

Term Test # 1
(Duration: 50 minutes)

Question 1. [20 MARKS]

Design a single-tape deterministic TM that given an input w ends up with $w \sqcup w$ on the tape with the head pointing to the leftmost character. Assume the input alphabet is $\Sigma = \{0, 1\}$. You should also provide a high level description of your TM in words.

Question 2. [20 MARKS]

Let $T = \{\langle M \rangle \mid M \text{ is a TM with } |\mathcal{L}(M)| = 5\}$. Does $T \in SD$? Does $T \in coSD$? Justify your answers. (You can assume the input alphabet is $\Sigma = \{0, 1\}$.)

Assignment Project Exam Help

<https://powcoder.com>

Add WeChat powcoder