Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Mark Schemes

Q1.

(a) non-contact (force)

allow electrostatic (force)

1

attraction (between hair and balloon)

allow repulsion between the hairs on the head

1

(b)

*an answer of 2.0 × 10^{-6} (C) scores **3** marks*
*an answer of 2 × 10^{-3} (C) scores **2** marks*

0.0050 = Q × 2500

this mark may be awarded if pd is incorrectly or not converted

1

$$Q = \frac{0.0050}{2500}$$

this mark may be awarded if pd is incorrectly or not converted

1

Q = 2.0 × 10^{-6} (C)
or
Q = 0.0000020 (C)

these answers only

1

(c)

*an answer of 120 (Ω) scores **5** marks*

0.16 = I × 4.0 × 10^{-3}
or

$$I = \frac{0.16}{4.0 \times 10^{-3}}$$

this mark may be awarded if time is incorrectly / not converted

1

I = 40 (A)

this value only

1

4800 = 40 × R

allow 4800 = their calculated I × R

1

$R = \frac{4800}{40}$

allow R = 4800 / their calculated I

1

R = 120 (Ω)

allow an answer consistent with their calculated I

1

[10]

Q2.

(a) the (mean) kinetic energy of the particles increases

allow the (mean) speed of the particles increases

'kinetic energy increases' is insufficient by itself

*do **not** accept particles vibrating*

1

which increases the (internal) energy of the water

ignore description of evaporation

1

(b) Particles in a gas have more potential energy than particles in a liquid.

1

(c) Energy given to water E = mL with quantities defined

1

$$\text{power output (of Bunsen burner)} = \frac{\text{energy transferred (to water)}}{\text{time}}$$

allow $P = \frac{E}{t}$ *with quantities defined*

1

$$\text{power output} = \frac{\text{change in mass} \times \text{specific latent heat}}{\text{time}}$$

allow E = Pt equated with E = mL or stated in words

or

$P = \frac{mL}{t}$ *with quantities defined*

1

time should be converted to seconds

or

use a time of 300 seconds

1

[7]