edexcel

Mark Scheme (Results)

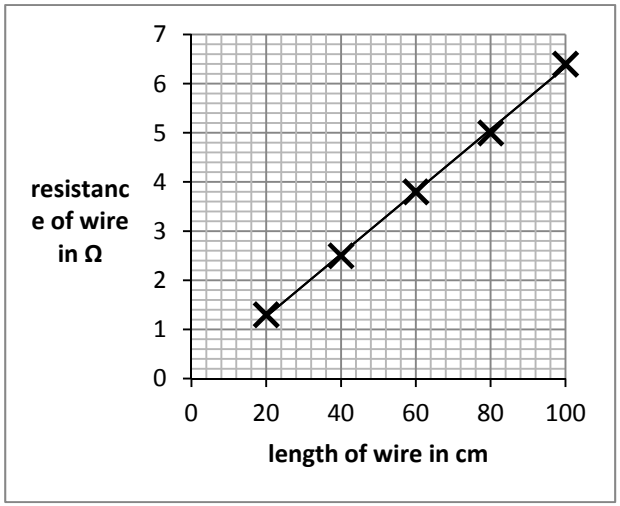
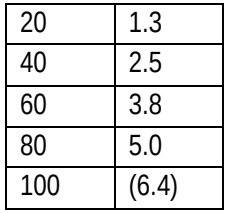
January 2013

International GCSE
Physics (4PH0) Paper 1P
Science Double Award (4SC0) Paper 1P

Edexcel Level 1/Level 2 Certificate
Physics (KPH0) Paper 1P
Science (Double Award) (KSC0) Paper 1P

Question number	Answer	Notes	Marks
3 (a)	CIRCUIT DIAGRAM – Correct symbols for ammeter, voltmeter and battery;	ALLOW three separate cells in series	1
	Ammeter in series with cells;	ALLOW anything reasonable for the wire (e.g. straight line, variable resistor, resistor)	1
	Voltmeter in parallel with wire / as shown in photograph;		1
(b) (i)	(independent variable) – length (of wire) (dependent variable) - resistance	BOTH NEEDED	1
(ii)	ANY FIVE APPROPRIATE, e.g. Connect the circuit / connect (crocodile) clip to wire; Read ammeter; Read voltmeter; For known /particular / quoted value length; measure length with a ruler; Repeat readings / average (in different places along the wire); Take readings for different lengths; Check meters for zero errors; Disconnect/switch off between readings; To avoid heating the wire;	IGNORE references to calculating resistance, plotting graphs –	5

Question Number	Answer	Notes	Marks
3 (c) (i)	Voltage = current x resistance;	ALLOW standard symbols, V = I X R ALLOW correct rearrangements DO NOT ALLOW equation given as unit symbols	1
(ii)	6.4;	ALLOW correct answer if it follows an equation given in unit symbols IGNORE s.f. BUT must be correctly rounded from 6.4285...	1

Question Number	Answer	Notes	Marks
3 (d) (i)	Sample graph –  scale; at least half the paper axes labelled including units; Plotting; Plotting; Best fit line;	 Points to plot IF AXES REVERSED, LOSE THE AXES MARK Ignore (100 cm, 6.4) ALLOW as length increases resistance increases ALLOW conclusions in terms of resistance per metre etc	5

Question Number	Answer	Notes	Marks
3 (d) (ii) MARK tog With	MARK (ii) and (iii) together, credit points wherever seen (directly) proportional;	IGNORE 'as length increases current decreases' / conclusions relating to current	1
(iii)	any TWO of Straight line; Through (0,0); line slopes upwards; quoting appropriate values from the graph;	ALLOW constant gradient ALLOW positive correlation	1 1
		Total	**19**

Question number	Answer	Notes	Marks
10 (a)	ANY THREE of particles in constant motion / particles have kinetic energy; in random directions; colliding with walls; causing a force on the walls; Pressure = force /area;	Answers need to refer to particles / molecules rather than 'the gas is...' ALLOW 'Hitting the walls' / 'bouncing off the walls' ALLOW 'push' / 'pushing'	3
(b) (i)	(pressure would) increase;		1
(ii)	(higher temp) increases (average) speed / kinetic energy of particles; So collide with walls more often / at higher speed;	IGNORE references to 'heating the particles' ALLOW 'hit harder'	1 1
(c)	Use of $p_1V_1 = p_2V_2$ (equation given) /substitution; 2000 (cm^3);	2000 alone scores 2	2
		Total	**8**