1) A fully charged parallel-plate capacitor remains connected to a battery while you slide a dielectric between the plates. Do the following quantities (a) increase, (b) decrease, or (c) stay the same? (i) C (ii) Q (iii) ΔV (iv) the energy stored in the capacitor. Explain your reasoning.

2) A fully charged parallel-plate capacitor is disconnected to the battery while you slide a dielectric between the plates. Do the following quantities (a) increase, (b) decrease, or (c) stay the same? (i) C (ii) Q (iii) ΔV (iv) the energy stored in the capacitor. Explain your reasoning.

3) A parallel-plate capacitor is connected to a battery. What happens to the stored energy if the plate separation is doubled while the capacitor remains connected to the battery? Explain your reasoning.