232/3 – PHYSICS (PRACTICAL) PAPER 3 MARKING SCHEME

1. (a) d = 0.60cm (1mk)
0.1131cm³ (1mk)

$V = \frac{22}{42}d^3$

$\frac{22}{42}(0.6)^3$

= 0.1131cm³ (1mk)

(b) D = 1.40

$A = \frac{22}{28}\times(1.4)^2$

= 1.54cm² (1mk)

(c) h_o = 5.3cm (1mk)

Table I

Number of ball bearings (N)	1	2	3	4	5	
Floating level h(cm)	5.6	5.8	6.0			
h – h_o(cm)	0.3	0.5	0.7			(6mks)

(e) A GRAPH OF $h - h_o$ AGAINST N

(g) (0.01) and (3,0.7)

$$S = \frac{Dh - h_o}{DN} = \frac{0.7 - 0.1}{3 - 0} \checkmark 1$$

$= 0.2\text{cm} \checkmark 1$ (2mks)

(h) $\frac{P_S}{P_1} = slope = \frac{P_S}{P_L}\ \frac{V}{A} \Rightarrow \frac{P_L}{P_S} = \frac{S \times A}{V}$

$$= \frac{0.2cm \times 1.54cm^3}{0.1131cm} \checkmark 1$$

$= \underline{2.72} \checkmark 1$ (2mks)

2. (b) E = 3.20V (1mk)

(c) V = 2.30 (½mk)
I = 0.20 (½mk)

(d) $R = \frac{2.3}{0.2} = 11.5\Omega$ ✓1

$\frac{2.3}{3.2-2.3} = M = \frac{11.5}{5}$ ✓1

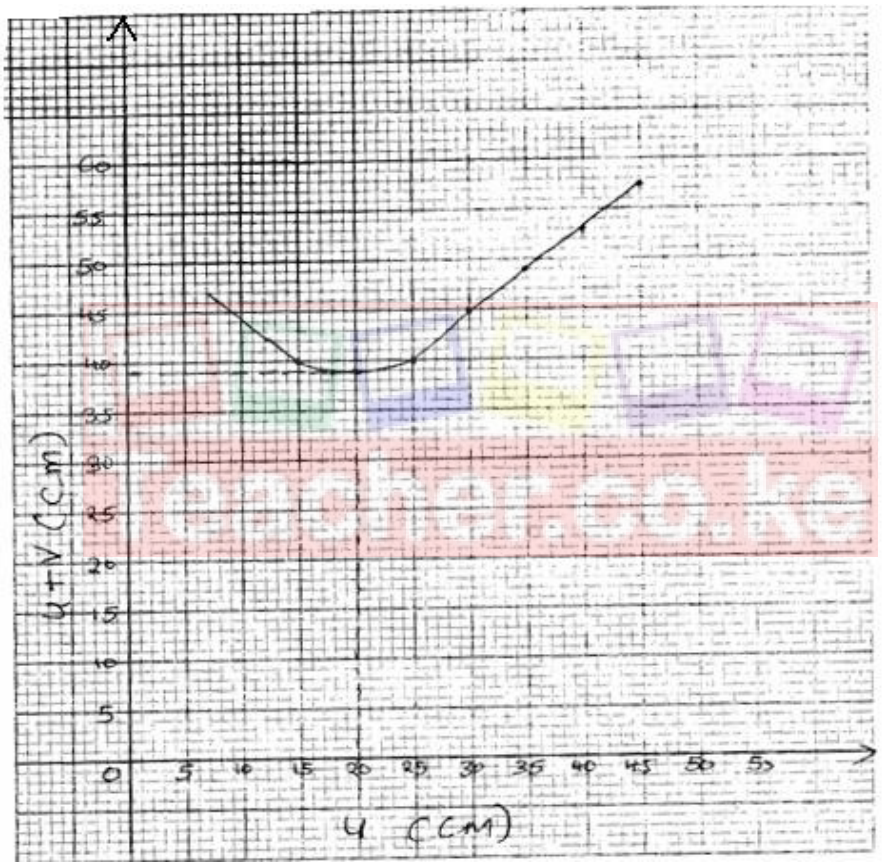
$= 2.556 = \frac{11.5}{5}m$

$\Rightarrow$ M = $1.111\Omega^{-1}$ ✓1

Part B: **TABLE 3**

U(cm)	15	20	25	30	35	40	45	
V(cm)	25.0	19.0	15.0	15.0	14.0	13.0	12.5	
(U + V(cm)	40.0	39.0	40.0	45.0	49.0	53.0	57.5	(8mks)

(e) A GRAPH OF U + V AGAINST U



Using U + V = 4K
39 = 4K
K = 9.75cm
U = 2K
20 = 2K
K = 10cm

OR

$K = \frac{09.75 + 10}{2.0}$

= 9.875cm

~ 10cm