PHYSICS PAPER 1

FORM 4

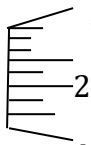
TRIAL 2, 2019

MARKING SCHEME

1. Measured diameter = 0.30

0.03

0.27 mm√1



30√ sleave reading √1

25 thimble reading √1 (3mks)

2. As the sucker sticks to the clean surface the air in it goes outside cheating a partial vacuum in it, greater atmospheric pressure acts on the sucker from outside.√1 (1mrk)

3. Closely wrap the thread 10 times around a cylinder.√1

- use the Meter rule to measure the beginning and the end√1

- Repeat three times and get the average length i.e the circumference√1

- Use the formulae $\frac{C}{\pi}$= D√ to find the diameter (4mks)

4. (i) $\frac{12000}{4}$ =3000N √ 1

(ii) P=$\frac{F}{A}$√

$\frac{3000}{80} \times 10000$

= 375,000pa √ (3mks

5. Gases have larger intermolecular distance√1

6. - Constriction√

- Narrow bore√

- High temperature range√ (3 mks)

7. (i) Decreases / reduces √1

(ii) Increases√1

8. (i) increase their absorbing power √1

(ii) Increase the surface area of exposure√1

(iii) Copper is a good conductor of heat √1 (5mks)

(iv) Prevent heat loss to the surrounding/retain heat in the water√1

(v) Allow the rays of light inside√1

9. (a) Product of force and perpendicular distance between the pivot and line of action of the force.√1

(b) Clockwise moments =Anticlockwise moments or $F_1d_1 = F_2d_2$√1

0.5 x 0.3 = W X 0.2√1

W= 0.75N√1 without units ½

10. - Luggage compartment in buses are in the lower parts

- Racing cars have low cog and wide wheel base

- Bunsen burner has wide heavy base.

- Chairs /stools/tripods have three or more legs inclined outwards.

- Acrobats . Any two 1 mk each (2mks)

11- Can be trapped and cause accident /fall√1

- Can catch fire√1 (2mks)

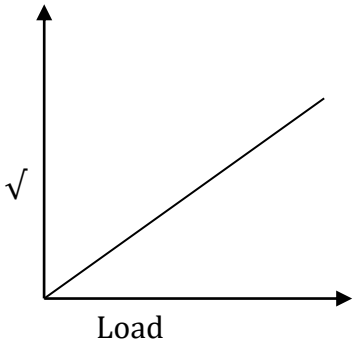
12. Rate of volume = aV√1

V = $\frac{8.0\times10^{-3}}{0.002}$ √1

= 4m/s √1

13.

M.A



SECTION B

14. (a) B√1

- Has a lower speed √1 (2 mks)

(b) (i) $v^2 = u^2 + 29S$ √1

$50^2 = 30^2 + (2x5x5)$ √1

S= 160m √1 (3 mks)

ii) F = ma√

F =2.7 X $\frac{(0-50)}{15}$ √1

F =9N √

15. (a) A floating object displaces its own weight of the fluid of the fluid in which it floats√1

(b) i) ∫=$\frac{m}{v}$ or M = ∫XV √

M= 1.5 ×4×10

M =60g or 0.06 kg√1 (3mks)

ii) U = ∫ v g

$U=1000\times\frac{4\times7.5}{1000000}\times 10\sqrt{1}$

$= 0.3N\ \sqrt{}$

(iii) W object - U √

0.6 – 0.3

0.3 N

15. (IV) U = ∫vg

$= 1000\times\frac{40}{100000}\times 10$

$= 0.4N\sqrt{}\ 1$

W-U

0.6-0.4

0.2N√ 1 (3mks)

16. (a) attractive forces between the nucleus and electrons.

b) I) $F= mw^2r.\ 1\ w = \sqrt{\frac{F}{mr}}$

$= \sqrt{\frac{0.4}{0.05\times0.1}}\sqrt{1}$

$= 8.944 mrad/sec\ \sqrt{}$ with/without 1 units

II) $T = \frac{2\pi}{W}$

$T= \frac{2\pi}{8.944}$

= 0.7024

= 0.705

ii) A tangent with an arrow

17a) (i) $m_1v_1 + m_2 + u_2\sqrt{}$

$(150\times20)+90\times 0$

3000kgm/s√ 1

ii) (150+90) √ 1

240vkgm/s √1

(iii) 3000 = 240√

v =12.5 m/s√1 (2mks)

b) F=ke

50 = K × 0.025

K = 2000

OR

$F=\frac{50}{0.025}\times\frac{4}{100}$

=80N

18. a) AS it rises pressure decreases √ thus volume of the bubble increases.√

(b) (i) P = $\frac{enery}{time}$ / E=p×t√

E=2500× 240

= 600000J √

E =2500 x 240√

= 600,000 J√ (2Mks)

(ii) Q= MCΔθ√1

$\Delta\theta = \frac{600\ 000}{21\times 4200}$ √

6.8^0 C OR 6.8 K √ (3Mks)

(b) VR = Effort distance / Load distance√1

$=\frac{l}{h}$

Sinθ =$\frac{h}{l}$ h→L sinθ (2mks)

VR=$\frac{h}{l}$ → = $\frac{1}{sin\theta}$