aAB	e$	S9
9	02789	aABe	$	$r_1 : S \rightarrow aABe$
10	01	S		accept

Where the reduce actions are :

$r_1 : S \rightarrow aABe$

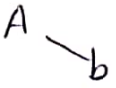
$r_2 : A \rightarrow Abc$

$r_3 : A \rightarrow b$

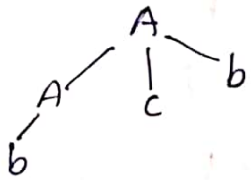
$r_4 : B \rightarrow d$

∴ Parse-Tree for the input string abbcde :

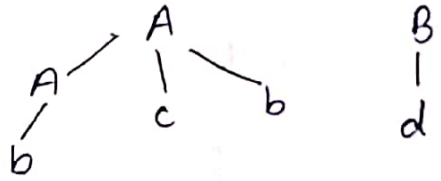
(i) $A \to b$:



(ii) $A \to AbC$:



(iii) $B \to d$:



(iv) $S \to aABe$