

Question	Answer	Marks	AO Element	Notes	Guidance
1	B - hydroelectric	1			
2	B - 25%	1			
3	B - 4.0 W	1			
4	C - wasted output energy = useful output energy	1			
5(a)	any two from: laptop can be charged anywhere owtte cost of charging is zero (Sun is a) renewable energy (source)/not using fossil fuels	2			
5(b)	(takes 5 times) longer to (re-)charge (battery)	1			

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6	any two from: risk of radioactive material escaping into environment products of nuclear fission are radioactive many isotopes produced have long half-lives reactors can be used to produce material for nuclear weapons	2			
7	useful energy output compared to total energy input	2			
8(a)	(gravitational) potential (energy)/(G)PE	1			
8(b)	any 3 from: water flows down OR water flows at constant speed water drives turbine OR turbine rotates owtte turbine turns generator (at constant speed) electricity generated/produced owtte	3			

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8(c)	transferred to thermal OR sound dissipated to the surroundings owtte	2			
8(d)	shorter (travelling) distance/water in B higher than A/water from A has to be pumped (up to C) owtte	1			
9	B between E and C G between C and D A followed by F in last two boxes	3			
10	B - 15%	1			
11	B - $\frac{\text{useful energy output}}{\text{total energy output}} \times 100\%$	1			
[Total: 23]					