CFG- Introduction problem

(1) $S \to AB$

$A \to a$

$B \to b$

Soln:

Here $V = S, A, B$

$T = a, b$

$P = \{S \to AB, A \to a, B \to b\}$

$S = S$

$L(S) = ab$

$L(A) = a$

$L(B) = b$

(2) $S \to AB$, $A \to aA \mid a$, $bB \mid b$

$V = S, A, B$

$T = a, b$

$P = \{S \to AB, A \to aA \mid a, A \to bB \mid b\}$

$S = S$

$L(S) = \{ab, abb, abbb, aab, aabb, aabbb, \ldots\}$

$L(A) = \{a, aa, aaa, aaaa, \ldots\}$

$L(B) = \{b, bb, bbb, \ldots\}$

Construction of CFG from Language

* $L = \{a^n / n \text{ is odd}\}$

  $A \rightarrow aaA \mid a$

* $L = \{a^n / n \text{ is even}\}$

  $A \rightarrow aaA \mid \epsilon$.

* L consists of palindrome of strings over $\{a, b\}$

  $L = \{aba, bab, abba, baab, \ldots\}$

  $S = \{asa \mid bsb \mid a \mid b \mid aa \mid bb \mid \epsilon\}$