SEC-6

(3) $S \to aB \mid bA$, $A \to a \mid aS \mid bAA$, $B \to b \mid bS \mid aBB$. Identify the string obtained from this grammar.

Let us consider a grammar.

$G_1 = (\{S, A, B\}, \{a, b\}, P, S)$ where S is the start symbol and P is given by

$S \to bA \mid aB$, $A \to bAA \mid aS \mid a$, $B \to aBB \mid bS \mid b$

Now let us find an equivalent CFG of it. As we know that right side in CFG either contains two non terminal or one terminal.

So, it is clear that in the first production above we have to replace terminal 'b' by a non-terminal say 'C_b' and 'a' by 'C_a' hence grammar becomes

$S \to C_bA \mid C_aB$ $A \to C_bAA \mid C_aS \mid a$

$B \to C_aBB \mid C_bS \mid b$, $C_a \to a$

$C_b \to b$