Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic : 2_Motion and Forces

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Name of the Student:_____
Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

The **inertial** mass of an object is a measure of how difficult it is to change the velocity of the object.
A force of 450 N acts on a car to give the car an acceleration of 0.35 m/s^2.
Calculate the **inertial** mass of the car.

(2)

inertial mass of car ..... kg

(Total for question = 2 marks)

Q2.

Figure 11 shows a ball held in a clamp at **R**, above the ground.

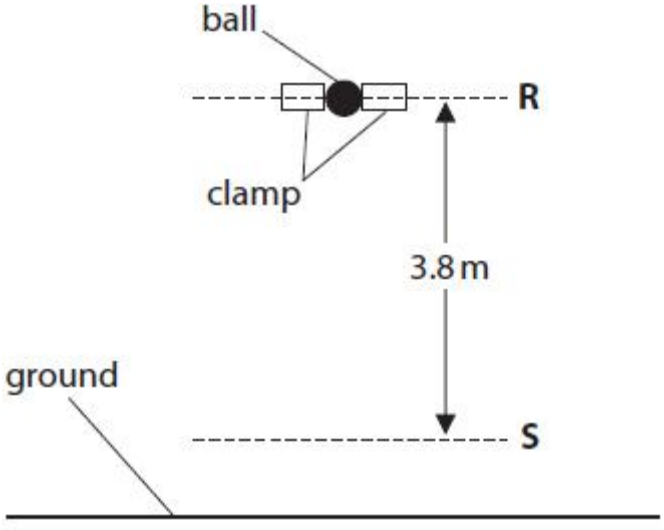

Figure 11

The ball is released from the clamp and falls.
S is 3.8 m below **R**.
At **S** the momentum of the ball is 0.40 kg m/s.
Calculate the mass of the ball.

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Acceleration due to gravity, g, = 10 m / s^2

(4)

mass of the ball ..... kg

(Total for question = 4 marks)

Q3.

An atom of mass 6.6×10^{-26} kg is moving with a velocity of 480 m / s.
Calculate the momentum of the atom.

(3)

momentum = ... kg m/s

(Total for question = 3 marks)

Q4.

A motorcycle is travelling at a velocity of 6.2 m/s.
The motorcycle accelerates at 2.5 m/s^2 until its velocity is 10 m/s.

(i) Calculate the time taken for this acceleration.
Use the equation

$$\text{time taken} = \frac{\text{change in velocity}}{\text{acceleration}}$$

(2)

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time taken = ... s

(ii) The motor cycle now decelerates (slows down) from 10 m/s to a stop.

The deceleration is at a constant rate of 4.4 m/s^2.
Calculate the distance the motorcycle travels as it slows down to a stop.
Use the equation

$$v^2 - u^2 = 2 \times a \times x$$

(2)

distance = ... m

(Total for question = 4 marks)

Q5.

Figure 9 shows a small steel ball held at a height, *h*, above the ground.

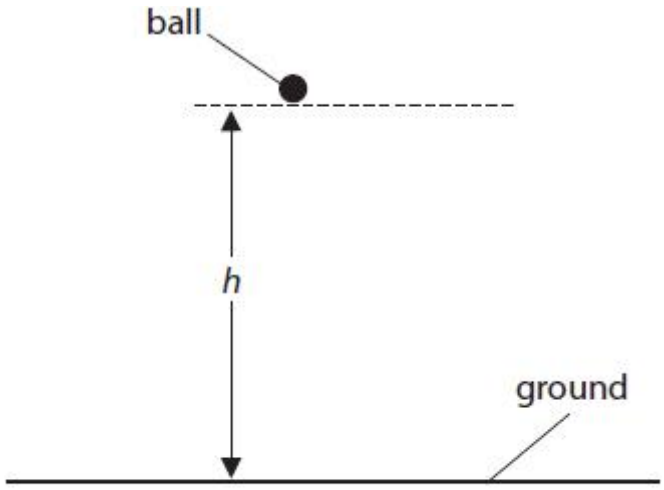

Figure 9

The ball is released and allowed to fall to the ground.

The height *h* is 1.4 m.

Calculate the time, *t*, for the ball to reach the ground.

Use the equation

$$t^2 = \frac{2h}{g}$$

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g = 10 m/s^2

(2)

t = ... s

(Total for question = 2 marks)

Q6.

Figure 8 shows a gymnast landing on a mat and coming to rest.

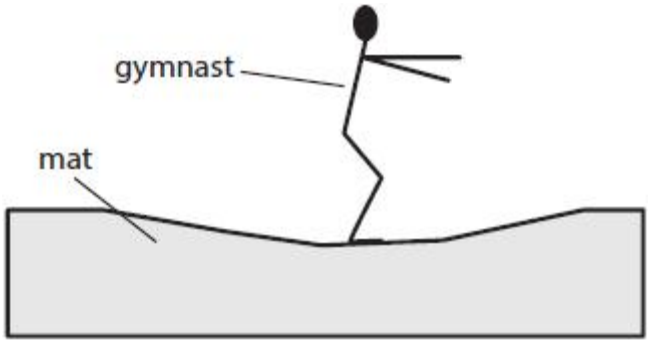

Figure 8

The gymnast has a mass of 53 kg.

The gymnast lands on the mat with a velocity of 4.0 m/s.

The average force exerted by the mat on the gymnast is 3500 N.

Calculate the time taken for the gymnast to come to rest.

Give your answer to an appropriate number of significant figures.

Use the equation

$$\text{force} = \frac{\text{change in momentum}}{\text{time}}$$

(3)

time = ... s

(Total for question = 3 marks)

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