

1. A parallel-plate capacitor is shown in the diagram with plate area of $A = 10.5 \text{ cm}^2$ and plate separation $2d = 7.12 \text{ mm}$. The left half of the gap is filled with material of dielectric constant $\kappa_1 = 21.0$; the top of the right half is filled with material of dielectric constant $\kappa_2 = 42.0$; the bottom of the right half is filled with material of dielectric constant $\kappa_3 = 58.0$. What is the capacitance?

[4 marks]

