

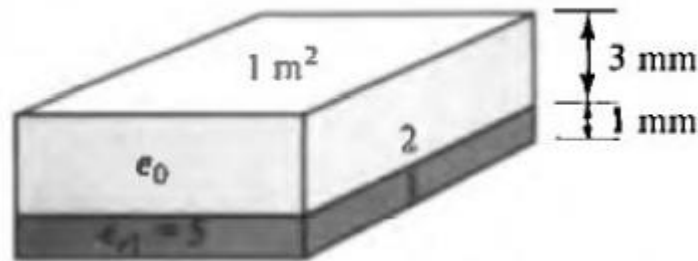
Lab7 (4/3/16)

Question.1

Find the stored energy in the system of four identical point charges, $Q=4\text{nC}$, at the corners of a square 1m on a side. What is the stored energy in the system when only two charges at opposite corners are in place?

Question.2

Find the voltage across each dielectric in the capacitor shown in figure below when the applied voltage is 200V.



Question.3

- Find the magnitudes of D and P for a dielectric material in which $E=0.15\text{MV/m}$ and $\chi_e=4.25$.
- A conductor of uniform cross section and 150 m long has a voltage drop of 1.3 V and a current density of $4.65 \times 10^5\text{ A/m}^2$. What is the conductivity of the material in the conductor.
- What energy is stored in the system of two point charges, $Q_1=3\text{nC}$ and $Q_2=-3\text{nC}$, separated by a distance of $d=0.2\text{m}$?

Question.4

A coaxial capacitor with inner radius 5mm , outer radius 6mm and length 500mm has a dielectric for which $\epsilon_r=6.7$ and an applied voltage $250\sin 377t$. Determine the displacement current i_D and compare with the conduction current i_C .