

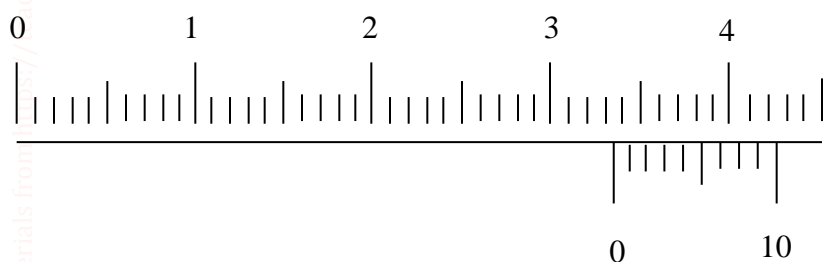
## PHYSICS FORM 2

TERM 1 2025

### MARKING SCHEME

#### SECTION A

1.



Check for correct drawing

Main scale 3.3 ✓

Vernier scale 0.06 ✓

2. Volume of water displaced =  $100 - 60 = 40\text{cm}^3$

Volume of water displaced = Vol. of stone =  $40\text{cm}^3$  ✓

$P = \frac{M}{V}$  (do not award a mark for the formula)

$$P = \frac{567\text{g}}{40\text{cm}^3} = 14.175\text{g/cm}^3 \text{ (correct substitution) ✓}$$

$P = 14.18\text{g/cm}^3$  (Answer must be given correct to 2d.p)

3. Weight on Earth = 600N

Weight on Planet = 450N

Weight,  $W = Mg$

$$M = \frac{W}{g}$$

$$\text{Mass of body} = \frac{600\text{N}}{10\text{N/Kg}} = 60\text{Kg} \checkmark$$

$$g = \frac{w}{m}$$

$$g = \frac{450\text{N} \checkmark}{60\text{Kg}} = \frac{7.5\text{N}}{\text{Kg}} \checkmark$$

Correct substitution  $\checkmark$

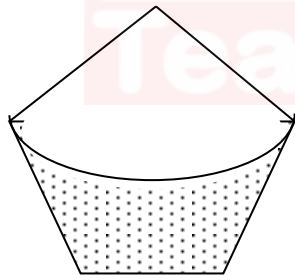
Correct answer with correct units  $\checkmark$

4. The force of cohesion within the mercury is greater than the force of adhesion between mercury and glass  $\checkmark$ .

The mercury therefore sinks down  $\checkmark$ the tube to enable mercury molecules to keep together $\checkmark$ .

5. Temperature rise and impurities lower the surface tension of water  $\checkmark$

6. a)



Check for correct drawing  $\checkmark$   
 Check on the curvature  $\checkmark$

b) The unbalanced  $\checkmark$  surface tension $\checkmark$  pulls the thread tight

7.  $h = 760\text{mm}$

$$p = 1.36 \times 10^4 \text{ Kg/m}^3$$

$$p = ?$$

$$p = pgh$$

$$p = 1.36 \times 10^4 \times 10 \times \frac{760}{1000}$$

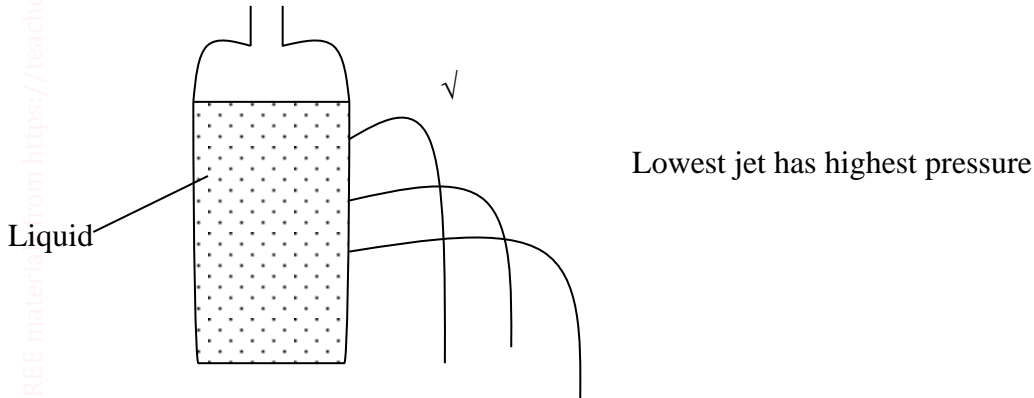
Check on the conversion  $\checkmark$

Correct substitution ✓

$$P = 103,360 \text{ N/M}^2$$

Accept  $P = 103,360 \text{ pa}$  ✓ check for correct units

8. The external pressure (atmospheric) is lower than the internal pressure ✓: therefore the capillaries break ✓.
9. The bottle with hole experiment – if diagram used; check for labeling ✓: Procedure, observation and conclusion ✓.



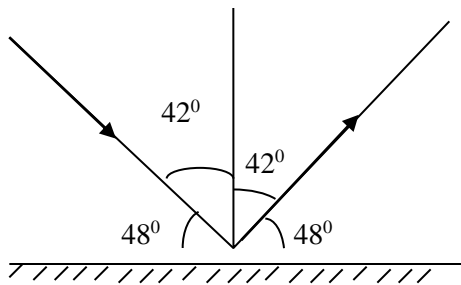
10. Solid – particles very close, hence low kinetic energy ✓.

Liquids – particles fairly free, moderate kinetic energy ✓

Gases – particles very free, high kinetic energy ✓

11. The metal blade conducts heat from the hand but the wood cannot ✓

12.



$$90 - 48 = 42^\circ \checkmark$$

Drawing a normal

13.  $(20 \times 0.3) + (20 \times 0.3) \checkmark$  or  $20 \times 0.6$

$$6 + 6 = 12\text{NM}\checkmark$$

Check for correct units

Check for presence of the neutral zone✓

## SECTION B

14. i. Smoke particles – smoke particles are larger than air molecules and light enough to move when

bombarded by air molecules ✓

Lens – focuses the light from the lamp on the smoke particles, causing them to be observable

Microscope – enlarges/magnifies the smoke particles so that they are visible ✓

ii. Smoke particles more randomly/zigzag ✓

Air molecules bombard the smoke particles

Air molecules are in random motion

iii. The speed of motion of smoke particles will be observed to be lighter/faster/speed increases✓.

15. a) Mass of water =  $66.1 - 42.9$ ✓

$$= 23.2\text{g}\checkmark$$

$$\text{b) Volume} = \frac{\text{Mass}}{\text{Density}} = \frac{23.2\text{g}}{1\text{g/cm}^3}$$

$$= 23.2\text{cm}^3\checkmark$$

Working must be shown

c) Volume of density bottle = volume of water

$$\text{Volume of bottle} = 23.2\text{cm}^3\checkmark$$

d) Mass of soil =  $67.2 - 42.9$

$$= 24.3\text{g}\checkmark$$

e) Mass of water that filled the space above the soil

$$= 82.0 - 67.2$$

$$= 14.8\text{g} \checkmark$$

f) Volume of soil

$$\text{Volume of water} = \frac{\text{Mass}}{\text{Density}} \checkmark$$

$$= \frac{14.8\text{g}}{1\text{g/cm}^3}$$

$$= 14.8\text{cm}^3 \checkmark$$

$$\text{Volume of soil} = 23.2 - 14.8$$

$$= 8.4\text{cm}^3 \checkmark$$

g) The density of the soil =  $\frac{\text{Mass}}{\text{Volume}}$

$$= \frac{24.3}{8.4} \checkmark$$

$$= 2.893\text{g/cm}^3 \checkmark$$

16. a) A – Seal and insulator ✓

B – Zinc case ✓

C – Mixture of carbon and manganese (IV) oxide ✓

D – Carbon rod ✓

b) Zinc case acts as a negative electrode ✓

c) i) Polarisation ✓

Remedy – Adding a depolarizer e.g potassium dichromate ✓

ii) Local action ✓

Remedy – By amalgamation ✓

Accept – use of pure zinc or coating zinc with mercury ✓