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.

	Answer	Additional guidance	Mark
(i)	an explanation linking **two** from: (wet road means) less / no friction (between tyres and road) (1) (wet weather means) increased stopping distance (1) (slower speed means) shorter braking / stopping distance (1) (dry weather / slower speed) reduces possibility of skidding / sliding / idea of losing control / crashing (1)	accept reverse arguments throughout accept road more slippery / less grip accept idea of reduced visibility accept braking or thinking distance in this context accept takes longer to slow down / stop ignore harder to brake	**(2)** **AO1**

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	Answer	Additional guidance	Mark
(ii)	convert **either** distance or time (1) (31 m =) $\frac{31}{1000}$ (km) or 0.031 (km) **OR** (1 s =) $\frac{1}{3600}$ (h) = $\frac{1}{60\times60}$ (h) or 0.000 28 (h) evaluation (1) (31 m/s =) 110 (km/h)	 (130 km =) 130 × 1000 (m) or 130 000 (m) **OR** (1 h =) 60 x 60 (s) or 3600 (s) (130 km/h =) 36(.1) (m/s) accept 111.6 or 112 (km/h) for 2 marks if no other marks awarded accept 1860 m/min and 2167 m/min for 1 mark each award full marks for the correct answer without working	**(2)** **AO2**

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	Answer	Additional guidance	Mark
(iii)	select and substitute into distance travelled = average speed x time (1) 46 = 31 x t rearrangement and evaluation (1) (t=) 1.48(3) (s) evaluation given to 2 sf (1) (t =) 1.5 (s)	 $31 = \frac{46}{t}$ $(t =) \frac{46}{31}$ award two marks for the correct evaluation without working any answer written to 2 sf independent mark 1.5 scores 3 marks 1.4 scores 2 marks 1.50 scores 2 marks 0.67 scores 2 marks 1400 scores 2 marks 0.673(9) scores 1 mark 1426 scores 1 mark	**(3)** **AO2**

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Q2.

Question number	Answer	Additional guidance	Mark
	an explanation linking any **two** from shorter reaction time (of computer-controlled car) (1) shorter thinking distance (1)	allow reverse arguments computer (reaction time) not affected by other relevant factors shorter distance (travelled) **before brakes applied**	**2** **AO3.1**

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Q3.

Question number	Answer	Additional guidance	Mark
(i)	D travelling more slowly A is incorrect, more passengers would increase the stopping distance B is incorrect, worn tyres would increase the stopping distance C is incorrect, if the car needed new brakes this would increase the stopping distance		(1) AO1

Question number	Answer	Additional guidance	Mark
(ii)	identification of horizontal line as reaction time (1) evaluation (1) 0.6 (s)	award full marks for correct answer without working 0.7 scores 1 mark	(2) AO3

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Q4.

Question number	Answer	Mark
	C reaction time	(1)

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Q5.

	Answer	Additional guidance	Mark
(i)	0.54 (s)	allow any value from 0.53 and 0.55 inclusive	(1) AO3

	Answer	Additional guidance	Mark
(ii)	curve extended to $\alpha = 80°$ (1) 0.45 (s) (1)	judge generously allow range 0.42 to 0.48 award full marks for the correct answer without working.	(2) AO3

	Answer	Additional guidance	Mark
(iii)	mention/idea of reaction time (1) (reaction time) about the same as the times on the graph (1)	human reaction time is about 0.2 seconds (compared with) 0.4 seconds on the graph ignore accuracy ignore "human error"	(2) AO3

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