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

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Name of the Student:_____
Max. Marks : 17 Marks   **Time : 17 Minutes**

Q1.

A diver is swimming underwater in a lake.

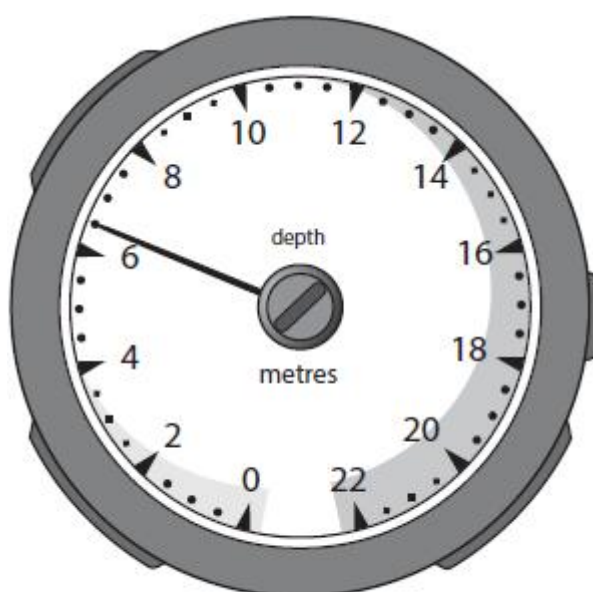The diver wears the meter shown in Figure 3.

Figure 3

(i) The meter shows the depth of the diver below the surface of the water.

State the depth shown on the meter in Figure 3.
State the unit.

(2)

depth = ...unit = ...

(ii) State how the pressure of the water on the diver changes as the diver swims down from the surface of the lake.

(1)

....

....

(iii) State why the total pressure on the diver is greater than just the pressure due to the water above the diver.

(1)

....

....

(Total for question = 4 marks)

Q2.

The graph in Figure 14 shows the variation in atmospheric pressure with the height above sea level.
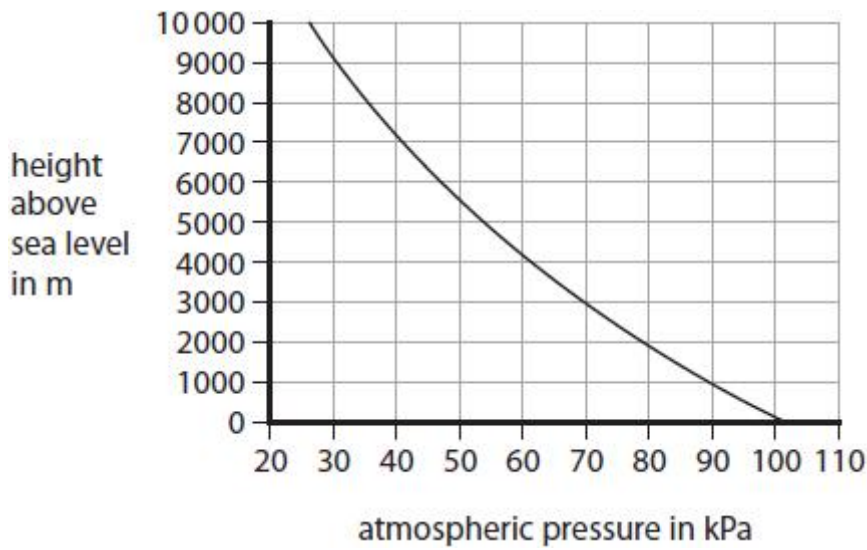

Figure 14

(i) Use the graph to estimate the atmospheric pressure at 3000 m above sea level.

(1)

atmospheric pressure = ... kPa

(ii) Use the graph to estimate the atmospheric pressure at 6000 m above sea level.

(1)

atmospheric pressure = ... kPa

(iii) Suggest a reason why the atmospheric pressure decreases with height above sea level.

(1)

....

....

(Total for question = 3 marks)

Q3.

This question is about pressure.

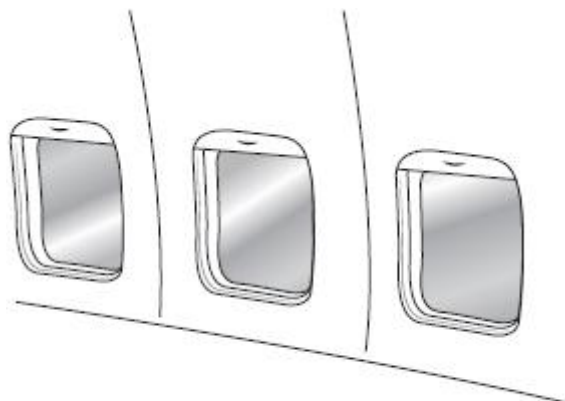Figure 22 shows windows in an aeroplane.

Figure 22

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 m².

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)

....

....

....

....

(iv) Figure 23 shows a cross-section through the aeroplane including one window.
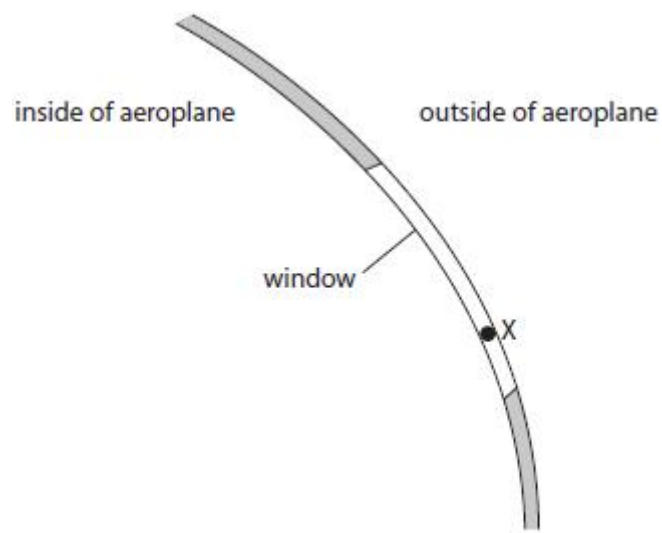
Figure 23

Draw an arrow on Figure 23 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)

Q4.

A box weighs 300 N.

The box rests on the floor.

The area of the box in contact with the floor is 0.75 m^2.

(i) Calculate the pressure exerted by the box on the floor.

Use the equation

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

(2)

pressure = ... Pa

(ii) Which of these is a unit of pressure?

(1)

☒ **A** kg/m^2
☒ **B** kg m^2
☒ **C** N/m^2
☒ **D** N m^2

(Total for question = 3 marks)