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

Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Mark Schemes

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)** • momentum = mass × velocity • action and reaction are equal and opposite (N 3) • force of R on Q = -force of Q on R • $\frac{\text{change in momentum of Q}}{\text{time}} = \frac{-\text{ change in momentum of R}}{\text{time}}$ • time of collision same for both • change in momentum of Q = - change in momentum of R • no overall change in momentum • R accelerates because of force from Q • transfer of momentum between Q and R	**(6)** AO 1 1

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 ideas lacks detail. (AO1) Presents an explanation with some structure and coherence. (AO1)
Level 2	3-4	• An explanation that 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	• An explanation that 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)

Q2.

	Answer	Acceptable answers	Mark
(a)(i)	momentum = 0.03 × 170 (1)	Accept 5.1 seen	**(1)**
(a)(ii)	momentum before = momentum after (1) 5.1 = 0.83 × v (1) v = 6.1 (m/s) (1)	allow 5.0 = 0.80 x v for 1 mark max 5.0 = 0.83 × v v = 6.0 (m/s) allow ecf from (a)(i) give full marks for correct answer, no working	**(3)**
(a)(iii)	Statement to include any two from • kinetic energy is not conserved (1) • (lost ke) appears as heat/sound (1) • momentum is conserved (1)	ke not conserved / some ke lost no momentum lost	**(2)**
(b)(i)	an explanation linking • momentum (must be) conserved (1)	photons move in opposite directions indication of movement in opposite directions	**(2)**

	• so must have positive and negative momentum (1)	(e.g. opposite velocities)	
(d)(ii)	E = (2 ×) 9.1 × 10^{-31} × [3 × 10^{8}]^{2} (1) = 1.6 × 10^{-13} (J) (1)	8.2 × 10^{-14} (0.82 × 10^{-13}) for 1 mark give full marks for correct answer, no working	**(2)**

Q3.

Question	Answer	Additional guidance	Mark
(i)	from 20 s to 45 s		**1 AO1.1**

Question	Answer	Additional guidance	Mark
(ii)	use of area from graph (1) process (1) EITHER calculation of area of trapezium OR calculation of area triangle and rectangle and triangle e.g. area $= \frac{[25 + 70]}{2} \times 15$ OR e.g. area triangle $= \frac{15 \times 20}{2} = 150$ (m) area rectangle $= 15 \times 25 = 375$ (m) area triangle $= \frac{15 \times 25}{2} = 187.5$ (m) evaluation (1) 712.5 (m)	allow evidence of counting squares and area of one square accept 712 (m) or 713 (m) do not accept 710 (m) award full marks for the correct answer without working	3 AO2.1

Question	Answer	Additional guidance	Mark
(iii)	substitution and evaluation (1) (average speed =) $\frac{712.5}{70}$ = 10(.2) (m/s)	allow $\frac{710}{70}$ = 10(.1) (m/s) allow ecf from their 7(a)(ii) award full marks for the correct answer without working	**1** **AO2.1**