# 2021 Ph H1 Q22

Section: Electricity

Topic: Current, PD, Power, Resistance

Question Summary
A resistor has resistance R = 100 Ω and a maximum power rating of 4.0 W. Find the maximum voltage that can be applied across the resistor without exceeding its rating.

Worked Solution
Use $P = V^2/R$.

Rearrange: $V = \sqrt{(PR)}$.

Substitute: $V = \sqrt{(4.0 \times 100)} = \sqrt{400} = 20$ V.

Final Answer: C

Revision Tips

- Power relations: $P = VI = I^2R = V^2/R$ — pick the form that fits the data.
- Component power ratings limit safe V and I; exceeding them risks damage.
- Keep significant figures appropriate to the given data (here, 2–3 s.f.).