S: Start Symbol

B: Block

V: Declaration of Variables

P: Procedure declaration

Ins: Sequence of instructions

Cm: Command

CtS: Control Structure

Id: Variable or procedure identifier

S → “kw ROBOT\_R”*,* B

\*S → “kw ROBOT\_R”*,* V*,* P*,* B

B → “sp [“*,* Ins*,* “sp ]“

\*V → “kw VARS”*,* Ids*,* “sp ;”

Ins → Cm

Ins → CtS

Ins → Id

Ins → assignTo

Ins → goto

Ins → move

Ins → turn

Ins → face

Ins → put

Ins → pick

Ins → moveToThe

Ins → moveInDir

Ins → jumpToThe

Ins → jumpInDir

Ins → nop

Ins → “cm assignTo”*,* “sp :”*,* int*,* Id*,* Ins

GOTO → “cm goto”*,* “sp :”*,* x*,* “sp ,”*,* y*,* Ins

x → Int

y → Int

x → id

y → id

Ins → λ

I

Kw ROBOT\_R B

Sp [ Ins sp ]

cm goto sp : x sp *,* y ins

int int λ

3 5