Grammar

$J \rightarrow H \mid A$

$H \rightarrow hP_H \mid htR_H \mid hfF_A \mid hoI_A$

$A \rightarrow aP_A \mid atR_A \mid afF_H \mid aoI_H$

$P_H \rightarrow xH \mid sB_H \mid yA$

$P_A \rightarrow xA \mid sB_A \mid yH$

$I_H \rightarrow iH \mid iA \mid I_A$

$I_A \rightarrow iA \mid iH \mid I_H$

$B_H \rightarrow mI_A \mid nrH \mid nrA \mid noI_A \mid F_H \mid m \mid n$

$B_A \rightarrow mI_H \mid nrH \mid nrA \mid noI_H \mid F_A \mid m \mid n$

$R_H \rightarrow bH \mid gI_H$

$R_A \rightarrow bA \mid gI_A$

$F_H \rightarrow I_H \mid F_H \mid sB_H$

$F_A \rightarrow I_A \mid F_A \mid sB_A$