Ans

9 Consider the following gramar

$\langle S \rangle \rightarrow \langle A \rangle a \langle B \rangle b$

$\langle A \rangle \rightarrow \langle A \rangle b | b$

$\langle B \rangle = a \langle B \rangle | a$

- baab
- bb aaaaaS
- bbbab
- bbaab

(i) $S \rightarrow \langle A \rangle a \langle B \rangle b$

$\downarrow$

$b a \langle B \rangle b$

$\downarrow$

$ba ab$

Generated by gramer.

(ii) bbbab

$S \rightarrow \langle A \rangle a \langle B \rangle b$

$\downarrow$

$\langle A \rangle b a \langle B \rangle b$

bba

Not possible

(iii) bbaaaaaS

$S \rightarrow \langle A \rangle a \langle B \rangle b$

↓

$\langle Bb \; a \langle B \rangle a \; b$

↓

$bb \; a \langle B \rangle a \; a \; b$

$bb \; a \; a \; a \; a \; a \; b$

Not possible

(iv) bbaab

~~$S \rightarrow a \langle A \rangle c \langle B \rangle \mid \langle A \rangle \mid b$~~

$S \rightarrow \langle A \rangle a \langle B \rangle b$

↓

$\langle Bb \; a \langle a \rangle b$

↓ ↓

$bb \; a \; a \; b$

Generated by grammar

4] Consider the following gramm.

$\langle S \rangle \rightarrow a \langle S \rangle c \langle B \rangle \mid \langle A \rangle \mid b$

$\langle A \rangle \rightarrow c \langle A \rangle \mid c$

$\langle B \rangle \rightarrow d \mid \langle A \rangle$

abcd

(i) $S \rightarrow a\langle S\rangle c\langle B\rangle$

$a\ b\ c\ d.$ using grammar $S \rightarrow b$ and $\langle B\rangle \rightarrow d$

(ii) acccbd

$S \rightarrow a\langle S\rangle c\langle B\rangle$

~~abc~~

$ac\langle A\rangle cd$ using $\langle S\rangle \rightarrow \langle A\rangle \rightarrow c\langle A\rangle$ and $\langle B\rangle \rightarrow d.$

↓

acccd.

∴ Not possible with the gramma.

(iii) acccbcc

$S \rightarrow a\langle S\rangle c\langle B\rangle$

$S \rightarrow a\langle A\rangle c\langle B\rangle$

$acccc\langle A\rangle$

$acccX$

∴ Not possible with gramma.

iv) acd

$S \rightarrow a\langle S\rangle c\langle B\rangle$

$a\langle S\rangle c\ d$

∴ Not possible with gram

(v) accc

$S \rightarrow a\langle S\rangle c\langle B\rangle$

$a\langle A\rangle c\langle A\rangle$

$a\ c\ c\ c$

using $\langle S\rangle \rightarrow \langle A\rangle$

$\langle B\rangle \rightarrow \langle A\rangle$

∴ Possible with grama