**PHYSICS FORM 4 MARKING SCHEME**

1. (a)

f = 20 – 0.3 = 19.7cm

F

O

b)

c) i) convex/converging lens produces a real,magnified image.

ii) u+v=100 >>v=100-u

m=v/u

4=

U=20cm >>v=80cm

 f=16cm

1. V=2πrf;

 = 2 x 22 x 1.5 x 3;

 7

 = 28 . 286m/s;

ii) T= Mr2 - mg;

 r

 =0.45 x 28.292 - 0.45 x 10;

 1.5

 = 235 .60 N;

b) mark on the diagram- horizontal projection to the left

 c) i) ω=∆Ɵ

 ∆t;

 = 4/10

 0.01;

 = 0 . 4

 0.01

 = 40 rad/s;

ii) T=1/f;

 ω=2πf

 40 =2πf; f=6.36Hz

 T=0.1571s;

1. a) When a body is fully or partially immersed in a fluid, it experiences an upthrust equal to the weight of the fluid displaced. ✓1

b) i) weight = mg But m = d x v

 W = d x v x g ✓1

= 800 x (0.04)3 x 10 ✓1

= 0.512N. ✓1

ii) Upthrust = weight of displaced fluid

= d x vol x g✓1

= 1000 x (0.04)3 x 10✓1

= 0.64 N✓1

iii) Tension in the thread = Upthrust – weight of block

= 0.64 – 0.512✓1

= 0.128N✓1

1. Pt = McCcΔT + MaCaΔT√1

180 x 36 = (0.1 x 400 x 12) + (0.2 x Ca x 12) √1

6480 = 480 + 2.4 ha

ha = 6480 – 480 = 6000

 2.4

 = 2,500Jkg-1K-1√1

1. Pressure acting on the bubble decreases as it moves towards the surface. √1
2. Total capacitance in parallel = 2 + 3 = 5F

Effective capacitance = CT = (5 x 1.5) / (5 + 1.5) = 1.154

Total Charge stored QT = CTV = 10 x 1.154 = 15.54F

Charge stored by 1.5F Capacitor = total charge = 15.54F

1. M.A = L = 3000N = 1.5√1

 E 2000N

 V.R = dE = 10M =2√1

 dl 5m

 n% = M.A x 100 % = 1.5 x 100%

 V.R 2

 = 75%√1

1. Supports aquatic life
2. (i)B √1

 (ii) Impulsive force (ft) √1

10. (i) Stationary waves do not transfer energy away from source while progressive waves do. √1

 - Vibrations of particles at points between successive nodes are in phase√1 while in progressive, phases of particles near each other are different.

 - In stationary waves, distance between successive nodes or anti nodes is λ/2 while in progressive waves distance between successive troughs or crests is λ

 (ii) – Sound waves require material medium while e.m waves don’t√1

* Sound waves are longitudinal while e.m waves are transverse. √1

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