* 1. **PHYSICS (232)**

**30.5.1 Physics Paper 1 (232/1)**

1. 5.0 x 10-6 kg. ***(1 mark)***

2. Since  

 For water 

 For liquid 

  ***(2 marks)***

3. (a) R = Reaction force Iar to surface

F = Friction parallel to surface



 (b) When θ reduces, R increases (approaches w) while F reduces. ***(2 marks)***

4.

* Atmospheric pressure is higher than normal.
* Presence of impurities in water/Addition of impurities. ***(2 marks)***

5. When flask is cooled it contracts / (volume reduces), but due to poor conductivity the material of glass; subsequently as both cool the contraction of water is greater than that of glass. ***(3 marks)***

6.

* Heat conductivity/rates of conduction. ***(1 mark)***
* Thermal conductivity.

7. Cross-sectional area of the metal rods. ***(1 mark)***

8. Pressure in liquids = ρgh

 = 1200 × 10 × 15 × 10-2

 = 1800 Pa

 Total pressure = (8.4 + 0.18) × 104 Pa = 8.58 × 104 Pa ***(3 marks)***

9. Intermolecular distances are greater/ larger in gas than in liquids. Forces of attraction in liquids are higher/stronger/larger/greater than in gases. ***(2 marks)***

10.

 ***(1 mark)***

11. ***Stable equilibrium***: When it is slightly tilted. C.O.G rises/is raised. When released it recovers.

 /comes to its original position ***(2 marks)***

12. Fast stream of air reduces pressure inside the tube. Pressure from outside is greater than inside, hence collapse. ***(2 marks)***

13.

* Diameter of the coils different.
* Wires have different thicknesses. no. of turns per unit length.
* Length of spring differs. ***(1 mark)***

14. Heated water has lower density, hence lower upthrust. ***(2 marks)***

15. (a) The rate of change of momentum of a body is (directly) proportional

 to the( resultant external )force producing the change, and takes place in

 the direction of the force. ***(1 mark)***

 or F ∝ 

  ***(3 marks)***

 (ii) V = u + at

 = 0 + 2 x 7 = 14 ms-1. ***(2 marks)***

 (c) (i) Vertical motion

 

 ***(2 marks)***

 (ii) Horizontal velocity

  ***(2 marks)***

 = 5.1ms-1

16. (a) Heat capacity of a body is the energy required to raise the temperature of the body by 1 degree centigrade or 1 Kelvin. ***(1 mark)***

1. Measurements:

 Initial mass of water +calorimeter = Mi

 Final mass of water + calorimeter = Mf

Time taken to evaporate (Mi– Mf) mass of steam = t

 ----------t.

 Mass of calorimeter ----------Mc

 Heat given out by heater = heat of vaporization

 Pt = (Mi- Mf) L

  ***(6 marks)***

 (c) (i) ***Heat gained by the calorimeter***

 Heat capacity × ΔT ***(2 marks)***

 = 40 (34 – 25) = 40 × 9 = 360J

 (ii) ***Heat gained by water***

 MwxCw × ΔT

 = 100 x 10-3 × 4.2 × 103 (34 – 25)

 = 3780 J ***(1 mark)***

 (iii) ***Heat lost by metal block***

 Mm Cm (100-34) ***(1 mark)***

 (iv) 150 × 10-3 × Cm (100-34)

 = 360 + 3780

 = 4140

 

 = 418  ***(3 marks)***

17. (a) Absolute zero temperature is the lowest temperature theoretically possible. ***(1 mark)***

 (b)

* Mass of the gas
	+ - Pressure of the gas ***(2 marks)***

 (c) (i) 4.0 × 10-5 m3 ***(1 mark)***

 (ii) -277°C ***(1 mark)***

 (iii) A real gas liquefies and finally solidifies since molecules lose Kinetic energy with more cooling. ***(2 marks)***

 (d)

 

 ***(4 marks)***

18. (a)

 ***(1 mark)***

 (b) (i) Pressure in liquid is transmitted equally through out the liquid. ***(1 mark)***

 (ii) When plunger is moved through d’ volume of oil = d x a

 When ram piston is displaced by dist D

 Volume of oil displaced = D × A

 Since no compression occurs

 

  ***(4 marks)***

 (c) (i) M.A = Load

 Effort

 =  ***(2 marks)***

 (ii) Efficiency = 

 = 74% ***(2 marks)***

 (iii) Work to overcome friction

 = 100% - 74% = 26% ***(1 mark)***

19. (a) When an object is in equilibrium, the sum of the anti clockwise moments about any point is equal to the sum of the clockwise moments about that point. ***(1 mark)***

 (b) (i) Volume = 100 × 3.0 × 0.6

 = 180 cm3

 Mass = volume x density

 = 180 × 2.7 = 486g

 Weight = mg = 486 × 10 = 4.86N

 1000 ***(3 marks)***

 (ii) 20F = 15 × 4.86

 F = 15 × 4.86 = 3.645N

 20

 F = 3.65N

 R = F + W = 8.51N ***(3 marks)***

 (iii) F

Show increase;

 (iv) ***Reason***: As x increases the distance between F and Pivot reduces so F has to increase to maintain equilibrium. ***(2 marks)***