PEARSON EDEXCEL GCSE PHYSICS (HIGHER) · 1PH0

PHYSICS



MARK SCHEME

TOPIC 10: ELECTRICITY AND CIRCUITS (PACK 1)

SCORE	PERCENTAGE
/132	%

STEMUP

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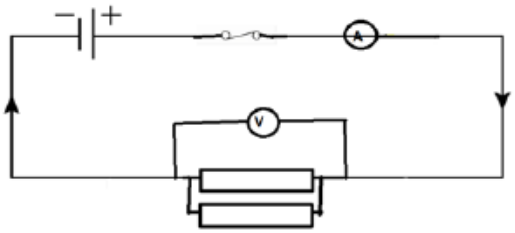
Mark Scheme

Q1.

Question Number	Answer	Mark
*	Answers will be credited according to candidate's deployment of knowledge and understanding of the material in relation to the qualities and skills outlined in the generic mark scheme. The indicative content below is not prescriptive and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant. AO1(6 marks) Circuit diagram including • power supply • ammeter • voltmeter • filament lamp • means of varying potential difference Description of method • measure current with ammeter • measure potential difference with voltmeter • vary the potential difference • calculate the resistance • repeat and compare	**(6)** AO 1 2

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

Q2.

Question number	Answer	Additional guidance	Mark
(i)	 voltmeter in parallel across resistor (1) second resistor in parallel (1)		(2)

Question number	Answer	Additional guidance	Mark
(ii)	potential difference/ voltage (drop across resistors in parallel) (1) current (in the circuit) (1)	voltmeter reading ammeter reading	(2)

Question number	Answer	Additional guidance	Mark
(iii)	1 Ω	one ohm	(1)

Question number	Answer	Additional guidance	Mark
(iv)	Comments to include: the (overall) resistance decreases as the number of resistors (in parallel) increases (1) the relationship is non-linear (1) any two relevant values from the graph (1)	 decreases at a decreasing rate the relationship is inversely proportional scores first 2 marks	(3)

Q3.

Question number	Answer	Additional guidance	Mark
(i)	17.7 (A)		(1) AO1

Question number	Answer	Additional guidance	Mark
(ii)	(The resistance) increases		(1) AO1

Question number	Answer	Additional guidance	Mark
(iii)	B 5 A fuse A is incorrect because it has a smaller value than the expected current C and D are incorrect because they have a much higher value than the expected current		(1) AO1

Question number	Answer	Additional guidance	Mark
(iv)	An explanation linking **two** of thick(er) wires have low(er) resistance (1) less thermal energy transferred (in the wires)(1) less potential difference / voltage (drop) across the wires (1)	allow reverse argument allow so wires do not get hot allow less voltage is lost more current can be carried	**(2)** **AO1**

Q4.

Question number	Answer	Additional guidance	Mark
a	recall and substitution (1) (force x 12.0 =) 0.050 x 8.4 rearrangement (1) (force =) $\frac{0.050 \times 8.4}{12.0}$ evaluation (1) (force =) 0.035 (N)	allow substitution and rearrangement in either order award full marks for the correct answer without working. if no other marks scored then award 1 mark for answers that round to 29 (eg 28.57) (substitution mark)	**(3)** **AO2**

Question number	Answer	Additional guidance	Mark
b	a description to include **four** of the following measure the value of current (1) measure force or distance(1) vary the current (1) restore equilibrium of system (1) calculate ratio between force and current or distance and current (1) if ratio is the same then they are proportional (1)	 accept calculate for measure increase weight or move (existing) weight to new position plot a graph of force / distance against current graph would be a straight line (through the origin)	**(4)** **AO3**

Q5.

Question number	Answer	Additional guidance	Mark
	counting teeth on the pinion (1) evaluation (1) 1.6 (m)	allow between 18 and 22 inclusive 20 x 0.08 ecf number of teeth answer in range 1.44 to 1.76 scores 2 marks award full marks for the correct answer without working power of 10 error scores 1 mark maximum	**(2)** **AO3.1**

Q6.

Question number	Answer	Additional guidance	Mark
	substitution into P = V × I (1) 2600 = 230 × I rearrangement (1) I = P ÷ V evaluation (1) 11 (A)	Substitution and re-arrangement in either order I = 2600 ÷ 230 for 2 marks allow answers that round to 11 award full marks for correct answer without working allow I = 2.6 ÷ 230 for 1 mark allow 0.011 (A) for 2 marks max if no other marks scored, award 1 mark for 2.6 kW = 2600 W	**(3)**

Q7.

Question number	Answer	Additional guidance	Mark
	any correct moment (1) 450 x 0.50 or 225 or 0.80 x F_2 substitution into prin. of moment equation (1) 450 x 0.50 = 0.80 x F_2 evaluation (1) 280 (N) (for question at end)	 allow 450 x 0.3 moment taken about B allow statement of prin. of moments accept numbers which round to 280 such as 281.25 award full marks for correct answer without working.	**(3)**

Q8.

Question number	Answer	Additional guidance	Mark
(i)	recall and substitution (1) V = 0.20 x 15 evaluation (1) 3 (V)	 7(V) gains 1 mark (use of 15 + 20) award full marks for the correct answer without working	**(2)**

Question number	Answer	Additional guidance	Mark
(ii)	addition and substitution (1) (P=) 0.20^2 x 35 evaluation (1) 1.4 (W)	 award full marks for the correct answer without working	**(2)**

Q9.

Question Number	Answer	Additional guidance	Mark
(i)	recall and substitution into $P = I^2 \times R$ (1) $130 = 14^2 \times R$ rearrangement (1) $R = \frac{130}{14^2}$ evaluation to **2 sig fig** (1) (R =) 0.66 (Ω)	substitution and rearrangement may be in either order alternative route: **V** ($= \frac{P}{I}$) $= \frac{130}{14}$ OR 9.3 V (1) R ($= \frac{V}{I}$) $= \frac{9.3}{14}$ (1) award full marks for the correct answer without working award 2 marks for 0.663.. or 0.67	**(3)**

Question Number	Answer	Additional guidance	Mark
(ii)	**rate** of flow of charge in the immersion heater is greater than in the kettle / heating element (1) the direction of the flow of charge in the kettle / heating element keeps changing (whereas it remains in the same direction in the immersion heater) (1)	accept reverse arguments more charge per second in the immersion heater allow (in this context) faster (rate of) flow in immersion heater 14 coulombs per sec in immersion heater and 8.3 coulombs per sec in kettle / heating element flows both ways in the kettle / heating element (one way in the heater) simply referring to alternating current and direct current is not enough	(2)

Q10.

Question number	Answer	Additional guidance	Mark
(i)	Substitution and evaluation (1) 15 (Ω)		(1) AO2.1

Question number	Answer	Additional guidance	Mark
(ii)	select / recall (1) (power =) V x I or (power =) I^2 x R or (power =) $\frac{V^2}{R}$ substitution and evaluation (1) (power =) 1.4 (W)	 (power =) 4.5 x 0.3 0.3^2 x 15 $\frac{4.5^2}{15}$ allow 1.3(5) (W) award full marks for the correct answer without working	**(2)** **AO2.2**

Q11.

Question Number	Answer	Additional guidance	Mark
(i)	(In every second), distance moved by chain around large gear = distance moved by chain around small gear (1) 2 x 48 = turns x 12 rearrangement and evaluation (1) 8 (turns each second)	accept use of gear ratio seen or implied e.g. 4:1 or 4/1 or 48:12 or 48/12 or converse e.g. 1:4 award full marks for the correct answer without working	**(2)**

Question Number	Answer	Additional guidance	Mark
(ii)	An explanation linking reduces friction/amount of thermal energy transferred (1) extra useful energy is available/less input energy is required (1) efficiency = useful energy transferred (by the bicycle) ÷ total energy supplied (to the bicycle) (1)	 (oil provides) lubrication less energy wasted allow for the last **two** mark points; **either** less input energy is required to produce the same output for **2** marks **or** more output energy is available for the same input energy for **2** marks	**(3)**

Q12.

Question Number	Answer	Additional guidance	Mark
(i)	recall and substitution into V = IR (1) $5.0 = 0.26 \times R$ rearrangement (1) (R=) $\frac{5.0}{0.26}$ evaluation (1) 19 (Ω)	accept substitution and rearrangement in either order (R=) $\frac{V}{I}$ $\frac{5.0}{0.26}$ scores 2 marks accept answers that round to 19 (Ω) (e.g. 19.23) accept answer written table if not written on answer line. award full marks for the correct answer without working	**(3)**

Question Number	Answer	Additional guidance	Mark
(ii)	a comment that includes the following points idea that resistance increases with potential difference (1) idea that doubling the potential difference does not result in doubling of resistance (1) **OR** V = constant × R is not supported by this data (1) correct processing of data from the table to support either of the above mark points (1)	idea that equal increments of potential difference do not cause equal increments of resistance reverse argument e.g. if student was correct then equal increments of p.d. would cause equal increment of resistance if student was correct then current would be constant ignore simple quoting of data for this mark	**(3)**

Question Number	Answer	Additional guidance	Mark
(iii)	A description that includes add a variable resistor (1) **with** in series (with the lamp / power supply) (1) **OR** add a potential divider (1) **with** in parallel with power supply (1)	marks may be obtained from a circuit diagram rheostat accept between / before / after for in series potentiometer across the power supply ignore replacing power supply / using fixed resistor(s) / LDR / thermistor in both cases, second mark conditional on first mark	**(2)**

Q13.

Question number	Answer	Additional guidance	Mark
(i)	substitution and rearrangement (1) (force = $\frac{\text{moment}}{\text{distance}}$) = $\frac{0.6}{3(\times 10^{-1})}$ evaluation (1) 2(.0) (N)	 reject 0.6 x 3 = 1.8 award full marks for the correct answer without working ignore significant figures 2(.0) to any other power of ten scores 1 mark maximum	**(2)** **AO2.1**

Question number	Answer	Additional guidance	Mark
(ii)	 correct calculation of one moment (1) correct calculation of second moment and adding of moments seen (1)	**show that** question either 2x0.1 or 1x0.5 seen 2(.0)x0.1(0) + 1(.0)x0.5 scores 2 marks 0.2+0.5 scores 2 marks accept calculations in alternative units (e.g. N cm) if correct conversion(s) seen if no other marks scored, the addition of two other moments can score 1 mark maximum	**(2)** **AO2.1**

Question number	Answer	Additional guidance	Mark
(iii)	explanation linking **three** from: **{sum** of / **total }** clockwise moments = **{sum** of / **total }** anticlockwise moments (1) for a system in equilibrium / balance (1) clockwise and anticlockwise moments compared (1) **so** rod not in equilibrium (1)	about the same point / about a point e.g. clockwise moment > anticlockwise moment or reverse argument 0.7 > 0.6 0.7 ≠ 0.6 rod will **rotate clockwise** MP4 can only be scored if MP3 awarded	**(3)** **AO3.2**

Q14.

Question number	Answer	Additional guidance	Mark
(a)	Rearrangement of equation (1) $Q = \frac{E}{V}$ Substitution including change of unit (1) 64 MJ = 64 000 000 J $Q = \frac{64000000}{330}$ Answer and unit (1) Q = 190 000 (C)	allow answers that round to 190 000, e.g. 193939 if the calculation is worked throughout without changing MJ to J, then maximum of 2 marks unless unit matches quantity	**(3)**

Question number	Answer	Additional guidance	Mark
(b)	Rearrangement (1) $I = \frac{Q}{t}$ Conversions and substitution (1) 190 (kC) = 190 000 (C) 8 hours = 8 × 3600 (s) = 28 800 (s) $I = \frac{190\,000}{28800}$ Evaluation (1) = 6.6 (A)	ecf from (a) (6.5972) if 193 939 used then accept 6.7	**(3)**

Q15.

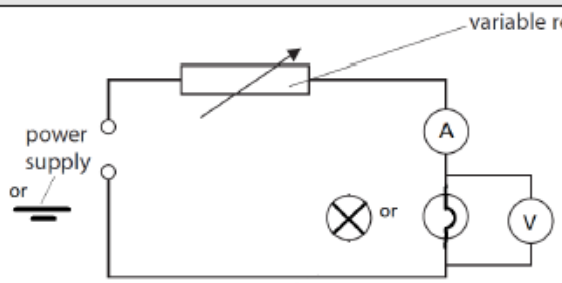
Question Number:	Answer	Additional Guidance	Mark
	recall clockwise moment = anticlockwise moment (1) moment = force x (perpendicular) distance (1) substitution (1) m × 17 = (6 × 15) + (4.6 × 10) rearrangement and evaluation (1) m = 8.0 (g)	calculations need not include g (which cancels out from all terms) substitution and rearrangement in either order m × 17 = 90+46 $m = \frac{(6\times15)+(4.6\times10)}{17}$ m = 136/ 17 award full marks for correct answer without working	**(4)** AO 1 1 AO 2 1

Q16.

Question number	Answer	Mark
(i)	C	(1)

Question number	Answer	Additional guidance	Mark
(ii)	Equating the same variable in both equations (1) $\Delta Q = m \times c \times \Delta\theta = P \times t$ Rearrangement (1) $t = \frac{(m \times c \times \Delta\theta)}{P}$ Substitution and evaluation (1) $t = \frac{(1 \times 4200 \times 77)}{3500}$ = 92 s	allow $\Delta\theta$ seen as 95 – 18 92.4 evaluation must be seen to at least 2 s.f. at some point in the working	(3)

Q17.

Question number	Answer	Mark
	 ammeter with correct symbol, in series with the lamp (1) voltmeter with correct symbol, in parallel with the lamp (1) valid method of changing the potential difference (1)	(3)

Q18.

Question Number	Answer	Acceptable answers	Mark
(a)(i)	**B**	.	**(1)**

Question Number	Answer	Acceptable answers	Mark
(a)(ii)	substitution V = 0.039 x 185 (1) evaluation 7.215 (which is about 7.2) (V) (1)	Substitution 7.2 = I x 185 (1) transposition I = 7.2 ÷ 185 (1)	**(2)**

Question Number	Answer	Acceptable answers	Mark
(a)(iii)	**C** (same as)		**(1)**

Question Number	Answer	Acceptable answers	Mark
(a)(iv)	An explanation to include The resistance (of the LDR) changes Greater resistance when in the dark	 LDR has less resistance in the light	**(2)**

Question Number		Indicative Content	Mark
QWC	***(b)**	An explanation linking some of the following. • less current is used at night-time • Resistance (of LDR or circuit) would increase with less ambient light • Higher resistance will allow less current (in the circuit) (ORA) • Less current in circuit means less energy from the battery • Less power required in the dark ORA for light conditions • Less current means less energy transferred (per second) • Total energy transferred is less during night time (than it would otherwise have been) due to the higher resistance of the LDR	**(6)**
Level	**0**	No rewardable content	
1	**1 - 2**	• A limited explanation linking the light level to EITHER resistance OR current. eg. It increases the resistance in the dark. • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy	
2	**3 - 4**	• A simple explanation linking the light level to TWO of resistance, current, energy. eg. At night-time its resistance would increase. This would reduce the current from the battery • the answer communicates ideas showing some evidence of clarity and organisation and uses scientific terminology appropriately • spelling, punctuation and grammar are used with some accuracy	
3	**5 - 6**	• A detailed explanation linking the light level to resistance AND current, AND energy. e.g. At night-time the resistance would be more. This would reduce the current and mean that the battery will not have to supply as much energy. • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors	

Q19.

Question number	Answer	Additional guidance	Mark
(i)	Recall GPE = m x g x Δh (1) Substitution = 400 x 9.8 x 1.5 (1) Evaluation = 5900 (J) (1) (which is nearly 6000 J)	 accept 5880 (J)	**(3)**

Question number	Answer	Additional guidance	Mark
(ii)	An explanation that combines identification – knowledge (1 mark) and reasoning (1 mark) • energy is dissipated/scattered (1) • into the surroundings (1)	 energy from a loss of ball's PE / its gain in KE ends up as (kinetic) energy of molecules (of ball / wall / air)	(2)

Question number	Answer	Mark
(iii)	**B** velocity	(1)

Q20.

Question number	Answer	Additional guidance	Mark
	An answer that combines the following points of understanding to provide a logical description: named force (acting at a distance) (1) situation (1)	 e.g. magnetic force between two (magnetic) poles	(2)

Q21.

Question number	Answer	Additional guidance	Mark
(i)	A description including as the potential difference (voltage) increases so does the current (1) idea of gradient of graph decreasing as V increases (1)	 positive correlation at a decreasing rate non-linear not directly proportional	(2) AO3

<table>
<tr><th>Question number</th><th>Answer</th><th>Additional guidance</th><th>Mark</th></tr>
<tr><td>(ii)</td><td>Award one mark for each row of the table
<table>
<tr><td></td><td>voltage in V</td><td>current in mA</td></tr>
<tr><td>point P</td><td>1(.00)</td><td>20</td></tr>
<tr><td>point Q</td><td>3.4 ±0.1</td><td>43 ±1</td></tr>
</table></td><td>ignore any units added in the boxes</td><td>(2)
AO2</td></tr>
</table>

Question number	Answer	Additional guidance	Mark
(iii)	substitution (1) $(R=)\frac{4.5}{51(\times 10^{-3})}$ evaluation (1) 88.(2) (Ω)	0.088(2) or 8.8(2) or 0.88(2) or 0.09 seen scores 1 mark 0.088(2) kΩ or 0.09 kΩ scores 2 marks award full marks for correct answer without working	(2) AO2

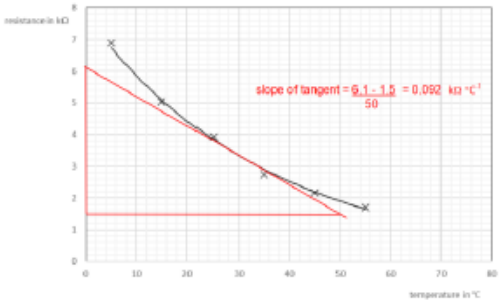
Question number	Answer	Additional guidance	Mark
(iv)	an explanation linking any three of: identification of resistance increasing (1) heating (of the filament) (1) because of more collisions (1) of electrons (with ions / atoms / other electrons) (1)	 temperature increases	(3) AO1

Q22.

Question number	Answer	Additional guidance	Mark
	move the (position of) the (0.050 N) weight (1) to the other side of the pivot/3.6 cm from the magnet (1)	adjust mass of modelling clay reduce (mass of modelling clay) by taking some away add (additional) weight between pivot and magnet scores 2 marks	**(2)** **AO3**

Q23.

Question number	Answer	Additional guidance	Mark
(i)	A description to include as temperature increases resistance decreases (1) non-linear / decreasing gradient (1)	 ORA allow exponential / inversely proportional in this context curve gets less steep as temperature increases ignore negative correlation unqualified quoted values are insufficient	**(2)** **AO3.1**

Question number	Answer	Additional guidance	Mark
(ii)	uses a right-angled triangle to calculate slope with a line of grazing incidence at θ = 30° C (1)  evaluation (1) (-) 0.092 (kΩ / °C) unit (1) kΩ / °C or kΩ °C^{-1}	tangent seen and used, drawn between θ = 25 and 35 °C accept for 2 marks either between 0.087 and 0.097 (kΩ / °C) or between 87 and 97 (Ω / °C) kohm/K or kohm K^{-1}	**(3)** **AO3.2**

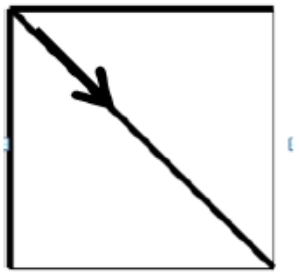
Q24.

Question number	Answer	Additional guidance	Mark
	(upward) force increases with speed (1) relationship is non-linear (1)	allow reverse argument changing rate / increases exponentially/ initially no upward force (until 1000 turns per minute)	**(2)**

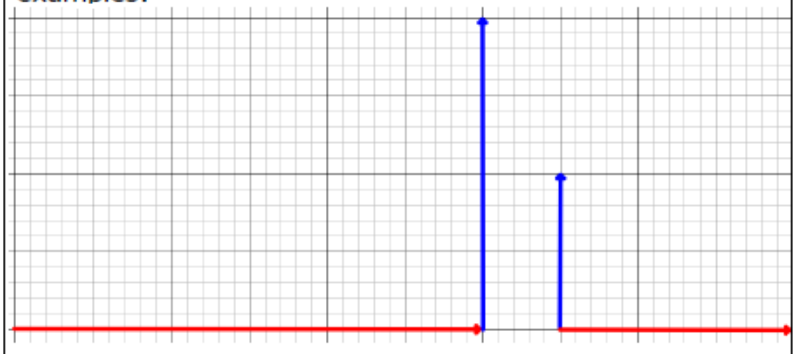
Q25.

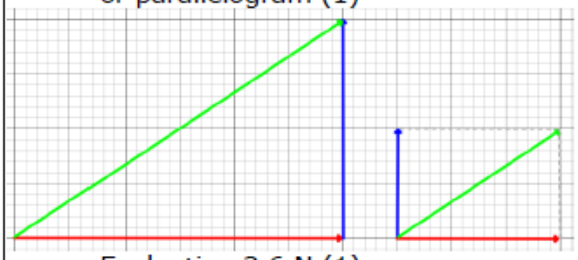
Question number	Answer	Additional guidance	Mark
	a diagram of a circuit including **all** of the following: power supply / cell(s) / battery identifiable resistance wire an ammeter a voltmeter (1) plus any **two** from ammeter in series (1) voltmeter in parallel (1) indication of tapping off / using 50cm of resistance wire (1)	accept symbols accept ohmmeter with resistance wire only ignore lamp(s) / additional resistors allow ohmmeter (across wire) instead of ammeter and voltmeter for 1 mark e.g. (crocodile) clips	**(3)** **AO2.2**

Q26.

Question number	Answer	Additional guidance	Mark
	Scale drawing two lines at right angles (1) a correct scaling (for example 10kN equivalent to 1 cm) / a completed square or triangle(1) diagonal in correct direction (1) 28 kN (1)	 judge by eye accept answers from 25 kN to 30 kN accept use of Pythagoras award full marks for correct answer without working.	**(4)**

Q27.

Question number	Answer	Mark
(i)	• two vector arrows at rights angles representing the forces (1) • two vector arrows in proportion (1) examples: 	**(2)**

Question number	Answer	Additional guidance	Mark
(ii)	• drawing shows a completed triangle or parallelogram (1)  • Evaluation 3.6 N (1)	±0.2 N may be calculated using Pythagoras theorem	(2)

Q28.

Question Number	Answer	Acceptable answers	Mark
(i)	Substitution (1) 2900 = 230 × current Transposition (1) $\frac{2900}{230}$ Evaluation (1) 13 (A)	Award full marks for correct answer with no working Allow substitution and transposition in either order Ignore powers of ten errors until evaluation Allow numbers which round up to 13	(3)

Question Number	Answer	Acceptable answers	Mark
(ii)	Substitution (1) 97 = 2.9 × time × 17 Transposition (1) $\frac{97}{2.9 \times 17}$ OR $\frac{97}{49.3}$ Evaluation (1) 2.0 (h)	Award full marks for correct answer with no working Allow substitution and transposition in either order Ignore powers of ten errors until evaluation Allow $\frac{97}{17}$ = 5.7 for 1 mark Allow numbers which round up to 2.0	(3)

Q29.

Question Number:	Answer	Mark
(i)	C 6.0 joules per coulomb **The only correct answer is C** ***A*** *is not correct because 1 volt is 1 joule per coulomb* ***B*** *is not correct because 1 volt is 1 joule per coulomb* ***D*** *is not correct because 1 volt is 1 joule per coulomb*	**(1)** AO 1 1

Question Number:	Answer	Additional Guidance	Mark
(ii)	recall and substitution (1) $42 = \frac{200 \times t}{(1000)}$ rearrangement (1) $t = \frac{42\ (\times 1000)}{200\ (\times 60)}$ evaluation (1) (t =) 3.5 (minutes)	accept substitution and rearrangement in either order 2.1 to any power of 10 or 3.5 to any power of 10 scores 2 marks 3 minutes 30 seconds award full marks for correct answer without working	**(3)** AO 1 1 AO 2 1

Question Number:	Answer	Additional Guidance	Mark
(iii)	recall and substitution (1) (E =) 42 x 6.0 evaluation (1) (energy =) 250 (J)	(using E = VIt) (E =) 6.0 x 200 (x 10^{-3}) x 2.10 (x 10^{2}) accept 252 (J) award full marks for correct answer without working	**(2)** AO 1 1 AO 2 1

Q30.

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 outlined in the generic mark scheme. The indicative content below is not prescriptive, and candidates are not required to include all the material which is indicated as relevant. Additional content included in the response must be scientific and relevant. A01 **Horizontal forces** • tension in the string/pull of the string • tension is one of the horizontal forces acting on the wooden block • friction between the table and the wooden block • friction acts in the opposite direction to the tension • friction opposes motion • the force due to friction is equal to the force provided by the tension • the forces are balanced /equal and opposite • no resultant force, so the block moves at a constant (horizontal) velocity	**(6)**

	Vertical forces • (normal) reaction (force) upwards between the table and the wooden block • contact force • weight of block downwards • the weight (force of gravity) and the (normal) reaction are equal and opposite / balanced • the block does not move up or down • tension caused by the force due to gravity on the weight • vertical forces on the block do not affect horizontal velocity. labels on the diagram should be considered when marking candidates do not have to indicate the forces as horizontal and vertical	

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

Level	**Mark**	**Additional Guidance**	**General additional guidance – the decision within levels** e.g. - At each level, as well as content, the scientific coherency of what is stated will help place the answer at the top, or the bottom, of that level.
	0	No rewardable material.	
Level 1	1–2	Additional guidance Elements of physics present i.e. isolated knowledge of principles **two** unconnected statements from any section	Possible candidate responses contact force weight pulls block friction tension in string weight acts downward reaction
Level 2	3–4	Additional guidance Some knowledge of principles with a logical connection made in one section and statement from the other section OR Detailed knowledge of principles with logical connections made in one section	Possible candidate responses There is friction between the table and the block and this opposes motion weight of block acts downwards

Level 3	5–6	<u>Additional guidance</u> Detailed knowledge of principles with logical connections made in one section and statement from the other section	<u>Possible candidate responses</u> Friction and tension are equal and opposite there is no resultant /no acceleration The weight (of the block) and the(normal) reaction are equal and opposite