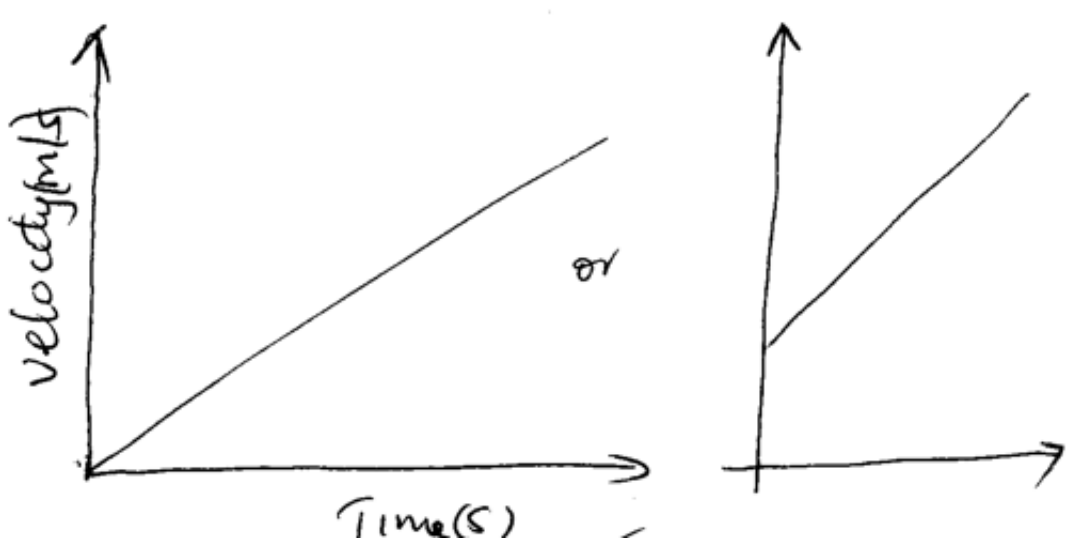
Answer all questions in the spaces provided

1. –Increasing temperature.√ (1mark)

   -Enlarge surface area of exposure.√ (1mark) .

2. 

   Acceleration (1 mark)

   Correct graph (constant acceleration) (1mark

3. A needle float because of the surface tension at the surface/surface tension broken for the needle to sink. √(1mark)

4. Distance =A rea under curve √

   $= \frac{1}{2} \times 4 \times 2 + \frac{1}{2} \times 4 \times 2$ √ (1mark)

   $= 8M$ √ (1mark)

5. Fixed mass of ages, or a given mass or mass constant

6. Sum of clockwise moment =sum of anticlockwise moments

$$15 \times 0.05 = F \times 0.1$$

$$F = \frac{15 \times 0.05}{0.1}$$

$$= \frac{0.75}{0.1} \quad \surd \text{(1mark)}$$

$$= 7.5N$$

   Force between the magnets =7.5 -3=4.5 (Attractive) (1mark)

7. Air above the plane move faster than air below creating a region of low pressure above

8. Stops rising when up thrust equal to the weight. √ Or Upward forces equal to downward force.(1mark

9.

$P=FV\sqrt{}$ (1mark)

$= 300 \times \frac{2}{6}\sqrt{}$ (1mark)

$= 100W\sqrt{}$ (1mrk)

10. . Net force zero √ or Resultant force zero

11. $d = \frac{V}{A}\sqrt{} = \frac{9.0\times10^{-16}}{5.0\times10^{-13}}\sqrt{}$

$= 1.8\times10^{-3}cm\sqrt{}$

12. For a real gas there is no force of attraction between molecules.√ (1mark

13. . $P=h\rho g\sqrt{}$(1mark)

$103000 = h\times1030\times10\sqrt{}$ (1mark)

$h = \frac{103000}{1030\times10} = 10m\sqrt{}$ (1mark)

Answer all questions in the spaces provided

14. (a) Correct range $=(100-0)^0$ C$=100^0$C] √(1mark)
Faulty range$= (90-10^0$ C$) =80^0$C

New range $= \frac{80}{100}\times20 = 16^0C$ (1mark)

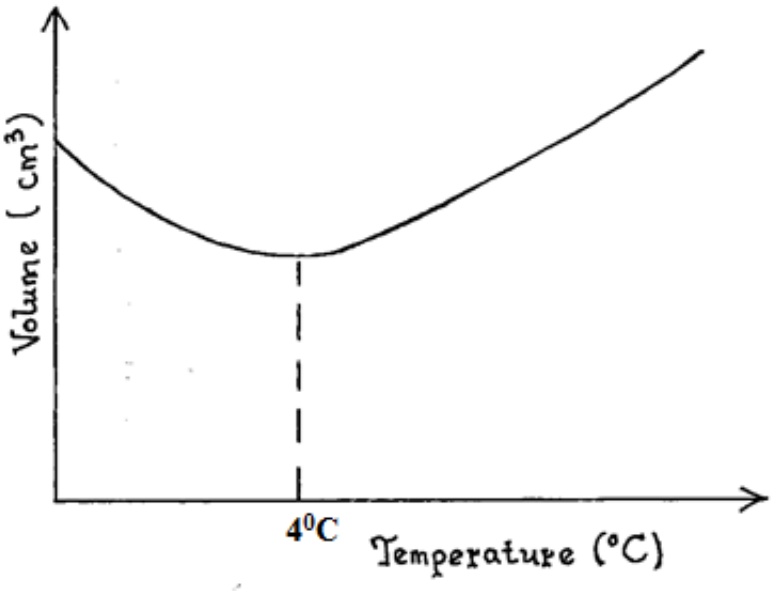
Thermometer reading $=16+10=26^0$ C√ (1mark)

(b) (i) For quick action /conduction of heat) √ (1mark)

(ii) Makes the thermometer sensitive. √ (1mark)

(c) -Expand regularly.√ (1mark) -Have wider temperature range.√ (1mark

(d)



Marking points 4^0√(1 mark)
Shape of curve √(1mark)

(e) Ice-berg have density close√ to that of water hence it is partially submerged√ and cannot be seen.

15. (a) Is the heat used to change liquid to gaseous state without change in temperature

(b) (i) Mass of condensed steam Ms
$= 160 - 140 = 20\ g$ √1 mark

(ii) $H = m_C C_C D\theta$ ⎫ 1 mark
$= 0.06 \times 390 \times 20$ ⎭ 1mark
$= 468J$

(iii) $Q = m_w C_w \Delta\theta$
$= 0.08 \times 4200 \times 20$
$= 6720J$

(iv) Heat lost =Heat gained

$$m_s Lv + m_s CwD\theta = 6720 + 468$$
$$0.02 \times Lv + 0.02 \times 4200 \times 65 = 6720 + 468$$
$$Lv = \frac{7188 - 5460}{0.02}$$
$$Lv = \frac{1728}{0.02} = 86400 Jkg^{-1}$$

(c) (i) Boiling temperature rises.√(1mark)

(ii) Clipping the rubber tube makes steam to accumulate increasing pressure inside the flask.√

(1mark)

Increased pressure makes it difficult for the water molecule to escape into vapour, hence more energy is require.√ (1mark)

16. (a) 6N.

(b) (i) Resultant force =10- 6√(1mark) =4N√ (1mark)

(ii) $F = Ma$, $4 = 2 \times a$ (1mark)

$a = \frac{4}{2}$ √ (1mark)

$= 2m/s^2$

(iii) $v = u + at$ √

$v = 0 + 2 \times 10 = \underline{\underline{20m/s}}$ √ (1mark)

(c) Momentum is conserved.√ (1mark)

$0 = 0.01 \times 400 + 4 \times V$ √

$4V = -4$

$V = -1m/s$ √√ (2marks)

17. (a) (i) 1.2 sec √√ (2marks)

(ii) h =Area under curve √

$= \frac{1}{2} \times 8 \times 1.2$ √ (1mark)

$= 4.8m$ √ (1mark)

(iii) Deceleration=Slope of the graph

$= \frac{0 - 8}{1.6 - 1.2}$ √ (1mark)

$= \frac{-8}{0.4}$ √ (1mark)

$= -20ms^{-1}$

(iv) F=ma, F=70 x-20 1 mark

$= \underline{-1400N}$

Retarding force =1400N

(v) $Depth = \frac{1}{2} \times 0.4 \times 8$ √ (1mark)

=1.6m √ (1mark)

18. (a) Etrapolation√ (correct) (1mark) Absolute temperature -275 to 280 √ (1mark)

(b) (i) Atmospheric pressure/76 cmHg/760 mmHg √(1mark)

(ii) 24 +76 =100 cmHg or 1000 mmHg√ (1mark)

(iii) PV=Constant.√ (1mark)

$76 \times 15 = (70 + 24) \int \sqrt{}$

$$l = 76 \times \frac{15}{100} = 11.4cm \sqrt{} \text{ (1mark)}$$

(c) (i) To expel air/remove air/push air out/drive air out.√(1mark)

(ii) Pressure of air outside the bottle is greater than the pressure of air inside.√ (1mark)

(iii) Cooling cause condensation (1mark) of vapour, creating a partial √ (1mark)

vacuum/fewer vapour /Lowering pressure inside the bottle.