Question

What is the thermal energy developed when a current of 1.5 A passed through a resistor of resistance of 10ohm for 10 seconds ?

Solution

We are given:

$I=1.5A$
$R=10\ Ohm$
$t=10\ s$

According to the Joule-Lenz law: $Q = I^2 \cdot R \cdot t$.

where Q – thermal energy (J), I - current (A), R – resistance (Ohm), t-time (s).

Calculating: $Q = I^2 \cdot R \cdot t = 1.5^2 \cdot 10 \cdot 10 = 22.5\ J$

Answer: **22.5 J**