

SCHOOL BASED FORM 4 EXAM JULY-AUGUST 2017

PAPER 3 PRACTICAL MARKING SCHEME

1. (b) $d = 0.28 \pm 0.01 \text{ mm}$ ($\frac{1}{2}$ mk)
 $d = 0.00028 \text{ m}$ 5 d.p places must ($\frac{1}{2}$ mk)

(c)

L (m)	0.1	0.3	0.5	0.7	0.9	
p.d (v)	2.7	2.6	2.5	2.7	2.8	± 0.1 1 mark of each correct max 2 marks
I (A)	0.3 8	0.22	0.16	0.12	0.10	± 0.01 1 mark for each correct max 2 marks
$R = \frac{V}{I} (\Omega)$	7.1 1	11.8 2	16.6 3	22.5 0	28.00	Correct evaluation 2 d.p must all correct 1 mk 4 correct $\frac{1}{2}$ less than 4 zero
$\frac{1}{I} (\text{A}^{-1})$	2.6 3	4.55	6.25	8.33	10.00	1 mark for both R and $\frac{1}{I}$

Total for table 6 marks

(g) (i) $E = \frac{1}{\text{Slope}(s)}$ (1 mark)

$= \frac{1}{0.312}$ Correct sub (1 mk)

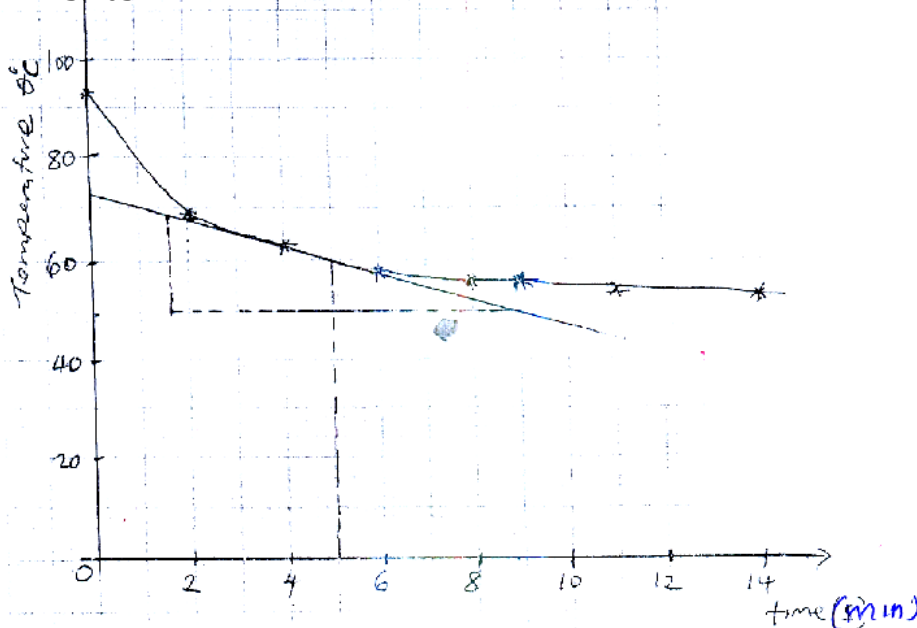
$= 3.205 \text{ V}$ Correct evaluation to 3 d.p Unit must (1 mk), no unit ($\frac{1}{2}$ mk), wrong units (zero)

(ii) $\frac{V}{E} = \text{Intercept of vertical axis.}$ (1 mk)

$V \times \frac{1}{E} = 1.4$

$V \times 3.205 = 1.4$ Correct sub, students own values 1 mk

$V = \frac{1.4}{3.205}$ Correct evaluation to 3 d.p. places unit must 1 mk No units ($\frac{1}{2}$ mk) wrong units (zero)



Awarding of marks for graph $\frac{1}{I}$ vs R.

- ✓ Labelling of axes both quantity and unit. (1 mk)
 - ✓ Scale should be simple, uniform and accommodative. (1 mk)
 - ✓ Plotting – correctly plotted point, student own value $\frac{1}{2}$ max (2 mks)
 - ✓ Line – A straight line with positive gradient (1 mk)
- (Total for graph 5 marks)

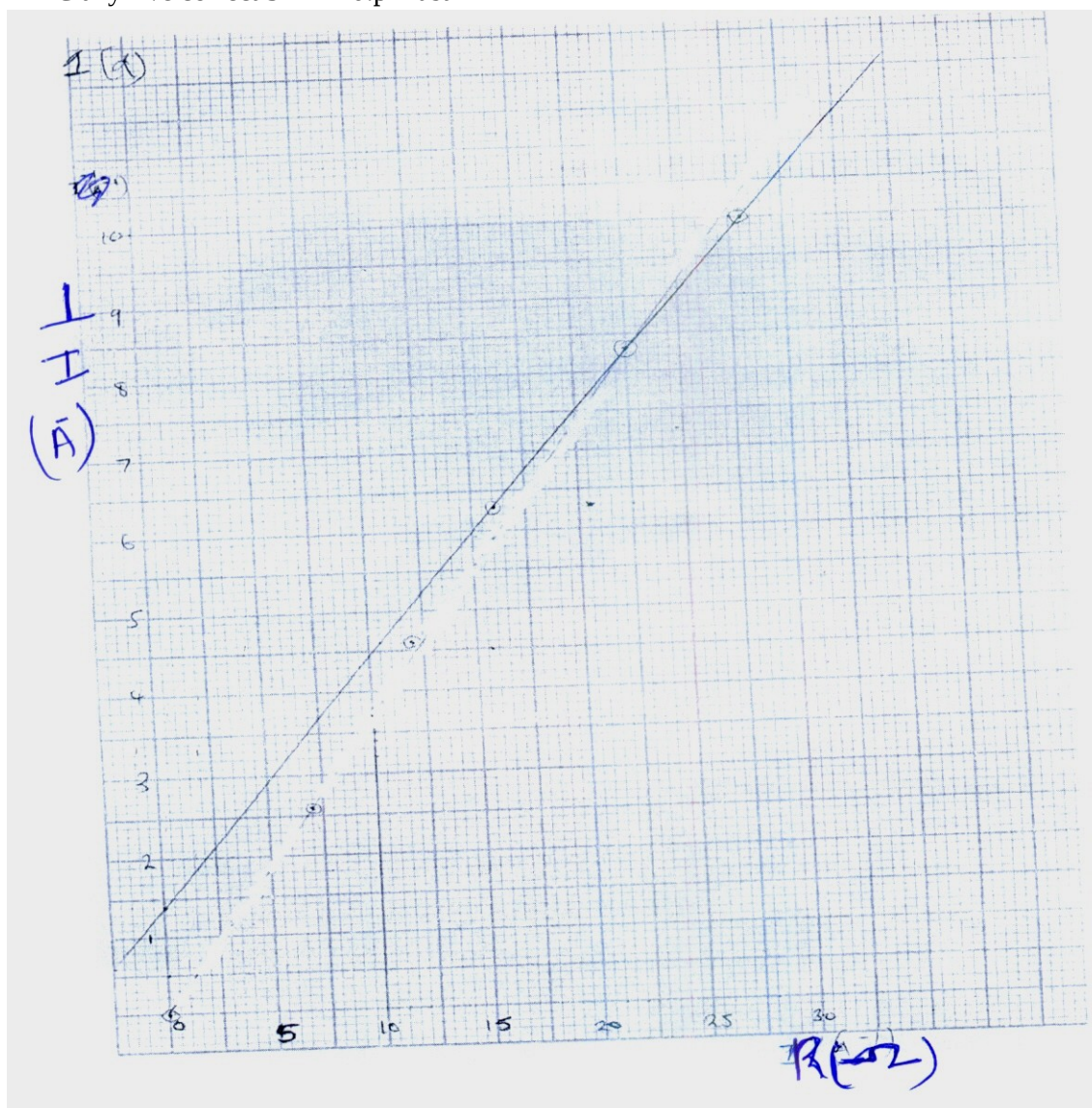
QUESTION 2

$T_{\max} = 95.0 \pm 3^{\circ}\text{C}$ 1 mk 1 d.p must

(iv)

Time (min)	0	2	4	6	8	10	12
Temperature ($^{\circ}\text{C}$)	93.0	69.0	63.0	58.0	56.0	54.0	53.0

$\pm 2^{\circ}\text{C}$ any five correct 5 mk 1 d.p must



Awarding of marks for graph of Temp vs Time

- ✓ Labelling of axes – both quantity and unit – 1mk
- ✓ Scale – Simple uniform and accommodative.
- ✓ Plotting – Correctly plotted points own values $\frac{1}{2}$ mk
- Max 2 mks
- ✓ Curve – Smooth curve passing through atleast 3 correctly plotted points – with –ve source.

(v) Rate of cooling at 5 min = Gradient of tangent at that point ($\frac{1}{2}$ mk), showing the tangent at the graph.

$$\text{Gradient} = \frac{y}{x}$$

$$= \frac{69-50}{8.8-1.5}$$

y interval 1 mk

x interval 1 mk

= _____ c/min correct evaluation 3 d.p units must 1 mk

PART B

u (cm)	30	35	40	
v (cm)	60	46.7	40.0	± 2.0 ½ mark for any correct max 1 mk
$x = \frac{v}{u}$	2.50	1.33	1.00	± 2.0 ½ mk for 2 any correct max 1 mk
y = $\frac{v}{(x+1)(cm)}$	20.00	20.04	20.00	All correct 1 mk

$$y = \frac{20.00+20.04+20.00}{3} \quad 1 \text{ mk for showing averaging}$$

$$= 20.01$$

$$= 20.0 \pm 0.2 \quad 1 \text{ 1mk for evaluation.}$$