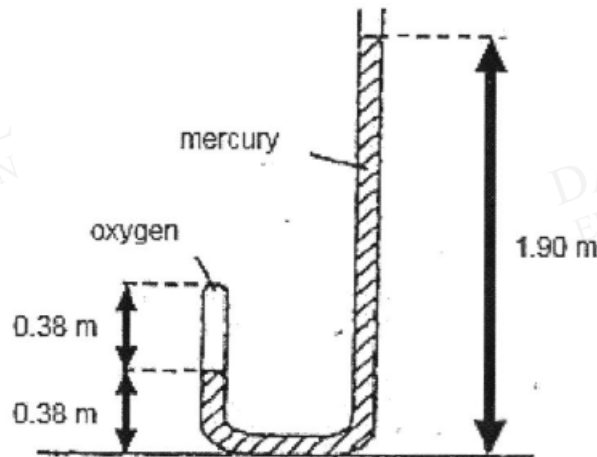


O Level Pure Physics MCQs

Pressure Test 2.0

Q1

14. The figure below shows oxygen compressed in the sealed end of a long U-tube by means of a column of mercury exposed to the atmosphere.



Given that atmospheric pressure is 0.76 mHg, what is the pressure of the oxygen gas in mHg?

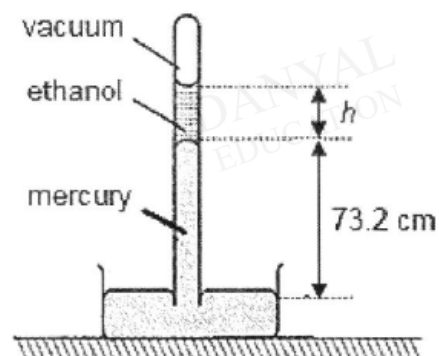
- A 1.14 mHg
- B 1.52 mHg
- C 2.28 mHg
- D 2.66 mHg

Q2

15. A barometer contains mercury mixed with some ethanol as shown below.

The following data is given:

Atmospheric pressure = 75.6 cm Hg
Density of ethanol = 789 kg/m³
Density of mercury = 13 600 kg/m³
Gravitational field strength = 10 N/kg

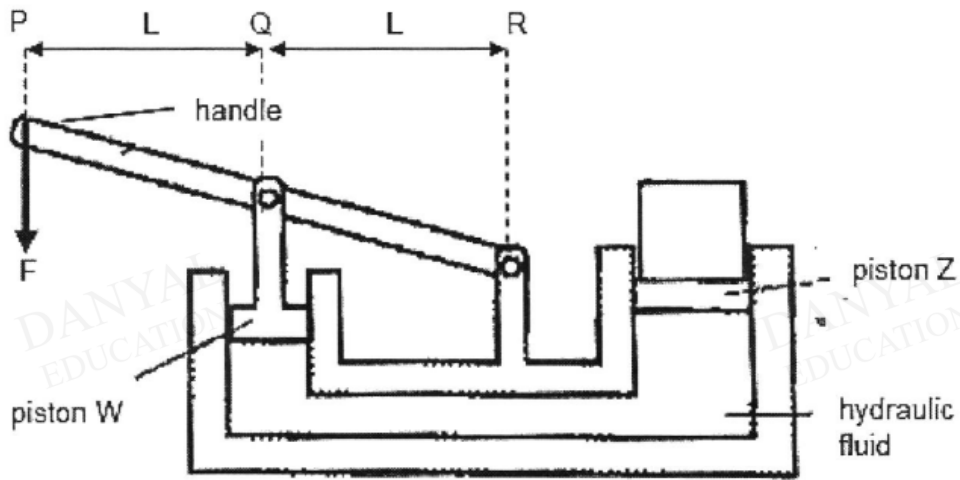


What is the height of the ethanol above the mercury column, h ?

- A 17.2 cm
- B 24.0 cm
- C 30.4 cm
- D 41.4 cm

Q3

16. The diagram below shows a lever connected to a piston W.



The surface area of Piston Z in contact with the hydraulic fluid is 10 times that of piston W. The horizontal distance PQ and QR is L.

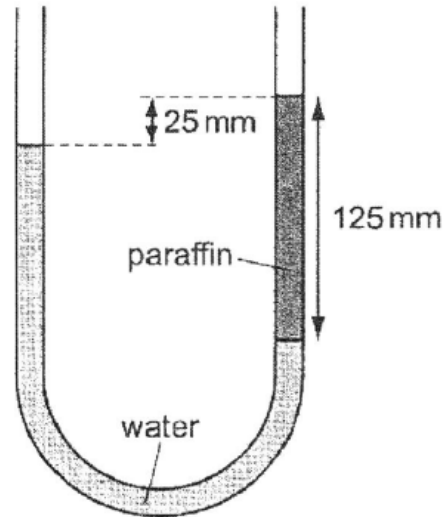
What is the force, **F**, exerted at the handle if the load lifted at piston Z is 20000 N?

- A 500 N
- B 1000 N
- C 2000 N
- D 10 000 N

Q4

Paraffin floats on water. Some paraffin is poured into one arm of a U-tube containing water.

The figure below shows a difference of 25 mm in the surface level of the water and paraffin in the two arms. The length of the paraffin column in the tube is 125 mm.



A small volume of paraffin is added to the right-hand arm increasing the length of the paraffin column in the tube to 150 mm.

What is the new difference between the surface levels of the water and paraffin in the two arms?

- A** 25 mm **B** 30 mm **C** 38 mm **D** 50 mm

Q5

A student is holding a large cube of sides 10.0 cm. A small cube of sides 5.0 cm is placed on top of the large cube. The mass of the large cube and small cube are 300 g and 120 g respectively. The student releases the large cube causing both cubes to fall towards the ground. Assume that the air resistance is negligible.

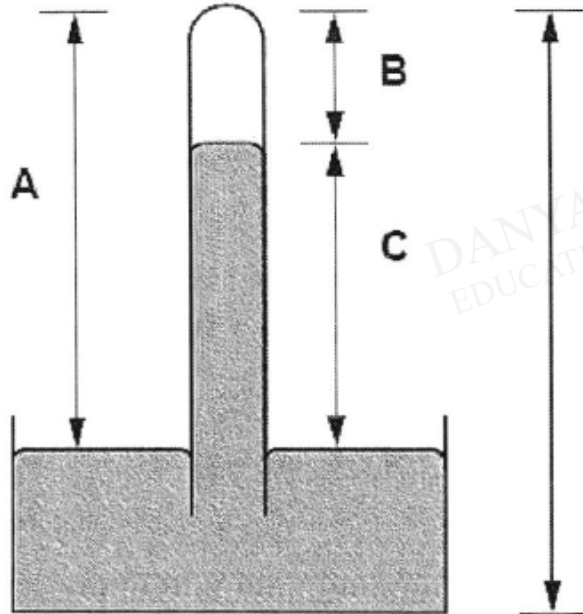
What is the pressure exerted by the large cube on to the small cube when they are falling?

- A** 0 N/cm² **B** 0.018 N/cm²
C 0.030 N/cm² **D** 0.048 N/cm²

Q6

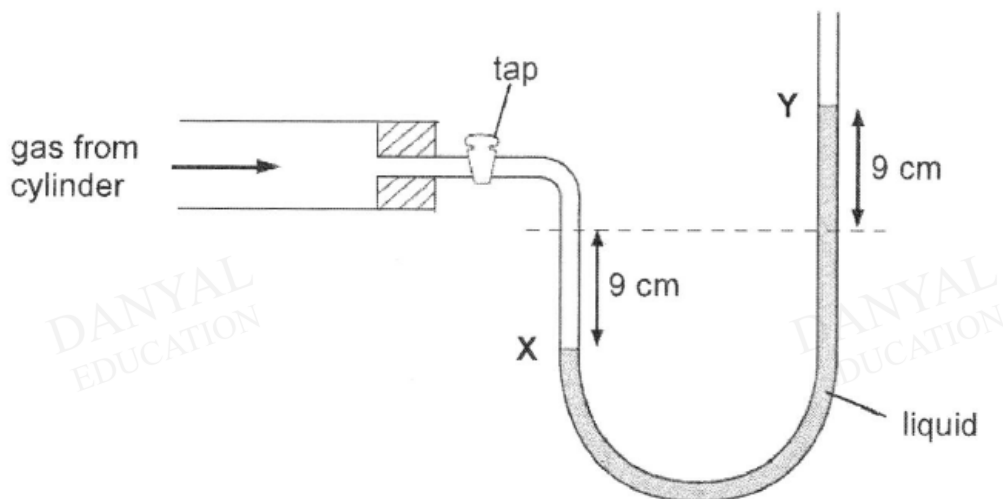
The diagram shows a simple mercury barometer.

Which height is a measure of the atmospheric pressure?



Q7

The diagram shows the levels X and Y in a liquid manometer when the gas tap is opened.



What is the pressure of the gas in the cylinder?

- A 9 cm of liquid above atmospheric pressure
- B 9 cm of liquid below atmospheric pressure
- C 18 cm of liquid above atmospheric pressure
- D 18 cm of liquid below atmospheric pressure

Q8

A 2 cm mercury column is seen along a glass tube as shown in Figure 1. Given that the length of the trapped air is 8 cm and the atmospheric pressure is 75 cm Hg, what is the length of the trapped air when the glass tube is turned to the position shown in Figure 2?

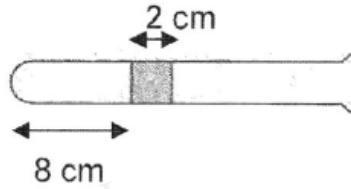


Figure 1



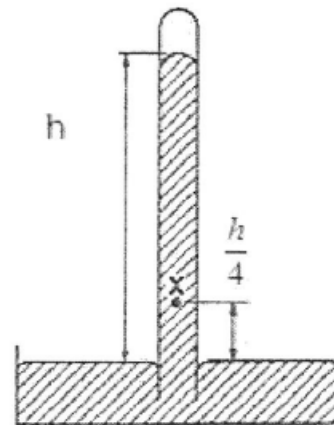
Figure 2

- A 6.0 cm B 7.5 cm C 7.8 cm D 8.0 cm

Q9

The height of a mercury barometer is h when the atmospheric pressure is 120 000 Pa. What is the pressure at X?

- A 30 000 Pa
 B 60 000 Pa
 C 90 000 Pa
 D 120 000 Pa



Q10

Fig. 19.1 shows a J-shaped tube which contains 5.0 cm³ of air trapped by the mercury. More mercury is poured into the open tube until the levels differ by 76 cm as shown in Fig. 19.2. If the atmospheric pressure is 76 cm Hg, what is the volume of trapped air in Fig. 19.2?

- A 2.0 cm³
 B 2.5 cm³
 C 3.0 cm³
 D 3.5 cm³

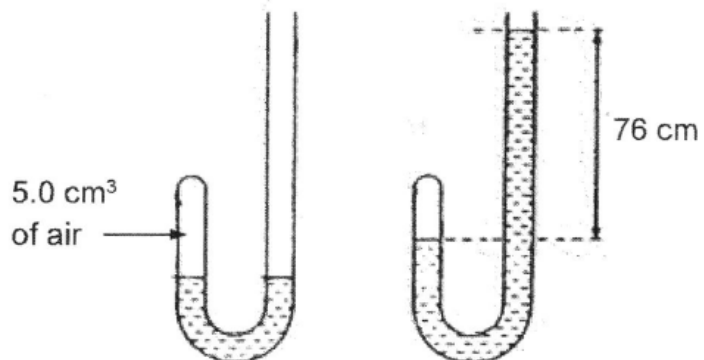


Fig. 19.1

Fig. 19.2

Answers

Pressure Test 2.0

Q1 C

Q2 D

Q3 B

Q4 B

Q5 D

Q6 C

Q7 C

Q8 B

Q9 C

Q10 B

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