

Name of the Student: _____

Max. Marks : 23 Marks

Time : 23 Minutes

Mark Schemes

Q1.

- (a) (i) kinetic
*do **not** accept movement* 1

- (ii) thermal sound
accept heat for thermal
*do **not** accept noise for sound*
***both** answers required in either order* 1

- (b) transferred to surroundings / surrounding molecules / atmosphere
'it escapes' is insufficient

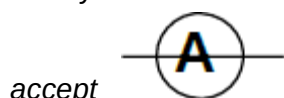
- or**
becomes dissipated / spread out
accept warms the surroundings
accept degraded / diluted
accept a correct description for surroundings eg to the washing machine
*do **not** accept transformed into heat on its own* 1

- (c) (i) 3 (.0 p)
*allow **1** mark for correct substitution of correct values ie 0.2×15*
*allow **1** mark for calculating cost at 40°C (16.5p)*
or
cost at 30°C (13.5p) 2

- (ii) any **two** from:
- less electricity needed
ignore answers in terms of the washing machine releasing less energy
an answer in terms of the washing machine releasing CO_2 negates mark
*do **not** accept less energy is produced*
 - fewer power stations needed
 - less fuel is burned
accept a correctly named fuel
*do **not** accept less fuel is needed*

Q2.

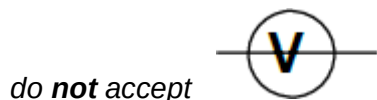
- (a) (i) ammeter symbol correct and drawn in series



do **not** accept lower case a

1

voltmeter symbol correct and drawn in parallel with the material



1

- (ii) adjust / use the variable resistor
accept change the resistance

or

change the number of cells

accept battery for cell

accept change the pd / accept change the voltage

accept increase / decrease for change

1

- (b) (i) 37.5 (Ω)
accept answer between 36 and 39 inclusive

1

- (ii) 5.6(25) **or** their (b)(i) $\times 0.15$
allow **1** mark for correct substitution ie 37.5 **or** their (b)(i) $\times 0.15$
provided no subsequent step shown

2

- (c) (i) the thicker the putty the lower the resistance
answer must be comparative
accept the converse

1

- (ii) any **one** from:

- measuring length incorrectly
accept may be different length
- measuring current incorrectly
do **not** accept different currents
- measuring voltage incorrectly
do **not** accept different voltage
- ammeter / voltmeter incorrectly calibrated
- thickness of putty not uniform
do **not** accept pieces of putty not the same unless qualified

- meter has a zero error
do **not** accept systematic / random error
accept any sensible source of error eg putty at different temperatures
do **not** accept human error without an explanation
do **not** accept amount of putty not same

1

[8]

Q3.

- (a) (i) conduction

1

convection

1

correct order only

- (ii) to keep the ceramic bricks hot for a longer time

1

- (b) (i) $E = P \times t$

18.2

allow **1** mark for correct substitution ie 2.6×7 provided that no subsequent step is shown

2

- (ii) 91 (p)

or their (b)(i) $\times 5$ correctly calculated

accept £0.91

do **not** accept 0.91 without £ sign

1

- (c) $E = m \times c \times \theta$

2 250 000

allow **1** mark for correct substitution ie $120 \times 750 \times 25$ provided that no subsequent step is shown

answers 2250 kJ or 2.25 MJ gain both marks

2

[8]