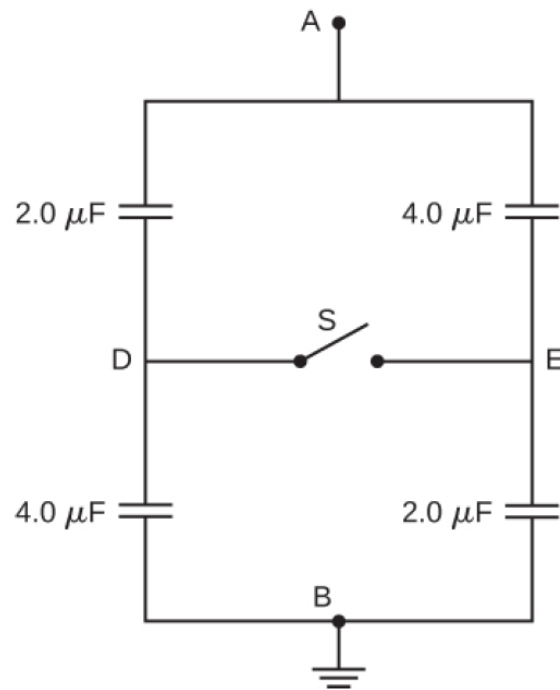
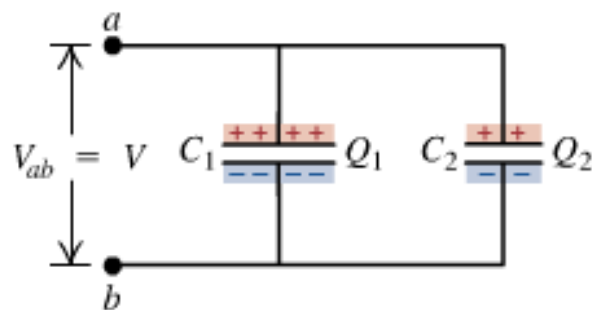


1. A spherical capacitor is formed from two concentric spherical conducting spheres separated by vacuum. The inner sphere has radius 12.5 cm and the outer sphere has radius 14.8 cm. A potential difference of 120 V is applied to the capacitor. (a) What is the capacitance of the capacitor? (b) What is the net charge,  $Q$ , on the outer or inner spheres? Note that the outer and inner sphere carry same amount of charge  $Q$  but opposite sign. (c) What are the surface charge densities of the outer and inner spheres?

2. When the network of capacitors shown in the figure are connected to a 300-V potential different between points A and B with the switch S open, (a) What is the potential difference  $V_E - V_D$ ? (b) What is the potential at point E after the switch is closed? (c) How much charge flows through the switch after it is closed?



3. In the figure, let  $C_1 = 9.0 \mu F$ ,  $C_2 = 4.0 \mu F$ , and  $V_{ab} = 36 V$ . Suppose the charged capacitors are disconnected from the source and from each other, and then



reconnected to each other with plates of opposite sign together. By how much does the energy of the system decrease?