Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Mark Schemes

Q1

Question Number	Acceptable Answers		Additional guidance	Mark
	• Unpolarised light oscillates in many planes	(1)		
	• The light perpendicular to the plane of polarisation of the filter is absorbed **Or** only light parallel to the plane of polarisation of the filter is transmitted	(1)		
	• So polarised light oscillates in only one plane	(1)		
	• So light intensity is reduced	(1)	dependent upon MP2 or MP3	**4**

Q2

Question Number	Answer		Mark
(a)	Resistivity is a property of a material **Or** is constant for a material	(1)	
	Resistance is a property of a wire/component/object **Or** Resistance depends on dimensions of a wire/component/object	(1)	2
* (b)	*Circuit diagram* Wire and a power supply (accept resistor symbol for wire) Ammeter in series and voltmeter in parallel with wire (an Ohmmeter across a wire with no supply scores 2 marks, an Ohmmeter across a wire with a supply scores 0 marks.) (QWC- Work must be clear and organised in a logical manner using technical wording where appropriate.) *Quantities measured* Current and potential difference **Or** resistance (consistent with diagram) Length of wire Diameter/thickness of wire (not area or radius) *Graph* Graph of R against l **Or** graph of V against l (for constant I) **Or** Graph of R against l/A **Or** Graph of RA against l (this mark is only awarded for a graph including different values of length) *Determination of resistivity* Determine the gradient of a relevant graph (allow for a graph of V against I) $A = \pi d^2/4$ **Or** $A = \pi r^2$ Correct processing to find ρ consistent with the graph (if no gradient, award final mark for statement that $\rho=RA/l$, ρ must be the subject)	(1) (1) (1) (1) (1) (1) (1) (1) (1)	9

Q3

<table>
<tr><th>Question Number</th><th>Acceptable answers</th><th>Additional guidance</th><th>Mark</th></tr>
<tr><td>*</td><td>This question assesses a student's ability to show a coherent and logically structured answer with linkages and fully-sustained reasoning.

Marks are awarded for indicative content and for how the answer is structured and shows lines of reasoning.

The following table shows how the marks should be awarded for indicative content.

<table><tr><th>Number of indicative marking points seen in answer</th><th>Number of marks awarded for indicative marking points</th></tr><tr><td>6</td><td>4</td></tr><tr><td>5 - 4</td><td>3</td></tr><tr><td>3 - 2</td><td>2</td></tr><tr><td>1</td><td>1</td></tr><tr><td>0</td><td>0</td></tr></table>
The following table shows how the marks should be awarded for structure and lines of reasoning.</td><td>Guidance on how the mark scheme should be applied: The mark for indicative content should be added to the mark for lines of reasoning. For example, an answer with five indicative marking points which is partially structured with some linkages and lines of reasoning scores 4 marks (3 marks for indicative content and 1 mark for partial structure and some linkages and lines of reasoning). If there are no linkages between points, the same five indicative marking points would yield an overall score of 3 marks (3 marks for indicative content and no</td><td></td></tr>
</table>

	Number of marks awarded for structure of answer and sustained line of reasoning	marks for linkages).	
Answer shows a coherent and logical structure with linkages and fully sustained lines of reasoning demonstrated throughout	2		
Answer is partially structured with some linkages and lines of reasoning	1		
Answer has no linkages between points and is unstructured	0		**(6)**

Indicative content

- electrons/atoms move to higher energy levels
  Or electrons/atoms are excited
- they then move to lower energy levels (accept ground state) and the energy (from the change) is given out in the form of a <u>photon</u>
- the energy levels are discrete
  Or only certain energy levels are possible
- the energy of the photon is <u>equal</u> to the difference in energy levels
  Or $hf = E_2 - E_1$ **Or** $hc/\lambda = E_2 - E_1$
- there are only a limited number of energy differences and only a corresponding set of frequencies/wavelengths
- different elements have different energy level (differences), so they will produce different frequencies/wavelengths

looking for energy differences /changes **not** energy levels