

Name of the Student: _____

Max. Marks : 19 Marks

Time : 19 Minutes

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
	B A, C and D are incorrect because these do not measure the vertical change in height above the earth's surface.		(1) A01

Question Number:	Answer	Additional guidance	Mark
(i)	<p>an explanation linking:</p> <p>wheel rubs on axle (as it rotates) OR friction (between the wheel and the axle) (1)</p> <p>causes heating/transfer of (thermal) energy/ work being done (1)</p>	allow generates heat	(2) AO 1 1

Question Number:	Answer	Additional guidance	Mark
(ii)	<p>any one from:</p> <p>lubrication/oil (1)</p> <p>(ball) bearings / ball-race (1)</p> <p>go slower (1)</p>	anything that lubricates – grease etc.	(1) AO 1 1

Q3.

Question number	Answer	Additional guidance	Mark
	<p>any one idea from</p> <ul style="list-style-type: none">• identifying anomalous results (1)• improve reliability (1)• uncertainty in starting point (1)	<p>ignore accuracy</p> <p>check if results are precise</p> <p>allow more precise</p>	<p>(1)</p> <p>AO1</p>

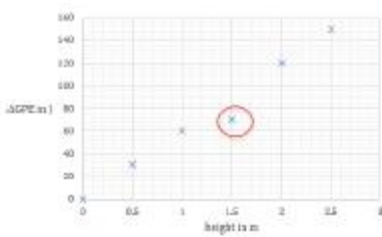
Q4.

Question	Answer	Mark
	C 900 N <i>A, B and D do not give the weight of the box.</i>	(1) AO1.1

Q5.

Question Number	Answer	Mark
	<p>The only correct answer is B: work done= force x distance moved in direction of force</p> <p>A is incorrect because the equation would be dimensionally inconsistent</p> <p>C is incorrect because the equation would be dimensionally inconsistent</p> <p>D is incorrect because the direction of the distance moved is incorrect</p>	(1)

Q6.

Question	Answer	Additional guidance	Mark
(i)	circle around (1.5, 70) (1)		(1) AO3.1

Question	Answer	Additional guidance	Mark
(ii)	<p>correct value of ΔGPE from the graph (1)</p> <p>120</p> <p>substitution (1)</p> <p>(120)</p> <p>5</p> <p>evaluation (1)</p> <p>24 (W)</p>	<p>(power =) <u>their value of energy</u></p> <p>5</p> <p>their energy value must be a number between 0 and 160</p>	(3) AO3.2

		<p>evaluation of <u>their value of energy</u></p> <p>5</p> <p>award full marks for the correct answer without working</p>	
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Q7.

Question number	Answer	Additional guidance	Mark
	estimate of weight (1) measure (actual) weight (1)	ignore reaction time use scales ignore repeating measurements	(2) A03

Q8.

Question Number	Answer	Acceptable answers	Mark
(a)	D driving for a long time without taking a break		(1)

Question Number	Answer	Acceptable answers	Mark
(b)(i)	substitution $1200 \times 8(.0)$ (1) evaluation 9600 (J) OR $9.6 \times 10^3 \text{ (J)}$ (1)	Give full marks for correct answer with no working. $9.6 \times$ any other power of 10 = 1 mark	(2)

Question Number	Answer	Acceptable answers	Mark
(b)(ii)	substitution $0.5 \times 1400 \times 25^2$ (1) evaluation of v squared $0.5 \times 1400 \times 625$ (1) evaluation $4.4 \times 10^5 \text{ (J)}$ (1) OR 440 000	Give full marks for correct answer with no working. accept 625 seen anywhere for this mark e.g. 875 000 gets 1 mark (forgot $\frac{1}{2}$) $437\,500 \text{ (J)}$ $4.4 \times$ any other power of 10 = 2 marks	(3)