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Modern Complexity Theory

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Assignment 1

Problem 1 (3 points)**:**
Suppose that there is a computer that enumerates the set of all possible questions Q. Show that in this case every acceptable decision problem $P \subseteq Q$ is computably enumerable.

Problem 2 (3 points)**:**
Construct a single-tape DTM that decides the language $L = \{a^n b^n c^n : n \in \mathbb{N}\}$.

Problem 3 (4 points)**:**
Show that RP $\subseteq$ BPP and that BPP $\subseteq$ PSPACE.