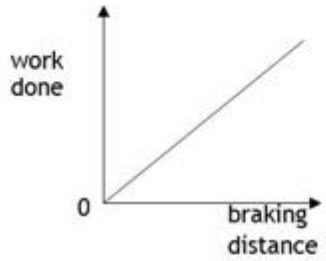
Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : Motion And Forces

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

Mark Schemes

Q1.

Question Number	Answer	Mark
	 ☒ A **The only correct answer is A (showing direct proportionality)** **B** is not correct – curve (not showing direct proportionality) **C** is not correct – constant value shown (not showing direct proportionality) **D** is not correct – curve (not showing direct proportionality)	**(1)**

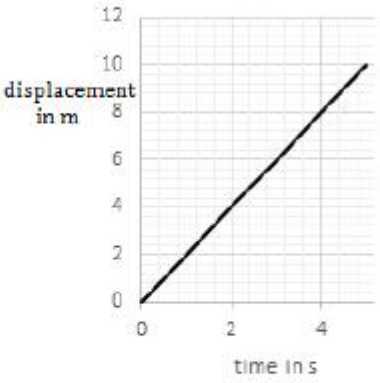
Q2.

Question Number	Answer	Additional guidance	Mark
(i)	A The submarine is speeding up.		(1)

Question Number	Answer	Additional guidance	Mark
(ii)	An explanation that combines identification (1 mark) and reasoning (1 mark) • identify the two forces which are (force of the submarine on the water) and <u>force/push of water on the submarine/propeller</u> (1) • these forces are equal and opposite (1)	states N's 3rd law mentions action and reaction **ignore** balanced forces	(2)

Question Number	Answer	Additional guidance	Mark
(iii)	An explanation that combines identification (1 mark) and reasoning (1 mark) • states N's 2nd law (1) $F = \frac{(mv - mu)}{t}$ • The reason that a long time is needed is because of a big change in momentum (1)	large momentum if no other marks scored F = ma scores 1 mark **OR** large mass scores 1 mark	(2)

Q3.

Question number	Answer	Mark
CS4	[x] **C**  A is not correct because it shows a constant velocity of 0.4 m/s B and D are not correct because they show constant acceleration.	**(1)** **AO3**

Q4.

	Answer Additional guidance	Mark
	B 3.0 s **A, C** and **D** are incorrect as they are the wrong time.	(1) AO3

Q5.

Question Number	Answer	Additional guidance	Mark
	B distance **A, C** and **D** are incorrect as these are vector quantities		**(1)** **AO1**

Q6.

Question number	Answer	Mark
	☒ **B** force Options A, C and D are all scalars.	**(1)**

Q7.

Question Number	Answer	Additional guidance	Mark
	an explanation linking: use an electronic timer / (1) to eliminate reaction time (1)	 light gate/ data logger there are other options which should be judged to this pattern (e.g. increase distance to reduce effect of reaction time)	**(2)** AO 3 3b

Q8.

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. **AO2 (strand 2) (6 marks)** <u>Determining force</u> • Use of F = (mv - mu)/t or F =ma • mass (of trolley(s)) needed • and times during impact (t) <u>Showing effect of crumple zone</u> • experiment repeated with and without the spring • (note) difference in contact times • use of spring as crumple zone • with spring, time for contact greater, less impact force <u>Precautions or controls</u> • times repeated and average taken • careful controls – same starting position / same angle of slope / release without pushing etc.	**(6)Exp**

Level	Mark	Descriptor
	0	• No awardable content
Level 1	1-2	• The explanation attempts to link and apply knowledge and understanding of scientific enquiry, techniques and procedures, flawed or simplistic connections made between elements in the context of the question. • Lines of reasoning are unsupported or unclear. (AO2)
Level 2	3-4	• The explanation is mostly supported through linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, some logical connections made between elements in the context of the question. • Lines of reasoning mostly supported through the application of relevant evidence. (AO2)
Level 3	5-6	• The explanation is supported throughout by linkage and application of knowledge and understanding of scientific enquiry, techniques and procedures, logical connections made between elements in the context of the question. • Lines of reasoning are supported by sustained application of relevant evidence. (AO2)

SUMMARY, for guidance

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 techniques and procedures – **two** unconnected statements from any section	Possible candidate responses Use F = (mv - mu)/t Use F = ma keep slope the same repeat and average use spring as crumple zone
Level 2	3–4	Additional guidance Some knowledge of techniques and procedures with a logical connection made in one section and statement from one more section	Possible candidate responses Measurements (difference in contact times) with and without the spring Use F = ma in finding the force
Level 3	5–6	Additional guidance Detailed knowledge of techniques and procedures with logical connections made in two sections and statement from one more section	Possible candidate responses Measure the trolley mass(es)/ velocities/ impact time(s) and use F = ma in finding the force Measurements (difference in contact times) with and without the spring Same starting place for trolley each time.