**MARKING SCHEME**

**PHYSICS PAPER 1 FORM 4 TERM 2 2024**

**SECTION A – 25 MARKS**

1. 12.5

+ 0.23 √

12.73– 0.03 = 12.70mm √

Centripetal force

Weight Reject symbols of the forces.

1. (i) Nature/ type of the material. √

(ii) Cross-sectional area of the conductor. √

(iii) Temperature difference. √

Any 2 correct

1. F = ke

e1 + e2 = F1 + F √

k 2k

0.045= + √

0.045 =

0.09k = 36

k = 400N/m √

1. 50×0.15 = 7.5cm3√

40.6 – 7.5 = 33.1cm3√

1. Lung pressure = Pa + hρg √

= (1.03×105) + × 1000 × 10 = 108000N/m2 √

1. Increase in temperature increases the kinetic energy of the particles. **√**
2. - Making it wider at the base. √

* Making the base heavier. √

1. There is lower pressure √ above the car due to the higher velocity. Thus the higher atmospheric pressure √ from beneath lifts the car making it feel lighter.
2. The pull of gravity √ is different for the two planets.
3. a) Elastic collision - Collision where both momentum and K.E are conserved.

Inelastic – Collision where momentum only is conserved.

b) M1V1 = M2 V2

0.05 × V = (0.05×1.5) + (0.5×0.5)

0.05V = 0.075 + 0.25

V = 0.325

0.05

= 6.5m/s

**SECTION B: 55 MARKS**

1. Quantity of heat energy required to change a unit mass of the substance from solid to liquid without change in temperature.

b) (i) Q = MLV √

100 × LV

100

= 0.1LV √

(ii) Heat lost = MCDQ

= 0.1 × 4200 × (100 – 48.8) = 21,504J

(iii) Heat gained = (2×4200×28.8) + (0.5×400×28.8) = 241,920 +5760

= 247,680J

(iv) 0.1LV + 21,504 = 247,680

0.1LV = 247,680 – 21,504

0. 1LV = 226,176 = 2.262 ×106J/kg

0.1 0.1

1. a) Distance is the length between two fixed points while displacement is the length between two fixed in a specified direction. √

b) i. The velocity is decreasing. √

ii. = 0.02 seconds √

iii. V = = √

= 125cm/s or 1.25m/s √

iv. = 25cm/s or 0.25m/s √

v. a = = = = -1000cm/s2  = -10m/s2  √

c) h = = = 1.8m √

1. a) i) V.R =

= √

= 4 √

ii) × 100% = 80% √

M.A = 80×4 = 3.2 √

100

iii) M.A = L

3.2 = √

E = 156.25N √

iv) Work is done to overcome friction. √

b) i) Volume of liquid leaving small piston = Volume of liquid getting into larger piston.

distance at A × πr2 = distance at B × πR2 √

V.R = = √

V.R = √

ii) M.A =

100 = √

L = 100×7 = 700N √

1. a) A floating body displaces its own weight of the fluid in which it floats. √

b) i) Volume of liquid displaced = Volume of the body.

V =

=

= 0.0025m3

ii) Upthrust = Vpg

= 0.0025 × 800 × 10

= 20N

iii) 100 – 20 = 80N

F1d1 = F2d2

2M = 4×80

M = 160N = 16kg

10

1. a) A gas whose both volume of molecules and forces between the molecules are negligible and obeys gas laws perfectly.

b) (**Graph)**

i) Boyles law.

ii) Mass

iii) P =(K) 1/V

K = gradient

gradient = = 4.0 – 0 × 103 pa = 8.333 × 10-4pa m3

4.8 – 0 × 106 m-3

must have units

follow through candidate’s work

c) Measure and record the initial temperature and its corresponding height (volume). √

Measure and record several values of temperature and their corresponding heights. √

Plot a graph of volume against absolute temperature. √

A straight line passing through the origin is obtained verifying Charles’ law. √