

Name of the Student: _____

Max. Marks : 24 Marks

Time : 24 Minutes

Mark Schemes

Q1.

- (a) (i) decreases (to zero) 1

resultant force acts in opposite direction to motion
accept air resistance and weight for resultant force
accept resultant force acts downwards
*do **not** accept air resistance increases*

1

- (ii) velocity includes direction
or
 velocity is a vector (quantity) 1

- (b) (i) 3.6
allow 1 mark for correct substitution i.e.
 $\frac{1}{2} \times 0.05 \times 12^2$ provided no subsequent step 2

- (ii) 3.6 **or** their (i) 1

- (iii) 7.2
or
 their (ii) $\div 0.5$ correctly calculated
allow 1 mark for correct substitution i.e.
3.6 or their (ii) = $0.05 \times 10 \times h$ 2

- (iv) **B** 1

- (c) range increases up to 45° 1

range decreases from 45°
the range is a maximum at 45° gains both marks
for any two angles that add up
to 90° the range is the same gains both marks
the range increases then decreases gains 1 mark

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Q2.

(a) 4200

allow 2 marks for correct substitution

ie $6930 = 0.330 \times c \times 5.0$

answers of 1050 or 840

or

correctly calculated answer from correct substitution of incorrect temperature change

or

identification of temperature change ie 5 °C

gain 1 mark

3

J / kg°C

accept J / kg K

1

(b) (in a metal) free electrons

to gain full credit the answer must be in terms of free electrons

1

gain kinetic energy

accept move faster

1

(free electrons) transfer energy to other electrons / ions / atoms

*do **not** accept particles*

1

by collision

allow a maximum of 2 marks for answers in terms of atoms / ions / particles

- *gaining kinetic energy or vibrating faster / more*
- *transferring energy by collisions*

1

(c) (air) particles spread out

1

(which causes the) air to become less dense / expand

*do **not** accept particles become less dense*

1

(so the) warm air rises

*do **not** accept heat rises*
particles rise is insufficient

1

(d) large surface area

ignore references to type of metal or external conditions

1

black / dark (colour)

1

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