

21 AC power and r.m.s. — Part 2 — Answers

Answers

Work through these after trying the questions yourself.

21.1 Because power depends on I^2 , and squaring makes it positive.

21.2 One half.

21.3 The steady d.c. value that gives the same average power.

21.4 $V_{\text{rms}} = V_0/\sqrt{2}$.

21.5 $V_{\text{rms}} = 340/\sqrt{2} \approx 240 \text{ V}$.

21.6 They deliver the same average power, so the r.m.s. value of the a.c. is equal to the d.c. value. That is exactly what “r.m.s.” means.

21.7 The “230 V” is the r.m.s. value. The peak is $V_0 = V_{\text{rms}}\sqrt{2} = 230 \times 1.41 \approx 325 \text{ V}$ — the voltage actually reaches this much at the top of each cycle.