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