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

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

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

Q1.

Figure 26 shows a glass U-tube containing water of density 1000 kg/m^3.
The water levels are the same on both sides of the U-tube.
Both ends of the U-tube are open to the atmosphere.
Atmospheric pressure is 101 000 N/m^2.

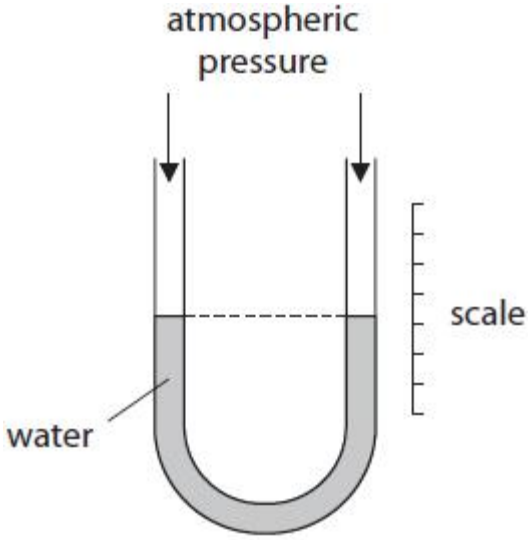

Figure 26

Figure 27 shows the U-tube with one side connected to a gas supply.
The difference in the levels of water, *h*, is 0.200 m.

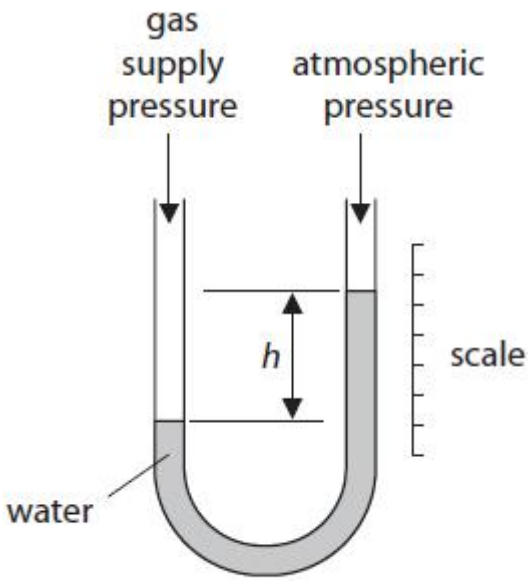

Figure 27

(i) Calculate the gas supply pressure.
Use an equation selected from the list of equations at the end of the paper.

(3)

pressure of gas supply = ... N/m^2

(ii) The measurement is repeated using a U-tube of larger cross-sectional area.

Explain why the value of *h* does not change.

(2)

.....

.....

.....

.....

(Total for question = 5 marks)

Q2.

Figure 16 shows a beaker containing 150 g of water.

Figure 16

The cross-sectional area of the bottom of the beaker is 3.3×10^{-3} m^{-2}.

Calculate the pressure at the bottom of the beaker due to the water.

Take gravitational field strength, g, to be 10 N/kg.

(2)

pressure = ... Pa

(Total for question = 2 marks)

Q3.

A spring is extended.

A force of 0.50 N gives an extension of 13 mm.

Calculate the spring constant *k* in N/m.

(3)

spring constant *k* = ... N/m

(Total for question = 3 marks)

Q4.

Figure 14 shows an athlete using a fitness device.

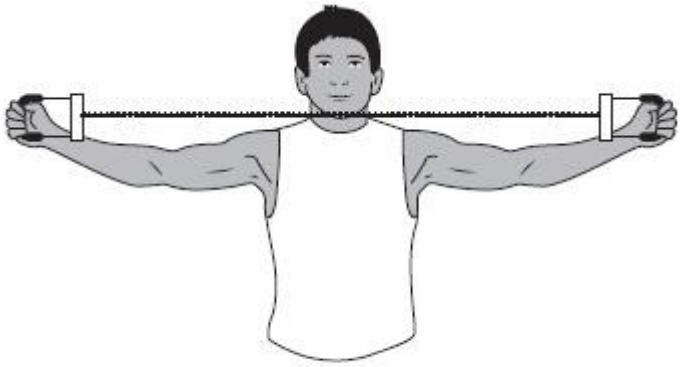

Figure 14

The athlete stretches the spring in the device by pulling the handles apart.

The spring constant of the spring is 140 N/m.

The athlete does 45 J of work to extend the spring.

The athlete takes 0.6 s to expand the spring.

(i) Calculate the useful power output of the athlete when stretching the spring.

(2)

useful power output of the athlete = ... W

(ii) Calculate the extension of the spring.

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

(3)

extension of the spring = ... m

(Total for question = 5 marks)

Q5.

Figure 2 shows a tank for holding water.

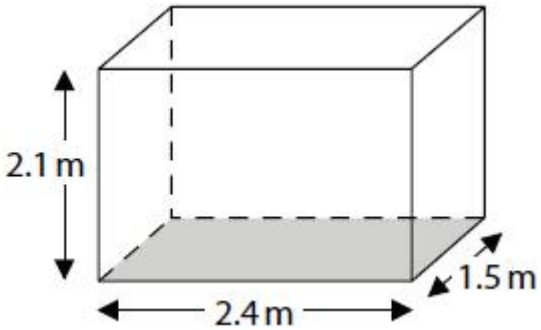

Figure 2

The tank has sides of 2.4 m, 2.1 m and 1.5 m.

The pressure at the bottom of the tank is 12 kPa.

(i) State the equation relating pressure, force and area.

(1)

(ii) Calculate the weight of water in the tank.

(4)

weight = ... N

(Total for question = 5 marks)