

Name _____ Instructor name _____

You must show and explain all work neat and organized to receive credit. Please show each step for calculations. YOU MUST TURN IN THIS SHEET to have your assignment graded.

1. (a) Define capacitance and write the expression for the capacitance of a parallel plate capacitor. (b) On what parameters does capacitance typically depend? (c) When a capacitor is fully charged in an RC circuit, how much current exists in it? (d) Calculate the area of a 2.05 F parallel plate capacitor having a plate separation of 4.50 mm . (15 pts)

2. (a) Write an expression for the potential difference V_C as a function of time across the capacitor in the circuit shown in the figure below. (b) If the battery in the circuit is removed, the capacitor discharges through the resistor. Write the expression for V_C as a function of time during the discharge. (5 pts)

