Homework Set 3

Problem 1: 2.3 (In the problem statement, as usual all upper-case letters denote variables, and lower-case letters denote terminals. The first line of the substitution rules involves variable \( R \), which should not be confused with the notation \( R \) in the definition of CFG denoting the set of all substitution rules.)

Problem 2: 2.6 (b)(d)

Problem 3: 2.7 (for (b)(d) only)

Problem 4: 2.13

Problem 5: Convert the following CFG \( G = (V, \Sigma, R, S) \) to an equivalent PDA. (You should use either the conversion procedure given in class, or the one given in the textbook.)

\[
V = \{S, Z, X, A\}, \Sigma = \{0, 1\}
\]

and \( R \) consists of the substitution rules:

\[
S \rightarrow ZX, \ X \rightarrow AA, \ A \rightarrow ZS, Z \rightarrow 0, \ A \rightarrow 1
\]

Problem 6: 2.25

Problem 7: 2.26