Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: GCSE Triple Science_ENERGY (High Demand Questions)

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

Mark Schemes

Q1.

(a)

*an answer of 2.5 (m) scores **3** marks*

1470 = 60 × 9.8 × h

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

1

$h = \frac{1470}{60 \times 9.8}$

or

$h = \frac{1470}{588}$

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

1

h = 2.5 (m)

this answer only

1

(b) (work done against) air resistance
or
(work done against) friction (between zip line and pulley)

1

causes thermal energy to be transferred to surroundings

ignore sound energy

1

(c) different people have different surface areas

allow streamlining

allow body position

body size is insufficient

1

so would be affected by air resistance differently

or

initial speed may not be zero (1)

which would add to the total energy (of the system) (1)

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allow people have different masses / weights (1)
so people have different terminal velocities (1)
reference to mass changing the kinetic energy or gravitational potential energy negates both these marks

1

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Q2.

(a) Initial temperature was a control variable

1

(b) copper

1

greater change in mass (than the other metals)

this mark is dependent on scoring the first mark
allow more ice melted (than the other metals)
allow the ice melted faster (than the other metals)

1

(c) variation in initial mass of ice cube

allow variation in initial volume of ice cube

or

surface area of the ice cube touching the metal

allow melting of ice while handling
allow variation in room temperature
allow initial temperature of metal block

1

(d)

*an answer of 0.016 (kg) scores **5** marks*

$E = m \times 2100 \times 15$

1

$E = m \times 334\,000$

1

$5848 = 31\,500\ m + 334\,000\ m$

or

$5848 = 365\,500\ m$

1

$$m = \frac{5848}{(31\,500 + 334\,000)}$$

or

$$m = \frac{5848}{(365\,500)}$$

1

m = 0.016 (kg)

*allow **2** marks for an answer that rounds to 0.186 or 0.0175*
*if no other mark scored allow **1** mark for either*

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5848 = m × 2100 × 15
or
5848 = m × 334 000

1

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Q3.

(a) chemical

1

equal to

allow the same as

1

in this order only

(b) $\text{power} = \frac{\text{work done}}{\text{time}}$

allow $P = \frac{W}{t}$

1

(c) $200 = \frac{W}{1800}$

1

W = 200 × 1800

1

W = 360 000 (J)

1

*an answer of 360 000 (J) scores **3** marks*

(d) 11 − 9.5 = 1.5 (m/s)

allow a change in speed between 1.2 and 1.5 (m/s)

1

$\left(\frac{1.5}{9.5}\right) \times 100 = 15.8\,(\%)$

allow an answer consistent with their change in speed
*an answer of 16 (%) scores **2** marks*

1

*an answer that rounds to 15.8 (%) scores **2** marks*

(e) maximum speed is lower

1

because maximum power output of cyclist is constant

allow maximum force on pedals is constant

1

(but) additional work is done (against gravity)

*do **not** accept additional work done against friction or air resistance*

or
gravitational potential energy (of cyclist) is increased

1

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