

Practice Question Set For A-Level  
**Subject : Physics**  
**Paper-1 Topic : 3\_ElectricCircuits**

Name of the Student: \_\_\_\_\_

Max. Marks : 23 Marks

Time : 23 Minutes

Mark Schemes

Q1.

Question Number	Answer	Mark	
(a)	best fit line use of gradient <b>Or</b> use of $R/l$ from graph or table use of $\rho = RA/l$ resistivity = $4.7 \times 10^{-7} \Omega \text{ m}$ (range 4.5 to $4.8 \times 10^{-7} \Omega \text{ m}$ )  <u>Example of calculation</u> gradient = $4.4 \Omega \div 1.0 \text{ m} = 4.4 \Omega \text{ m}^{-1}$ $\rho = A \times \text{gradient} = 1.06 \times 10^{-7} \text{ m}^2 \times 4.4 \Omega \text{ m}^{-1}$ resistivity = $4.66 \times 10^{-7} \Omega \text{ m}$	(1) (1) (1) (1)	4
(b)	temperature increases (with increasing current) resistance/resistivity would have increased (with temperature)	(1) (1)	2
(c)	Precaution Explanation  E.g. ensure good contact (e.g. tight croc clips); so pd across contact resistance doesn't make V results inaccurate E.g. Avoid pressing too hard on wire; as a deformation would affect cross-sectional area and therefore resistance e.g. ensure wire is straight so length measurement is accurate e.g. ensure eyes perpendicular to scale to avoid parallax errors  <b>Do not credit:</b> diameter of wire since area is not in the table repeat and average high resistance voltmeter keep temperature constant	(1) (1)	2
	<b>Total for question</b>		<b>8</b>



<b>(d)</b>	Lower resistance	<b>(1)</b>	<b>4</b>
	(smaller current, so) lower temperature (so less vibration of lattice ions) <b>Or</b> (smaller current, so) smaller drift velocity	<b>(1)</b>	
	fewer collisions of electrons with lattice ions <b>Or</b> less frequent collisions of electrons with lattice ions	<b>(1)</b>	
	Less energy dissipation (as heat) <b>Or</b> less ke lost in collisions	<b>(1)</b>	
<b>Total for question</b>			<b>15</b>