

4.

产生式: $expr \rightarrow expr \mid$

$expr \rightarrow term$

$term \rightarrow term \&\& factor$

$term \rightarrow factor$

$factor \rightarrow !factor \mid$

$factor \rightarrow (expr)$

$factor \rightarrow \mid$

$factor \rightarrow 0$

语义规则: $expr.val = term.val$

$term.val = term1.val \text{ AND } factor.val$

$term.val = factor.val$

$factor.val = \text{NOT } factor1.val$

$factor.val = expr.val$

$factor.val = \mid$

$factor.val = 0$

语法树: $expr.t = 0$

