Question Number	Answer	Acceptable answers	Mark
1(a)	An explanation linking two from MP1 (so that they) decrease the (high) voltages (1) MP2 high voltages used for efficiency/energy saving (1) MP3 (step-down transformers) used {near / for} {homes / factories/appliances} (1) MP4 (so that it is) safer (1)	**stepping down voltage reducing from {high/eg 200 000 V} to {low /e.g.230 V} voltage** **low current used for efficiency/ energy saving** less risk of electrocution high voltages are dangerous	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(b)	one line / curve above **and** below x-axis (1) two complete cycles in the 1.0 s (1)	one complete cycle in 0.5 s	**(2)**

Question Number	Answer	Acceptable answers	Mark
1(c)	Transposition (1) $V_s = V_p \times n_s/n_p$ Substitution (1) $(V_s =) \frac{12 \times 100}{2400}$ Evaluation (1) 0.5 (V)	 Substitution and transposition in either order i.e. if $\frac{12 \times 100}{2400}$ is seen this scores 2 If they sub Vp, Np and Ns correctly, ignore anything for Vs even a blank Calculation may be done using <u>turns ratio</u> Correct answer no working = full marks answer (no working) with POT error =2 (eg 5 or 0.05) Ignore powers of 10 until evaluation	**(3)**

Question Number	Answer	Acceptable answers	**Mark**
1(d)	C		**(1)**

(Total for Question 2 = 8 marks)

Question Number	Answer	Acceptable answers	Mark
2(a)	B		**(1)**

Question Number	Answer	Acceptable answers	Mark
2(b)(i)	an explanation linking **three** of the following • (waves cause) float to move (up and down)(1) • (this causes) magnet to move (in and out of coil) (1) • (hence) magnetic field (of magnet) (1) • cuts across/links/ interacts wire in coil (1) • <u>inducing/generating</u> potential difference across ends of coil (1)	magnet moves (in the coil) **Allow**{current/voltage/volts/amps} <u>induced/generated</u> in coil	**(3)**

Question Number	Answer	Acceptable answers	Mark
2(b)(ii)	a description including **two** of the following • increase the number of turns on the coil (1) • use a more powerful magnet (1) • use full scale device (1)	more coils (of wire) ignore bigger coil stronger/more magnets **Ignore** bigger magnet **Allow** idea of more/bigger/ faster waves	**(2)**

Question Number		Indicative content	Mark
QWC	***2(c)**	A discussion linking some of the following **Advantages of tidal power** • renewable energy source • reduction in greenhouse gases/atmospheric pollution (compared to fossil fuel) • reduces reliance on fossil fuels • conserves stocks of fossil fuels • predictable source of energy • regular/reliable supply of energy • barrages at different areas would give energy supply at different times **Disadvantages of tidal power** • does not give continuous supply of energy • destruction of plant/animal/bird habitats • problems with passage of ships • affects migration of fish • high capital cost /very long payback time • pollution caused from producing /transporting building materials • visual pollution This list is not exhaustive. Give credit for other plausible suggestions	**(6)**
Level	**0**	No rewardable material	
1	**1-2**	• there is limited discussion of the advantages or disadvantages of tidal power ie gives one advantage OR one disadvantage of tidal power. e.g. tidal power is not available 24 hours a day/ The barrage will save fuel for motorists going to the town on the other side (of the estuary) • the answer communicates ideas using simple language and uses limited scientific terminology • spelling, punctuation and grammar are used with limited accuracy	
2	**3-4**	• there is some discussion of the advantages and disadvantages of tidal power ie gives one advantage AND one disadvantage of tidal power e.g. an advantage of tidal power is that it uses a renewable energy resource and a disadvantage is that they damage birds' habitats • 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**	• there is detailed discussion of the advantages and disadvantages of tidal power ie gives one advantage AND one disadvantage of tidal power, one of which is detailed, AND a clear link to another method e.g. tidal power stations are a good idea because they use a renewable energy resource and will help to conserve fossil fuel stocks. However, it causes problems for migrating fish • the answer communicates ideas clearly and coherently uses a range of scientific terminology accurately ling, punctuation and grammar are used with few errors	