

SECTION B

Answer ALL questions in the spaces provided.

- 11 A nichrome wire of length 0.45 m has a cross-sectional area of $2.5 \times 10^{-7} \text{ m}^2$.
The resistance of the wire is $2.0 \, \Omega$.

(a) Calculate the resistivity of nichrome.

(2)

Resistivity =

(b) A potential difference of 3.0 V is applied across the nichrome wire.

Calculate the drift velocity of the conduction electrons in the nichrome wire.

number of conduction electrons per $\text{m}^3 = 9.0 \times 10^{28} \text{ m}^{-3}$

(3)

Drift velocity =

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- (c) A student suggests that the drift velocity will double if the length of wire used in the circuit is halved.

Comment on this suggestion.

(3)

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(Total for Question 11 = 8 marks)