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

**Name of the Student**:_____
**Max. Marks : 19 Marks** **Time : 19 Minutes**

Q1.

Figure 14 shows a spring standing on a table.

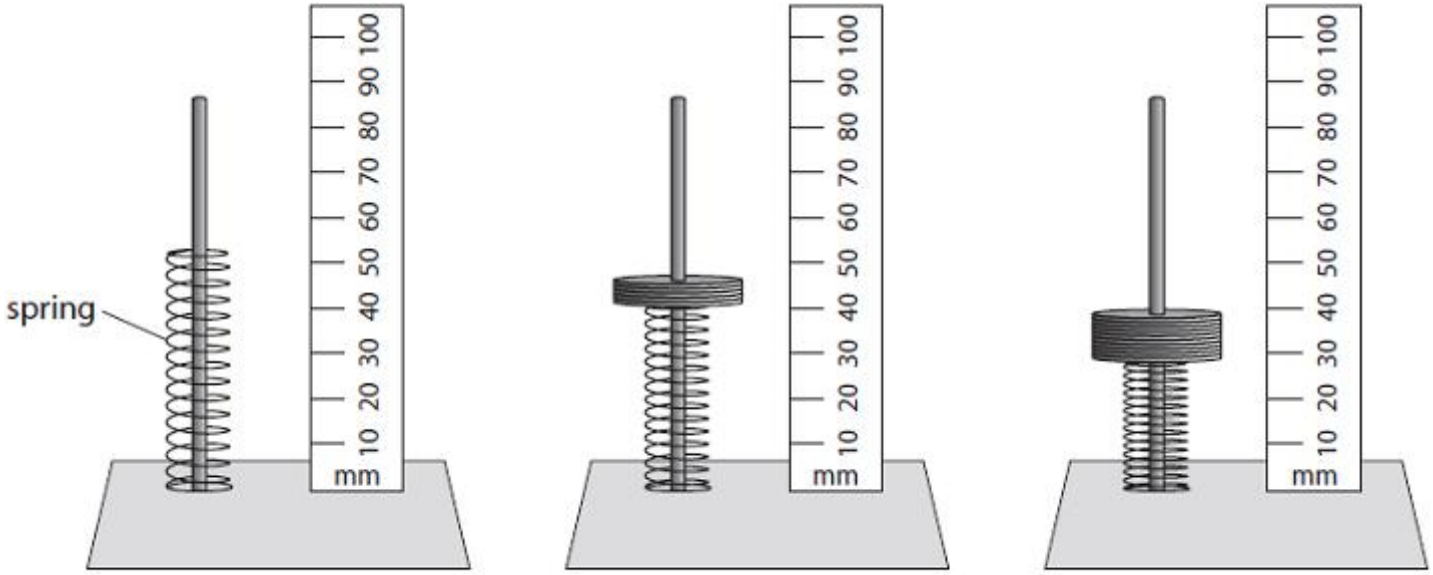



**Figure 14a** **Figure 14b** **Figure 14c**

Weights are added to the spring as shown in Figures 14b and 14c.

(i) Estimate the original length of the spring as shown in Figure 14a.

**(1)**

original length = ..... mm

(ii) Describe how the reduction in the length of the spring when weights are added can be determined.

**(2)**

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(iii) State **two** ways that the experimental procedure could be improved.

**(2)**

1 .....

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2 .....

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(iv) Give **one** reason why the reduction in length eventually reaches a limit as more weights are added.

**(1)**

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**(Total for question = 6 marks)**

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Q2.

A student sets up the apparatus shown in Figure 9.

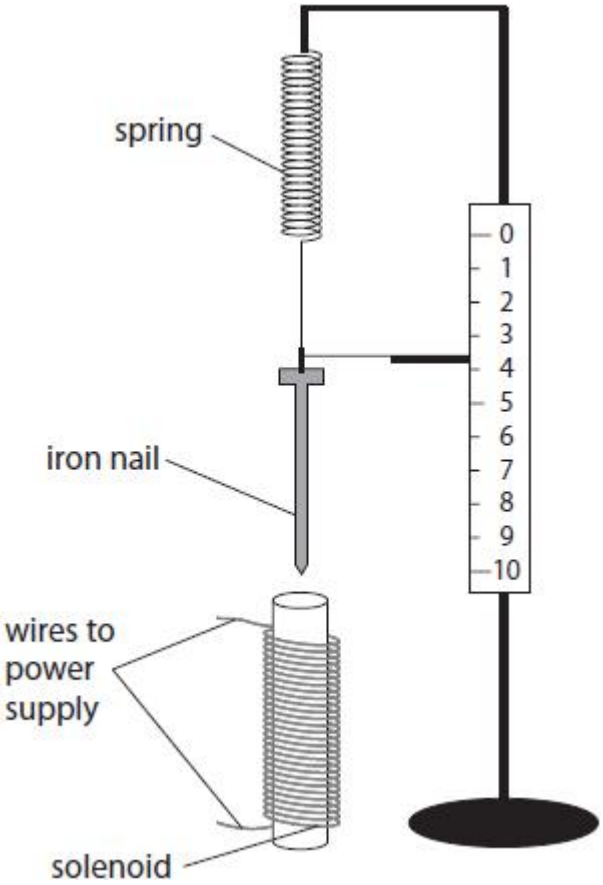



**Figure 9**

(i) When the current in the solenoid is switched on, the solenoid attracts the iron nail.

Describe how the student could use this apparatus to investigate how the size of the current in the solenoid affects the force of attraction between the solenoid and the iron nail.

**(4)**

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(ii) The spring constant of a different spring is 24 N/m.

The spring is extended from its unstretched length by 12 cm.
Calculate the energy transferred in extending the spring by 12 cm.
Use an equation selected from the list of equations at the end of this paper.

**(2)**

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energy transferred = ..... J

**(Total for question = 6 marks)**

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Q3.

This question is about pressure.

Figure 5 shows windows in an aeroplane.

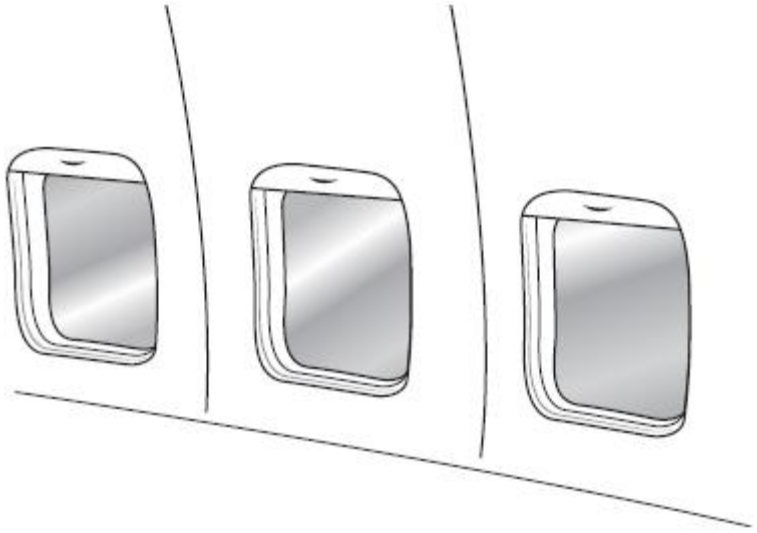


**Figure 5**

The aeroplane is high above the Earth's surface.

The atmospheric pressure outside the aeroplane is 23 000 Pa.

The air pressure inside the aeroplane is 80 000 Pa.

(i) Calculate the pressure difference between inside and outside of the aeroplane.

**(1)**

pressure difference = ..... Pa

(ii) The surface area of the window is 0.094 $m^2$.

Calculate the size of the force on the window due to the cabin air pressure of 80 000 Pa.
Use the equation

$$P = \frac{F}{A}$$

**(2)**

force = ..... N

(iii) On the same aeroplane, a different window has a smaller surface area.

Explain how the force due to the air pressure inside the cabin on the small window differs from the force on the larger window.

**(2)**

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(iv) Figure 6 shows a cross-section through the aeroplane including one window.

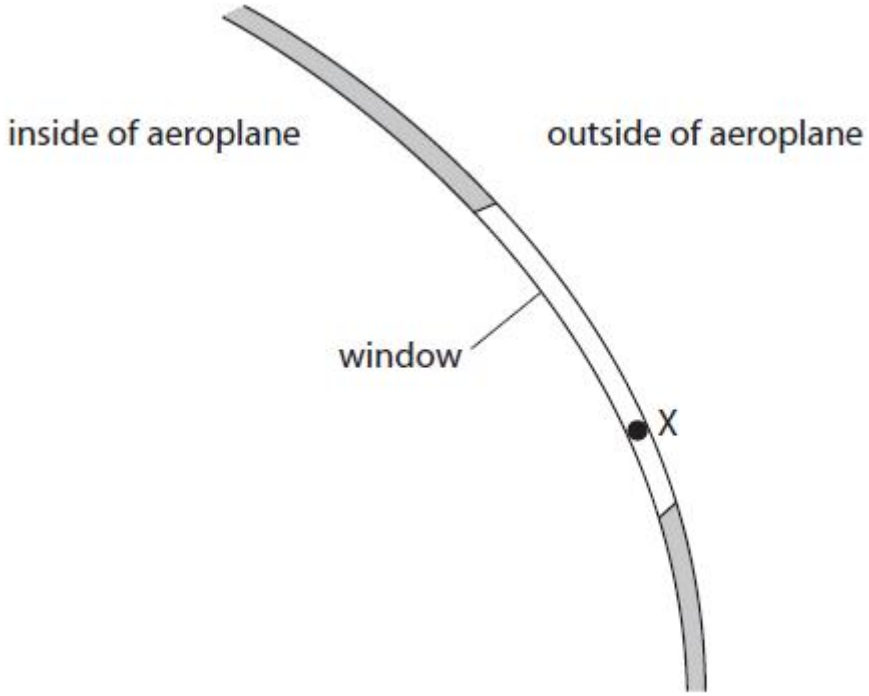



**Figure 6**

Draw an arrow on Figure 6 to show the direction of the resultant force due to the air pressure inside the cabin on the window at point X.

**(2)**

**(Total for question = 7 marks)**

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