Physics 126 Discussion #4: Chapter 19.5-19.6

1. A 0.47 µF parallel plate capacitor has \(7.1 \times 10^{-5}\) C of charge on its plates which are separated by 0.052 mm. What is the magnitude of the electric field between the plates?

2. An empty 15 µF parallel plate capacitor is charged by a 12 V battery. The battery remains connected, and the region between the plates of the capacitor is filled with pure water. What is the new capacitance of the capacitor and the new charge on the plates of the capacitor?

3. An air filled parallel plate capacitor has a plate separation of 0.15 mm. What plate area is required for the capacitor to have a capacitance of 33 µF?

4. Two parallel plate capacitors, one air filled and the other filled with paper, are otherwise identical and hold the same charge, q. Which capacitor has stored more energy? How much more?