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

Name of the Student:_____
Max. Marks : 25 Marks **Time : 25 Minutes**

Q1.

A car travelling at 15 m/s comes to rest in a distance of 14 m when the brakes are applied.

Calculate the deceleration of the car.
Use an equation selected from the list of equations at the end of this paper.

(3)

deceleration = ... m/s^2

(Total for question = 3 marks)

Q2.

The photograph shows a man dropping an egg inside a padded box from a height.

He is investigating to see if the padding stops the egg from breaking.
The velocity of the container was 18 m/s as it hit the floor.
The mass of the container was 0.5 kg.

Calculate the momentum of the container.

(2)

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Q3.

(a) 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

(b) The car accelerates from rest for 16 s.

Calculate the speed of the car after 16 s.

(3)

speed = ... m/s

(c) The car starts on another journey.

Figure 6 shows the graph of the car's movement.

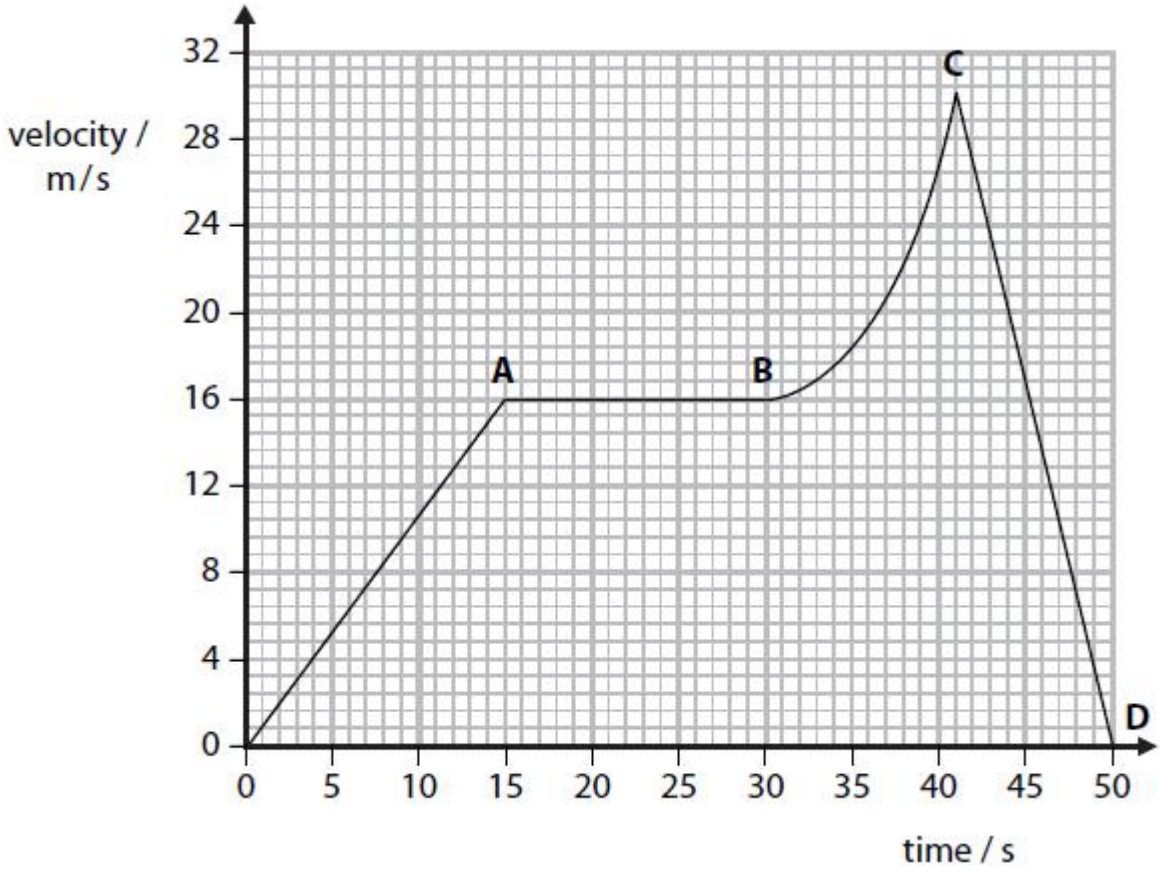


Figure 6

Show that the distance travelled when the car is moving at a constant speed is greater than the distance travelled when the car is slowing down.

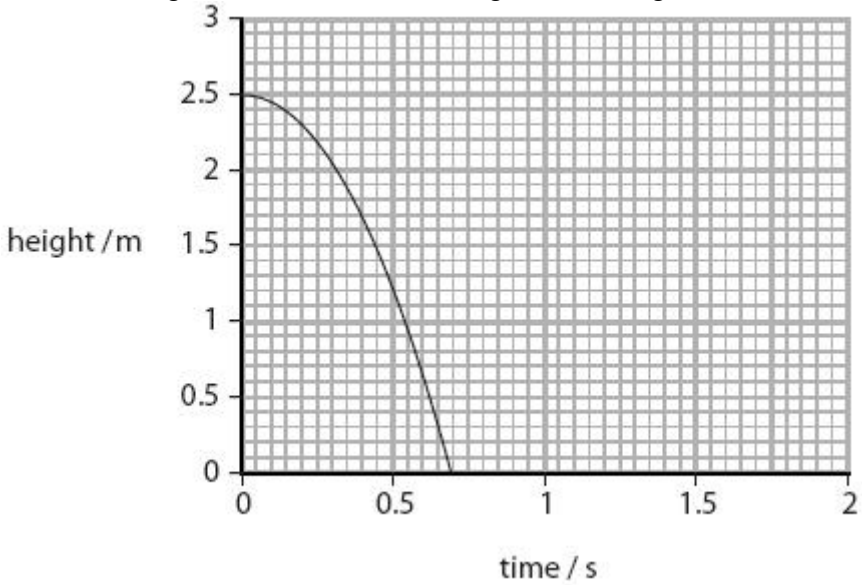
(4)

(Total for question = 10 marks)

Q4.

(a) The man in the photograph balances a ball above the ground.

He lets the ball fall.
He starts a timer at the same time.
The graph shows how the height of the ball above the ground changes with time.



(i) From the graph, state the height of the ball above the ground when the timer was started.

(1)

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(ii) From the graph, state the time taken for the ball to reach the ground.

(1)

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(iii) The ball bounces back to a height of 1.9 m.
Continue the line on the graph to show this.

(3)

(iv) Explain why the ball does not bounce back to its original height.

(2)

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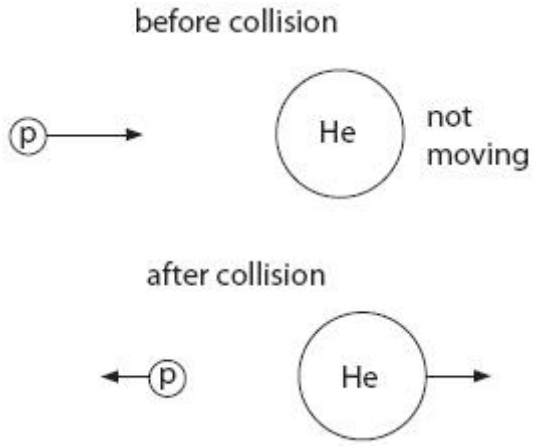
(b) The diagram shows a collision between a proton (p) and a helium nucleus (He).



(i) The table gives some information about the collision.

		before collision	after collision
proton	kinetic energy (arbitrary units)	12.5	4.5
helium nucleus	kinetic energy (arbitrary units)	0	8

Use information from the table to show that the collision is elastic.

(2)

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(ii) State the name of one device that can be used to accelerate protons to very high speeds.

(1)

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(Total for Question = 10 marks)