9. Experiment (15 pts)

The black box contains a nonlinear element (active resistance) and a capacitor, connected sequentially. Find the capacitance C of the capacitor (5 pts) and the $V - I$ characteristic of the nonlinear element (6 pts). Note that *(a)* the electrolytic capacitor accepts only one polarity of charge (indicated by the colors of the output wires of the black box); *(b)* the $V - I$ characteristic cannot be expected to be symmetric with respect to $I = 0$. However, you are requested to study the range $I > 0$ corresponding to the discharge of the capacitor. Tabulate your measurement data and draw appropriate graphs (4 pts). Experimental equipment: batteries, wires, multimeter, stopwatch, graphic paper.