Name of the Student:_____

Max. Marks : 21 Marks   **Time : 21 Minutes**

Mark Schemes

Q1.

Question Number	Answer	Additional Guidance	Mark
(i)	recall (1) $(\Delta PE) = mgh$	$1300 = 7 \times 10 \times h$ work done = force x distance	**(3)** AO 1 1 AO 2 1
	substitution and rearrangement (1) $h = \dfrac{1300}{7 \times 10}$		
	evaluation (1) 19 (m)	accept answers that round up to 19 (m) (e.g. 18.57 (m)) award full marks for the correct answer with no working	

Question Number	Answer	Additional guidance	Mark
(ii)	recall (1) KE = ½ m v² substitution and rearrangement (1) v = √(2 x 1100÷8) evaluation (1) 17 (m/s)	$v^2 = \dfrac{2 \times 1100}{8}$ accept answers that round up to 17 (m/s) (e.g. 16.58 (m/s)) award full marks for the correct answer with no working	(3) AO 1 1 AO 2 1

Q2.

Question Number	Answer	Additional guidance	Mark
	reading energies from graph (1) 5.2 and 3.9 (kJ) substitution (1) e.g. $\dfrac{1.3 \times (100)}{5.2}$ evaluation (1) 25(%)	accept 5.0 to 5.4 and 3.7 to 4.1 0.18 to 0.32 18 to 32 (%) award full marks for the correct answer with no working	**(3)** AO 2 1

Q3.

	Answer	Additional guidance	Mark
i	**Two** from: falling water/hydro (1) tides (1) sun/solar (1) geothermal (1) biomass (1)		(2) **AO1**

	Answer	Additional guidance	Mark
(ii)	recall and substitution (1) (%) efficiency = $\dfrac{2.2\ (\times\ 100)}{6.2}$ evaluation (1) 0.35 (1)	allow numbers that round to 0.35 e.g. 0.3548 accept 35(%) for full marks award full marks for correct answer without working.	(2) **AO2**

	Answer	Additional guidance	Mark
(iii)	**One** from: air (has to be) moving on the other side of the blades (1) not all of the air hits the blade (1) friction within the turbine/generator (1) some energy (always) transferred to thermal (1) it is fitted with a speed limiter (1)		(1) AO3

Q4.

Question Number	Answer	Mark
	B natural gas **is the only correct answer**	**(1)**
	A geothermal *is not a non-renewable source of energy*	AO 1 1
	C tidal *is not a non-renewable source of energy*	
	D solar *is not a non-renewable source of energy*	

Q5.

Question Number	Answer	Additional guidance	Mark
	an explanation linking: increased use of renewables/decrease use of nonrenewables (1)	accept "them" as renewable accept reason why renewables are beneficial	(2) AO 1 1
	reason (1)	accept reason why non-renewable(s) are not beneficial	

Q6.

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

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

Question number	Answer	Additional guidance	Mark
(iii)	substitution (1) $\underline{950}$ (x100) 980		2 AO2.1
	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	