

ESERCIZIO 5, svolgimento

1. Formula del condensatore: $Q = C\Delta V$

Per un condensatore a facce piane parallele distanti d e di area A : $C = \varepsilon_0 \varepsilon_r \frac{A}{d}$

Quindi

$$Q = \varepsilon_0 \varepsilon_r \frac{A}{d} \Delta V = 8,85 \times 10^{-12} \times 9 \times \frac{10^{-4}}{80 \times 10^{-10}} \times 90 \times 10^{-3} C = 89,6 \text{ nC}$$

$$2. C = \frac{Q}{\Delta V} = \frac{89,6 \times 10^{-9}}{90 \times 10^{-3}} = 1,0 \mu F$$

$$3. En = \frac{1}{2} C \Delta V^2 = \frac{1}{2} \times 1,0 \times 10^{-6} \times (90 \times 10^{-3})^2 = 4,0 \text{ nJ}$$