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

Name of the Student:_____
Max. Marks : 24 Marks **Time : 24 Minutes**

Q1.

A student uses the apparatus shown in Figure 3 to investigate the extension of a spring.

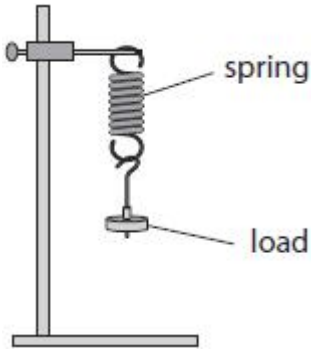


Figure 3

(i) Describe how the student could measure the extension of the spring when a load is added.

(3)

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(ii) The extension of the spring for a load of 1.5 N is 30 mm.

Calculate the spring constant for the spring.
Use the equation

$$\text{spring constant} = \frac{\text{load}}{\text{extension}}$$

(2)

spring constant = ... N/mm

(Total for question = 5 marks)

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Q2.

Some questions must be answered with a cross in a box (☒). If you change your mind about an answer, put a line through the box (☒) and then mark your new answer with a cross (☒).

A student carries out an investigation to show how pressure varies with depth in water.

A pressure sensor is attached to a rule.

The rule and pressure sensor are lowered into the water in a tank, as shown in Figure 25.

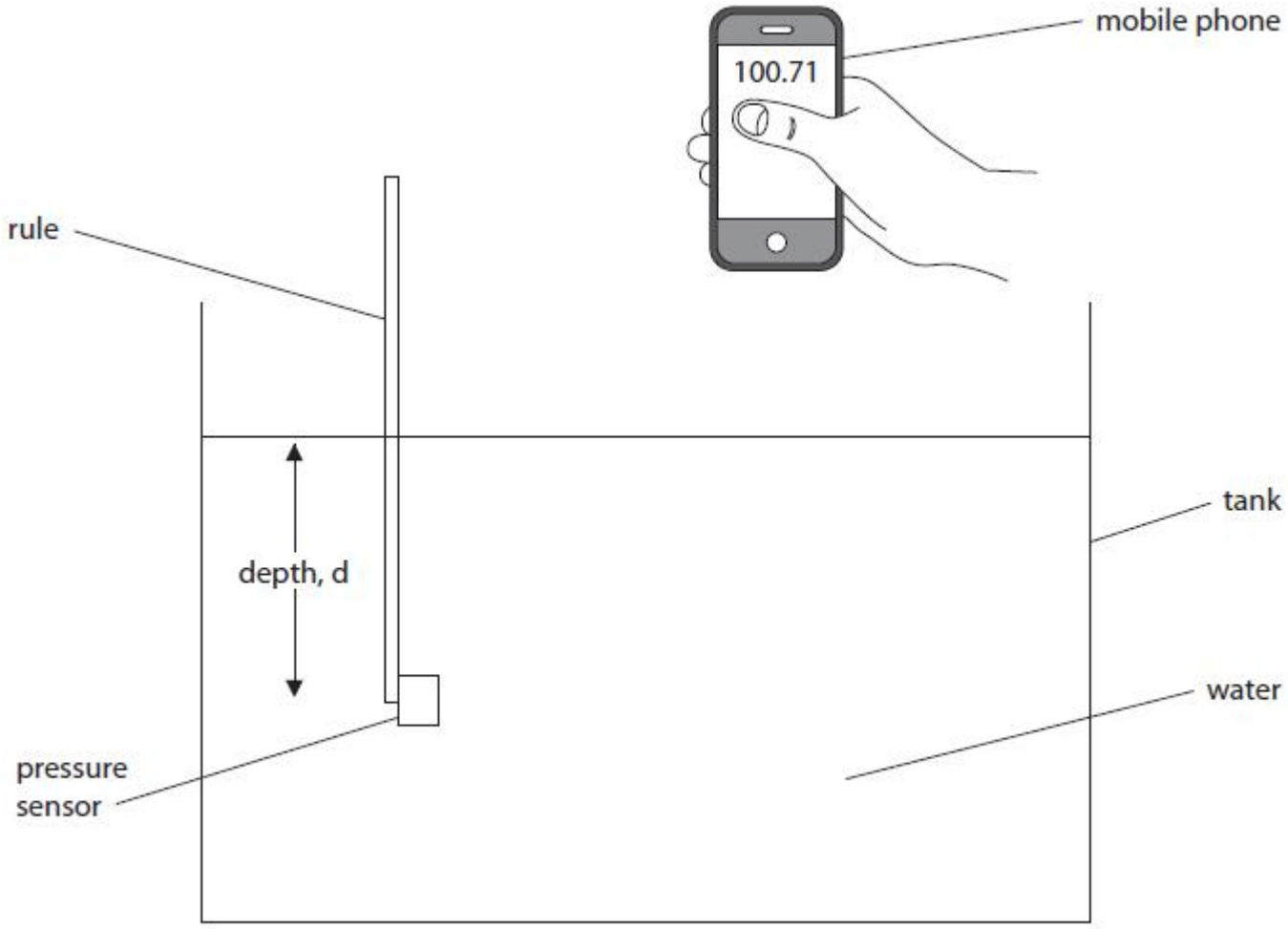


Figure 25

The depth of the pressure sensor below the surface of the water is read from the scale on the rule.

The pressure is displayed on the student's mobile phone which receives a signal from the pressure sensor.

Figure 26 gives some of the readings.

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depth in m	pressure in kPa
0.050	99.15
0.100	99.70
0.150	100.15
0.200	100.70
0.250	101.15
0.300	101.70

Figure 26

Figure 27 shows a graph with some of the results plotted, but two of the points are missing.

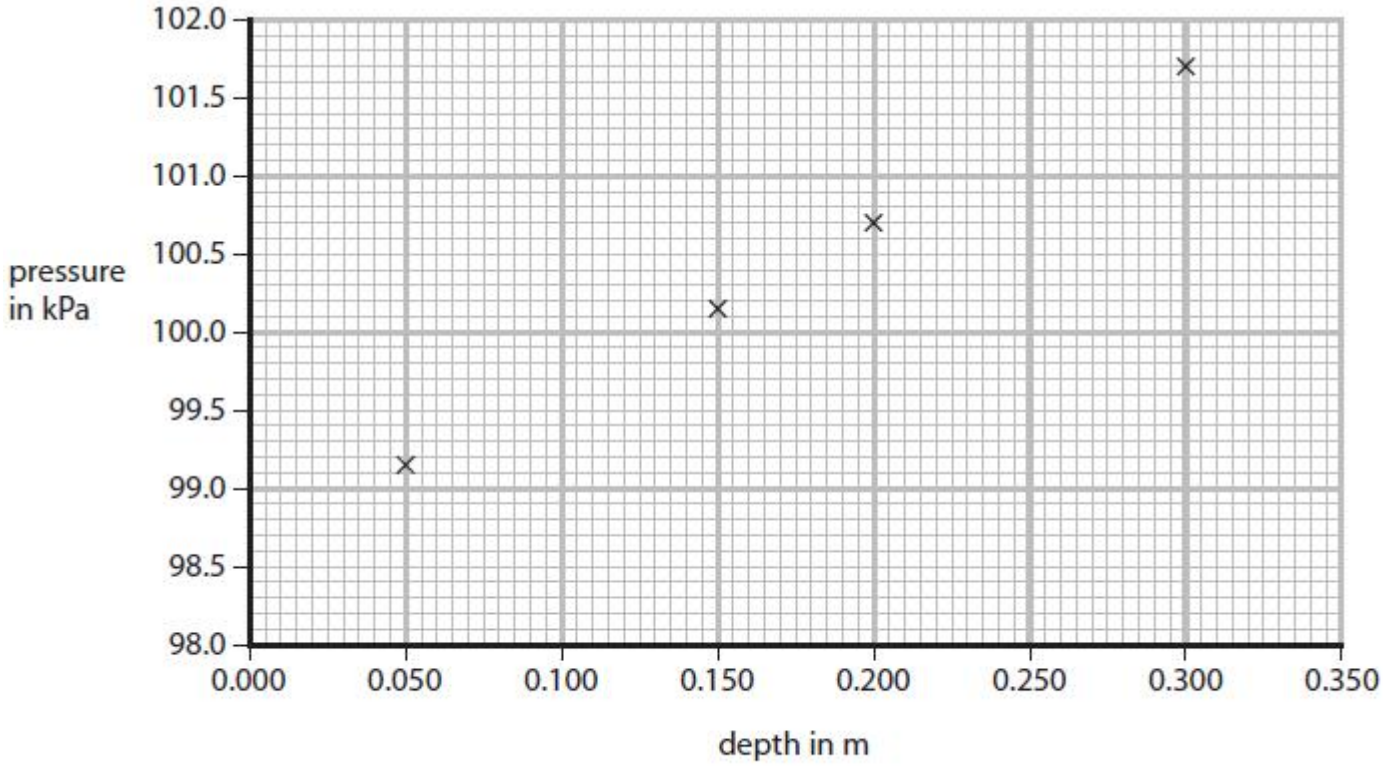


Figure 27

(i) Plot the two missing points on the graph.

(2)

(ii) Draw a line of best fit through the points on the graph.

(1)

(iii) Which of the following equations represents the variation of pressure with depth of water below the surface?

(1)

- ☒ **A** y = ax2 + b
- ☒ **B** y = mx
- ☒ **C** Y = mc - x
- ☒ **D** y = mx + c

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(iv) Use the graph in Figure 27 to predict the pressure at the surface of the water.

(1)

pressure at the surface of the water = ... kPa

(Total for question = 5 marks)

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Q3.

A swimming pool contains fresh water.

The pressure 2 m below the surface of the swimming pool is measured.

The pressure 10 m below the surface of the sea is also measured.

The pressure 10 m below the surface of the sea is greater than the pressure 2 m below the surface of the swimming pool.

State **two** reasons why the pressure is greater 10 m below the surface of the sea.

(2)

1 .....

.....

2 .....

.....

(Total for question = 2 marks)

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Q4.

* Figure 16 illustrates an effect that can be explained using the ideas of pressure, force and area.

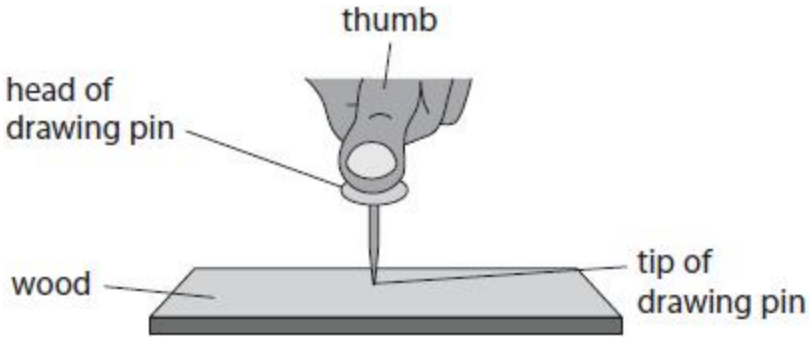


Figure 16

Explain why the tip of the drawing pin goes into the wood but the head of the drawing pin does not go into the thumb.

(6)

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(Total for question = 6 marks)

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Q5.

10 m of sea water exerts the same pressure as the atmosphere.

A submarine is at a depth of 50 m below the surface of the sea.

Calculate how many times greater the pressure is on the submarine than atmospheric pressure.

(2)

pressure = ... times greater

(Total for question = 2 marks)

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Q6.

An aeroplane takes off from the ground.

State **two** factors that affect the pressure of the atmosphere on the aeroplane as the aeroplane goes higher in the atmosphere.

(2)

1 .....

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2 .....

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(Total for question = 2 marks)

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Q7.

Figure 15 shows different water levels in two similar water containers with taps.

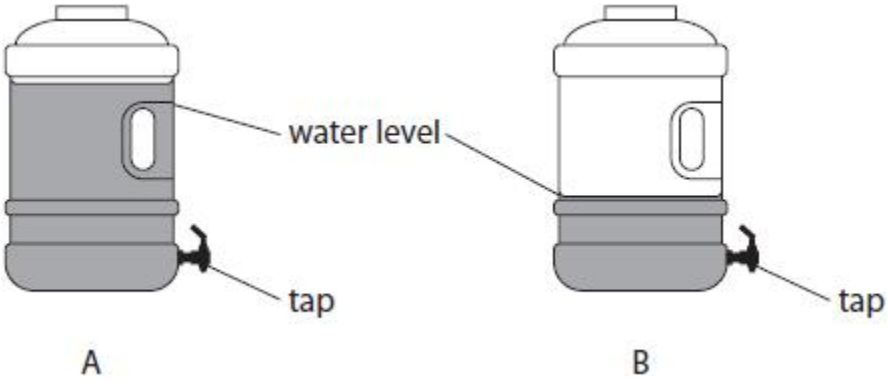


Figure 15

Explain why the water runs out of the tap of container A faster than out of the tap of container B.

(2)

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(Total for question = 2 marks)

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