1. 解：(a) 用继承属性 d 作为深度，附有下面的语法制导翻译方案

$S' \to \{S.d = 0;\}\ S$

$S \to \{L.d = S.d + 1;\}\ (L)$

$S \to a \quad \{print(S.d);\}$

$L \to \{L_1.d = L.d;\}\ L_1, \{S.d = L.d;\}\ S$

$L \to \{S.d = L.d\}\ S$

(b) 用继承属性 ipos，综合属性 spos 分别记录该文法符号推出的首个字符前面字符的数量，推出的最后一个字符的位置

$S' \to \{S.ipos = 0;\}\ S$

$S \to \{L.ipos = S.ipos + 1\}\ (L) \quad \{S.spos = L.spos + 1\}$

$S \to a\ \{S.spos = S.ipos + 1;\ print(S.spos);\}$

$L \to \{L_1.ipos = L.ipos;\}\ L_1, \{S.ipos = L_1.spos + 1\}\ S \quad \{L.spos = S.spos\}$

$L \to \{S.ipos = L.ipos;\}\ S \quad \{L.spos = S.spos;\}$

2. 解：

$E \to E_1 + T$	$E.nptr = mkNode('+', E_1.nptr, T.nptr)$	$s[top-2] = mkNode(s[top-1], s[top-2], s[top])$
$E \to E_1 - T$	$E.nptr = mkNode('-', E_1.nptr, T.nptr)$	$s[top-2] = mkNode(s[top-1], s[top-2], s[top])$
$E \to T$	$E.nptr = T.nptr$	$s[top] = s[top]$ (可省略)
$T \to (E)$	$T.nptr = E.nptr$	$s[top-2] = s[top-1]$
$T \to id$	$T.nptr = mkLeaf(id, id.entry)$	$s[top] = mkLeaf(id, s[top])$
$T \to num$	$T.nptr = mkLeaf(num, num.val)$	$s[top] = mkLeaf(id, s[top])$

3. 解：(a) a>b or true and not c<f

假设下条指令从 100 开始

(100) if a>b goto –

(101) goto 102

(102) goto 103

(103) if c<f goto –

(104) goto –

且 B.truelist = {100, 104}

B.falselist = {103}

(b) 答题

(200) if a > b goto –
(201) goto 202
(202) goto 203
(203) if c < f goto –
(204) goto –