

# Conservation of Energy and Power and Energy forms 3 MS

## QUESTION 1

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	electrical sound	correct order only	1 1
b)	the energy transformed by the TV will be destroyed		1
c)	a higher efficiency than		1
Total marks			4

## QUESTION 2

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)i)	2(.0)	accept 2000 W or 2000 watt(s) accept answer given in table do not accept 2000	1
a)ii)	4.5	allow 1 mark for correct substitution ie $1.5 \times 3$ allow 1 mark for the answers 1.5 or 6(.0)	2
b)i)	6 pm temperature starts to rise faster or graph (line) is steeper / steepest	only scores if 6 pm given  it refers to graph gradient or temperature accept answers in terms of relative temperature rise eg 5 to 6 pm 2 °C rise, 6 to 7 pm 6 °C rise accept temperature rises sharply / rapidly / quickly do not accept temperature starts to rise	1 1
b)ii)	middle box ticked		1
Total marks			6

## QUESTION 3

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	radio	radio must be chosen for reason to score	1

	gives out sound or others give out heat / thermal energy	inclusion of other forms of energy negates mark	1
b)	Kettle	accept 2.5 (kW)	1
c)	(bigger volume) takes more time (to boil)	accept explanation using data from graph	1
	(so) more energy transferred	do not accept electricity for energy	1
	(and) this costs more money	ignore references to cost of water	1
Total marks			6

#### QUESTION 4

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	<p>advantage</p> <p>any one from:</p> <ul style="list-style-type: none"> <li>•produce no / little greenhouse gases / carbon dioxide</li> <li>•high(er) energy density in fuel</li> <li>•long(er) operating life</li> </ul> <p>disadvantage</p> <p>any one from:</p> <ul style="list-style-type: none"> <li>•produce (long term) radioactive waste</li> <li>•accidents at nuclear power stations may have far reaching or long term consequences</li> <li>•high(er) decommissioning costs</li> <li>•long(er) start up time</li> </ul>	<p>allow produces no / little polluting gases</p> <p>allow doesn't contribute to global warming / climate change</p> <p>allow produce no acid rain / sulphur dioxide reference to atmospheric pollution is insufficient</p> <p>produce no harmful gases is insufficient</p> <p>accept one nuclear power station produces as much power as several gas power stations</p> <p>nuclear power stations can supply a lot of or more energy is insufficient</p> <p>allow saves using reserves of fossil fuels or gas</p> <p>accept waste is toxic</p> <p>accept nuclear for radioactive</p> <p>accept high(er) building costs</p>	1
b)i)	12 000 (kWh)	<p>allow 1 mark for correct</p> <p>substitution eg</p> <p><math>2000 \times 6</math></p> <p>or</p> <p><math>2000000 \times 6</math></p> <p>or</p> <p><math>12\,000\,000 / 1000</math></p> <p>an answer of 12 000 000 scores 1 mark</p>	2

b)ii)	any idea of unreliability, eg <ul style="list-style-type: none"> <li>•wind is unreliable</li> <li>• shut down if wind too strong/weak</li> <li>•wind is variable</li> </ul>	reference to weather alone is insufficient	1
Total marks			4

### QUESTION 5

QUESTION	ANSWER	EXTRA INFORMATION	MARKS
a)	chemical kinetic  sound	correct order only	1 1 1
b)	37.5% or 0.375	an answer rounded to 0.38 or 38% scores both marks an answer of 0.375 with a unit gains 1 mark an answer of 0.375% gains 1 mark an answer of 37.5 with or without a unit gains 1 mark allow 1 mark for an answer $\frac{3}{8}$ $\frac{3}{8}$ with a unit scores 0	2
Total marks			5