Practice Question Set For GCSE
**Subject : Physics**
**Paper-1 Topic: Particle Model Of Matter (High Demand)**

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**Name of the Student**:_____
**Max. Marks : 27 Marks** **Time : 27 Minutes**

Mark Schemes

## Q1.

(a) zero error

*allow systematic error*

**1**

(b) reset the balance to zero g

*allow subtract the reading shown on the balance from the reading taken*

**1**

(c) resolution

*this answer only*

**1**

(d) place the measuring cylinder on a horizontal surface

**1**

view with eye in line with the level of the water

*allow read from the bottom of the meniscus*

**1**

(e) add several coins to the measuring cylinder

*allow a minimum of 5 coins if a number of coins is given*

**1**

measure the change in the water level in the measuring cylinder

**1**

divide by the number of coins added

**1**

(f) $8.9 = \frac{3.6}{\text{area} \times 0.16}$

allow $8.9 = \frac{3.6}{\text{volume}}$

**1**

$\text{area} = \frac{3.6}{8.9 \times 0.16}$

*allow area = 2.5(28…) ($cm^2$)*

**1**

$\text{density} = \frac{3.6}{2.528 \times 0.17}$

allow $\frac{3.6}{\text{their calculated area} \times 0.17}$

**1**

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density = 8.37… (g/cm$^3$)

*allow a correct calculation using their calculated area*

**1**

density = 8.4 g/cm$^3$

*this mark can only be scored for a correct rounding of a value of density calculated using correct equations*

**1**

**[13]**

## Q2.

(a) they vibrate about fixed positions.

**1**

(b) kinetic energy decreases potential energy decreases

**1**

(c) metal: has a high thermal conductivity

**1**

which increases the rate of energy transfer from the mixture

*allow ice cream for mixture*

**1**

plastic: has a low thermal conductivity

**1**

which reduces the rate of energy transfer from the surroundings (to the liquid coolant at –20°C)

*ignore references to insulation throughout*

**1**

(d) a high specific heat capacity

**1**

so it can absorb a large amount of energy with only a small temperature change

**1**

(e) 165 kJ = 165000 J

**1**

$\Delta E = m \times 3500 \times 21.5$
**and**
$\Delta E = m \times 255000$

**1**

$165000 = 75250\ m + 255000\ m$
**or**
$165000 = 330250\ m$

*this mark may be awarded if E is incorrectly/not converted*

**1**

$m = \frac{165000}{75250 + 255000}$
**or**

*this mark may be awarded if E is incorrectly/not converted*

**1**

$m = \frac{165000}{330250}$

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*allow an answer consistent with their value of E*

m = 0.499621 (kg)

**1**

m = 0.50 (kg)

*this answer only*

*If no marks awarded other than the first marking point:*

***either***

*165 000 = m × 3500 × 21.5 scores **1** mark*

*m = 2.192… scores **1** mark*

*m = 2.2 (kg) scores **1** mark.*

*these marks may be awarded if E is incorrectly/not converted*

***or***

*165 000 = m × 255 000 scores **1** mark*

*m = 0.647 scores **1** mark*

*m = 0.65kg scores **1** mark.*

*these marks may be awarded if E is incorrectly/not converted*

**1**

**[14]**

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