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**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 $\frac{C}{π}$= D√1 to find the diameter (4mks)

4. (i) $\frac{12000}{4}=$3000N √ 1

 (ii) P=$\frac{F}{A}$√

$\frac{3000}{80}×10000$

 = 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 F1d1= F2d2√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 = $\frac{8.0×10^{-3}}{0.002}$ $√$ 1

= 4m/s √ 1

13.

M.A

 √

 Load

 **SECTION B**

14. (a) B√1

- Has a lower speed √1 (2 mks)

(b) (i) v2 = u2 +29S √1

 502 =302+(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) ʃ =$\frac{m}{v}$ or M = ʃXV √

 M= 1.5 $×$4$×$10

 M =60g or 0.06 kg√1 (3mks)

ii) U = ʃ v g

 U=1000$×\frac{4×7.5}{1000000}×10$√1

 = 0.3N √

(iii) W object - U √

0.6 – 0.3

0.3 N

15. (IV) U = ʃvg

= 1000$×\frac{40}{100000}×10$

 = 0.4N√ 1

W-U

0.6-0.4

0.2N√ 1 (3mks)

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

 b) I) F= mw2r. 1 w =$\sqrt{\frac{F}{mr}}$

= $\sqrt{\frac{0.4}{0.05×0.1 }}$√1

 = 8.944mrad/sec √ with/without 1 units

II) T = $\frac{2π}{W}$

 T= $\frac{2π}{8.944}$

= 0.7024

= 0.705

ii) A tangent with an arrow

17a) (i) m1v1 +m2+u2√

 (150$×$20)+90$×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= $\frac{50}{0.025}×\frac{4}{100}$

=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= MC∆$θ$√ 1

∆$θ$ = 600 000 √

 21$×$ 4200

6.80 C OR 6.8 K √ (3Mks)

(b) VR = Effort distance

Load distance√1

 = $\frac{l}{h}$

Sin$θ$ =$\frac{h}{l}$ h =L sin$θ$ (2mks)

VR=$\frac{h}{l}$ = $\frac{1}{sinθ}$