**KCSE 2017**

## 4.6.3 Physics Paper 3 (232/3)

### MARKING SCHEME

| 1. a) | $I_1 = 0.3$ mA | | | | | | (1 mark) |
|---|---|---|---|---|---|---|---|
| b) | $I_2 = 0.37$ mA | | | | | | (1 mark) |

| c) | R x 10³ (Ω) | 0.330 | 1.0 | 1.33 | 1.5 | 2.5 | 4.0 | (6marks) |
|---|---|---|---|---|---|---|---|---|
| | I mA | 0.69 | 0.53 | 0.48 | 0.44 | 0.35 | 0.26 | |
| | I x10⁻³ (A) | 0.69 | 0.53 | 0.48 | 0.44 | 0.35 | 0.26 | |
| | 1/I A⁻¹ | 1.45 | 1.88 | 2.08 | 2.27 | 2.86 | 3.84 | |

| d) | Attach graph of $\frac{1}{I}$ against R. | (4 marks) |
|---|---|---|

| e) | i. | $\text{Slope} = \dfrac{2.5 - 1}{2.5 - 0}$ $= 0.60$ | (3 marks) |
|---|---|---|---|
| | ii | $(I)\dfrac{1}{I} = \dfrac{R}{E} + \dfrac{R_1}{E}$ $\quad I \quad \dfrac{1}{I} = \dfrac{1}{E}(R + R_1)$ $\therefore \dfrac{1}{E} = Slope = 0.6$ $E = \dfrac{1}{0.6} = 1.67$ $\quad II \quad \dfrac{R_1}{E} = \dfrac{R_1}{1.67} = y \quad \text{intercept}$ $= s$ | (3 marks) (2 marks) |

## QUESTION 2
## PART A MARKING SCHEME

| a) | $A = 60°$ | (1 mark) |
|---|---|---|
| | $l = 5.2cm$ | (1 mark) |
| b) | Normal at $3^{rd}$ way ⊔ 1.5 from A (From the candidates outline) | (2 marks) |
| e) | $D_1 = 41°$ | (1 mark) |
| | $D_2 = 39°$ | (1 mark) |
| | $D_3 = 40°$ | (1 mark) |
| f) | i. $D_m = \dfrac{41° + 39° + 40°}{3} = 40°$ | (1 mark) |
| | ii. $k = \dfrac{\sin\dfrac{(60+40)}{2}}{\sin\dfrac{60}{2}}$ $= \dfrac{\sin 50}{\sin 30}$ $= 1.53$ | (3 marks) |

**PART B**

| | | |
|---|---|---|
| g) | $\theta_0 = 24\,°C$ | (1 mark) |
| h) | $t_1 = 1.59\,\text{sec}$ | (1 mark) |
| i) | $t_2 = 3.00\,\text{sec}$ | (1 mark) |
| j) | (I) $x = \dfrac{77.5 - 24}{1.59}$ <br><br> $= 33.65$ | (2 marks) |
| | (II) $y = \dfrac{67.5 - 24}{3.00}$ <br><br> $= 14.5$ | (2 marks) |
| k) | It is greater than x because the cooling rate depends on the difference between the highest temperature and the room temperature. | (2 marks) |