Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 2_Motion and Forces

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
(i)	4.4 m/s ^{2}		(1)

Question number	Answer	Additional guidance	Mark
(ii)	graph (if projected back) does not pass through origin OWTTE (1)	accept not a straight line	(1)

Question number	Answer	Additional guidance	Mark
(iii)	An answer that combines the following points to provide a plan/method: • raise left hand end of runway (1) • (so that) force of gravity on trolley will balance frictional forces (1)	(so that) trolley travels at constant speed when given a small push	(2)

Q2.

	Answer	Acceptable answers	Mark
(a)	Description including 3 of the following: • (Gravitational) potential energy (transferred) to KE(1) • Idea of energy transfer to heat/sound whilst descending (1) • Chemical	(G)PE (transferred) to KE Allow gravitational energy for GPE Energy transferred to heat because of air resistance/ friction The energy goes to heat as he stops. Energy is	**(3)**

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	energy is transferred to heat energy in Andrew (1) • Idea of energy dissipated on stopping (1)	transferred to the surroundings	
(b)(i)	substitution (1) 67 × 31 evaluation (1) 2077 (kg m/s)	2080, 2100 working backwards using 2000 (v=) 29.85, 30 (m=) 64.52, 65 67 X 31=2000 scores only one mark	**(2)**
(b)(ii)	substitution (1) 2000 ÷ 2.3 evaluation (1) 870 (N)	answer to (b)(i)) ÷ 2.3 900, 869.6, 869.5 903	**(2)**
(b)(iii)	an explanation linking two of the following • Force on Andrew is quite small (1) • Because impact time is long (1) • The acceleration/deceleration is quite small (1) • Because impact distance is far (1)	force is reduced/ less /not as strong slows down/changes momentum gradually acceleration = 1.35 'g' or 13.5 m/s^2 slows down (rate of) change of momentum scores 2 marks	**(2)**

Total question = 8 marks

Q3.

Question	Answer	Mark
(i)	**D** **A** is not correct there is no vertical force **B** the centripetal force acts inward **C** is not correct there is no force acting at right angles to the radius	**1** **AO1.1**

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Question	Answer	Additional guidance	Mark
(ii)	any **one** from:- direction (of ball is) (continuously) changing (1) there is a resultant force acting on the ball (1) velocity/it is a vector (1)	ignore changing force /acceleration / centripetal force velocity/it has direction	**1 AO1.1**

Q4.

Question number	Answer	Additional guidance	Mark
(i)	C 7.7×10^9 kg m/s Only one correct power of 10. The other answers are all distractors involving students misappropriating 'kilos' in some way, either in kilograms or form kilometres		**(1) comp**

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Question number	Answer	Additional guidance	Mark
(ii)	rearrangement and substitution (1) $v = \frac{\text{momentum change}}{\text{mass}}$ $= \frac{7.5\ (\times 10^{10})}{8(.0)\ (\times 10^{6})}$ evaluation (1) 9.4×10^{3} / number that rounds to 9.4×10^{3} (m/s)	$v = \frac{p}{m}$ e.g. 9375, 9.375×10^{3} 9400 (m/s) 9.4 km / s award full marks for the correct answer without working award 1 mark for 9.4 to any other power of 10	(2) exp

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