

Do on a separate sheet of paper!

Capacitor & Circuits Practice

- The first capacitor was invented by Pieter van Musschenbroek in 1745 when he and his assistant stored charge in a device called a Leydan jar. If  $5 \times 10^{-4}$  C of charge were stored in the jar over a potential difference of 10,000 V, what was the capacitance of the Leydan jar?
- The nervous system of the human body contains axons whose membranes each act as small capacitors. A membrane is capable of storing  $1.2 \times 10^{-9}$  C of charge across a potential difference of 0.070 V before discharging nerve impulses through the body. What is the capacitance of one of these axon membranes?
- On Saturday nights, Greg likes to go to the Disco, where he can dance under the strobe light. The strobe contains a 200.  $\mu$ F capacitor that stores charge over a 1000. V potential difference. If the strobe flashes four times per second, what is the current flow created by the strobe's capacitor?
- Amber accidentally leaves the headlights on overnight and is unable to start the car in the morning. The two headlights connected in parallel each draw 2.00 A of current from the 12.0 V battery. If the battery stores  $7.50 \times 10^5$  J of energy, how long will it take for the headlights to go off? Why are the headlights connected in parallel?
- Find the current in each resistor for each of the circuits.

