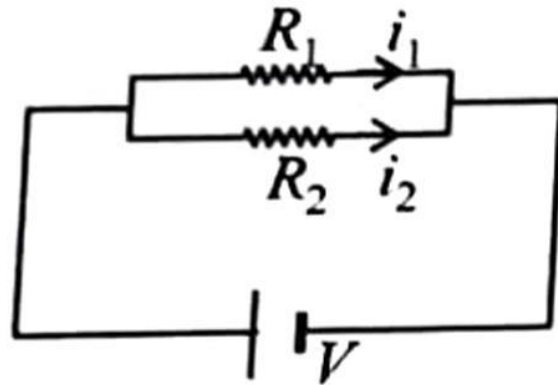


Q. 07 An electric current is passed through a circuit containing two wires of the same material, connected in parallel. If the lengths and radii are in the ratio of  $\frac{4}{3}$  and  $\frac{2}{3}$ , then the ratio of the current passing through the wires will be [2004]

- (a)  $8/9$       (b)  $1/3$       (c)  $3$       (d)  $2$

07

(b)



$$R_1 = \frac{\rho \ell_1}{\pi r_1^2}; R_2 = \frac{\rho \ell_2}{\pi r_2^2}$$

$$i_1 R_1 = i_2 R_2 \text{ (same potential difference)}$$

$$\therefore \frac{i_1}{i_2} = \frac{R_2}{R_1} = \frac{\ell_2}{\ell_1} \times \frac{r_1^2}{r_2^2} = \frac{3}{4} \times \frac{4}{9} = \frac{1}{3}$$