Practice Question Set For GCSE
Subject : Physics
Paper-2 Topic :15_Forces and their matter

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

Q1.

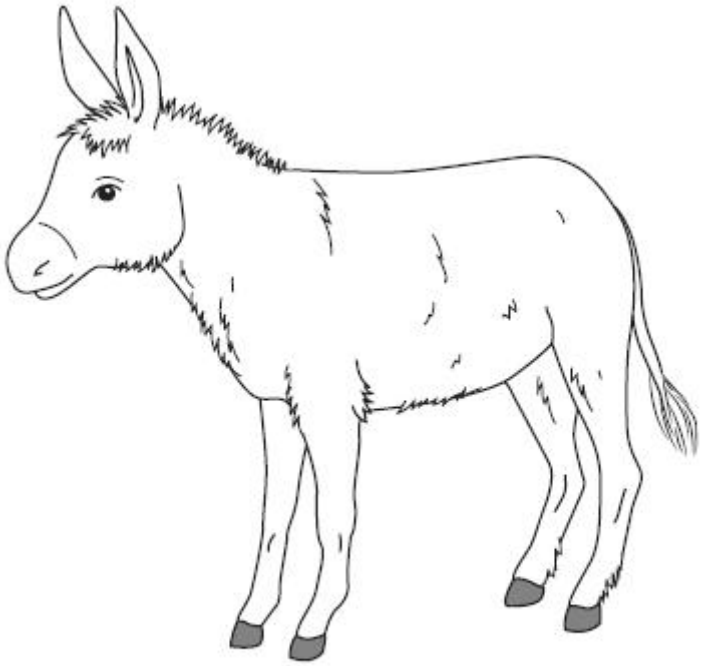


Figure 6

A donkey has a weight of 2500 N.

The area of each hoof is 0.022 m^2.

(i) Calculate the average pressure that the donkey exerts on the ground.

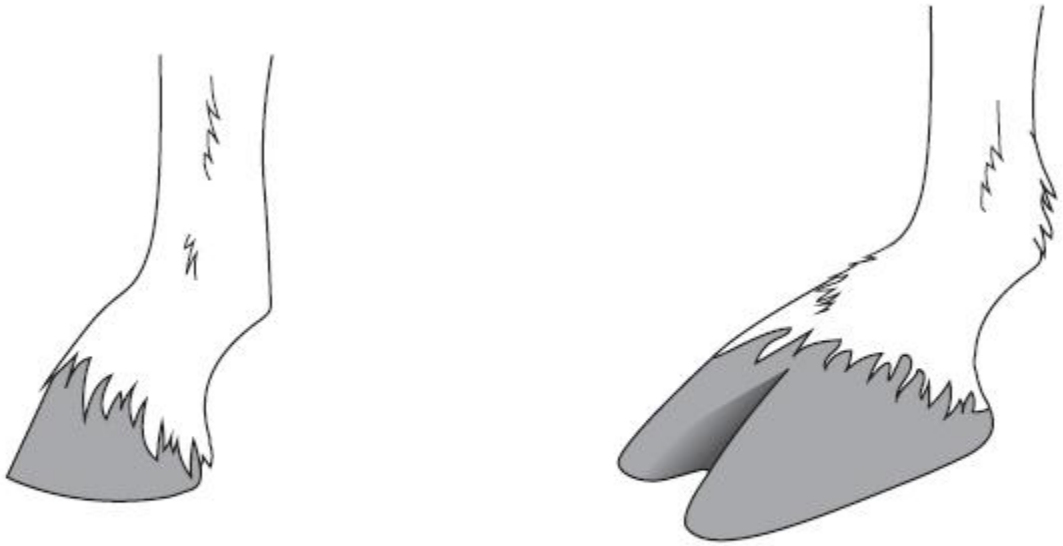
Use the equation

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

(2)

average pressure = ... Pa

(ii) Figure 7 shows how the shape of a camel's hoof is different from the shape of a donkey's hoof.



donkey hoof

camel hoof

Both diagrams are drawn to the same scale.

Figure 7

The camel and the donkey have the same mass.

Explain how a camel's hoof is a more suitable shape than a donkey's hoof for walking on soft ground.

(2)

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.....

(Total for question = 4 marks)

Q2.

Another spring is extended.

The work done to extend the spring is 0.14 J.

The spring constant of the spring is 175 N/m.

Calculate the extension of the spring.

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

(3)

extension of spring = ... m

(Total for question = 3 marks)

Q3.

Figure 16 shows part of the inside of a pen.

The pen contains a spring that can be compressed.

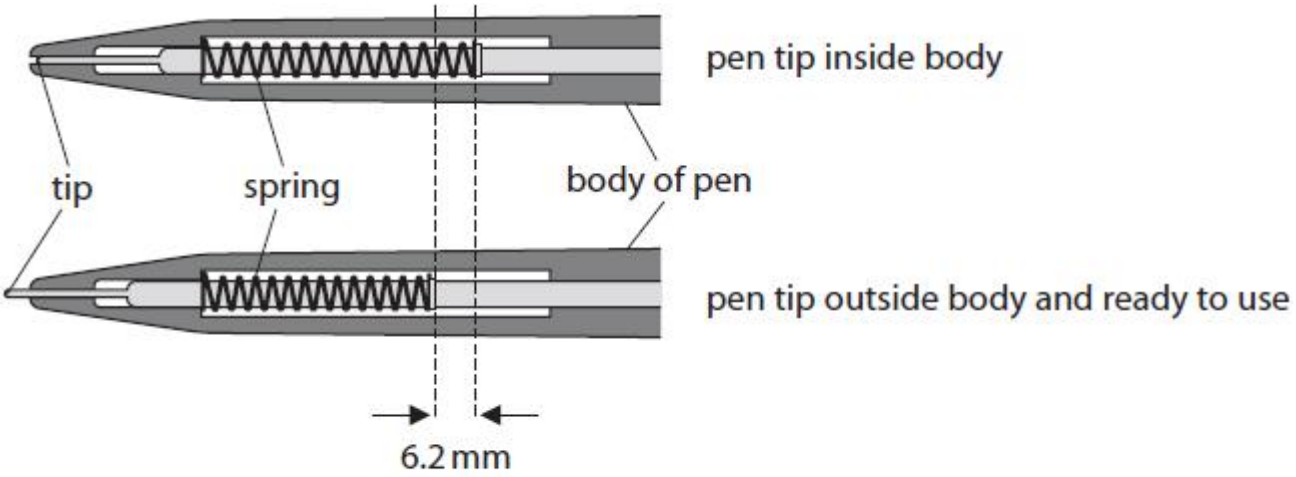

Figure 16

The spring constant of the spring is 260 N/m.

(i) Calculate the force needed to compress the spring by the amount shown in Figure 16.

Give your answer to an appropriate number of significant figures.

(3)

force = ... N

(ii) A student removes the spring from the pen and investigates the compression of the spring.

Figure 17 shows the equipment and the procedure that the student uses.

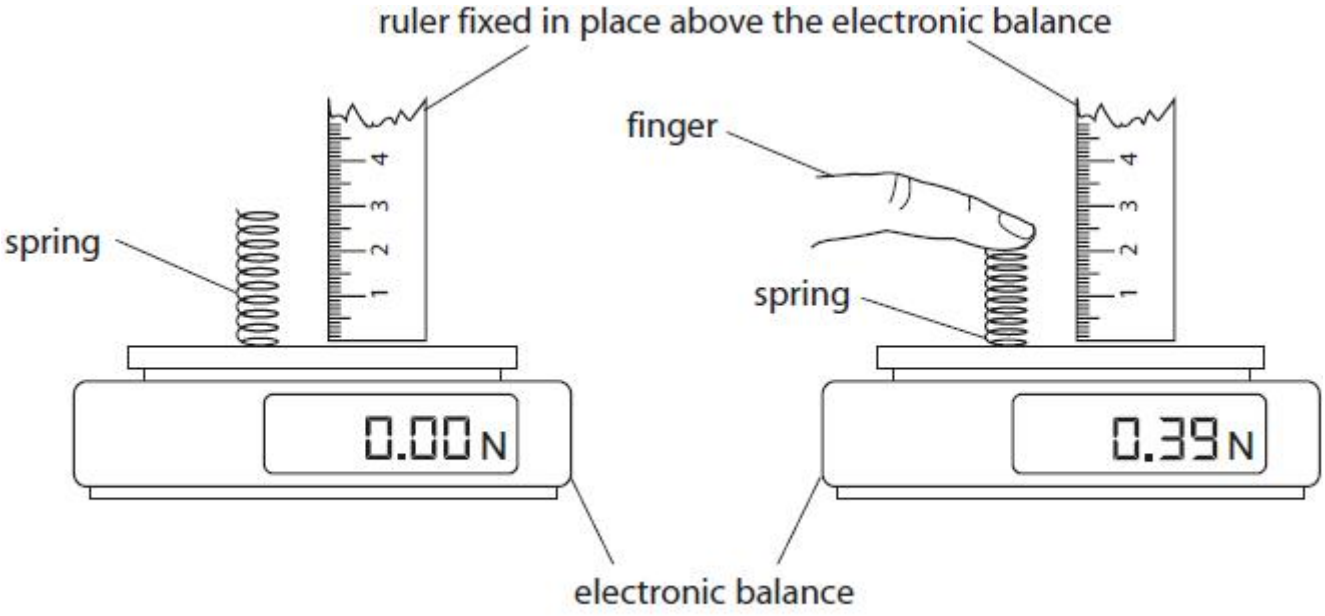

Figure 17

The student presses down on the spring to change its length.

The electronic balance measures the force applied to the spring.
Describe how the student can determine the change in length of the spring.
You may add to Figure 17 to help your answer.

(3)

(iii) The student finds it difficult to make an accurate measurement of the change in length of the spring using the equipment as shown.

Describe **one** way that the student could improve the procedure.

(2)

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(Total for question = 8 marks)

Q4.

Figure 10 shows an ice skater standing on one skate.

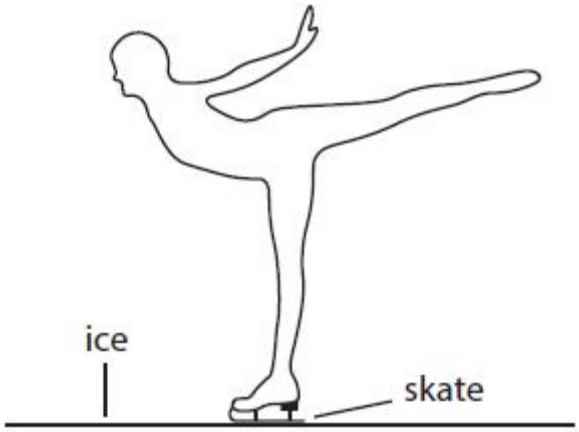

Figure 10

Calculate the force the skate exerts on the ice

pressure of skate on ice = 4.8×10^{7} Pa

area of blade in contact with ice = 1.2×10^{-5} m^2

force = pressure × area

Give your answer to 2 significant figures.

(3)

force = ... N

(Total for question = 3 marks)