

Problem 1: Design a circuit to measure $x \in [200 \text{ K}, 400 \text{ K}]$, temperature, using a platinum RTD with response $H_t(x) = R_0(1 + \alpha_1 x + \alpha_2 x^2)$, where $R_0 = 250 \Omega$, $\alpha_1 = 0.00398 / ^\circ\text{C}$, and $\alpha_2 = -5.83 \times 10^{-7} / ^\circ\text{C}^2$. Convert the temperature to floating-point number $H(x) = x / \text{K}$, to be written into variable `tee`.

- The temperature written should have a precision of ± 0.1 .
- The voltage across the RTD must be 1.3 V (at all temperatures).
- Within $x \in [200 \text{ K}, 400 \text{ K}]$, the input to the ADC must be no lower than 5% and no higher than 95% of its maximum input voltage. (Assuming the minimum input to the ADC is 0 V, like the type described in class.)

Show all component and supply values. Show pseudocode for the interface routine.