232/3
Physics
PAPER 3
MARKING SCHEMES

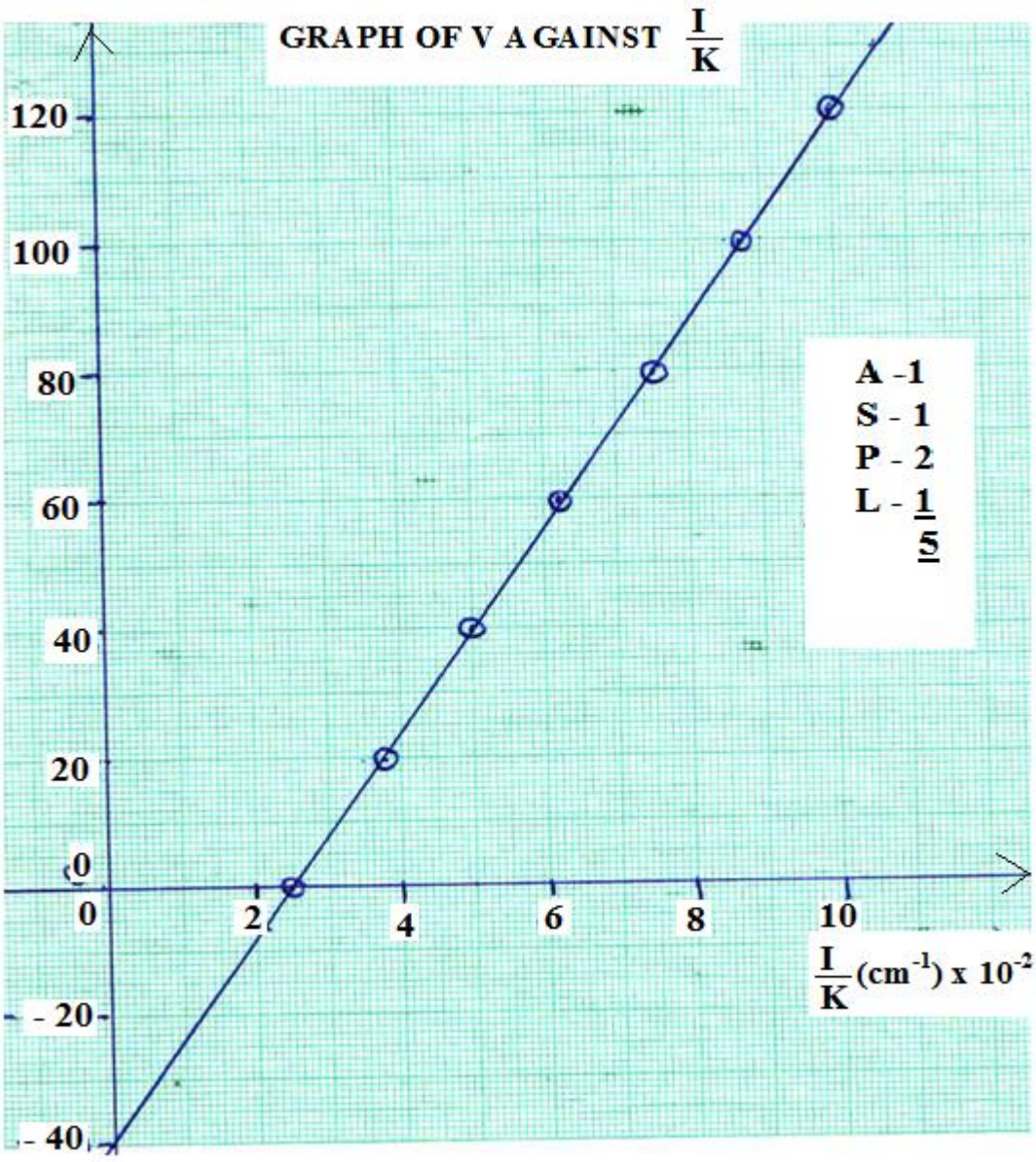
1. c) K = 40.0± 0.4cm ✓ ½
t = 30.2 ± 0.4cm ✓ ½

e)

Vol, V(cm^3)	0	20	40	60	80	100	120
Distance; K (cm)	40.0	26.6	20.0	16.1	13.4	11.5	10.0
$\frac{1}{k}$ (cm^{-1}) x 10^{-2}	2.5	3.76	5.00	6.21	7.46	8.70	10.0

K – row, 4 mks, All values ± 0.4cm
$\frac{1}{K}$ – row, 2 mks, All values

f)



A – 1, well labelled with units

S- 1, Linear and appropriate
P – 2, All values
L – 1

g) Slope, S = $\frac{\Delta V}{\Delta \frac{1}{k}} = \frac{120-40(cm^3)}{(10-5)X\ 10^{-2}(cm^{-1})}$ ✓
= 1600cm^4 with units ✓

h) (i)S = $\frac{50000t}{d}$ ✓ For realising
$\Rightarrow$1600cm^4 = $\frac{5000\ x\ 30.2cm}{d}$ ✓
d = $\frac{50000\ x\ 30.2cm}{16002}$
= 943.75cm^{-3} ✓

(ii) V – axis intercept = $\frac{1000m}{d}$ ✓ for reading
- 40 = $\frac{-1000m}{943.75cm^{-3}}$ ✓
m = $\frac{943.75cm^{-3}\ x\ 40}{1000}$
= 37.75 ✓

Question 2.

L (cm)	L (m)	V	I (a)	$\frac{v}{I}$
100	1.00	1.45	0.04	
90	0.90	1.40	0.05	
70	0.70	1.35	0.08	
50	0.50	1.30	0.09	
40	0.40	1.25	0.12	
20	0.20	1.15	0.02	

Atleast 5 correct values of L (m) 1dp a must – 1mk

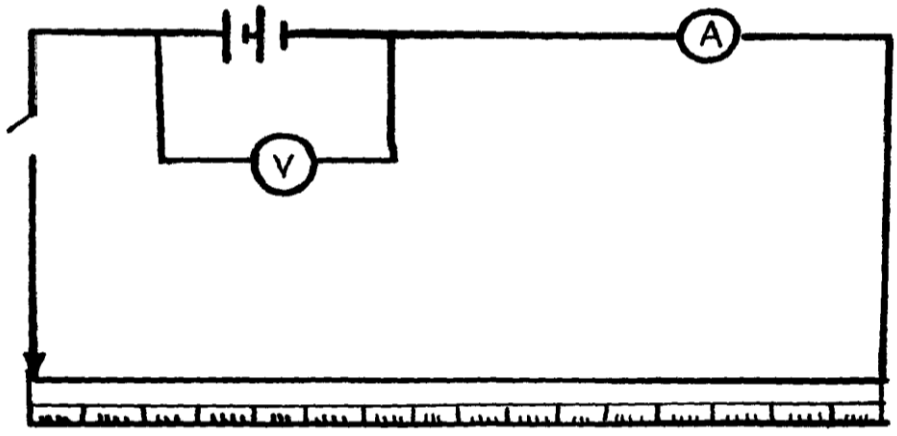
Decreasing value of v between (1.5 – 0.9) v 1 dp a must – ½ mk each max (2½ mks)

Increasing values of i between (0.02 – 0.4) a – 1 dp a must. ½ mk each max 2½

Atleast 5 correct values of $\frac{v}{I}$ 2 dp a must – 1 mk

total 7mks

Iii) a)



arrangement of cells in series and voltage across with switch open. 1mk

B) e.m.f = (3.0 ± 0.2) 1 dp a must 1mk

Iv)

- Both axes correctly labelled 1mk
- Simple + uniform scale 1mk
- Plotting 4 points correctly - ½ mk each max 2mks
- A line with positive gradient passing through atleast 3 correctly plotted points. 1mk

v) NB No line slope

- correct intervals 1mk
- substitution 1mk
- evaluation (units a must) 2 dp – 1mk

vi)

- d .....mm 2dp a must ½ mk
- d..... 2dp in standard form ½ mk

vii)

- substitution of d and S – 1mk
- evaluation of h 3dp – 1mk