

# MARK SCHEME

# GCSE

## PHYSICS

## AQA - TRIPLE SCIENCE

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P3 - TEST 2

PARTICLE MODEL OF MATTER

Beginner

## Mark schemes

<b>1.</b>	(a) (i) Z	1
	(ii) X	1
	(b) (i) moving randomly	1
	(ii) stronger than	1
	(c) (i) evaporation	1
	(ii) any <b>one</b> from:	
	• becomes windy	
	• temperature increases <i>accept (becomes) sunny</i> <i>"the sun" alone is insufficient</i>	
	• less humid	1
		<b>[6]</b>
<b>2.</b>	(a) (i) 7pm <i>accept 19.00 / 1900</i>	1
	(ii) 8pm <i>accept 20.00 / 2000</i>	1
	temperature drops more slowly <i>accept heat for temperature accept line is less steep</i>	1
	(b) insulator	1
	conduction *	1
	convection *	
	<i>* answers can be either way around</i>	1

- (c) (i) 4 (years) 1
- (ii) it is the cheapest / cheaper / cheap  
do **not** accept answers in terms of heat rising or DIY 1
- has the shortest / shorter payback time  
do **not** accept short payback time 1

[9]

- 3.** (a) Student A's measurements had a higher resolution 1
- Student B was more likely to misread the temperature 1
- (b) a random error 1
- (c) 8.4 °C 1
- (d) 740 (seconds)  
allow answers in the range 730 – 780 1
- (e) 0.40 × 199 000 1
- 79 600 (J) 1
- accept 79 600 (J) with no working shown for 2 marks
- (f) stearic acid has a higher temperature than the surroundings  
accept stearic acid is hotter than the surroundings 1
- temperature will decrease until stearic acid is the same as the room temperature / surroundings 1

[9]

- 4.** (a) to reflect (the infrared)  
accept (shiny surfaces) are good reflectors  
ignore reference to incorrect type of wave 1
- (b) black 1

best absorber (of infrared)

*answer should be comparative*  
*black absorbs (infrared) is insufficient*  
*accept good absorber (of infrared)*  
*ignore reference to emitter*  
*ignore attracts heat*  
*ignore reference to conduction*

1

(c) to reduce energy loss

*accept to stop energy loss*  
*accept heat for energy*  
*accept to stop / reduce convection*

**or**

so temperature of water increases faster

*accept to heat water faster*  
*accept cooks food faster*

**or**

reduces loss of water (by evaporation)

1

(d) 672 000

*allow 1 mark for correct substitution, ie  $2 \times 4200 \times 80$  provided no subsequent step shown*

2

**[6]**

**5.**

(a) the bigger the surface area, the faster the water cools down / temperature falls

*answers must imply rate*  
*accept heat for temperature provided rate is implied*  
*do **not** accept cools down more unless qualified*

1

(b) any **two** from:

the ears:

- have large surface / area  
*not just has large ears*
- radiate heat  
*accept loses heat, but does not score*  
*if the reason given for heat loss is wrong*
- keep blood cooler

2

(c) (i) radiation

1

(ii) conduction

1

**[5]**