**MARKING SCHEME PHYSICS PAPER 232/1**

**ARISE AND SHINE TRIAL EXAM**

**AUGUST/SEPTEMBER - 2022**

**SECTION A**

1. + 0.01mm✔
2. P = ₰gh✔

= 1.25 x 10 x 2500

= 31250

31250 = 13600 x 10 x h✔

 h = $\frac{31250}{136000}$

 h = 0.229779m

 = 229.779mm✔

Barometric height = 760 – 229.779

 = 530.221mmHg✔

1. ✔



1. ✔



1. ✔ (a) Vacuum/freefall

(b) v2 = u2 + 2gs ✔

V2 = O + 2 x 10 x 20

V2 = 400

V = 20 m/s✔

1. ✔The angle subtended at the centre of a circular path by an arc length equal to the radius of the path.
2. ✔No constriction,✔ the thermometric✔ liquid flows back while taking reading.
3. ✔The glass block is fully submerged, no further increase✔ in upthrust /maximum upthrust attained.
4. ✔Thermodynamics.
5. ✔Stability reduces,✔ the centre of gravity rises. ✔
6. ✔ (a) A – vacuum

B – silvered walls

 (b) A – conduction and convection

 B - radiation

1. ✔ (a) Action and reaction are equal but opposite

✔ (b) v2 = u2 + 2as

O = 202 + 2a x 15

O = 400 + 30a

a = $\frac{-400}{30}$

a = -13.33ms-2

F = m a ✔

 = 900 x -13.33

 = 12000N

**SECTION B**

1. ✔ (a) i) P.E = Mgh

= 20x10x0.9 ✔

= 180J ✔

 ✔ii) ½mv2 = E

 ½ x 20v2 = 180 ✔

 V2 = 18

 V = 4.243 m/s

 (b) i) w = mgh ✔

 = 2000 x 10 x 3

 = 60000 J ✔

 ✔ii) p = $\frac{w}{t}$

 = $\frac{60000}{6}$ ✔

 10000w or 10kw✔

 ✔iii) ŋ = $\frac{P output}{P input}$ x 100% ✔

 = $\frac{10}{12.5}$ x 100% ✔

 = 80% ✔

1. ✔ (a) Tension reduces, ✔ upthrust increases ✔

(b) i) w = mg

 = 0.5 x 10

 = 5N ✔

 ii) U = ₰Ug ✔

 = 8.0 x 104 x 1000 x 10 ✔

 = 8N ✔

 iii) T = U – w

 = 8 – 5 ✔

 = 3 N ✔

(c) ✔ R.d = $\frac{U in liquid}{U in water}$

 $\frac{5-4}{5-3}$ ✔

 = 0.5

 ℓ liquid = 0.5 x 1gcm-3

 = 0.5gcm-3

1. ✔ (a) Quantity of heat required to change or raise the temperature of any given mass of a substance by 10C or 1K.

(b) (i) Q = MCΔɵ ✔

 = 0.215 x 400 x 9 ✔

 = 774J ✔

 (ii) Q = MCΔɵ ✔

 = 0.1 x 4200 x 9 ✔

 = 3780J ✔

 (iii) ✔Heat lost by metal block = Heat gained by water + calorimeter

 MCΔɵ = MCΔɵ + MCΔɵ ✔

 15 x C(100 – 34) = 774 + 3780 ✔

 9.9C = 4554

 C = 460Jkg-1k-1

✔ (c) pt = MCΔɵ

 5 x 8 x 60 = 0.5 x 460Δɵ

 Δɵ = $\frac{40 x 60}{0.5 x 460}$

 = 10.430

1. ✔ (a) Constant change in velocity✔

(b) I

1. F = $\frac{mv^{2}}{r}✔$1 ✔

= $\frac{0.3 x 40^{2}}{0.5}$

= 960N ✔

1. $\frac{v\_{1}}{r\_{1}}$ = $\frac{v\_{2}}{r\_{2}}$ ✔

$\frac{40}{0.5}$ = $\frac{v\_{2}}{1.2}$✔✔

V2 = $\frac{1.2 x 40}{0.5}$

 = 96m/s ✔

✔ II (i) B

 (ii) It requires greater centripetal force to maintain because of a longer radius.

1. ✔ (a) (i) They are being bombarded by invisible air particle which are in constant random motion.

(ii)

1. To maintain temperature
2. P1V1 = P2V2 ✔

2 x 10-5 x 80 = P2 x 25 ✔

 P2 = 6.4 x 105Nm-2 ✔

 $✔$(b) A gas that obeys gas laws perfectly.

 (c) (I) K = slope

 K = $\frac{ΔP}{Δ\frac{1}{v}}$

 = $\frac{4.0 x 10^{5}-0✔ }{4.85 x 10^{6}-0 ✔ }$

 = 0.0823NmoJ ✔

 (II) Energy / work done