Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: GCSE Triple Science_Forces (High Demand Questions)

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

(a) the tendency of an object to continue in its state of rest or motion

allow how difficult it is to change the velocity of an object

1

(b) (soft foam) increases the time taken to stop

allow increases impact/contact time

or

increases the time taken to decrease momentum

allow increases the time of the collision

*do **not** accept slows down time*

1

decreases the rate of change in momentum

allow reduces acceleration/deceleration

reduces momentum is insufficient

*allow increases the time to reduce the momentum to zero for **2** marks*

1

reducing the force (on the egg)

allow impact for force

1

(c)

*an answer 4.5 (m/s) scores **4** marks*

*an answer 4500 scores **3** marks*

180 ms = 0.18 s

if incorrectly or not converted, subsequent marks may still be awarded for correct method and calculations

1

$$800 = \frac{32 \times v}{0.18}$$

1

$$v = \frac{800 \times 0.18}{32}$$

1

v = 4.5 (m/s)

1

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Alternative method

180 ms = 0.18 s (1)

Δmv = 144 (kgm/s) (1)

Δv = 144 ÷ 32 (1)

v = 4.5 (m/s) (1)

Alternative method

180 ms = 0.18 s (1)

a = 25 (m/s^2) (1)

25 = Δv ÷ 0.18 (1)

v = 4.5 (m/s) (1)

[8]

Q2.

(a) longer arrow pointing vertically downwards

one arrow only

1

labelled weight

allow (force of) gravity

1

(b) initially air resistance is less than weight / gravity so the skydiver accelerates

allow drag for air resistance

allow increased velocity / speed for accelerates

1

acceleration causes the air resistance to increase

*acceleration **or** increased velocity / speed is not required here if given in the first mark point*

1

resultant force decreases to zero

allow air resistance becomes equal to weight / gravity

1

so the skydiver falls at terminal velocity

allow constant velocity/speed for terminal velocity
ignore any mention of subsequent motion and use of parachute

1

(c)

*an answer of 50 (m/s) scores **3** marks*

distance at 7s = 200 (m)
distance at 12s = 450 (m)

***both** distances required*

1

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speed = $\frac{450 - 200}{\quad}$ **or** $\frac{250}{\quad}$

allow correct use of their two distances divided by 5

1

50 (m/s)

allow an answer consistent with their two distances

1

(d) The higher the altitude the less dense the air

1

so the air resistance on the skydiver (falling from 39000 m) was less (at the same speed)

1

so the skydiver was able to accelerate for longer before reaching (a higher) terminal velocity

allow constant velocity/speed for terminal velocity

1

or

so the skydiver was able to accelerate for longer before air resistance = weight / gravity

[12]

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