

LANJET JOINT EVALUATION 2022

PHYSICS PP3 MARKING SCHEME

PRACTICALS TERM 4 END TERM

MARKING SCHEME

Qnt I. (curved mirror)

U (cm)	15.0	20.0	25.0	30.0	35.0	40.6
V (cm)	60.5	30.0	23.0	20.0	15.0	10.5
$\frac{1}{u}$ (cm ⁻¹)	0.0667	0.0500	0.0400	0.033	0.0286	0.0250
$\frac{1}{v}$ (cm ⁻¹)	0.0165	0.0333	0.0435	0.0500	0.0667	0.0952

(5 mks)

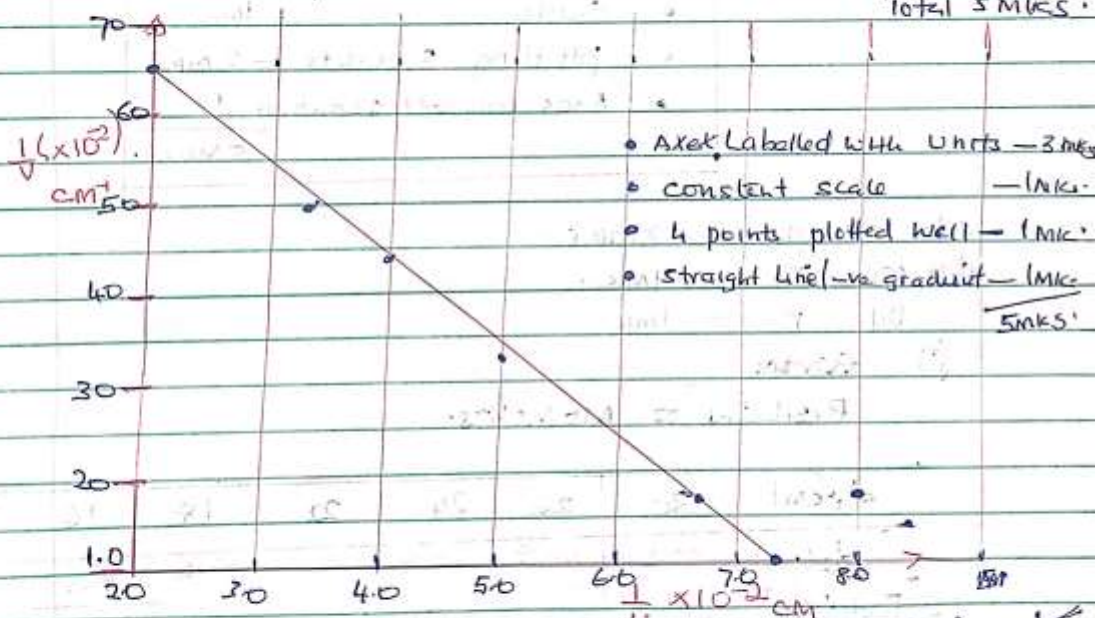
Error in U ± 0.5 cm ✓

Error in V ± 0.5 cm ✓

(a) Values of V each within the range $6 \times 10^2 = 3$ mks.
 Values of $\frac{1}{v}$ correctly evaluated to 4 sf = (1mk)

Values of $\frac{1}{u}$ correctly evaluated to 4 sf = (1mk)

Total 5 mks.



(F) When $\frac{1}{u} = 0$, $\frac{1}{v} = 6.6 \times 10^{-2} \text{ cm}^{-1}$; $\frac{1}{v} = 0$, $\frac{1}{u} = 7.15 \times 10^{-2} \text{ cm}^{-1}$

$$\frac{1}{f} = \frac{6.6 \times 10^{-2} + 7.15 \times 10^{-2}}{2} = 6.875 \times 10^{-2} \text{ cm}^{-1} \quad \checkmark$$

PTO.

$$f = 1 \div (6.875 \times 10^{-2}) = 0.14545 \times 10^2 = 14.5 \text{ cm}$$

PART B:(a)

RESULTS TABLE

L(M)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	
I(A)	0.5	0.44	0.4	0.38	0.36	0.32	0.30	1mk
p.d(V)	1	1.2	1.3	1.4	1.5	1.6	1.7	1mk
$R = \frac{V}{I} (\Omega)$	2	2.73	3.25	3.68	4.17	5.0	5.67	1mk
$\frac{1}{I} A^{-1}$	2	2.27	2.5	2.63	2.78	3.13	3.33	1mk

d) I – Values all correct values (3mks)

At 4 correct values (1mk)

V - Values all correct values (3mks)

At least 4 correct values (1mk)

Plotting graph (5mks)

-plotting 5-7 pts 2mks

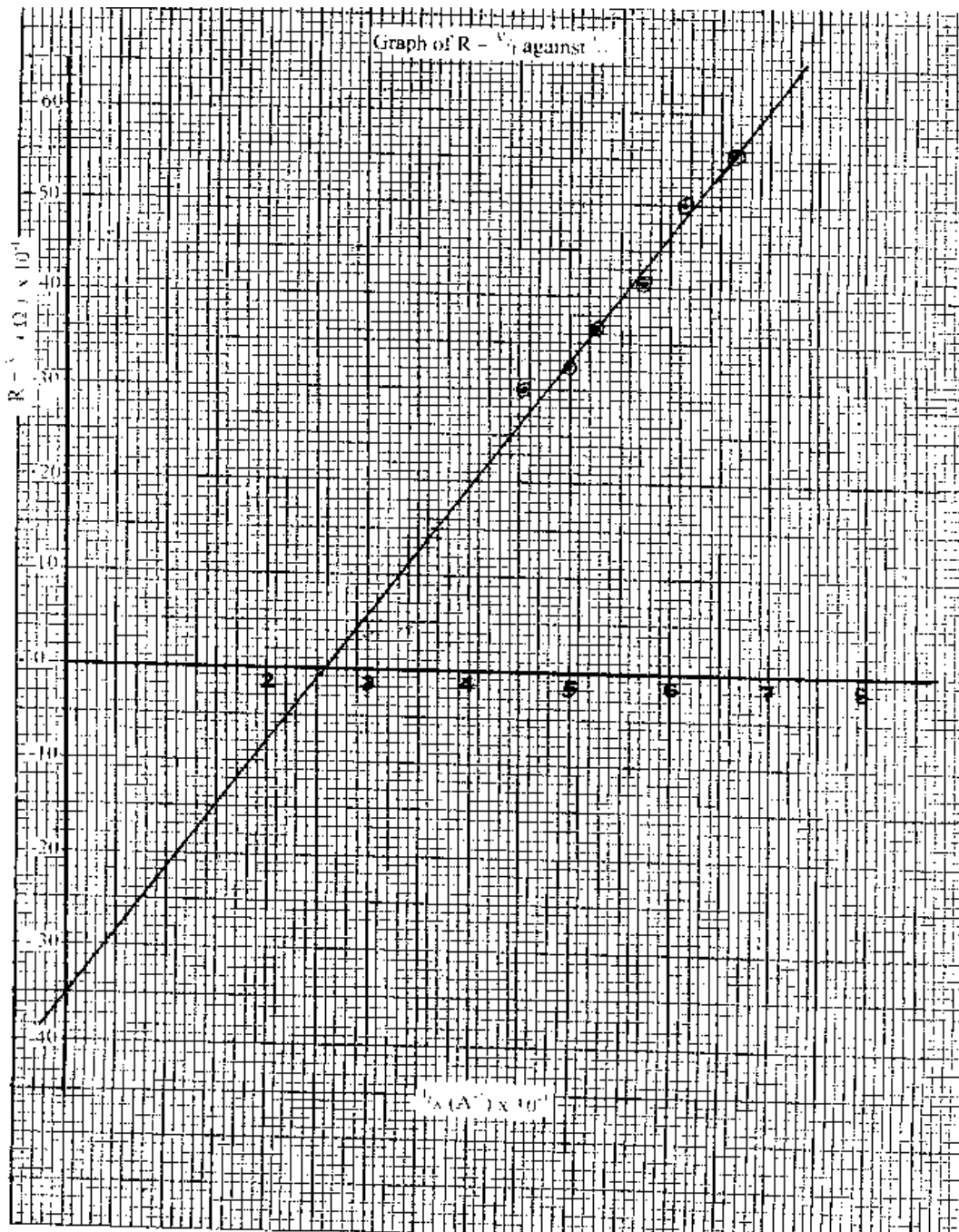
4-5pts 1mk

1-3pts no mk

-straight line 1mk

-scale appropriate 1mk

-axes labelled 1mk



e) A (14.5×10^{-1} , 5×10^{-1}) B (32.5×10^{-1} , 53.5×10^{-1}) (1mk)

$$\text{Slope} = \frac{(53.5 - 5) \times 10^{-1}}{(32.5 - 14.5) \times 10^{-1}} \frac{(\Omega)}{A^{-1}}$$

$$= \frac{48.5}{16.0}$$

$$= 2.69 \Omega A$$

evaluation (1mk)

accuracy ($\frac{1}{2}$)

Unit ($\frac{1}{2}$)

f) i) $R \times \frac{1}{I} \therefore E = K = \text{Slope} = 2.69V$

(1 mk)

$$R = \frac{K}{I}$$

ii) $-r = -35 \times 10^{-1} = 3.5$

Realizing $y = y$ intercept (1mk)

B: (b)

$d_1(\text{CM})$	30	26	24	22	18	16
$d_2(\text{CM})$	59.0	41.8	34.8	28.1	13.6	$6.3\sqrt{}$
$F_1d_1(\text{NM})$	0.30	0.26	0.24	0.22	0.18	0.16
$F_2d_2(\text{NM})$	0.295	0.209	0.174	0.141	0.065	0.035

Each $\times \frac{1}{2} = 3\text{mks}$

Any 5 correct readings $\times \frac{1}{2} = 2.5\text{mks}$
-2.5mks

Error $d_2 = +$ or $- 0.1$

$G = 50\text{CM}$. mark

$F_1 = 1\text{N}$

$F_2 = 0.5\text{N}$