MARKING SCHEME: GATUNDU EVALUATION EXAM

1. Volume = $150-80 = 70\,cm^3$ ✓

$$\rho = \frac{M}{V} \checkmark$$

or

$$\rho = \frac{567}{70}$$

$$= 8.10\,g/cm^3 \checkmark$$

2. (i) – Weight of solid in air (Real weight) ✓
– Weight of solid in the fluid (Apparent weight) ✓

(ii) Upthrust = Real weight – Apparent weight ✓

3. The object will continue to move with constant velocity along a straight line. ✓

4. Presence of impurities ✓
– Increase in pressure ✓

5. Flask contract first ✓
Water contracts more than flask.

6. Blowing increases the velocity of air inside the tube which leads to decrease in pressure. ✓
The atmospheric pressure pushes the walls of the tube.

7. $F_1d_1 = F_2d_2$ or Sum of clockwise moment = Sum of anticlockwise moments. ✓

$0.5 \times T + 4 \times 0.35 = 0.4 \times 8$ ✓

$0.5T + 1.4 = 3.2$

$T = \frac{1.8}{\quad} = 3.6\,N$ ✓

8. (a) $F = 20N$

$e = 0.5cm$

$k = \frac{F}{e}$ ✓

or

$k = \frac{20N}{0.5cm}$

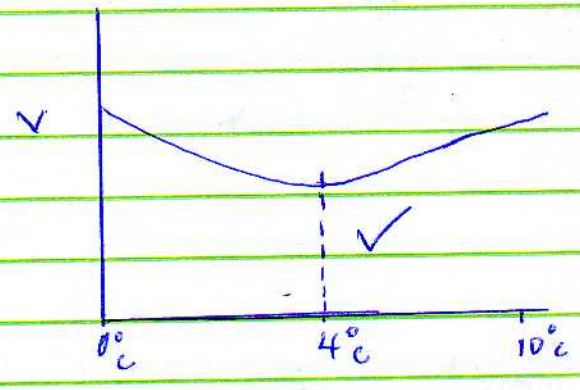
$= 40N/cm$ ✓ or $0.4N/m$.

(b) $F = ke$

$= 40N/cm \times 0.86cm$

$= 34.4N$. ✓

9.



10. (a) Melting or solid changes to liquid ✓

(b) Vapourisation (liquid changes to gas).

(ii) Prevent mercury from flowing back into bulb. ✓

12. Diffusion ✓

13 The position of the centre of gravity (C.O.G) does not change even with a duplacement. ✓ or The C.O.G is at its lowest point.

14(a) Gas that obeys all gas laws (perfectly). ✓

(b)(i) By changing pressure slowly ✓ or allowing gas to go back to original temperature after the change.

(ii) K = The slope ✓

$(2.0 \times 10^6, 1.65 \times 10^5)$ and $(4.0 \times 10^6, 3.3 \times 10^5)$ (Reading from the graph) ✓

$$\frac{(3.3 - 1.65) \times 10^5}{(4.0 - 2.0) \times 10^6} = \frac{1.65 \times 10^5}{2.0 \times 10^6} \checkmark$$

$$= 0.0825 \text{ Nm} \checkmark$$

(iii) Work done on the gas.

(iv) - Use dry gas or ✓
Make very small changes in temperature.

(c) $\frac{V_1}{T_1} = \frac{V_2}{T_2}$ ✓

or

$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$ where $P_1 = P_2$

$V_2 = V_1 T_1$