Q1 : Show that $\text{EQ}_{\text{CFG}}$ is undecidable. Show that $\text{EQ}_{\text{CFG}}$ is co-Turing-recognizable.

Q2 : Show that no computable function reduces $A_{\text{TM}}$ to $E_{\text{TM}}$.

Q3 : Show that if $A$ is Turing-recognizable and $A \leq_m \overline{A}$, then $A$ is decidable.

Q4 : Show that the Post Correspondence Problem is decidable over the unary alphabet $\Sigma = \{1\}$. In the Silly Post Correspondence Problem, SPCP, in each pair the top string has the same length as the bottom string. Show that the SPCP is decidable.

Q5 : Prove that there exists an undecidable subset of $\{1\}^*$.

Q6 : Show that $A$ is decidable iff $A \leq_m 0^*1^*$.

Q7 : Let $S = \{(G) : G$ is a CFG and $L(G)$ is unambiguous$\}$. Show that $S$ is not decidable.

Q8 : Consider the problem of determining whether a PDA accepts some string of the form $\{ww : w \in \{0,1\}^*\}$. Use the computation history method to show that this problem is undecidable.