Lesson #26: Energy in Dielectric Systems **Name:** _____

Study section 4.4.3, then answer the following questions.

1. When a dielectric (dielectric constant ε_r) is inserted between the plates of a capacitor, the electric field between the plates **increases / decreases / stays the same** *(circle one)*, assuming the charge on the plates stays constant. Now explain in a sentence or two why this makes physical sense.

2. When a dielectric (dielectric constant ε_r) is inserted between the plates of a capacitor, the potential difference between the plates **increases / decreases / stays the same** *(circle one)*, assuming the charge on the plates stays constant. Now explain in a sentence or two why this makes physical sense.

3. When a dielectric (dielectric constant ε_r) is inserted between the plates of a capacitor, the capacitance of the capacitor **increases / decreases / stays the same** *(circle one)*. Now explain in a sentence or two why this makes physical sense.

4. When a dielectric (dielectric constant ε_r) is inserted between the plates of a capacitor, the energy stored in the capacitor **increases / decreases / stays the same** *(circle one)*, assuming the charge on the plates stays constant. Now explain in a sentence or two why this makes physical sense.

5. When a dielectric (dielectric constant ε_r) is inserted between the plates of a capacitor, the energy stored in the capacitor **increases / decreases / stays the same** *(circle one)*, assuming the <u>voltage</u> on the plates stays constant. Now explain in a sentence or two why this makes physical sense.