**SET 8**

**PHYSICS PAPER 1**

**MARKING SCHEME**

1.Light lid builds high pressure in sufuria. The high pressure raises the boiling point of water exposing the potatoes to higher temperature

2. E = ½ Fe √1

 = ½ x 2 0.015 √1

 = 0.015J√1

3. - Area of base

 - Position of centre of gravity√1

4. The thermometer bulb first receives the heat and expands creating more volume, the mercury then receives the heat and expands causing a rise.

5. P1P1 = P2 P2

 P1 = A + Hℓwg = 100,000 NM-2

 Volume is directly proportional toR3

 R1 r3 = P2 R3

 R3 = P1r 3 = 105000 x (1x 10-3)3√ 1

 P2 100 000

 R3= 1.05 x 10-9 m

 R= 1.05 x 10-9 = 1. 0164 x 10-3m

 D = 2.0328 X 10-3m 0r 2.0328 mm√1

6. Increases in friction lower the efficiency of a machine √1

7.

8. A 1V1 =A 2V2 √1

 A2  = A1 V1

 V2

 =24 x 3√1

 9

 = 8cm2 √1

9. Stability increases √1 since centre of gravity is lowered (ice melts to a smaller volume of water)√1

**Displacement**

10.

**Time**

11. (a) The water melts at the top but the ice remains athmelted because water is a poor conductor of heat hence heat is not conducted downwards.

 (b) The ice melts, heat is transmitted to it by convection

12. (a) (i) 133-(70 +50)√1

 = 133 -120√1

 = 13g√1

 (ii) MwCw Dө + Mc Cc Dө √1

 = 70 x 4200 x 25 + 50 x 900 x 25 √1

 1000 1000

 = 7350 + 4875

 = 12225 J√1

 (b) (i) Heat given =MLv + MCDө √1

 = 13 x 10-3 Lv + 13 x 10-3 x 4200 x ( 100-30) √1

 (ii) Heat gained by water = Heat given out by slens + calorimeter

 12225 = 13 x 10-3Lv + 13 x10-3 x 4200 x 70√1

 12225 = 13 x10-3 Lv + 3822

 13 x 10-3 Lv = 8403√1

 Lv = 646384.6 kg-1 √1

13. (a) (i) 16.5 = 44√1

 r 16

 r = 16.5 x 16 √1

 44

 R = 6cm √1

 (b) V.R =R/r √1

 = 16.5 √1

 6

 = 2.75√1

 (c) (i) M.A – L/E √1

 = 1200√1

 300

 = 4√1

 (ii) n = M.A x 100% √1

 V.R

 = 4/6 x 100%

 = 66.67% √1

14. (a) (i) The pressure of a fixed mass of a gas is inversely proportional to it’s volume provided the temperature is kept constant √1

 (ii) The volume of a fixed mass of a gas is directly proportional to it’s absolute temperature at constant pressure √1

 (b) (i) Check the student graph

 (ii) at 0oC v= 4.7 ± 0.1√1

15. (a) V= u ± at√1

 V2 = u2 ± 2as√1

 S= ut ± ½ at2

 (b) 100km/h = 100 x 1000

 3600

 = 27.78m/s√1

 In 0.5 sec. the drive covers 27.78m/s x 0.55 = 13.89m

 After applying brake

 a = -4m/s2

 u= 27.78 m/s

 v=0

 v2 = u2 + 2as √1

 -2as = u2

 S= u2

 2a √1

 = 27.78 = 96 .47m√1

 -2 (-4)

 (c)

**50**

**60**

**110**

**125**

**5**

**10**

**15**

**20**

**25**

**30**

(ii) Average velocity = total distance covered

 total time taken

 Distance = Area under graph

 =(20x 50)+ ½ (20 +25) 10+ (50x25)+ ½ (15x25)

 = 1000 + 225 + 1250 + 187.5

 = 2662.5 m√1

 Total time = 125

 Speed = 2662.5√1

 125

 = 21.3m/s√1

 (iii) a = v-u √1

 t

 = 25 -20

 10

 = 0.5m/s√1

16. (a) For a system of colliding bodies the total linear movement remains. Constant provided no external forces act .√1

 (b) m1 u1+ m2 v2 = m1 v1 +m 2v2 √1

 10000x 10 + 2000 x (-20) = (10000+2000)v1√1

 100000-40000=12000v1

 V1 =60,000 √1

 12000

 = 5m/s-1√1

 (ii) ft =change in movement √1

 Ft = mv –mu

 F = mv -mu

 T

 = (2000 x 5) – (2000 x-20)√1

 2

 = 25000N√1