2022 Ph H1 Q19

Section: Electricity

Topic: Current, PD, Power, Resistance

Question Summary
Three resistors are connected to a 3.0 V supply: a 9.0 Ω in series with a parallel combination of two 6.0 Ω resistors. Find the total power dissipated in the circuit.

Worked Solution
Parallel pair: $R_p = (6\times6)/(6+6) = 36/12 = 3.0\ \Omega$.
Series total: $R_{total} = 9.0 + 3.0 = 12.0\ \Omega$.
Circuit current: $I = V/R = 3.0 / 12.0 = 0.25$ A.
Power: $P = VI = 3.0 \times 0.25 = 0.75$ W.

Final Answer: C

Revision Tips

- Combine parallel first (use product over sum for two resistors).
- Total power for whole circuit can be found by P = VI using supply V and total I.
- Cross-check: P = V²/R_total = 9 / 12 = 0.75 W (same result).