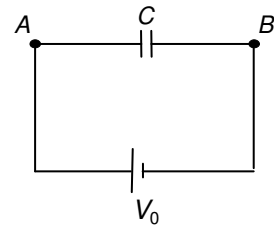


CAPACITOR PROBLEM

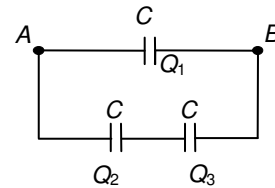
A capacitor with capacitance C is connected to a battery giving a voltage V_0 in order to charge it.

- a) Which is the charge taken by each plate of capacitor?



The battery is removed and the capacitor is connected to two equal capacitors (the same capacitance C than the first one) as can be seen on drawing.

- b) Without using the concept of equivalent capacitance (only writing equations of preservation of charge and difference of potential on circuit), compute the charge and the difference of potential on each capacitor (Q_1 , Q_2 , Q_3 , V_1 , V_2 and V_3).



The plates of **second** capacitor are approached each other up to a half of the previous distance, and the **third** capacitor is filled with a dielectric of relative dielectric permittivity $\epsilon_r = 4$.

- c) Using the concept of equivalent capacitance, compute charge, difference of potential and stored energy on each capacitor (Q'_1 , Q'_2 , Q'_3 , V'_1 , V'_2 , V'_3 , W_1 , W_2 and W_3).