Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Mark Schemes

Q1.

(a) (i) silvered surfaces

more than the correct number of ticks in a row negates the mark

radiation

2

plastic cap

conduction, convection (both required)

	conduction	convection	radiation	
vacuum	✓	✓		
silvered surfaces			✓	(1)
plastic cap	✓	✓		(1)

(ii)

any mention of air or any other substance in a vacuum scores zero

because there are no particles in a vacuum

accept atoms / molecules for particles
accept vacuum is empty space
accept there is nothing in a vacuum
accept there is no air / gas in the vacuum

conduction **and** convection need particles / medium

*need reference to both conduction **and** convection*
accept correct descriptions

2

(b) (i) less heat lost (to air above the heater)

*do **not** accept **no** heat lost*

light shiny surfaces are poor emitters (of radiation)

accept radiators for emitters
references to reflection are neutral

or dull, matt surfaces are good emitters (of radiation)

*do **not** credit answers which infer reflection from the underside of the*

hood

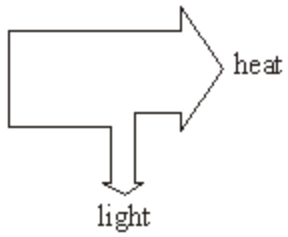
ignore correct reference to absorption

2

(ii) correct diagram drawn with one output arrow narrower than the other

ignore input

arrows correctly labelled with energy form
eg



flow charts score zero

2

(iii) energy cannot be destroyed

accept (principle of) conservation of energy

*do **not** accept because energy cannot be lost without clarification*

1

[9]

Q2.

(a) 1/25 **or** 1:25 **or** 0.04

accept 4 % or $\frac{15}{375}$ *or* $\frac{3}{75}$ *or 1 in 25 for both marks*

*allow **1** mark for total of 375*

*allow **1** mark for a clearly correct method using a clearly incorrect total*

*do **not** accept 1:26*

2

(b) (i) **B**

*do **not** credit reason if **B** is not chosen*

1

(only) burning fossil fuels produces carbon dioxide / carbon (emissions)
or nuclear fuels don't produce carbon dioxide

insufficient – smallest amount of fossil fuels

accept less carbon dioxide

1

(ii) accept anything reasonable eg

increased level of insulation

use energy efficient light bulbs

do not leave appliances on standby

switch thermostats down (1°C)

generate own electricity

install solar panels

accept insulate

accept specific examples eg loft

1

(c) (i) any **three** from:

- no power output until wind speed exceeds 4m/s
- output rises rapidly after 4m/s
- output begins to level out / rises less rapidly at / after 13m/s
- output peaks at 21 / 22m/s
- output constant between 21 / 22 and 25 / 26 m/s
- output falls (rapidly) after 25 / 26m/s

*accept for **1** mark goes up then comes down*

3

(ii) any **one** from:

- unreliable energy source
- dilute energy source
- take up too much land

accept wind does not always blow

accept need thousands / lots of turbines

ignore reference to visual / noise pollution

ignore reference to kill birds

1

[9]