

Q 17 A 220 volt, 1000 watt bulb is connected across a 110 volt mains supply. The power consumed will be [2003]

(a) 750 watt

(b) 500 watt

(c) 250 watt

(d) 1000 watt

(c) We know that $R = \frac{V_{\text{rated}}^2}{P_{\text{rated}}} = \frac{(220)^2}{1000}$

When this bulb is connected to 110 volt mains supply we get

$$P = \frac{V^2}{R} = \frac{(110)^2 \times 1000}{(220)^2} = \frac{1000}{4} = 250W$$