CaSPA ELDORET DIOCESE

**232/1**

**PHYSICS**

**Paper 1**

**Marking scheme**

**1.** Volume = 2cm × 3cm × 5cm

 = 30cm³ 1

 Mass = Volume × density

 = 30cm³ × 13.6g/cm³

 = 408g 1

 Weight = 408g × 10N/kg

 1000g

 = 4.08N 1

**2.** Reading = exact + - error

 = 4.85 - 0.02

 = 4.83cm 1

 1



**3.** Stability increases since centre of gravity is lowered when ice melt to a smaller volume. 1

**4.** The mass slides towards A and settles midway between A and B. This because the wire expands when melted and becomes loose thus enabling the mass to slide freely.

**5.** Flow rate = Cross-section area × velocity.

 7.7 × 10-2m³/s = 3.142 × (3.5 × 10-3)² × V

 7.7 × 10-2m³/s = 3.8489 × 10-5m²V

 3.8489 ×10-5m² 3.8489 × 10-5m²

 V =2.000s × 10³ m/s

**6.** Weight of the machine parts

- Energy lost / used to lift machine parts. ***any one correct.***

**7.** Resultant force = 15N - 8N = 7N

 F = ma

 a = F

 m

 = 7N = 1.4m/s²

 5kg

**8.** Area of cross-section (thickness)

 Length of conductor

 Type of metal ***any two correct***



**9.**

1

**10.** Heat loss = heat gained

 5 × 4200 × 40 = ×4200 × 25

 x = 5 × 40

 25

 = 8kg

**11.** A cm = cm

 1.3 × 60 = 1.2 × T

 78 = 1.2 T

 T = 65N

 **Section B (55 marks)**

**12.a)** Energy is not created nor destroyed but can be charged from one form to another.

 ii) It has a higher V.R.

b) i) Work done = force × distance

 AB = 200 × 20 = 4000Nm

 CD = 600 × 20 = 12,000Nm

 EF = ½ × 10 × 400 = 2000Nm

 FG = ½ × 10 × 400 = 2000Mm

 GH = 10 × 400 = 4000

 24,000 Nm

 ii) Power = force × velocity

 = 600 × 0.6 m/s

 = 360W

c) P = W.D = 3.6 × 105 × 10 × 400

 Time 3600 sec

 =400KW

 Total power = 400 + 200 = 600 kw

 Efficiency = 400 × 100 = 66.67%

 600

**13. a)** The rate of change of linear momentum is directly proportional to the external 1 force and takes place in the

direction of the force.

b) The bus has greater momentum 1 than the saloon car and therefore a greater inertia 1 (since

mass in higher)

c) i) Momentum before impact

 = momentum after impact 1

 m1u1 +m2u2 = (m1 + m2)v

 0.02 × 200 + 0.45 × 0 = (0.4s + 0.2)V 1

 V = 4 = 6.154ms-1 1

 0.65

 ii) h = ½ gt²

 5 = ½ × 10 × t² 1

 t² = 1

 t = 1 sec

 iii) R = ut

 = 6.154 × 1 1

 = 6.154m 1

**14.** a) Expands regularly.

* Does not wet glass
* Good conduct of heat ***any 2 × 1 mk***

b) i) Oil of creosote

 ii) On cooling, is leaves space for expansion.

 iii) when it is hot, oil of creosote in the bulb expands pushing mercury up arm A of U tube mercury pushes steel

 index in A upward to maximum temperature of creosote.

 When temperature falls oil of creosote in the bulb contracts pushing mercury towards bulb and pulls steel index up indicating minimum temperature.

 iv) Lower ends of indices.

d) Magnet

15. a) Impurities

 Pressure *any 1 × 1 mark*

b)



iii) VIt = MLf

 8 × 2.25 × 10 × 60 =200Lf

 1000

 Lf = 8 × 2.25 × 10 × 60

 0.2

 = 54000Jkg-1

 iii) No heat is absorbed from surrounding environment.

**16.**a)i) Provide the centrifugal force so that the body is maintained in a circular path without skidding

 ii) Water escapes through the holes leaving the clothes dry. This is because the adhesive force between the water particles and the drum is reduced and the water escapes through the holes.

b) i)  = 2f

 = 60 × 2

 60

 = 2  rads / sec

 = 6.28 rads / sec 1

 ii) V = wr

 = 6.28 × 0.18

 = 1.1304m/s 1

 a = v² 1.1304² 1

 r 0.18

 = 7.099m/s² 1

**17.** a) i) 0.315N 1

 ii) Wgt of liquid displaced = 0.315N 1

 Volume of liquid displaced = 60 × 4.2

 = 25.2cm³ 1

 Density, = m

 v

 = 31.5g1

 25.2cm³

 = 1.25g/cm³

 = 1250kg/m³ 1

b) Weight of solid = weight of liquid displaced

 Mass of solid = 5 × 0.8g/cm³

 = 4g 1

 Mass of solid = 4g

 Volume of solid = 20cm³

 Density of solid = 41

 20

 = 0.2g/cm³ 1