NAME INDEX NUMBER

SCHOOL DATE

PRESSURE

1. 1995 Q4 P1

Figure 2 shows a liquid being siphoned from one beaker to another. Refer to this diagram where answering questions 4, 5 and 6

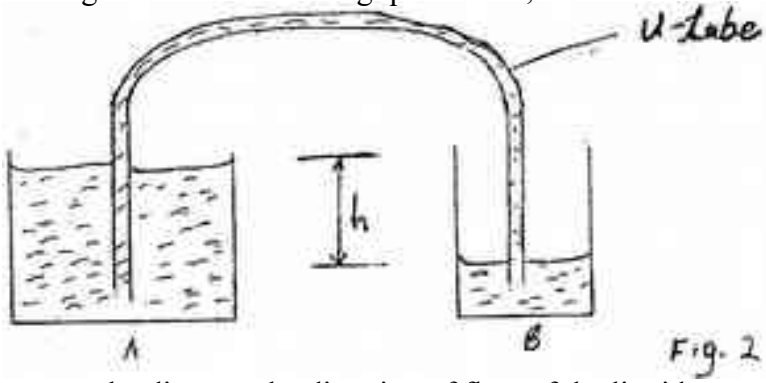

Fig. 2

Indicate on the diagram the direction of flow of the liquid (1 mark)

2. 1995 Q5 P1

Show that the force driving the liquid through the U – tube is proportional to the height, h (3 marks)

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3. 1995 Q6 P1

State what would happen to the flow if the system in figure 2 were put in vacuum (1 mark)

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4. 1995 Q13 P1

The diagram in figure 4 shows two glass tubes of different diameters dipped in water

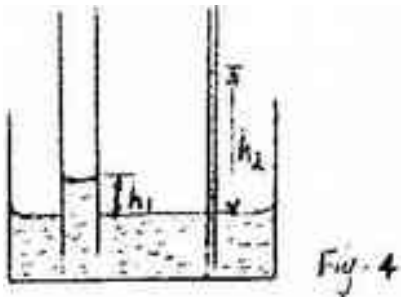

Fig. 4

Explain why h_2 is greater than h_1 (3 marks)

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5. 1996 Q4, 5 P1

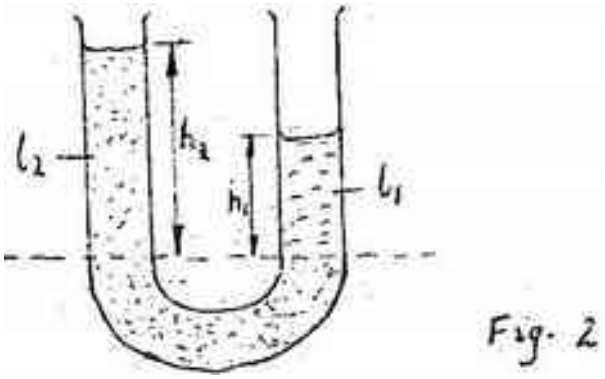

Fig. 2

4. Figure 2 shows a U tube containing two liquids L_1 and L_2 of densities 0.8 g cm^{-3} and 1.8 cm^{-3} respectively in equilibrium. Given that h_2 = 8 cm determine the value of h_1 (3 marks)

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5. A small nail may pierce an inflated car tyre and remain there without pressure reduction in the tyre. Explain this observation (2 marks)

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6. 1997 Q5 P1

The height of the mercury column in a barometer at a place is 64cm. What would be the height of a column of paraffin in barometer at the same place?
(Density of paraffin = 8.0×10^2 kgm^{-3}, Density of mercury = 1.36×104 kgm^{-3})

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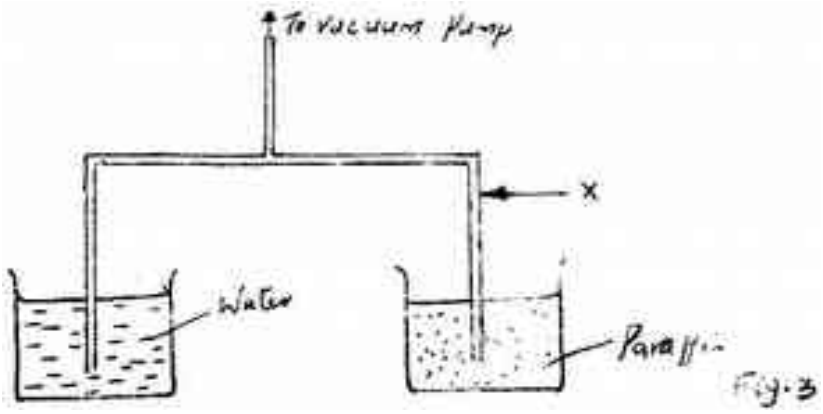
7. 1999 Q4 P1

A vacuum pump was used to pump out air from the glass tube immersed in liquids as shown in figure3.



After sometime the level of paranum rose to position A. Mark 1, the corresponding position for the water level. Give a reason for your answer.

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8. 2001 Q4 P1

State the reason why it may not be possible to suck liquid into your mouth using drinking straw on the surface of the moon.

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9. 2001 Q3c P1

A hole of area 2.0 cm^2 at the bottom of a tank 2.0m deep is closed with a cork. Determine the force on the cork when the tank is filled with water. (Density of water is 1000kg/m^3 and acceleration due to gravity is 10m/s^2).

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10. 2002 Q5 P1

The total weight of a car with passengers is 25,000N. The area of contact of each of the four tyres with the ground is 0.025m^2. Determine the minimum car tyre pressure.

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11. 2003 Q4 P1

The reading on a mercury barometer at a place in 700mm. What is the pressure at the place Nm^{-2} (Density of mercury is 1.36 x 10^4 kgm^{-3})

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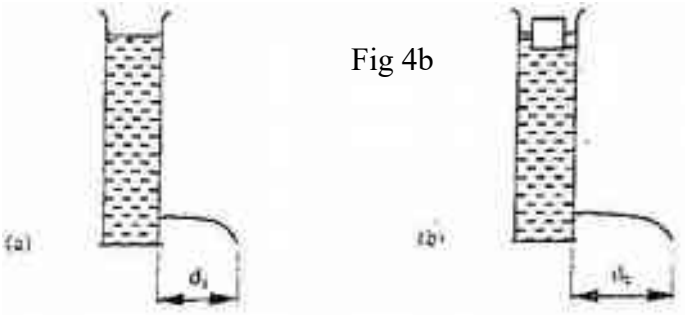
12. 2005 Q4 P1

A can with a hole on the side is filled with water to a certain height. Water jets out as shown in Fig. 4(a). a second identical can is filled with water to the same height and a block of wood floated on the water as shown in Fig. 4 (b)

Fig 4a Fig 4b



State the reason why the maximum distance of the jet, d_2 is greater than d_1 (1 mark)

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13. 2006 Q3 P1

State Pascal's principle of transmission of pressure in fluids (1 mark)

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14. 2007 Q4 P1

Figure 3 shows the levels of two liquids A and B after some air has been sucked out of the tubes through the tap. Use this information and the figure to answer questions 4 and 5.

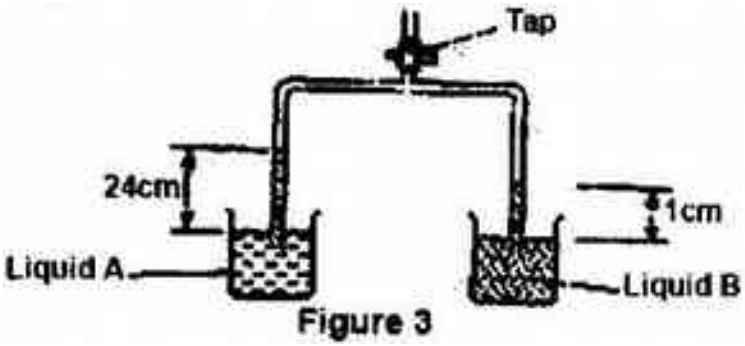

Figure 3

State the reason for the rise in the levels of the liquids when air is sucked from the tubes

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15. 2007 Q5 P1

Given that the density of liquid B is 1200 kgm^3, determine the density of liquid A. (3 marks)

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16. 2008 Q8 P1

Fig. 4 shows a conical flask 15cm high, filled with a liquid of density 1200kgm^{-3}. The atmospheric pressure of the surrounding is 8.4 x 10^4 Pa.

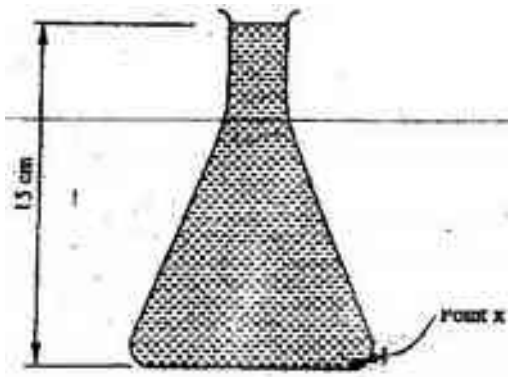

Figure 4

Determine the pressure at the point marked X, at the bottom of the flask. (3 marks)

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17. 2009 Q4 P1

Figure 2 shows two cylinders containing a liquid and connected with a tight-fitting flexible tube. The cylinders are fitted with air-tight pistons A and B as shown

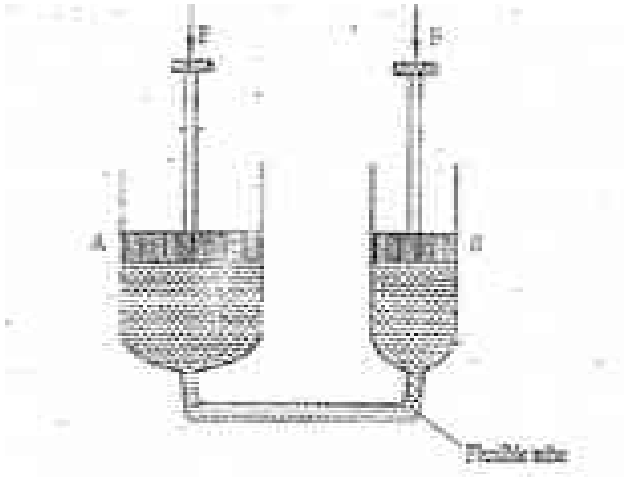

Figure 2

When equal forces,F, are applied on the pistons as shown, it is observed that piston A moves up while piston B moves down. Explain this observation.

(2 marks).

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18. 2010 Q11 P1

When a bicycle pump was sealed at the nozzle and the handle slowly pushed towards the nozzle, the pressure of the air inside increased.

Explain this observation. (1 mark)

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19. 2012 Q7,

A balloon is filled with a gas which is lighter than air. It is observed to rise in air upto a certain height. State a reason why the balloon stops rising. (1mark)

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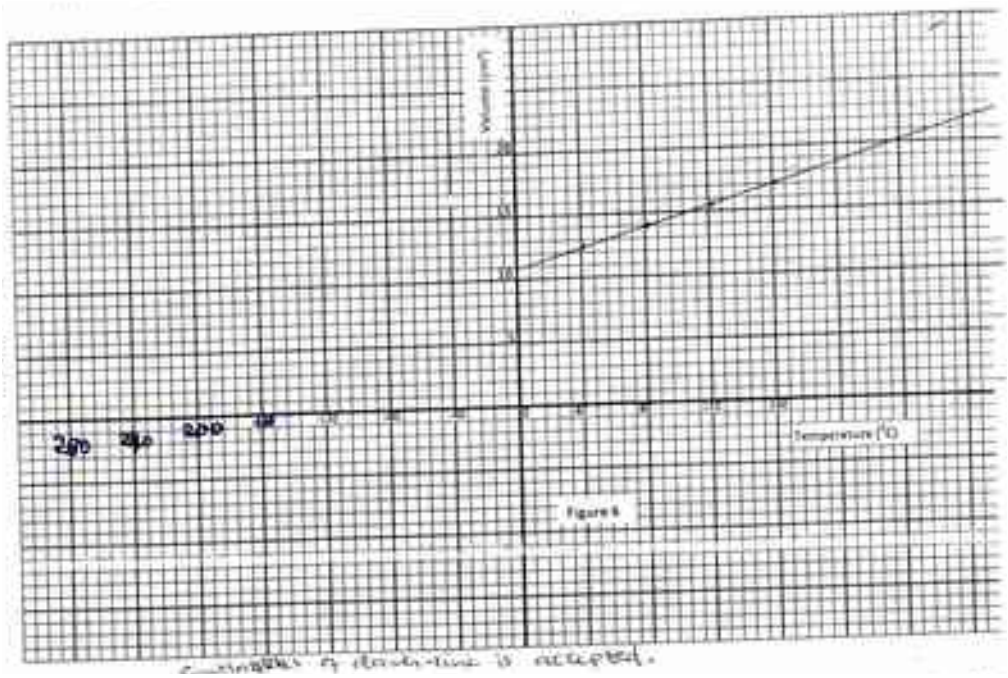
20. 2012 Q15 P1

(a) **Figure 6** shows a graph of volume against temperature for a given mass of gas.



Use the graph to determine the absolute zero temperature in ^{0}C. (2marks)

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(b) **Figure 7** shows a horizontal tube containing air trapped by mercury thread of length 24cm. the length of the enclosed air column is 15cm. The atmospheric pressure is 76cmHg.

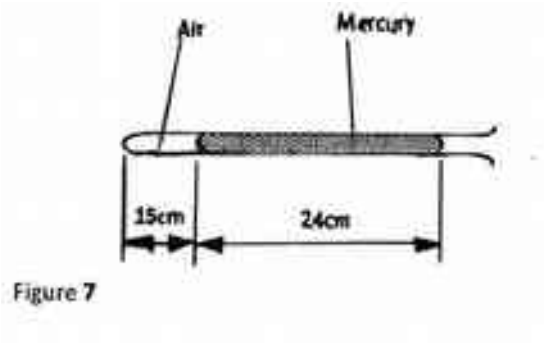

Figure 7

(i) State the pressure of the enclosed air. (1 mark)

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(ii) The tube is now held in a vertical position with the open end facing upwards as shown in **Figure 8.**

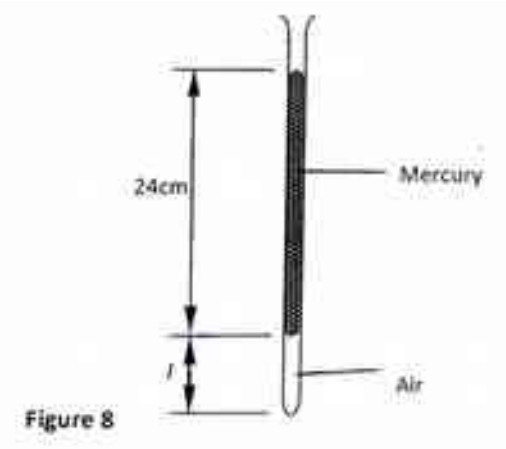

Figure 8

Determine:

(I) Pressure of the enclosed air (1 mark)

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(II) The length (l) of the enclosed air column (3 marks)

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(c) In an experiment to demonstrate atmospheric pressure, a plastic bottle is partially filled with hot water and the bottle is then tightly corked. After some time the bottle starts to get deformed.

(i) State the purpose of the hot water. (1 mark)

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(ii)State the reason why the bottle gets deformed (1 mark)

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(iii) Explain your answer in c (ii) (2 marks)

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