CATHOLIC DIOCESE OF KAKAMEGA EVALUATION TEST
JULY/AUGUST EXAM 2023
232/3 PHYSICS PAPER 3 MARKING SCHEME

QUESTION 1

A (i) b = 6.3 ± 0.2cm 1d.p (1mk)

(vii)

i ^{0}	10	20	30	40	50
Y (cm)	4.1	4.0	3.9	3.8	3.7

1 d.p (5mks)

1 mark each

(vi) Diagram – ½ mk (½ mk)

(viii) Graph
S – 1
P – 2
L – 1
A – 1
5 (5mks)

(ix) $Ky_0 = b$ | $K = \frac{6.3}{4.2}$ substitution (1mk)

$K = \frac{b}{y^\circ}$ | $K = 1.5\ (1.4 - 1.6)$

Answer (1mk)
No units

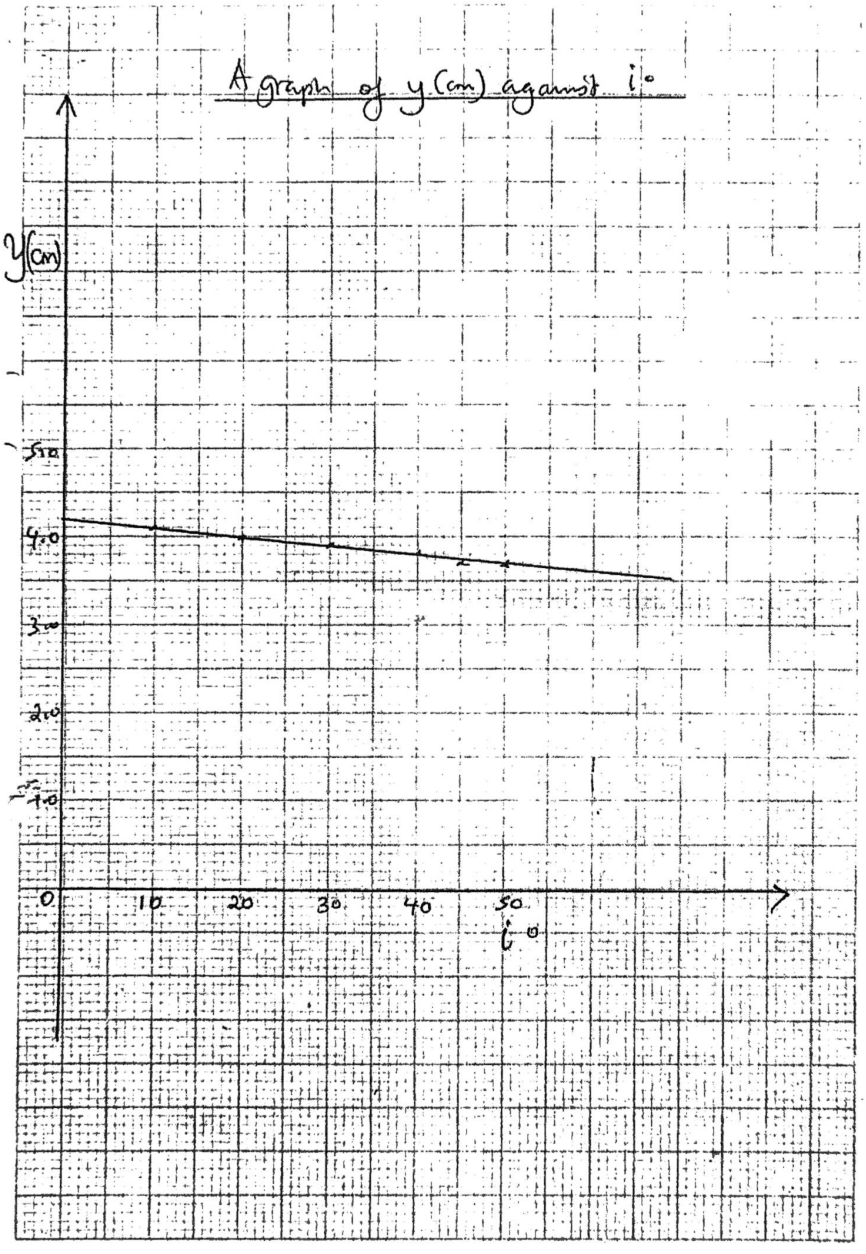
(x) K is the refractive index of glass. (1mk)

B. (ii) Diagram (½ mk)

(vii)

i ^{0}	R ^{0}	Sin i	Sin r
30	18-21	0.5000	0.3256

No d.p 4s.f or exact (3mks)
1mk each



(viii) Sin r = $\frac{1}{2t}$ | Rt = $\frac{1}{0.3256}$ | t = 1.536 4s.f (✓1mk) or exact No units

$0.3256 = \frac{1}{2t}$ | $2t = 3.071$

Substitution (1mk) $t = \frac{3.071}{2}$ (2mk)

QUESTION 2

SECTION A.

i) M = 5.0g ± 1.0 (✓1mk) 1 or 2 dip (1mk)

v)

	Time for S oscillations	Penodic time T (s)
1	4.02	0.8040
2	4.04	0.8080
3	4.00	0.8000

Use student's value correct evaluation

2mk (2d.p) 4s.f or exact 1mk

any two correct (3mks)

vi) Average T = $\frac{0.8040 + 0.8080 + 0.8000}{3}$ (✓½ mk)

= 0.804 sec (✓ ½ mk) current units

4s.f or Exact

vii). Diameter = 1.60±0.01cm ✓1mk 2d.p (1mk)

Radius = 0.8 ✓1mk correct evaluation (1mk)

Use candidates, answer 4s.f

viii). $V = \frac{4}{3}\pi r^3$ | V = 6.435 x 10^{-6} m^3 (✓1mk)

$\frac{4}{3} x 3.142 \times 0.008^3$ ✓1mk | evaluation (2mks)

ix). $R - r = \frac{gT^2}{4\pi^2}$

$R-r = \frac{10x0.804^2}{4x3.142^2}$ ✓1mk Use student's values

R-r = 0.1637 (2mks)

R-0.8 = 0.1637

R = 0.1637 + 08

R = 0.9637m – ✓1mk Use students' correct evaluation

4s.f or exact

- Units a must.

x). Density = $\frac{\text{mass}}{\text{volume}}$

$= \frac{5.0 \times 10^{-3}}{6.435 \times 10^{-6}}$ ✓correct substitution using students values

= 777 kg/m^3 ✓correct evaluation

Units a must

SECTION B

i). D = 0.36±0.01mm = 2d.p (1mk)

ii) $A = \frac{11D^2}{14}$ (2mks)

$A = \frac{11}{14} x\ 3.6x10^{-4})^2$ ✓1mk substitution

$A = 1.018 \times 10^{-7}\ m^2$ ✓1mk - correct Evaluation

\- units a must

iv). $E = 3.1 \pm 0.1\ V$ ✓1mk 1 d.p

v). V = (2.0 – 2.8) V ✓1mk 1 d.p

vi). $\frac{1}{v} = \frac{rA}{fLE} + \frac{1}{E}$

$\frac{1}{2} = \frac{1.018x10^{-7}xr}{1.0x10^{-6}x1x3.0} + \frac{1}{3.0}$ ✓1mk correct

½ = (0.0339) r + 0.333 substitution

0.0339r = 0.167 4s.f or exact

R = 4.926Ω ✓1mk unit is a must

Use student's evaluation