

a) " if condition then if condition then a:=1 else a:=1 "

It's ambiguous whether the else goes with the first or second if.

b) ①  $\langle \text{stmt} \rangle \rightarrow \langle \text{Assign} \rangle \mid \langle \text{ifThen} \rangle \mid \langle \text{ifThenElse} \rangle \mid \langle \text{BeginEnd} \rangle$   
 $\langle \text{ifThen} \rangle \rightarrow \text{if condition then } \{ \langle \text{stmt} \rangle \}$   
 $\langle \text{ifThenElse} \rangle \rightarrow \text{if condition then } \{ \langle \text{stmt} \rangle \} \text{ else } \{ \langle \text{stmt} \rangle \}$   
 $\langle \text{BeginEnd} \rangle \rightarrow \text{begin } \langle \text{stmtList} \rangle \text{ end}$   
 $\langle \text{Assign} \rangle \rightarrow a := 1$

②  $\langle \text{stmt} \rangle \rightarrow \langle \text{Assign} \rangle \mid \langle \text{ifThen} \rangle \mid \langle \text{ifThenElse} \rangle \mid \langle \text{BeginEnd} \rangle$   
 $\langle \text{ifThen} \rangle \rightarrow \{ \text{if condition then } \langle \text{stmt} \rangle \}$   
 $\langle \text{ifThenElse} \rangle \rightarrow \{ \text{if condition then } \langle \text{stmt} \rangle \text{ else } \langle \text{stmt} \rangle \}$   
 $\langle \text{BeginEnd} \rangle \rightarrow \text{begin } \langle \text{stmtList} \rangle \text{ end}$   
 $\langle \text{Assign} \rangle \rightarrow a := 1$