Syntax - Analysis

First and Follow

① Calculate the first and follow function for the given grammar's:

	First ()	Follow ()
$S \rightarrow (L)/a$	$\{ (, a \}$	$\{ \$, , ,) \}$
$L \rightarrow S L' E$	$\{ (, a, \}$	$\{) \}$
$L' \rightarrow , S L' / E$	$\{ , , E \}$	$\{), \}$

②

	First ()	Follow ()
$S \rightarrow ACB \| cbB \| Ba$	$\{ d, g, h, E, b, a \}$	$\{ \$ \}$
$A \rightarrow da / BC$	$\{ d, g, h, E \}$	$\{ h, g, \$ \}$
$B \rightarrow g / E$	$\{ g, E \}$	$\{ \$, a, h, g \}$
$C \rightarrow h / E$	$\{ h, E \}$	$\{ g, \$, b, h \}$

③

	First ()	Follow ()
$S \rightarrow t ABCD$	$\{ t \}$	$\{ \$ \}$
$A \rightarrow qt/t$	$\{ q, t \}$	$\{ r, q, p \}$
$B \rightarrow r / E$	$\{ r, E \}$	$\{ r, p \}$
$C \rightarrow q/E$	$\{ q, E \}$	$\{ p \}$
$D \rightarrow p$	$\{ p \}$	$\{ \$ \}$

④	First ()	Follow ()
$S \rightarrow AbBaCc/\varepsilon$	$\{a, b, \varepsilon\}$	$\{\$\}$
$A \rightarrow aAb/ba$	$\{a, b\}$	$\{b\}$
$B \rightarrow bBC/cb$	$\{b, c\}$	$\{a, c\}$
$C \rightarrow cCa/ac$	$\{c, a\}$	$\{c, a, \}$

⑤

	First	Follow
$E \rightarrow TE'\lambda$	$\{ (, id \}$	$\{ \$,) \}$
$E' \rightarrow +TE' / \lambda$	$\{ +, \lambda \}$	$\{ \$,) \}$
$T \rightarrow FT'\lambda$	$\{ (, id \}$	$\{ +, \$,) \}$
$T' \rightarrow *FT'\lambda / \lambda$	$\{ *, \lambda \}$	$\{ +, \$,) $
$F \rightarrow (E) / id$	$\{ (, id \}$	$\{ *, +, \$,) \}$

Note:- Here λ is count as epsilon