Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 3_ Conservation of Energy

Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
(i)	Any one of: solar panel (1) bio-gas (1) geothermal (1)	 reject wind unless reference made to electrical heater supplied by wind-powered dynamo.	(1)

Question number	Answer	Additional guidance	Mark
(ii)	substitution and rearrangement (1) efficiency. = useful energy / total energy 0.96 x 7500 evaluation (1) 7200 (J)	 full marks will be awarded for correct numerical answer without working	(2)

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Q2.

Question number	Answer	Additional guidance	Mark
(i)	thermal (energy/store) (1)	energy dissipated energy wasted energy lost energy transferred to surroundings energy transferred due to friction energy transferred due to air resistance allow heat (energy) ignore sound/not useful energy	**1** **AO2.1**

Question number	Answer	Additional guidance	Mark
(ii)	30 (J) (1)	accept -30	**1** **AO2.1**

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Question number	Answer	Additional guidance	Mark
(iii)	substitution (1) 950 (x100) 980 evaluation (1) 0.97 OR 97%	 allow answers that round to 0.97 or 97% for 2 marks allow 1 mark for answers that round to 97 or 0.97% allow 1 mark for answers of 0.96 or 96% (truncated) award full marks for correct answer without working	**2** **AO2.1**

Q3.

Question number	Answer	Mark
	As chemical energy in the battery	**(1)**

Q4.

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Question number	Answer	Additional guidance	Mark
	(original) GPE – KE (at bottom) (1)	allow (idea of) input – output allow wrong way round (eg output-input)	**(1)**

Q5.

Question number	Answer	Additional guidance	Mark
	(vertical) height of slope (1) mass (of the toy car) (1)	 allow (in this context) weight if no other mark scored allow 1 mark for quoting either equation (Δ)GPE =mgh OR KE = ½ mv^2	**(2)**

Q6.

Question number	Answer	Additional guidance	Mark
	any **two** from reduce air resistance (1) lubricate (wheels) (1) push off (1)	 be more aerodynamic crouch down	**2** **AO1.1**

Q7.

	Answer	Acceptable answers	Mark

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(i)	1400 – 1300 (= 100) (kJ) (1)		**(1)**
(ii)	Substitution (1) 1300 / 1400 × 100 Evaluation (1) 93(%) or 0.93	A value which rounds to 93(%) or 0.93 Correct answer with no working scores 2 marks	**(2)**

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** • fuel forms a store of chemical (potential) energy • chemical energy is transferred to kinetic energy and thermal energy when the car moves • kinetic energy transferred to thermal energy as the car slows down **AO3** • during X, kinetic energy increases as the car's speed increases/car accelerates and the increase in kinetic energy is provided by the chemical energy store • during all three sections, work is done against frictional forces in the moving parts of the car and against the drag from the air • during Y, kinetic energy stays constant when the car moves at constant speed but energy is still transferred to thermal energy • during Z, kinetic energy decreases as the car slows down	**(6)**

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Level	Mark	Descriptor
	0	No awardable content.
1	1–2	• Interpretation and evaluation of the information attempted but will be limited with a focus on mainly just one variable. Demonstrates limited synthesis of understanding. (AO3) • The description attempts to link and apply knowledge and understanding of scientific ideas, flawed or simplistic connections made between elements in the context of the question. (AO2)
2	3–4	• Interpretation and evaluation of the information on both variables, synthesising mostly relevant understanding. (AO3) • The description is mostly supported through linkage and application of knowledge and understanding of scientific ideas, some logical connections made between elements in the context of the question. (AO2)
3	5–6	• Interpretation and evaluation of the information, demonstrating throughout the skills of synthesising relevant understanding. (AO3) • The description is supported throughout by linkage and application of knowledge and understanding of scientific ideas, logical connections made between elements in the context of the question. (AO2)

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