FORM FOUR PHYSICS PRACTICAL
MARKING SCHEME

Question 1

L (cm)	0.2	0.4	0.5	0.6	0.7	0.9	1.0	
p.d (V)	2.05	2.25	2.35	2.40	2.45	2.50	2.55	+ 0.01
I (A)	0.825	0.625	0.525	0.475	0.425	0.375	0.350	+ 0.001
R (Ω)	2.485	3.600	4.476	5.053	5.765	6.667	7.286	
$^1/_I$ (A^{-1})	1.212	1.600	1.905	2.105	2.353	2.667	2.857	

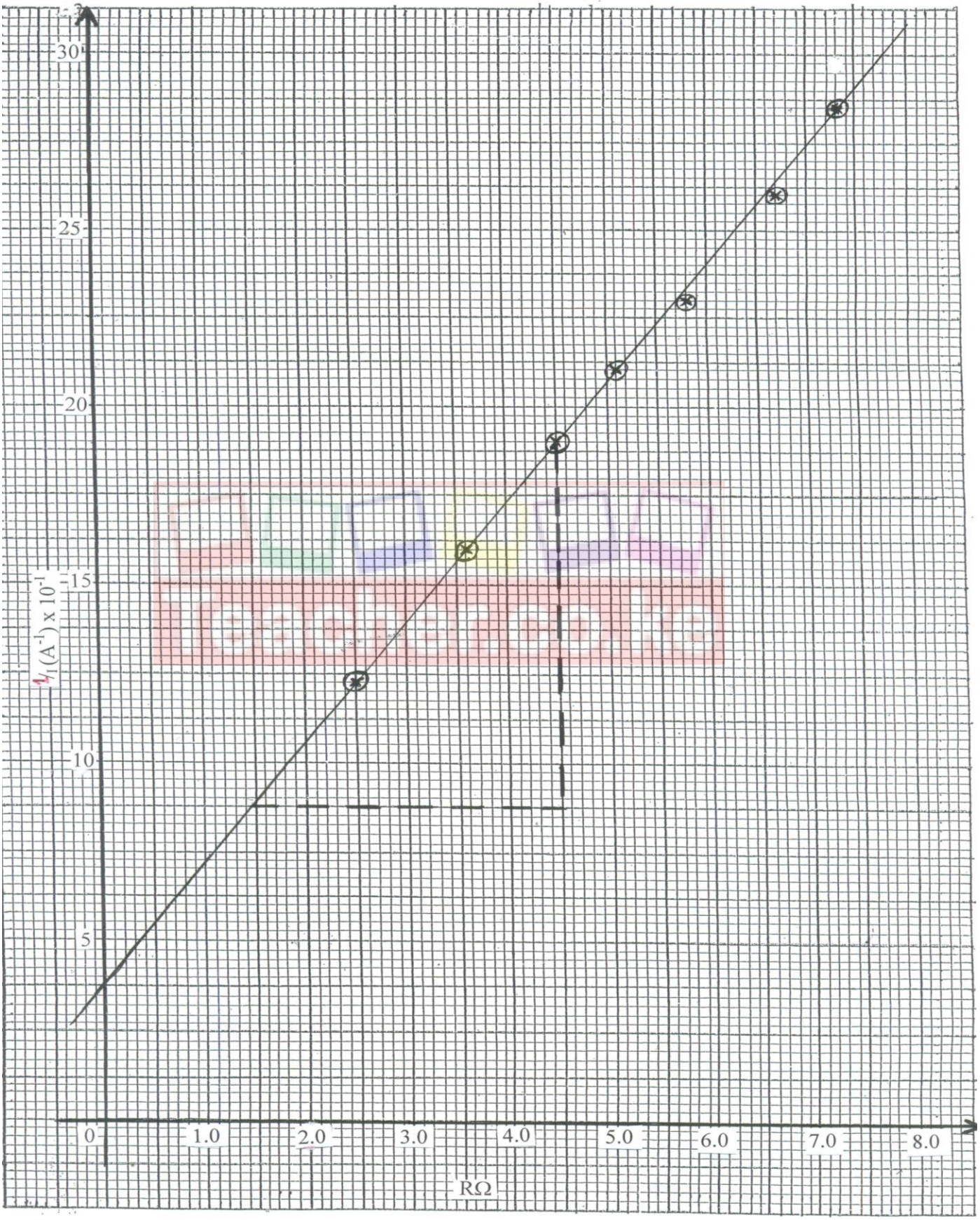
P.d (V) – each point ½ mk max 4 points = 2mks
I (A) – each point ½ mk max 4 points = 2mks
R Ω - All points correct = 2mks
$^1/_I$ A^{-1} – all points correct = 1mk
7mks

(d)

Axis – labelled with units – 1mk
Scale – uniform and simple and should accommodate all points – 1mk
Plotting – at least 6 points – 2mks
Line – straight with positive gradient passing through 4 correctly plotted points 1mk
5mks

(e) Slope, S $\Delta = {}^1/_I / \Delta R$
$= \frac{(19 - 8.8) \times 10^{-1}}{4.5 - 1.5}$ √(1) (intervals)
$= \frac{1.02}{3.0}$ √ (1) (evaluation)
$= 0.34\ A^{-1}\ \Omega^{-1}$ √(1) (Accuracy)
∴ S = 0.33 ± 0.01
Range (0.32 – 0.34) 3mks

question 1 d



(f) $1 = \frac{1}{I}R + \frac{r}{E}$

$Y = MX + C$ √

$\frac{I}{E}$ = slope, S, = 0.34 √

$E = \frac{I}{\text{Slope}} = \frac{1}{0.34} = 2.94$√ V

3mks

$\frac{r}{E}$ = y – intercept

r = y – intercept x E √

= $3.8 \times 10^{-1} \times 2.94$

= 1.117Ω

2mks

Question 2

PART A

(a) G = 50.0 ± 2.0 cm √

(b)

x (cm)	5.0	10.0	15.0	20.0	25.0	30.0
d (cm)	4.5	9.3	14.0	18.4	23.0	27.0

Each point ½ mk + 0.1 (3mks)

(c)

Axis – label with units – 1mk
Scale - uniform and simple
Can accommodate all the points 1mk
Plotting – all points correctly plotted – 2mks
Line – straight, passing through four (4)
Correctly plotted points 1mk
5mks

(d) Slope S, $\frac{\Delta d}{\Delta x} = \frac{16 - 0}{17.5 - 0}$ √ = $\frac{16}{17.5}$ = 0.9143

2mks

(e) (i) $W = \frac{100}{1000} \times 10 = 1N$ √

F = SW = 0.9143√

2mks

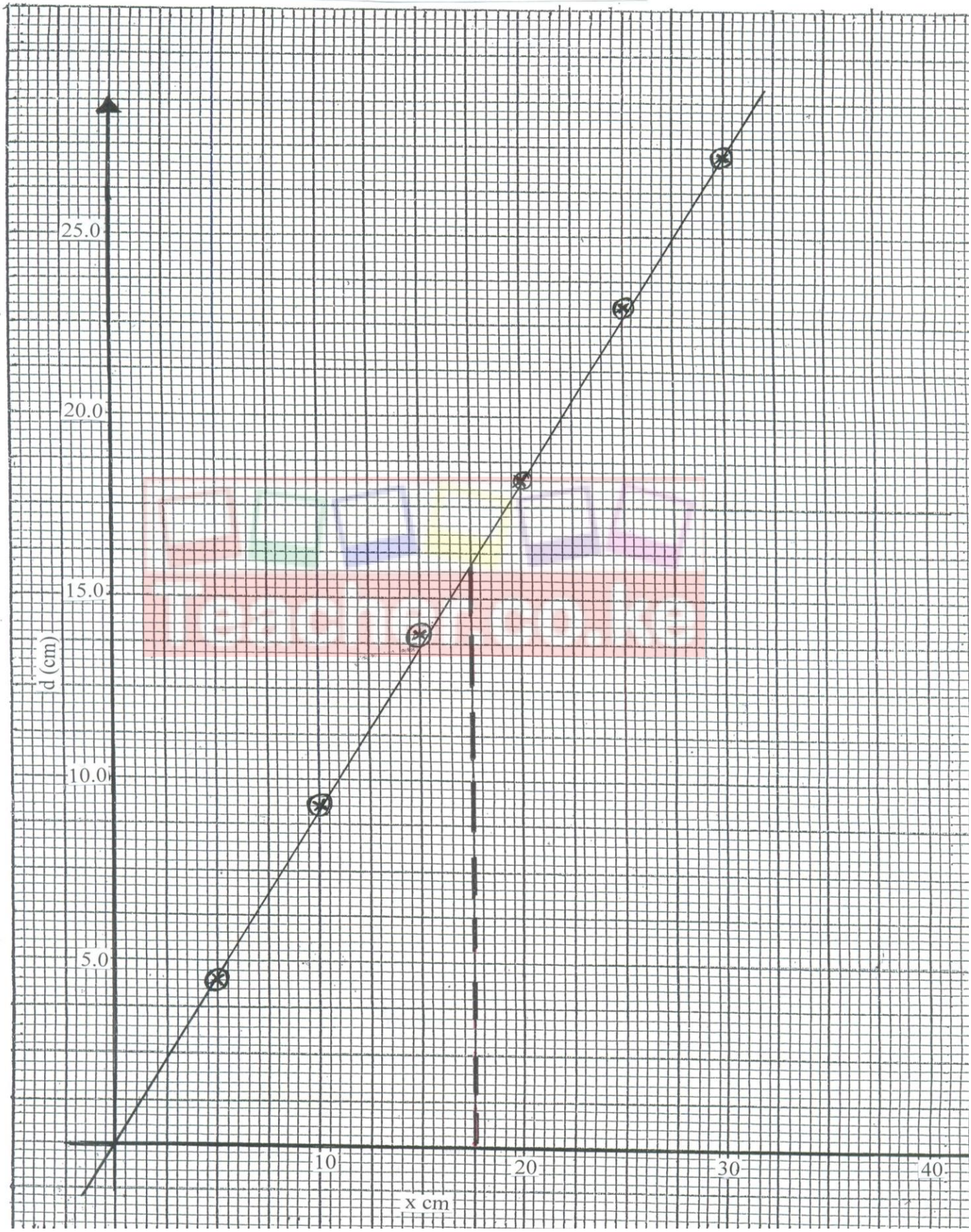
(ii) U = W – F

= 1 – 0.9143 √
= 0.0857 N √

2mks

3.

Question 2 part A (c)



Question 2 part A (c)

PART B

(a) $t = 28.53 \pm 0.02$ √1

$T = {}^{t}/_{20} = 1.4265$ √ ½

(b) $T^2 = \frac{4\pi^2 L}{g}$ √½

$g = \frac{4\pi^2 \times 0.5}{(1.4265)^2}$ √½

$= 9.700$ √½ (3mks)

NB $g = 10 \pm 1$

PART C

(a) $h = 20.0 \pm 2$cm√

(b) $\frac{h}{2} = \frac{20}{2} = 10\text{cm} \pm 1.0$√

(2mks)