

TERM 2 2025
PHYSICS
Paper 3

MARKING SCHEME

Part A

u (cm)	20	25	30	35	40	45
v (cm)	20	17	15	14	13	13
u + v (cm)	40	42	45	49	53	58
uv (cm ²)	400	425	450	490	520	585

Values of v within $\pm 5\text{cm}$ of the given value $\frac{1}{2}$ mk each value

Value of u + v $\frac{1}{2}$ mk to a maximum of 3 values. Use candidates value correctly added

Values of uv, $\frac{1}{2}$ mk to a maximum of 3 values use candidates value correctly worked

(f) Graph

Axes correctly labelled with units – 1mk

Appropriate scale, simple, covering all values and at least half of the grid

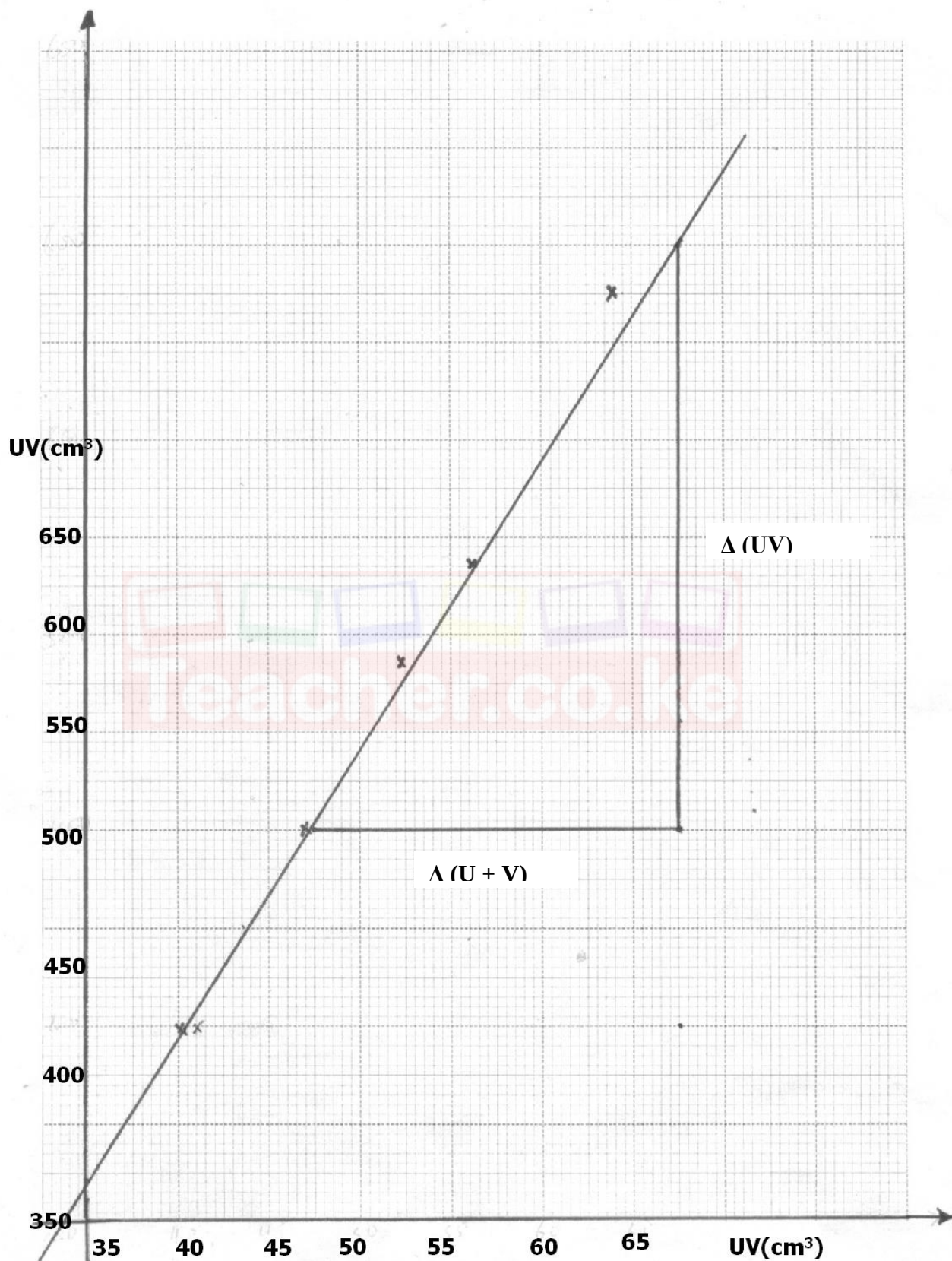
Each point correctly plotted to within one small square $\frac{1}{2}$ mk to a maximum of 4 points

Line of best fit within one small square of the plotted point 1 mk.

Total = 5mks

(g)

$$\begin{aligned}
 \text{Score} &= \frac{\Delta uv}{\Delta(u + v)} \text{ evidence on the graph(1mk)} \\
 &= \frac{600 - 450}{62.5 - 45} \text{ Correct interval from the graph(1mk)} \\
 &= 8.57\text{cm} \pm 2 \text{ cm}
 \end{aligned}$$



Part B

- (h) (i) $h = 14.5 \pm 1\text{cm}$ ($\frac{1}{2}$ mk)
(ii) $d = 4.0\text{cm} \pm 1\text{cm}$ ($\frac{1}{2}$ mk)
(iii) $t = h - d = 14.5 - 4.0 = 10.5\text{cm}$ ($\frac{1}{2}$ mk)
(iv) $m = 45\text{g}$ ($\frac{1}{2}$ mk) candidates value within range of 35 – 55g
(v) $D = 2.45\text{cm} \pm 0.1\text{cm}$ ($\frac{1}{2}$ mk)
(vi) $R = \frac{D}{2} = \frac{2.45}{2} = 1.225\text{cm}$ follow candidates work ($\frac{1}{2}$ mk)
(vii) $45 = \rho \times 3.142 \times (1.225)^2$ **1mk**
 $\rho = \frac{45}{4.715}$ **1mk**
 $= 9.54\text{g/cm}^3$ **1mk**

2. (b) $E = 3.0 \pm 0.2\text{V}$ 1mk (Ans with no units $\frac{1}{2}$ mks)

(d)

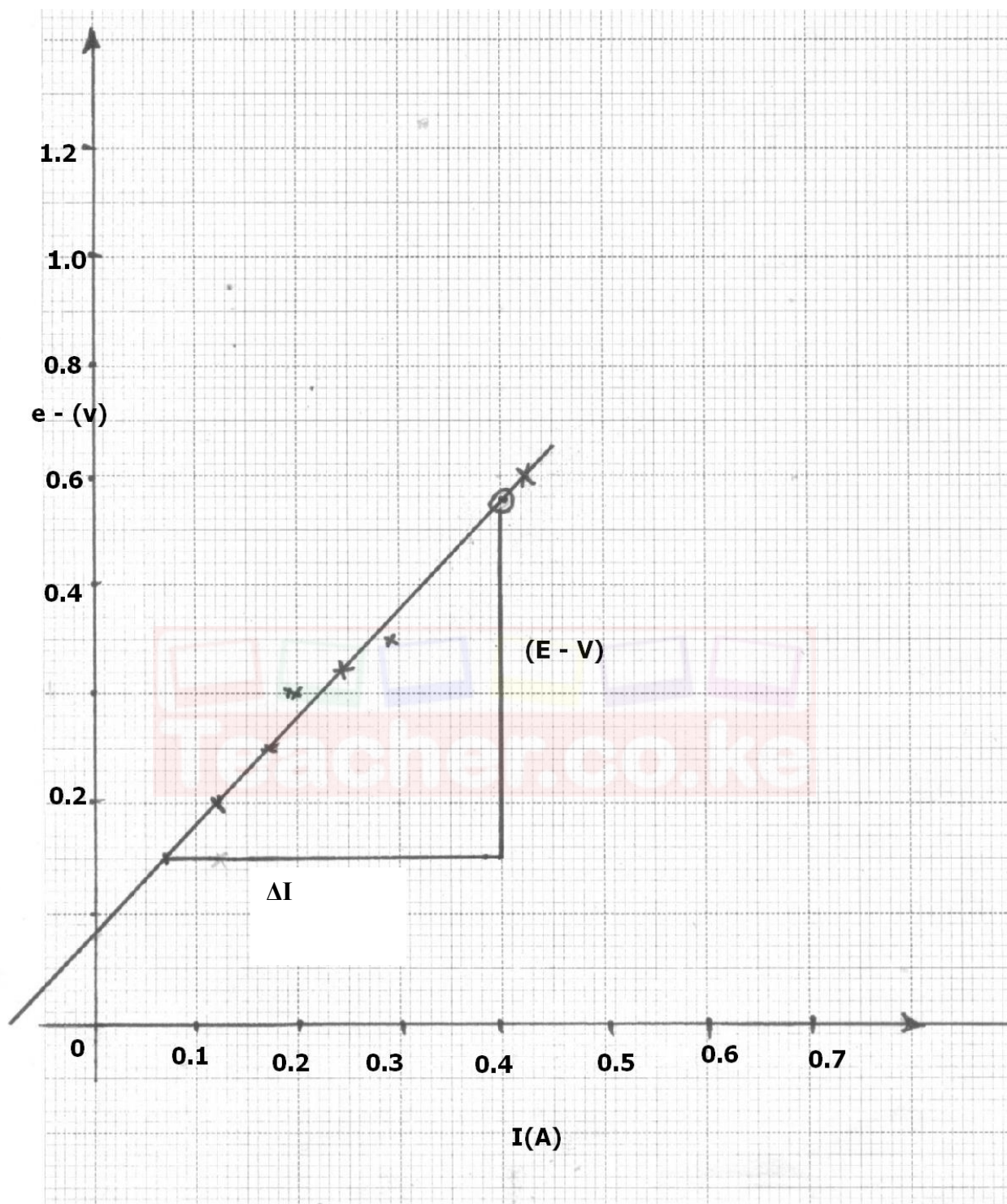
L (cm)	100	70	60	50	40	20	
I (A)	0.12	0.17	0.20	0.24	0.28	0.42	$\pm 0.1\text{A}$
V (V)	2.6	2.5	2.4	2.35	2.3	2.0	$\pm 0.2\text{V}$
E – V (V)	0.4	0.5	0.6	0.65	0.7	1.0	

Correct values $\frac{1}{2}$ mk for each correct value

Voltage values $\frac{1}{2}$ mk for each correct value

(E – V) values $\frac{1}{2}$ mk to maximum of 2 values

- (e) Same as for the graph in question 1 part A



(f)

$$\begin{aligned}
 \text{Slope} &= \frac{\Delta(E - V)}{\Delta I} && \text{Evidence on the graph(1mk)} \\
 &= \frac{0.96 - 0.30}{0.4 - 0.07} && \text{Correct interval from graph(1mk)} \\
 &= 2\Omega \pm 0.2 && (1mk)
 \end{aligned}$$

- (g) (i) $r = \text{slope}$ **(1mk)**
 $= 2\Omega$ **(1mk)**
- (ii) $E - V = Ir$
 $3.0 - V = 0.3 \times 2$ **(1mk)**
 $V = 3.0 - 0.6$
 $= 2.4V$ **(1mk)**

