

FORM 1 PHYSICS MARKING SCHEME END OF TERM 2

1. Length - Metre
 Mass - Kilogram
 Time - Second
 Electric current - Ampere
 Thermodynamic temperature – Kelvin
 Luminous intensity - Candela
 Amount of substance - Mole (Any 3)

- 2(a) Surveyor's tape measure
 (b) Metre rule
 (c) Tailor's tape measure

3. Circumference = πd

$$= \frac{22}{7} \times 4.2 = 13.2$$

$$\frac{132\text{cm}}{13.2\text{cm}}$$

$$= \underline{10 \text{ times.}}$$

4. $145\text{mm} \times 214\text{mm} = 31\,030\text{mm}^2$

5. - Mass per unit area ✓
 - Kg m^{-3} or Kg/m^3 ✓

6. Vol of water dropped = 55×0.12
 $= 6.6 \text{ cm}^3$

Final water level = $30\text{cm}^3 - 6.6 \text{ cm}^3$ ✓ $30\text{cm}^3 + 6.6\text{cm}^3 = 36.6\text{cm}^3$
 $= 23.4 \text{ cm}^3$

7(a) $4\text{cm} = 0.04\text{m}$ ✓

$$V = (0.04)^3 \checkmark$$

$$= 0.000064\text{m}^3 \checkmark$$

(b) $P = \frac{M}{V}$

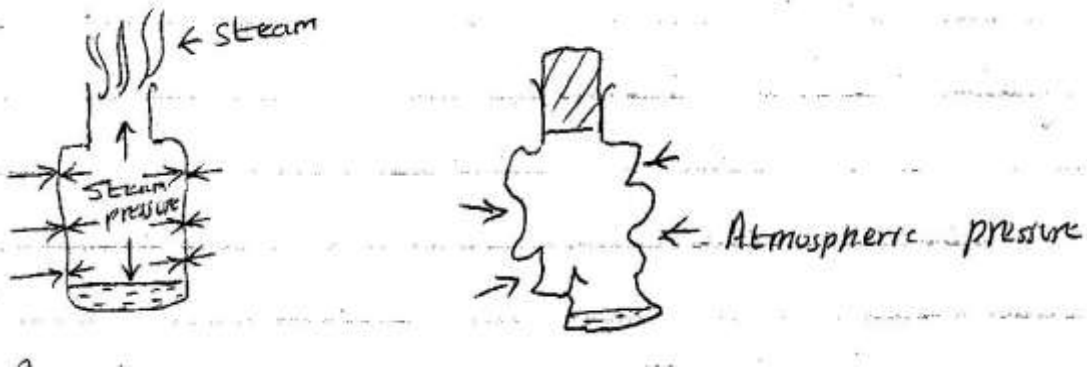
$$= \frac{0.512}{0.000064}$$

$$8000\text{Kgm}^{-3} \checkmark$$

8. Force acting normally per unit area. ✓
 $\text{N/m}^2 \checkmark$ or Pascals

9. When you suck the straw the air pressure inside it decreases making the atmospheric pressure outside to press the liquid hence it rises on the straw.

10.



- Boil the water for several minutes. ✓
- Replace the cork and allow the container to cool. You may pour cold water on it to cool it faster. ✓
- The container crushed in.
- On cooling, the steam condenses. A partial vacuum is therefore created inside the ✓ container. Since the pressure inside is less than atmospheric pressure outside, the container crushes in. ✓

11. Pressure at A = Pressure at B

$$P_g + h\rho g = P_a \checkmark$$

$$P_g + 0.03 \times 13600 \times 10 = 103\,000 \checkmark$$

$$P_g + 4080 = 103\,000$$

$$P_g = 98\,920 \text{ Nm}^{-2} \checkmark$$

$$12. (a) \quad P = \frac{F}{A} \checkmark = \frac{160}{0.002} \checkmark$$
$$= \underline{80,000} \text{ Nm}^{-2} \checkmark$$

$$(b) \text{ Pressure at A} = \text{Pressure at B} \checkmark$$
$$= 80\,000 \text{ Nm}^{-2}$$

$$(c) \quad F = P \times A \checkmark$$
$$= 80\,000 \times 0.3 \checkmark$$
$$= 24\,000 \text{ Nm}^{-2} \checkmark$$

$$13. \text{ Total pressure} = \text{Pressure of water} + \text{Atmospheric pressure}$$
$$= h\rho g + 103\,000 \checkmark$$
$$= 35 \times 1030 \times 10 + 13\,000 \checkmark$$
$$= 463\,500 \text{ Pa} \checkmark$$

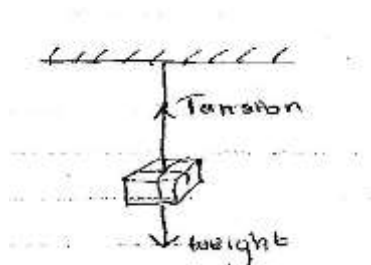
$$14. \text{ Greatest pressure} = \frac{\text{Force}}{\text{Smallest area}} \checkmark$$
$$= \frac{0.5 \times 10}{0.05 \times 0.1} \checkmark$$
$$= \frac{5}{0.005} = \underline{1000} \text{ Nm}^{-2} \checkmark$$

$$\text{Smallest pressure} = \frac{\text{Force}}{\text{Largest area}} \checkmark$$
$$= \frac{5}{0.2 \times 0.1} \checkmark = \frac{5}{0.002} = \underline{250} \text{ Pa} \checkmark$$

15. Anything that occupies space and has weight. \checkmark
- Gas \checkmark
 - Liquid \checkmark
 - Solid \checkmark

16. This is because the particles in gases are wide spread ✓ compared to liquid and solids which are closely parked. ✓
17. (a) This is because the particles in gases are wide spread compared to liquid and solids which are closely parked.
- (b) This is because the particles of the spray move from region of high concentration to region of low concentration.
18. (a) Smoke particles.
- (b) They collided with denser and invisible air particles.
19. The pollen grains are very light and they collided with invisible water particle making them to move in random motion.
20. - It is a push or pull ✓
- Newton ✓

21. (a)



(b) Tension = Weight = mg ✓
= 90×10 ✓
= $900N$ ✓

22. When the water was poured on a dry glass slab it spread uniformly because the adhesive force was higher than cohesive force but on a waxed glass slab it formed spherical droplets because cohesive force was higher than adhesive force.

23(a) $W = mg$ ✓
= 70×10 ✓
= $700N$ ✓

(b) $W = mg \checkmark$
 $= 70 \times 1.7 \checkmark$
 $= 119\text{N} \checkmark$

24. $g = \frac{w}{m} \checkmark$

 $= \frac{30}{7.5} \checkmark$
 $= 4\text{N/kg} \checkmark$

25(a) $W = mg$
 $= 5 \times 10 = 50\text{N}$
 $= 15\text{N} \quad 6\text{cm}$
 $50\text{N} \quad ?$

 $\frac{50 \times 6}{15} \checkmark = 20\text{cm}$

(b) $6\text{cm} \quad 15\text{N}$
 $2.5\text{cm} \quad ?$

 $\frac{2.5 \text{ cm} \times 15\text{N}}{6\text{cm}} \checkmark$

 $= 6.25 \text{ N} \checkmark$

26. Dip the lid in hot water, it will expand,✓ then dip the bottle itself in cold water, it will contract allowing the opening of the lid to be easy.✓