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

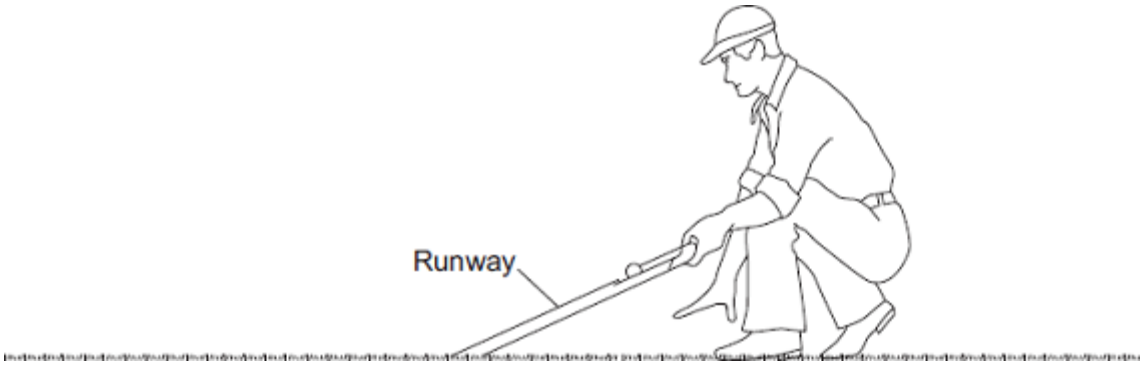
Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

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

## Q1.

**Figure 1** shows a golfer using a runway for testing how far a golf ball travels on grass.
One end of the runway is placed on the grass surface.
The other end of the runway is lifted up and a golf ball is put at the top.
The golf ball goes down the runway and along the grass surface.

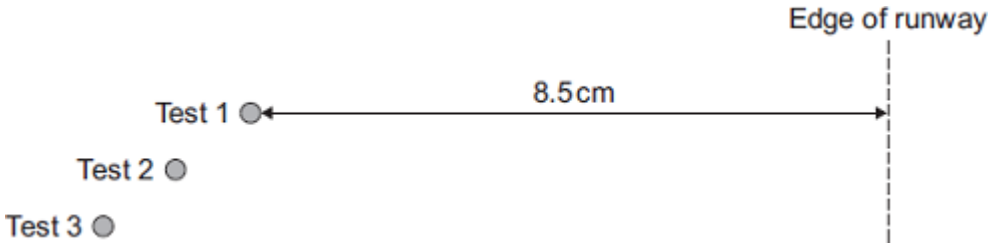
**Figure 1**




(a) A test was done three times with the same golf ball.

The results are shown in **Figure 2**.

**Figure 2**




(i) Make measurements on **Figure 2** to complete **Table 1**.

**Table 1**

| Test | Distance measured in centimetres |
|---|---|
| 1 | 8.5 |
| 2 | |
| 3 | |

**(2)**

(ii) Calculate the mean distance, in centimetres, between the ball and the edge of the runway in **Figure 2**.

_____

Mean distance = _____ cm

**(1)**

(iii) **Figure 2** is drawn to scale.
Scale: 1 cm = 20 cm on the grass.

Calculate the mean distance, in centimetres, the golf ball travels on the grass surface.

_____

Mean distance on the grass surface = _____ cm

**(1)**

(iv) The distance the ball travels along the grass surface is used to estimate the 'speed' of the grass surface.

The words used to describe the 'speed' of a grass surface are given in **Table 2**.

**Table 2**

| **'Speed' of grass surface** | **Mean distance the golf ball travels in centimetres** |
|---|---|
| Fast | 250 |
| Medium fast | 220 |
| Medium | 190 |
| Medium Slow | 160 |
| Slow | 130 |

Use **Table 2** and your answer in part **(iii)** to describe the 'speed' of the grass surface.

_____

**(1)**

(b) The shorter the grass, the greater the distance the golf ball will travel.
A student uses the runway on the grass in her local park to measure the distance the golf ball travels.

(i) Suggest **two** variables the student should control.

_____

_____

_____

**(2)**

(ii) She carried out the test five times.
Her measurements, in centimetres, are shown below.

**75 95 84 74 79**

What can she conclude about the length of the grass in the park?

_____

_____

**(1)**

(c) Another student suggests that the 'speed' of a grass surface depends on factors other than grass length.

She wants to test the hypothesis that 'speed' depends on relative humidity.

Relative humidity is the percentage of water in the air compared to the maximum amount of water the air can hold. Relative humidity can have values between 1% and 100%.

The student obtains the data in **Table 3** from the Internet.

**Table 3**

| Relative humidity expressed as a percentage | Mean distance the golf ball travels in centimetres |
|---|---|
| 71 | 180 |
| 79 | 162 |
| 87 | 147 |

(i) Describe the pattern shown in **Table 3**.

_____

_____

**(1)**

(ii) The student writes the following hypothesis:
'The mean distance the golf ball travels is inversely proportional to relative humidity.'

Use calculations to test this hypothesis and state your conclusion.

_____

_____

_____

_____

_____

_____

**(3)**

(iii) The data in **Table 3** does **not** allow a conclusion to be made with confidence.

Give a reason why.

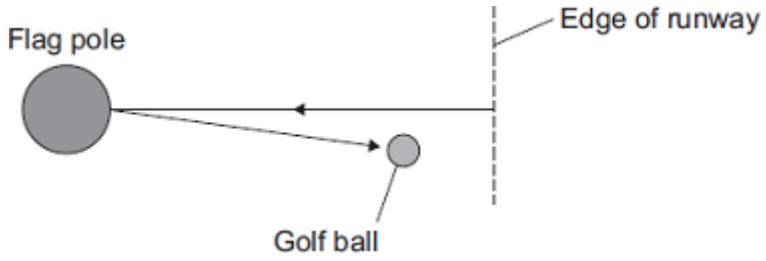
_____

_____

**(1)**

(d) In a test, a golf ball hits a flag pole on the golf course and travels back towards the edge of the runway as shown in **Figure 3**.

**Figure 3**




The distance the ball travels and the displacement of the ball are **not** the same.

What is the difference between distance and displacement?

_____

_____

_____

_____

**(2)**

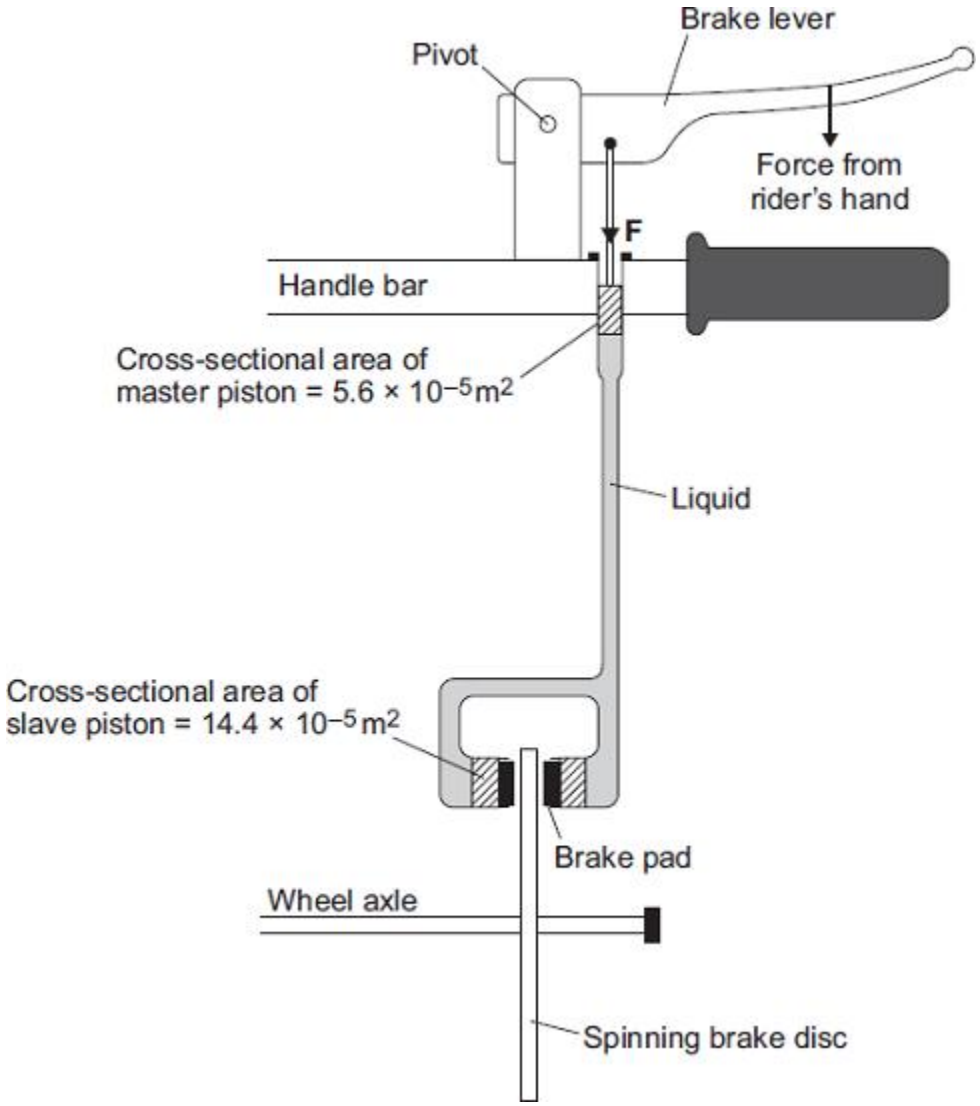
**(Total 15 marks)**

## Q2.

Mountain bike riders use brakes to slow down.

© Ljupco Smokovski/Shutterstock

Some mountain bikes have hydraulic brakes.




(a) What property of a liquid enables a hydraulic brake system to work?

_____

**(1)**

(b) When the rider's hand pulls on the brake lever, the master piston applies a pressure of $1.5 \times 10^6$ pascals to the liquid.

Using information from the diagram, calculate the force **F** exerted on the liquid by the master piston.

_____

_____

_____

_____

Force **F** = _____ N

**(2)**

(c) The pressure in the liquid applies a force to move each slave piston.

How does the size of this force compare to the force **F** applied by the master piston?

_____

_____

Give a reason for your answer.

_____

_____

**(2)**

**(Total 5 marks)**