

KAPSABET HIGH SCHOOL

232/3 PHYSICS
(PRACTICAL)

MARKING SCHEME

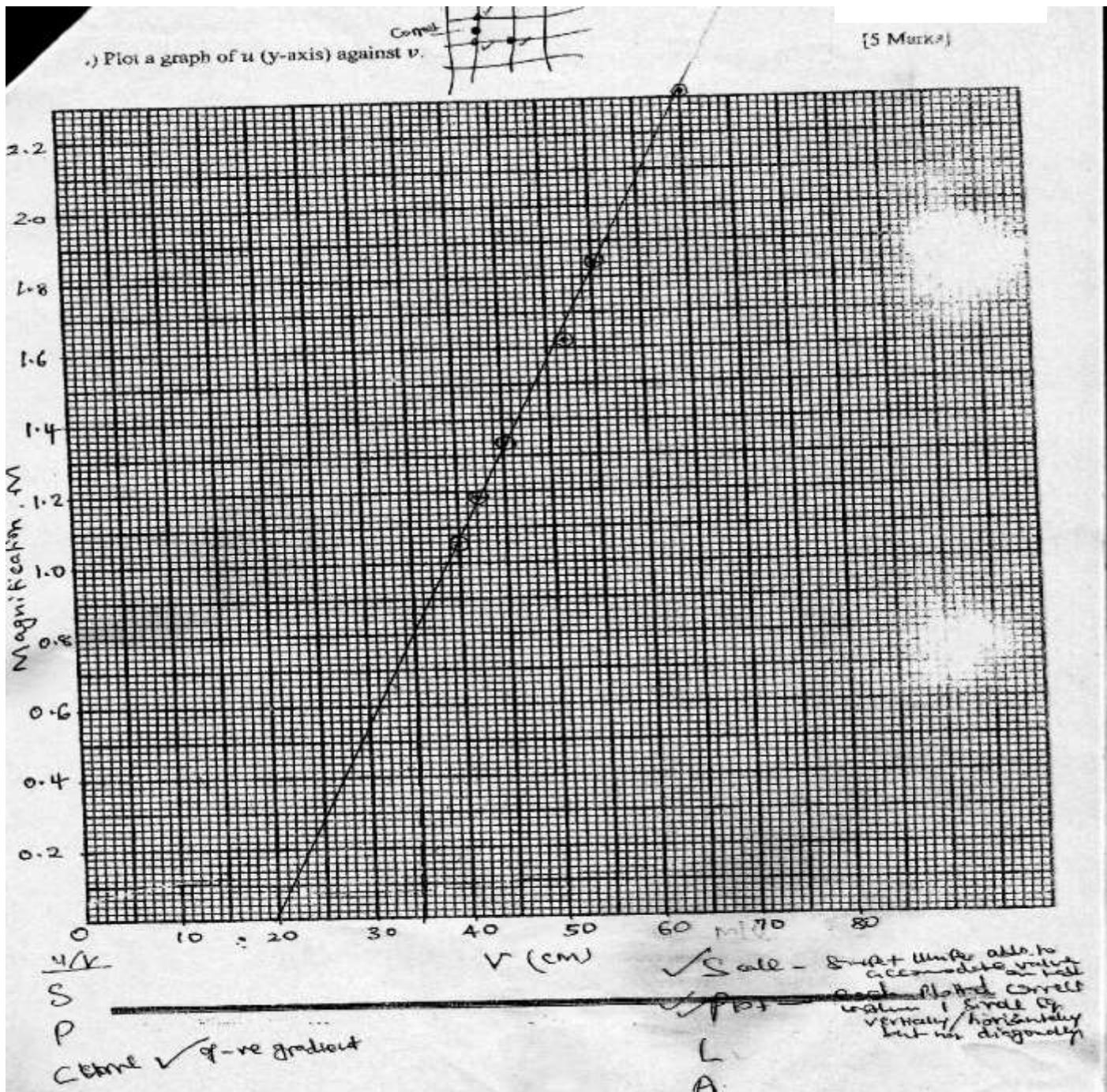
Q1. v)

u (cm)	28	30	32	34	36	38
v = (cm)	65.0	55.2	51.8	45.1	42.3	39.9
$m = \frac{v}{u}$	2.321	1.84	1.619	1.326	1.175	1.05

vii)

$\pm 0.5 \text{ cm}$ $\frac{1}{2} \text{ mk}$
upto 3 mks

1 mk for correct
values of v/u



$$\text{Slope} = \frac{0.8 - 0}{35.0 - 19.5} = \frac{0.8}{15.5} = 0.05161$$

$$\text{Slope} = \frac{1}{f}$$

$$f = \frac{1}{0.05161} = 19.38 \text{ cm}$$

- viii) a) Thickness (T) of the lens = 0.44 ± 0.01 (0.43 – 0.45) cm
 b) The diameter (D) of the lens = 5.07 ± 0.01 (5.06 – 5.08) cm
 ix) ✓1 correct (subst.)
 ✓1 correct (evaluation)

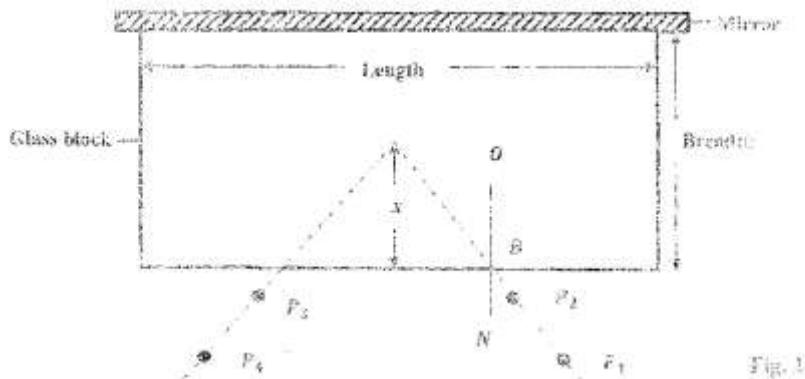
(2 mks)

PART II

- ii) Determine the refraction index of the glass block using the formula.

Refractive index, η of glass $\eta = \frac{b}{a}$

$$\eta = 1.5 \pm 0.1 (1.4 - 1.6) \sqrt{\sqrt{}}$$



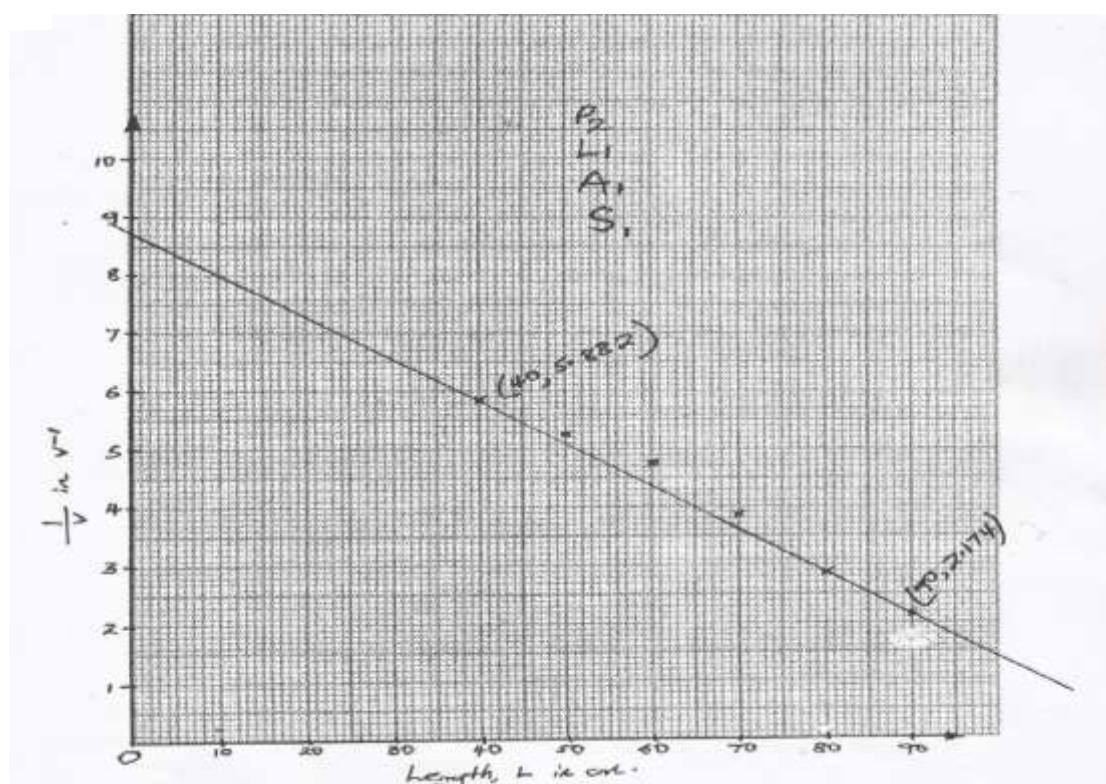
QUESTION 2

2. a) i) $V_1 = 1.50 \pm 0.10$ V ✓1
 b) Table 2

0.7	1.11	1.17	1.22	1.24	1.26
1.17	1.31	1.37	1.42	1.44	1.46
L (cm)	90	80	70	60	50
V₂ (Volts)	1.07	1.21	1.27	1.32	1.34
V = (V₁ - V₂) (Volts)	0.46	0.32	0.26	0.21	0.19
1/V (V⁻¹)	2.174	3.333	3.846	4.762	5.263

✓ +0.1

1 ✓ $= 1.5 \pm 0.10$ (5 mks)



- c. i) The slope S of the graph.

(2 mks)

$$\text{Slope} = \frac{5.882 - 2.174}{40 - 90} = \frac{3.708}{-50}$$

$$= -0.07416 \text{ v}^{-1} \text{ cm}^{-1} \sqrt{1}$$

ii) The value of W

$$\frac{-W}{100} = \text{Slope} \Rightarrow$$

$$W = -100 \text{ (slope)}$$

$$= -100 \times (-0.07416) = 7.416 \text{ v}^{-1} \text{ cm}^{-1} \sqrt{1}$$

iii) The value of R .

$$\frac{I}{V} = \frac{-WL}{100} + \frac{12}{R}$$

$$y\text{-intercept} = \frac{12}{R}$$

$$R = \frac{12}{8.70}$$

$$= 1.379 \text{ V}^{\sqrt{1}}$$

(1 mk)

(2 mks)

PART II

b) Measure the length x .

(½ mk)

$$x = 3.2 \text{ cm}$$

c) Measure the whole length of test tube y .

(½ mk)

$$y = 14.6 \text{ cm}$$

d) Determine the external diameter of the test tube using the vernier caliper.

$$\text{External diameter} = 2.41 \text{ cm}$$

(½ mk)

$$\text{External radius, } r = 1.08 \text{ cm}$$

(½ mk)

e) Measure the mass of the test-tube and its contents,

$$\text{Mass, } M = 47.01 \text{ g}$$

(1 mk)

f) Determine the density of water given that

(1 mk)

$$p = \frac{7M}{22r^2(y-x)}$$

$$1.12 \text{ g cm}^{-3} \pm 0.1$$