Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic: Forces (Low Demand Questions)

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Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Q1.

The photograph below shows a girl bowling a ball along a ten-pin bowling lane.



The girl is trying to knock down the ten pins at the end of the bowling lane.

As the ball travels along the lane the velocity of the ball decreases.

(a) Velocity is a vector.

Which statement describes a vector?

Tick (✓) **one** box.

Vectors have direction only. ☐

Vectors have magnitude and direction. ☐

Vectors have magnitude only. ☐

(1)

(b) Why does the velocity of the ball decrease as the ball travels along the lane?

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Tick (✓) **one** box.

The force of gravity slows the ball down.	☐
There are no forces acting on the ball.	☐
There is a resultant force acting on the ball.	☐

(1)

(c) The ball travels along the lane at an average speed of 4.5 m/s

It takes the ball 4.0 seconds to travel the length of the lane.

Calculate the length of the lane.

Use the equation:

distance travelled = speed × time

_____

_____

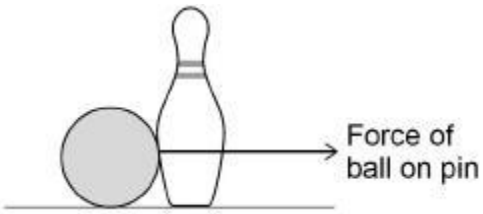
_____

_____

Length of the lane = _____ m

(2)

The diagram below shows the ball hitting one of the pins.



(d) Draw an arrow on the diagram above to show the force of the pin on the ball.

(2)

(e) The velocity of the pin changes from 0 to 12 m/s

It takes 0.15 seconds for the velocity to change.

Calculate the acceleration of the pin.

Use the equation:

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

_____

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_____

_____

_____

Acceleration = _____ m/s^2

(2)

(f) When the pin is struck it accelerates.

Complete the sentences.

Choose answers from the box.

Each answer can be used once, more than once, or not at all.

decreases	**increases**	**stays the same**

The displacement of the pin from the girl _____.

The mass of the pin _____.

The kinetic energy of the pin _____.

(3)

(Total 11 marks)

Q2.

The photograph below shows a computer keyboard.

There is a spring under each key.



(a) Why do the keys have springs under them?

Tick (✓) **one** box.

Springs make the keys easier to press. ☐

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Springs make the keys lighter. ☐

Springs push the keys back to their original position. ☐

(1)

(b) Why does every spring used in the keyboard have the same spring constant?

Tick (✓) **one** box.

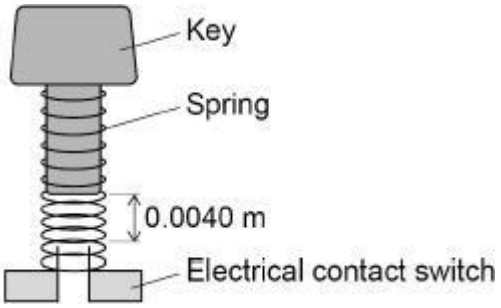
So that more than one key can be pressed at the same time. ☐

So that the same force is needed to press each key. ☐

So that the springs are all the same length. ☐

(1)

The diagram below shows one of the keys and its spring.



(c) What happens to the length of the spring when the key is pressed?

_____

_____

(1)

(d) How far must the key move before it touches the switch?

Tick (✓) **one** box.

4.0 mm ☐ 4.0 cm ☐ 4.0 μm ☐

(1)

(e) If a key is not pressed with enough force, no signal is sent to the computer.

Explain why.

_____

_____

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_____

_____

(2)

(f) The spring in the diagram above has a spring constant of 200 N/m

Calculate the force on the spring when the key moves a distance of 0.0040 m

Use the equation:

force = spring constant × compression

_____

_____

_____

_____

Force = _____ N

(2)

(g) Suggest **two** ways the spring in the key in the diagram above could be changed so that the switch can be closed more quickly.

1. _____

_____

2. _____

_____

(2)

(Total 10 marks)

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