سوال ۳)

1) $S \to Ad S \mid Ba$

• $A \to aB \mid Ab$

$B \to Bd \mid \lambda$

First	Follow
$\{a, d, \varepsilon\}$	$\{\$\}$
$\{a\}$	$\{d, b\}$
$\{\varepsilon, d\}$	$\{a, b, d\}$

→ LL1 نیست.

$Follow(A) = \{d\} \cup \{b\}$ ، $Follow(B) = \{d\} \cup \{a\} \cup Follow(A)$

	a	b	d	$
S	$S \to Ba$ $S \to Ads$		$S \to Ba$	$S \to \varepsilon$
A	$A \to aB$ $A \to Ab$			
B	$B \to \varepsilon$	$B \to \varepsilon$	$B \to Bd$ $B \to \varepsilon$	

برای تبدیل به LL1:

Eliminate left recursion ، simplify ، Extract left common factor ، Generate firsts ، Generate follows ، Generate table

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۲) $S \to A$

$A \to xAx \mid C$

$B \to yBy \mid C$

$C \to zBz \mid wAw \mid \lambda$

FIRST
$\{x, z, w, \varepsilon\}$
$\{x, z, w, \varepsilon\}$
$\{y, x, z, w, \varepsilon\}$
$\{z, w, \varepsilon\}$

FOLLOW
$\{\$\}$
$\{x, w, \$\}$
$\{y, z\}$
$\{x, y, z, w, \$\}$

→ LL1 نیست

$FOLLOW(A) = \underbrace{Follow(S)}_{\$} \cup \{x\} \cup \{w\}$

$Follow(B) = \{y\} \cup \{z\}$ ، $Follow(C) = Follow(A) \cup Follow(B)$

	x	y	z	w	$
S	$S \to A$		$S \to A$	$S \to A$	$S \to \varepsilon$
A	$A \to xAx$		$A \to C$	$A \to C$	
B					
C					

1) $E \rightarrow TE'$

2) $E' \rightarrow +TE' \mid \lambda$

3) $T \rightarrow FT'$

4) $T' \rightarrow *FT' \mid \lambda$

5) $F \rightarrow id \mid (E)$

Follow(E') = Follow(E)

Follow(T) = First(E')

Follow(T') = Follow(T)

Follow(F) = First(T')

	FIRST	Follow
1)	{id, (}	{$,)}
2)	{+, ε}	{$,)}
3)	{id, (}	{+, $,)}
4)	{*, ε}	{+, $,)}
5)	{id, (}	{*, +, $,)}

	id	(	)	*	+	$
E	$E \rightarrow TE'$	$E \rightarrow TE'$				
E'			$E' \rightarrow \varepsilon$		$E' \rightarrow +TE'$	$E' \rightarrow \varepsilon$
T	$T \rightarrow FT'$	$T \rightarrow FT'$				
T'			$T' \rightarrow \varepsilon$	$T' \rightarrow *FT'$	$T' \rightarrow \varepsilon$	$T' \rightarrow \varepsilon$
F	$F \rightarrow id$	$F \rightarrow (E)$