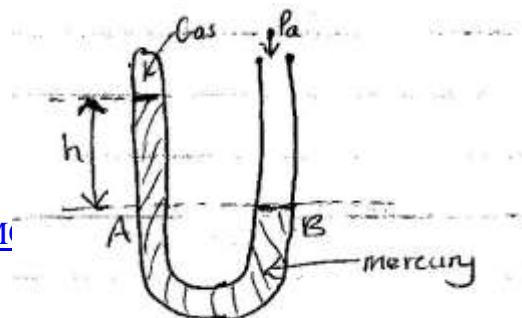


8. What is pressure ? State its SI unit. (2mks)

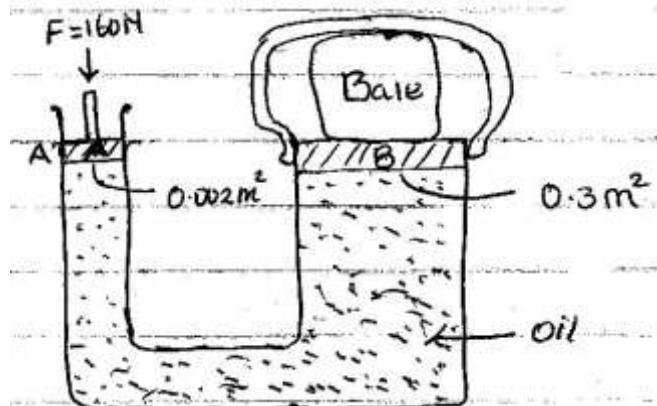
9. Explain the action of drinking straw. (3mks)

10. Using the crashing can experiment, explain using a diagram the existence of atmospheric pressure (5mks)

11. The diagram below shows a mercury manometer. Some dry gas is present in the closed space in limb A, while limb B is open. If atmospheric pressure $P_a = 103\ 000\ \text{pa}$, $h = 30\text{mm}$ and density of mercury is $13\ 600\text{kgm}^{-3}$. Determine pressure P_g of the gas. (Take $g = 10\text{Nkg}^{-1}$) (4mks)



12. The figure below shows a simple hydraulic press used to compress a bale. The cross-section areas of A and B are 0.002m^2 and 0.30m^2 respectively:



(a) Pressure exerted on the oil by the force applied at A. (3mks)

(b) Pressure exerted on B by the oil. (2mks)

(c) Force produced on B compressing the bale. (3mks)

13. A sea diver is 35m below the surface of sea water. If the density of the sea water is 1.03gcm^{-3} and g is 10N/kg . Determine the total pressure on him.
(Atmospheric pressure = $103\,000\text{Nm}^{-2}$) (3mks)

14. A brick 20cm long, 10cm wide and 5cm thick has a mass of 500g. Determine the:
(a) Greatest pressure that can be exerted by the brick on a flat surface. (3mks)

(b) Least pressure that can be exerted by the brick on a flat surface. (Take $g = 10\text{N/kg}$) (3mks)

15. Define matter and give the three states of matter. (4mks)

16. Explain why the density of a gas is much less than that of a solid or liquid. (2mks)

17. Explain the following:

(a) It is possible to compress gases but not solids and liquids. (2mks)

(b) A perfume sprayed at one corner of a room spreads quickly to the entire room. (2mks).

18. A smoke cell contains a mixture of trapped air and smoke. The cell is brightly lit and viewed through a microscope. Small bright specks are seen dancing in a random manner.

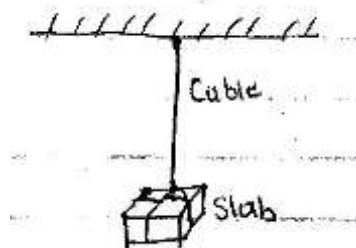
(a) What are these small bright specks ? (1mk)

(b) Why do they move in a manner described above ? (2mks)

19. Using pollen grains placed in water, explain how their motion supports the idea that matter is not continuous. (2mks)

20. Define force and give its SI units. (2mks)

21. A concrete slab of mass 90kg is held by a steel cable of a crane as shown in the fig below.



(a) Draw and name the forces acting on the slab. (2mks)

(b) Determine the tension in the cable. (3mks)

22. When water is poured on a dry glass slab it spreads uniformly but it forms spherical droplets on a waxed glass slab. Explain. (4mks)

23. A man has a mass of 70kg. Determine

(a) His weight on earth, where the gravitational field strength is 10N/kg. (3mks)

(b) His weight on the moon, where the gravitational field strength is 1.7N/kg. (3mks)

24. A mass of 7.5kg has weight of 30N on a certain planet. Calculate the acceleration due to gravity on this planet. (3mks)

25. A spring stretches by 6cm when supporting a load of 15N.

(a) How much would it stretch when supporting a load of 5kg? (3mks)

(b) What load would make the spring extend by 25mm ? (3mks)

26. Describe a method that can be used to open a tight lid of a bottle without damaging it. (2mks).