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

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

Q1.

A car accelerates at a constant rate of 1.83 m/s^2 along a flat straight road.
The force acting on the car is 1.870 kN.
Calculate the mass of the car.
Give your answer to three significant figures.

(3)

mass = ... kg

(Total for question = 3 marks)

Q2.

A car accelerates at a constant rate of 1.83 m/s^2 along a flat straight road.
The force acting on the car is 1.870 kN.
The car accelerates from rest for 16 s.
Calculate the speed of the car after 16 s.

(3)

speed = ... m/s

(Total for question = 3 marks)

Q3.

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)

time taken = ... s

(ii) The motorcycle 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

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

distance = ... m

(Total for question = 2 marks)

Q4.

The ball bearing is now dropped through air.

The initial velocity of the ball bearing is zero.

The acceleration of the ball bearing is 10 m/s^2.

The ball bearing falls 1.5 m.

Calculate the velocity of the ball bearing when it has fallen 1.5 m.

Use the equation

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

(2)

velocity of ball bearing = ... m/s

(Total for question = 2 marks)

Q5.

(i) A car is moving at 90 km/h when the driver has to stop.

Calculate the thinking time of the driver.
Using the equation:
time = distance ÷ average speed

(2)

thinking time = ... s

(ii) A car has a mass of 1300 kg.

Calculate the kinetic energy of the car when it is travelling at 20 m/s.

(2)

kinetic energy ..... J

(Total for question = 4 marks)

Q6.

A car driver sees a rabbit on the road.

The driver makes an emergency stop after he sees the rabbit.

Figure 6 shows the speed of the car from the time the driver sees the rabbit until the car stops.

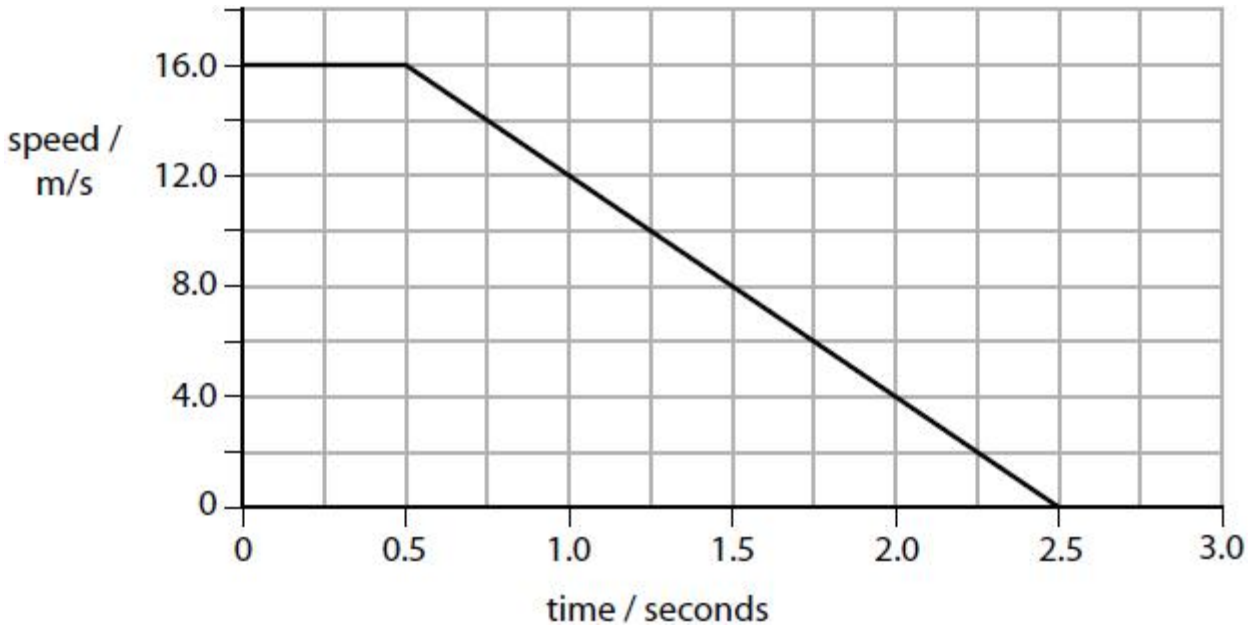

Figure 6

(i) Which equation relates acceleration to change in velocity and time?

(1)

☐ **A** $a = \frac{(v-u)}{t}$

☐ **B** $a = \frac{t}{(v-u)}$

☐ **C** $a = t(v-u)$

☐ **D** $a = v - \frac{u}{t}$

(ii) Calculate the deceleration of the car.

(3)

deceleration = ... m/s^2

(Total for question = 4 marks)