2018 Ph H1 Q18

Section: Electricity

Topic: Capacitors

Question Summary

A 220 μF capacitor is connected across a 12 V supply. Find the maximum energy stored when fully charged.

Worked Solution

Energy stored: $E = \frac{1}{2} C V^2$.

$C = 220\ \mu F = 220 \times 10^{-6}\ F = 2.20 \times 10^{-4}\ F$.
$E = \frac{1}{2} \times 2.20 \times 10^{-4} \times 12^2 = 0.5 \times 2.20 \times 10^{-4} \times 144 \approx 1.58 \times 10^{-2}\ J$.

Final Answer: D

Revision Tips

- Use $E = \frac{1}{2} C V^2$ to calculate stored energy.
- Check μ prefix carefully: $220\ \mu F = 2.20 \times 10^{-4}\ F$.
- Energy is measured in joules (J).