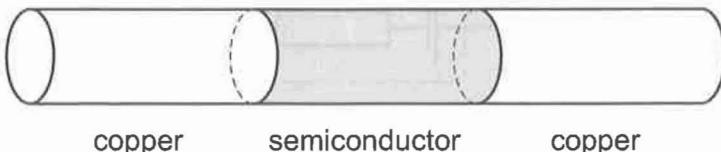


- 27 The electric current through a cylinder of semiconductor material is supplied by copper wires, as shown.



The charge carriers in the semiconductor material are electrons. The semiconductor material and the copper have the same cross-sectional area.

The table gives details of the number of free electrons per cubic metre in each material.

	copper wire	semiconductor
number of free electrons per cubic metre	8.6×10^{28}	4.3×10^{21}

The mean speed of electrons through the copper wire is 0.58 mm s^{-1} .

What is the mean speed of electrons through the semiconductor material?

- A $2.9 \times 10^{-6} \text{ ms}^{-1}$
- B $2.9 \times 10^{-3} \text{ ms}^{-1}$
- C $1.16 \times 10^4 \text{ ms}^{-1}$
- D $1.16 \times 10^7 \text{ ms}^{-1}$