Phys 222 SI Session #10

Topics: Capacitors

Intro discussion: Who would win in a fight: one 500-lb duck or 500 1-lb ducks?

1. What is the total capacitance of the circuit below?

![Circuit Diagram]

2. The charge on the square plates of a parallel-plate capacitor is Q. The potential across the plates is maintained with constant voltage by a battery as they are pulled apart to twice their original separation, which is small compared to the dimensions of the plates. The amount of charge on the plates is now equal to what factor of Q?

3. The capacitors in the network shown in the figure all have a capacitance of 5.0 μF. What is the equivalent capacitance, $C_{ab}$, of this capacitor network?

4. What is the total capacitance between the two points in the picture at right?

5. A spherical capacitor with inner radius 4 mm and outer radius 5 mm is connected in parallel with a cylindrical capacitor with the same inner and outer radii and length 85 cm. What is the charge stored when the total voltage across the capacitors is 13 V?

6. If a square capacitor has side 6 cm and the distance between the plates is 0.15 mm, what is the charge on the capacitor when the voltage across it is 15 V?