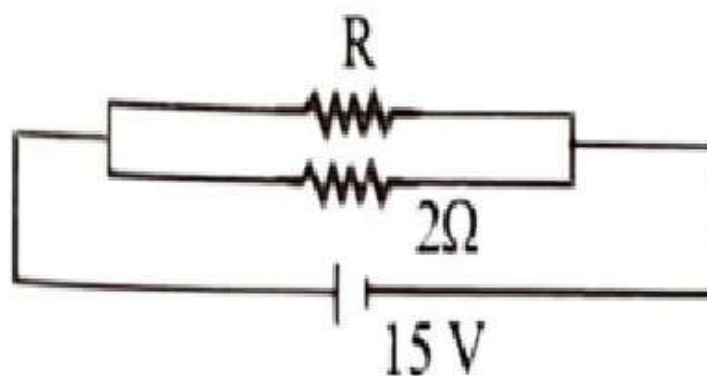


Q 19

If in the circuit, power dissipation is 150 W, then R is [2002]



- (a) 2Ω (b) 6Ω (c) 5Ω (d) 4Ω

(b) The equivalent resistance is $R_{eq} = \frac{2 \times R}{2 + R}$

$$\therefore \text{Power dissipation } P = \frac{V^2}{R_{eq}}$$

$$\therefore 150 = \frac{15 \times 15}{R_{eq}}$$

$$\therefore R_{eq} = \frac{15}{10} = \frac{3}{2}$$

$$\Rightarrow \frac{2R}{2+R} = \frac{3}{2} \Rightarrow 4R = 6 + 3R \Rightarrow R = 6\Omega$$