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

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

Mark Schemes
Q1.

Question number	Answer	Additional guidance	Mark
	An explanation linking: lubricate/oil the wheels (1) (to) reduce friction (1)	 make the toy car more streamlined / different surface / lubricate slope reduce air resistance / drag accept start from lower down the slope (1) (to) reduce the total amount of energy (transfer) (1)	**(2)**

Q2.

	Answer	Acceptable answers	Mark
(i)	(Bow and arrow:) kinetic (1) (Electric kettle:) heat (thermal) (1) (Microphone:) sound (1)	Heat/thermal	**(3)**
(ii)	Any **one** from (transferred into) thermal/heat/sound(energy) (1) (Energy) is dissipated (1)	Do not accept light energy or it disappears goes into surroundings/air (energy) is wasted/lost	**(1)**

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Q3.

	Answer	Acceptable answers	Mark
(ai)	Model A because Model A (can produce up to)7200kWh per year (at 13mph) / will produce 6000 kWh (with given wind speed). (1)	Model B produces less than 6000kWh per year at 13mph /requires wind speed of more than 13mph to produce 6000kWh	**(1)**
(aii)	Substitution (1) 0.14 × 6000 Evaluation (1) (£)840	Allow incorrect conversion of p to £ such as 0.014 × 6000 for 1 mark only 84 000 p correct answer with no working shown gains both marks	**(2)**
(aiii)	Divide the installation cost by the annual saving (to find the time in years) (1)	£840 for annual saving	**(1)**
(aiv)	A suggestion linking (energy saving lamps) would not transfer so much thermal energy (1) he may have to use additional heating / lights (which would cost money to run/ purchase) (1)	not get hot / produce so much heat reverse argument such as insufficient heat for chicks to thrive (Ignore references to light output.)	**(2)**

		Indicative Content	Mark
QWC	***(b)**	A discussion including some of the following points • Both HEP and Solar power are renewable • Both HEP and Solar power would save fossil fuels • HEP only possible in some locations • HEP requires reservoirs and damming of rivers • This can	**(6)**

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		damage environment /takes a lot of land out of use • Energy from solar power installation is currently much less than energy from fossil fuel powered station • Solar power only suitable in certain locations • Solar power reliability dependent on constant sunshine • Neither of them cause atmospheric pollution	
Level	**0**	No rewardable content	
1	**1 - 2**	• a limited description such as at least one relevant detail of each resource eg: Solar power doesn't give off atmospheric pollution. HEP generates more power than solar power. • 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 discussion such as one which gives comparisons between the two or at least an advantage and disadvantage of both. eg: HEP does not use fossil fuels but it can damage the environment where is it located. Solar power will never run out but it requires lots of light/land. • 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 comparison such as one which relates advantages and disadvantages of **both** HEP and solar power to a particular situation for possible large scale use e.g.: Solar power uses a renewable energy source but it currently does not produce as much energy as fossil fuel station where there is little sunlight. HEP can produce a lot more energy where there are hills and water but only possible in certain geographical locations.	

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		• 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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