Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : Motion And Forces

Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

Question Number	Answer	Acceptable answers	Mark
(i)	Substitution $\frac{90}{1000} \times 3.3$ (1) evaluation 0.30 (N) (1)	A value which rounds to 0.30 eg 0.297 Give full marks for correct answer with no working Ignore power of ten error until evaluation Allow 1 mark for 297 even with no working shown	**(2)**

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Question Number		Indicative Content	Mark
QWC	***(ii)**	An explanation demonstrating some of the following: Descriptions of the graph • Accelerates upwards during stage1 • Maximum velocity is reached at the end of stage 1 • Accelerates downwards / decelerates during stage 2 • Accelerates during stage 3 • Comes to rest during stage 4. Interpretations of the shape of the graph • Fuel is burnt creating thrust in stage • Thrust is upwards in stage 1/ • Gravity/weight (is always) a downward force • Fuel runs out at end of stage 1/ has ran out by stage 2 • Still going up during/ max height at end of stage 2 • Starts to fall at start of stage 3 • Negative velocity during stage 3 because it is falling. • Rapid deceleration / collision with the ground during stage 4/end of stage 3 Explanations for changes in velocity • Resultant force upwards/ thrust greater than gravity force during stage 1 • Acceleration non-linear because mass is decreasing / resultant force is increasing • Linear deceleration in stage 2/3 because force of gravity is constant • Resultant downward force/only gravity/ weight is acting during stage 2 and 3 • Large resultant force of impact during stage 4	**(6)**

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Level	0	No rewardable content
1	1 - 2	• A limited explanation involving descriptions of the graph. • E.g. The rocket gets faster as it goes up during stage 1. The rocket slows down during stage 2 • 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 involving interpretations of the shape of the graph e.g. The rocket's velocity increases during stage 1 because the burning fuel provides a force. The rocket accelerates downwards during stage 3 • 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 which includes descriptions and interpretations for the shape of the graph including an explanation. E.g. The rocket's acceleration during stage 1 is increasing because it is losing mass as the fuel is burnt. It then slows down until it reaches maximum height at the end of stage 2 • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately • spelling, punctuation and grammar are used with few errors

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Q2.

Question Number	Answer	Acceptable answers	Mark
(i)	force (1)	If than one word given then 0 marks.	**(1)**

Question Number	Answer	Acceptable answers	Mark
(ii)	B 0.07kg		**(1)**

Question Number	Answer	Acceptable answers	Mark
(iii)	Arrow pointing (vertically) upwards (1) Value of 1.2 (N) (written near to arrow) (1)	 Marks are independent of each other	**(2)**

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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**

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**

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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

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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