

Q. 04

The resistance of a wire is R . It is bent at the middle by 180° and both the ends are twisted together to make a shorter wire. The resistance of the new wire is

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- (a) $2R$ (b) $R/2$ (c) $R/4$ (d) $R/8$

04 (c) Resistance of wire (R) = $\rho \frac{l}{A}$

If wire is bent in the middle then

$$l' = \frac{l}{2}, A' = 2A$$

$$\therefore \text{New resistance, } R' = \rho \frac{l'}{A'}$$

$$= \frac{\rho \frac{l}{2}}{2A} = \frac{\rho l}{4A} = \frac{R}{4}$$