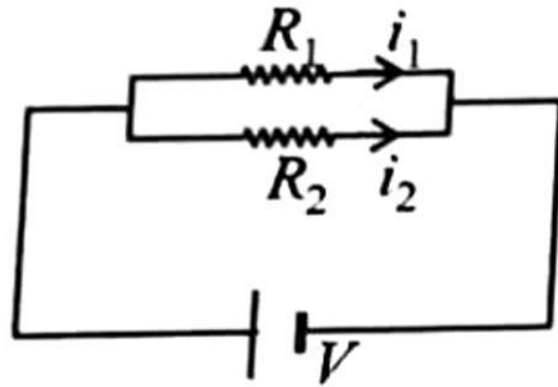**Q. 05** An electric current is passed through a circuit containing two wires of the same material, connected in parallel. If the lengths and radii are in the ratio of $\frac{4}{3}$ and $\frac{2}{3}$, then the ratio of the current passing through the wires will be **[2004]**

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

05   **(b)**

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

$i_1 R_1 = i_2 R_2$ (same potential difference)

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