

MAKING SCHEME

TERM III

PHYSICS FORM ONE

1. Physics is the study of matter and its relation to energy

2. Mechanics

Electricity and magnetism

Thermodynamics

Geometric optics

Waves

Atomic physics

3. (a) Force is a pull or a push on a body SI unit Newton (N)

(b) In (a) the cohesive forces between water molecules are stronger than between water and wax. In (b) adhesive forces between the water molecules and glass molecules are stronger.

(c) Soap lowers the surface tension of water

4. In the thick glass, heat is distributed unevenly causing unequal expansion and contraction which leads to breakage. In the thin glass heat is evenly transmitted hence uniform contraction and expansion .

5. The initial fall of the level of the water is due to the expansion of the glass flask, which gets heated first. The water starts expanding when heat finally reaches it, and it rises up the tube.

6. (a) Force acting normally (perpendicular) per unit area.
SI unit Nm^{-2} or Pa or N/m^2 .

(a) (i) Pressure is greater at the bottom than at the top. This is because pressure increases with depth.

- (ii) A sharp panga has a smaller area of the edge than a blunt panga, hence it exerts more pressure during cutting than a blunt one.

(b) (i) $P_{\max} = \frac{F}{A_{\min}}$

$$A_{\min} = 0.15 \times 0.05 \\ = 0.0075\text{m}^2$$

$$P_{\max} = \frac{25}{0.0075} \\ = 3333.3\text{N/m}^2$$

(ii) $P_{\min} = \frac{F}{A_{\max}}$

$$A_{\max} = 0.25 \times 0.15$$

$$= 0.0375\text{m}^2$$

(ii) $P_{\min} = \frac{25}{0.0375}$
 $= 666.67\text{N/m}^2$

7. (a) Anything that occupies space and has mass

- (b) (i) to illuminate the smoke cell
(ii) to focus light into the smoke cell
(iii) to observe the movement of the smoke particles

- (c) Bright specks in continuous random motion

The motion is due to constant collisions between the smoke particles and the invisible air particles which are always in random motion.

(d) The motion of the particles increase

8 (a) Mass per unit volume
SI unit Kg/m^3 or Kgm^{-3}

(b)
$$\text{volume} = \frac{\text{Mass}}{\text{Density}}$$
$$= \frac{3600}{1.8} = 2000\text{cm}^3$$

(c)

Mass of water	=	70 – 20
	=	50g
Volume of water	=	50cm^3 ($P = 1\text{g/cm}^3$)
Volume of bottle	=	50cm^3
Mass of liquid	=	55 – 20
	=	35g
Density of liquid	=	35
		50
	=	0.7g/cm^3 or
		700Kg/m^3

9. Thickness of sheets

	=	1000 x 0.05
	=	50mm

Thickness of covers

	=	0.10 x 2
	=	0.2mm

Thickness of book

	=	50 x 0.2
	=	50.2mm

10. Volume of water drops

	=	55 x 0.12
	=	6.6cm^2

Final water level in burette

	=	30 + 6.6
	=	36.6cm^3

11. (a) The degree of hotness or coldness of a body SI unit is Kelvin (K)

(b) (i) T

	=	0 – 273
	=	0 – 273
	=	-273°C

(ii) T

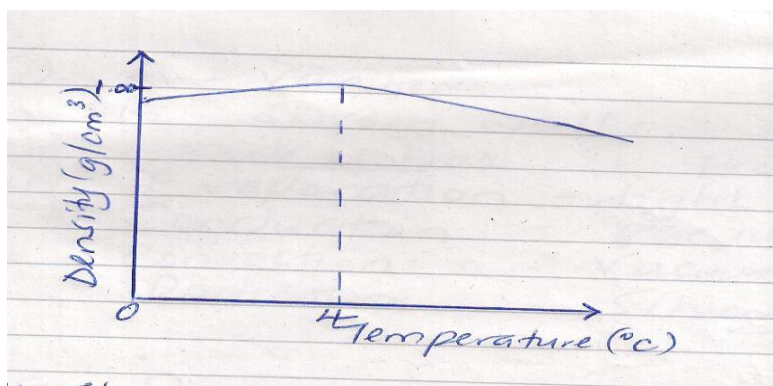
	=	0167 – 273
--	---	------------

$$= -106^{\circ}\text{C}$$

- (c) - be seen easily (visible)/opaque)
 - expand or contract uniformly
 - not stick to the inside of the tube (should not wet the inside of the tube)
 - have a wide range of temperature (high boiling point and low freezing point)
- (d) - Its temperature range is about 35°C - 43°C , which makes it suitable since the temperature of a healthy person is about 37°C .
 - The constriction. It prevents the mercury from flowing back to the bulb before the temperature is read.
- (e) It will break since the temperature of boiling water is much above the maximum this thermometer can measure.

12. (a) The behavior of water in that it contracts when its temperature is raised from 0°C to 4°C

(b)



(c) (i)

temperature of water does not drop to zero. At 4°C water has a maximum

density hence it sinks, ice being lighter than water floats on the surface and this prevents further loss of heat.

(ii) When water freezes in the pipes it expands and this is what causes bursting

13. (a) Pressure applied at one part in a liquid transmitted equally to all other parts of the enclosed liquid

$$(b) \quad \frac{F_1}{A_1} = \frac{F_2}{A_2}$$

$$\begin{aligned} F_1 &= \frac{F_2 A_1}{A_2} \\ &= \frac{20000 \times 2}{1000} \\ &= 40N \end{aligned}$$

- (c)
- Be incompressible
 - Have low freezing point and high boiling point
 - should not corrode the parts of the brake system

14. (a)	<u>Mass</u> Quantity of matter in a body Measured in kilograms Same everywhere Magnitude only	<u>Weight</u> Pull of gravity on a body Measured in Newtons Changes from place to place Both magnitude and direction
---------	---	--

$$\begin{aligned} (b) \quad W &= mg \\ &= 70 \times 1.7 \\ &= 119N \end{aligned}$$

$$\begin{aligned} (c) \quad g &= \frac{W}{M} \\ &= \frac{30}{7.5} \\ &= 4N/Kg \end{aligned}$$

- (d) A scalar quantity has magnitude (size) only but no direction while a vector quantity has both magnitude and direction.