

Name of the Student: _____

Max. Marks : 17 Marks

Time : 17 Minutes

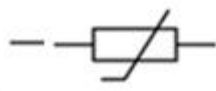
Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
(i)	B live and neutral A , C and D are incorrect because the terms positive and negative are not used in the context of wires in a mains cable.		(1) AO1

Question number	Answer	Additional guidance	Mark
(ii)	a description that includes any two from melts (1) if there is a fault (1) breaks the circuit (1) stops current (1) safety (1)	blows / breaks if current too large prevents overheating / fire if no other marks scored allow 1 mark for identifying the fuse.	(2) AO1

Q2.

Question Number	Answer	Mark
	 The only correct answer is D A is incorrect because that is the symbol for a diode B is incorrect because that is the symbol for a light dependent resistor C is incorrect because that is a symbol for a motor	(1)

Q3.

Question number	Answer	Additional guidance	Mark
	B 5 A A, C and D are incorrect repetitions or addition		(1) AO1

Q4.

Question Number:	Answer	Mark
	D diode The only correct answer is D <i>A is not correct as for a thermistor, current would increase with potential difference from the origin</i> <i>B is not correct as current against p.d for a resistor gives a straight line from the origin</i> <i>C is not correct as current against p.d for a resistor gives a straight line from the origin</i>	(1) AO 1 1

Q5.

Question number	Answer	Additional guidance	Mark
(a)(i)	Any one reason from: - the thermistor and the water are at the same temperature (1) - large volume of water gives a steady temperature rise (1)	accept idea that only small part of thermometer would be in contact with a thermistor in air accept difficult to control change in temperature of thermistor when heated in air	(1)
Question number	Answer	Additional guidance	Mark
(a)(ii)	Any one of the following developments to the procedure: - add ice to increase lower limit of temperature range (1) - use liquid with higher boiling point to increase upper limit of temperature range (1)	accept named liquid with higher boiling point, e.g. oil	(1)

Question number	Answer	Additional guidance	Mark
(b)	A comparison and contrast that must include at least one similarity and one difference from the following points to a maximum of three marks: Similarities • resistance of both changes with temperature (1) • both graphs show a non-linear relationship (1) • data comparison, e.g. both have the same resistance at 80 °C (1) Differences • resistance of A decreases with temperature but resistance of B increases with temperature (1) • for A, (largest slope/rate of change) is at lower temperature but for B, (largest slope/rate of change) is at higher temperature(s) (1) • for B, resistance is constant below 50 °C but for A resistance is roughly constant above 60 °C (1)	accept (smallest slope/rate of change) for A is at higher temperature but (smallest slope/rate of change) for B is at lower temperature	(3)

Question number	Indicative content	Mark
*	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlines in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all of the material which is indicated as relevant. Additional content included in the response must be scientific and relevant. A01 (6 marks) • measure the resistance of the thermistor • use ammeter and voltmeter/ use multimeter set on R • in a circuit • measure temperature of thermistor • using thermometer • use water bath • heater or method of heating • use cool water / room temperature water to start • raise temperature • measure new resistance • etc	(6)

Level	Mark	Descriptor
	0	• No rewardable material.
Level 1	1-2	• Demonstrates elements of physics understanding, some of which is inaccurate. Understanding of scientific, enquiry, techniques and procedures lacks detail. (AO1) • Presents a description which is not logically ordered and with significant gaps. (AO1)
Level 2	3-4	• Demonstrates physics understanding, which is mostly relevant but may include some inaccuracies. Understanding of scientific ideas, enquiry, techniques and procedures is not fully detailed and/or developed. (AO1) • Presents a description of the procedure that has a structure which is mostly clear, coherent and logical with minor steps missing. (AO1)
Level 3	5-6	• Demonstrates accurate and relevant physics understanding throughout. Understanding of the scientific ideas, enquiry, techniques and procedures is detailed and fully developed. (AO1) • Presents a description that has a well-developed structure which is clear, coherent and logical. (AO1)