

**THE UNITED REPUBLIC OF TANZANIA
DODOMA REGION
FORM FOUR MOCK EXAMINATION-2023
PHYSICS 2B-ACTUAL PRACTICAL
MARKING SCHEME**

031/2B

1. (i) Table of results;-

$x(cm)$	$y(\pm 2cm)$
35	29.3
30	23.6
25	17.8
20	12.1
15	6.3

(@ 02 marks, Total 10 marks)

- (ii) A plotted graph of y against x is shown on a graph No 1

- (iii) From the graph, Slope ;-
- $$G = \frac{\Delta y}{\Delta x}$$
- (01 mark)**

$$= \frac{20 - 4}{27 - 13}$$

(01 mark)

$$= 1.143 \quad (1.15 \pm 0.01)$$

(01 mark)

The value of y -intercept is 11cm

(01 mark)

(iv) Given;

$$y = \left(\frac{100g}{m} \right) x - \left(\frac{10Mr}{m} \right)$$

$$slope = \frac{100g}{m}$$

(00¹/₂ mark)

$$m = \frac{100g}{slope} = \frac{100g}{1.143} = 87.5g \quad (87 \pm 5g)$$

(00¹/₂ mark)

$$y\text{-Intercept} = -\frac{10M_r}{m}$$

(00¹/₂ mark)

$$-11 = -\frac{10M_r}{m}$$

$$M_r = \frac{m \times 11}{10} = \frac{87.5 \times 11}{10} = 96.25g \quad (95 \pm 15g)$$

(00¹/₂

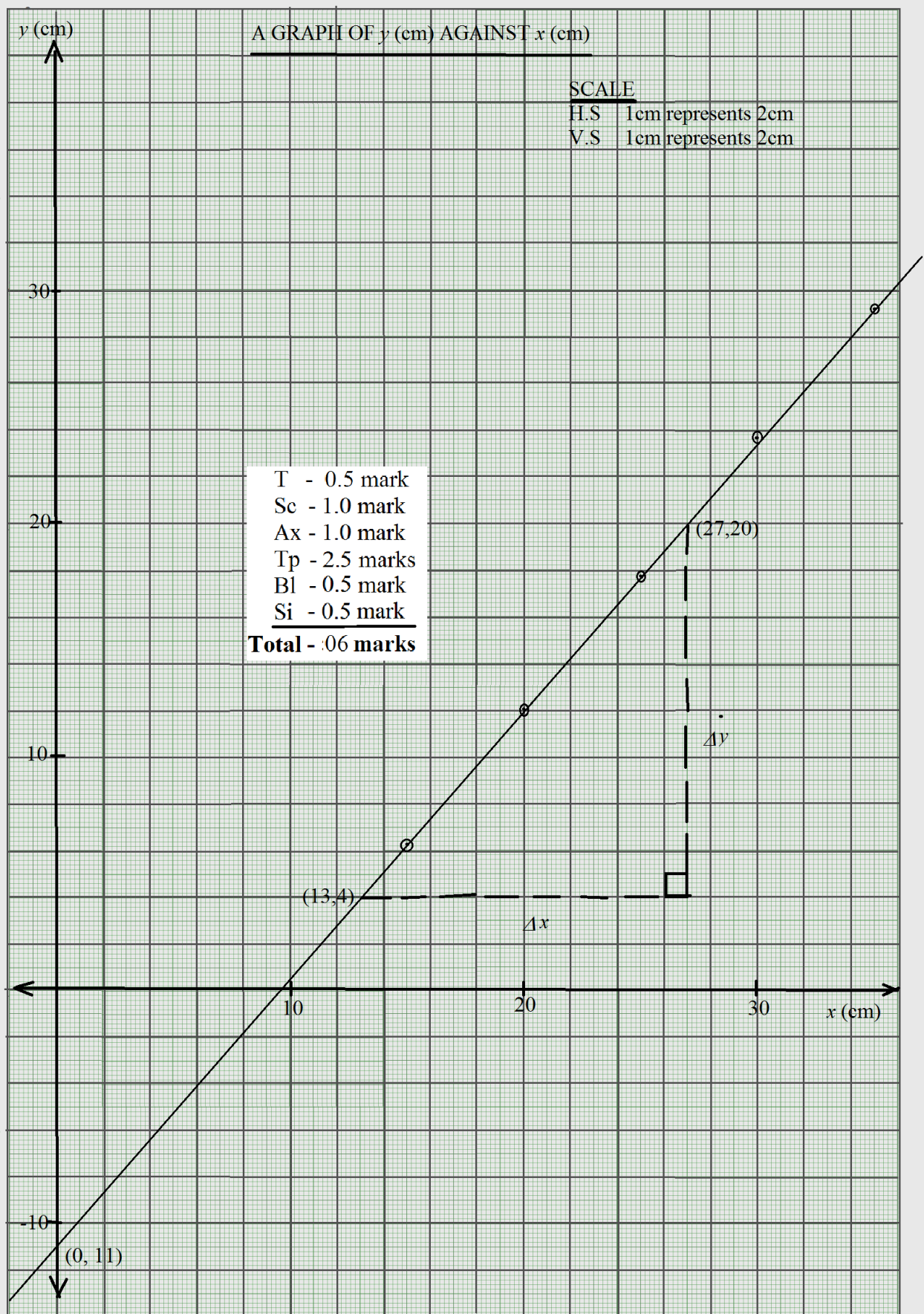
mark)

(v) Consider measured values Thickness $t = 0.5\text{cm}$ **(00½ mark)**

Width $w = 2.8\text{cm}$ **(00½ mark)**

$$\text{Volume } V = L \times t \times w = 0.5\text{cm} \times 2.5\text{cm} \times 100\text{cm} = 125\text{cm}^3 \quad \textbf{(01 mark)}$$

$$\text{(vi) Density } = \frac{M_r}{V} = \frac{96.25\text{g}}{125\text{cm}^3} = 0.75\text{g/cm}^3 \quad (0.6 - 0.9\text{g/cm}^3) \quad \textbf{(01 mark)}$$



2. (i) Table of results

$R(\Omega)$	1	2	4	6
$I(A)$	1.10	0.60	0.35	0.25
$\frac{1}{I}(A^{-1})$	0.9	1.7	2.9	4.0

(Total 10 marks)

(ii) Plotted graph of R against $\frac{1}{I}$ is shown on a graph paper.

(iii) From the graph Slope $= \frac{\Delta R}{\Delta \frac{1}{I}}$ **(01 mark)**

$$= \frac{5.5 - 2.5}{3.8 - 1.9}$$

(01mark)

$$= 1.58V$$

(01 mark)

The value of R- intercept is -0.5Ω **(02 marks)**

(iv) From $E = I(R + r)$

$$R = \frac{E}{I} - r$$

Slope of the graph represent the **E.m.f** of a cell **(01 mark)**

R-intercept represents the value of **internal resistance** of a cell **(01 mark)**

(v)

(vi) – To determine the E.m.f of a cell

- To determine the internal resistance of a cell

- To study the relationship between resistance and current flowing through it

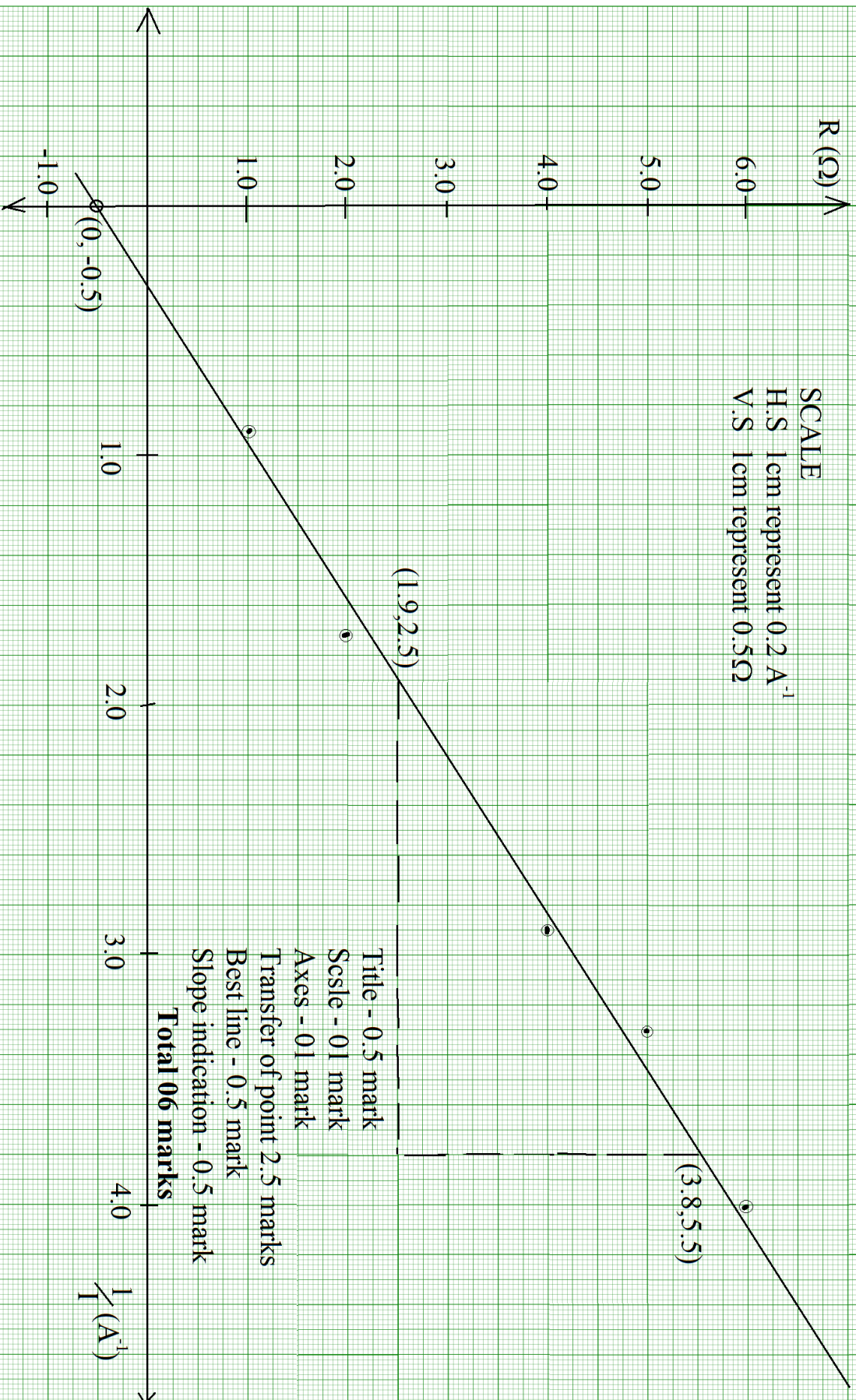
(Any one 02 marks)

A GRAPH OF R AGAINST $\frac{1}{I}$

SCALE

H.S 1cm represent 0.2 A^{-1}

V.S 1cm represent 0.5Ω



Title - 0.5 mark

Scale - 01 mark

Axes - 01 mark

Transfer of point 2.5 marks

Best line - 0.5 mark

Slope indication - 0.5 mark

Total 06 marks