FORM TWO PHYSICS ASSIGNMENT ON PRESSURE.

WEEK 1

1. State and explain the effect on the height, h, when the thistle funnel is moved upwards towards the surface of the liquid
2 . Water dams are built with thicker walls at the bottom than at the top.   Explain why
3. Water tanks in houses are erected as high as possible. Explain.
4. Explain why a hole in a ship near the surface is less dangerous than one near the bottom.
5. A drum which is 2m high contains water to a depth of 0.5 m and oil of density 0.5g/cm3 extends to the top. Find the pressure exerted at the bottom of drum by the two liquids.
6. The reading of mercury barometer is at 70.0cm. What is the pressure at the place in N/m2. {Assume density of mercury is 1.36 x 104 kg/m3}
7. A submarine is 30m below sea water of density 1g/cm3. if the atmospheric pressure at the place is equivalent to 760mmHg. Find the total pressure acting on the submarine (Take density of mercury =13600kg/m3)
8. A submarine is 40m below sea water of density 1020 kg/m3. If the atmospheric pressure at the place is 103,000Pa, calculate the total pressure acting on the submarine.
9. A sucker stuck on a flat surface was pulled by means of a spring balance as shown in figure below.

When the sucker was just about to be pulled off the surface, the spring balance reading was 40 N. Given that the area of the sucker was 4.4 cm^2 , determine the air pressure in Nm−2Nm-2.

10. 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 x $10_2$102 kgm$_{-3}$kgm-3)

WEEK 2 and 3

 8. A submarine is 20m below sea water of density 1000 kg/m3. If the atmospheric pressure at   the place is 102,000Pa, calculate the total pressure acting on the submarine.

 9.A boy is swimming 25m below water level of density 1g/cm3. The atmospheric pressure at this place is equivalent to 72cmHg. Calculate the total pressure on his body in N/m2 (take ρ for mercury = 13600kg)

10. A water tank of height 4.8m is ¾ full. Determine the force exerted on a thin metal plate resting flat at the bottom of the bottom of the tank if the plate has an area of 2cm2. The density of water is 1000kg/m3 and the atmospheric pressure =104,000 Pa

11. A water tank of height 6m is full. Determine the force exerted on a thin metal plate resting flat at the bottom of the bottom of the tank if the plate has an area of 0.5m2. Take acceleration due to gravity, g = 10m/s2, the density of water to be 1000kg/m3 and the atmospheric pressure P=100,000 Pa

12. The height of mercury column in a barometer is found to be 76cm at a certain place. What would be the height on a water barometer in the same place? (Density of water is 1000kg/m3 and density of mercury is 13600kg/m3).

13. The height of mercury column in a barometer, at a place is 64cm. What would be the height of a column of paraffin in the barometer at the same place? (take density of mercury =13600kgm-3 and density of paraffin = 800 kg /m3).

14. A hole of diameter 1.0mm is made in the side of a water pipe. If the pressure of the flow is maintained at 3.0 x 106 Nm-2, calculate the force with which the water jets out of the hole.

15. A hole of area 200mm2 at the bottom of a tank 4.0m deep is closed with a cork. Determine the force due to water (Density of water is 1000kg/m3, and acceleration due to gravity is 10m/s2

The barometric height in a town is 65cmHg. Given that the standard atmospheric

pressure is 76cmHg and the density of mercury is 13600kg/m3

WEEK 5 AND 6.

16. A mountain climber with a mercury barometer discovered that the readings of the barometer at the bottom and top of a certain mountain were 750mmHg and 520mmHg respectively. Given that the density of air between the bottom and top of the mountain is uniform and equal to 1.25 Kg/m3, estimate the height of the mountain. (Take the density of mercury to be 1.36 x 104 Kg/m3) (3mk)

17. The height of mercury column in a barometer is found to be 67cm at a certain place. What would be the height on a water barometer in the same place. (Density of water is 1000kg/m3 and density of mercury is 13600kg/m3).

 18. The height of mercury column in a barometer density 13600kg/ m-3, 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 x 102 kg /m3). (3mks)

19. 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 x 102102 kgm−3kgm-3)

20. A hole of area 2.0cm2cm2 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 1000kgm−3kgm-3 and acceleration due to gravity is 10ms−2ms-2)

21. In an experiment to demonstrate atmospheric pressure, a plastic bottle is partially filled with hot water and the bottle is then tightly corked. After sometime, the bottle starts to get deformed.

22. A block of copper of density 8.9 g/cm3cm3 measures 5 cm × 3 cm × 2 cm. Given that the force of gravity is 10Nkg–1Nkg–1 , determine:
(a) the maximum pressure.
(b) The minimum pressure that it can exert on a horizontal surface.

23. Explain why water storage tanks in houses are erected as high as possible.