**FORM FOUR PHYSICS PRACTICAL**

**MARKING SCHEME**

**Question 1**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| L (cm) | 0.2 | 0.4 | 0.5 | 0.6 | 0.7 | 0.9 | 1.0 | + 0.01  + 0.001 |
| p.d (V) | 2.05 | 2.25 | 2.35 | 2.40 | 2.45 | 2.50 | 2.55 |
| I (A) | 0.825 | 0.625 | 0.525 | 0.475 | 0.425 | 0.375 | 0.350 |
| 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 Δ = 1/I / ΔR

= (19 – 8.8) x 10-1 √(1) (intervals)

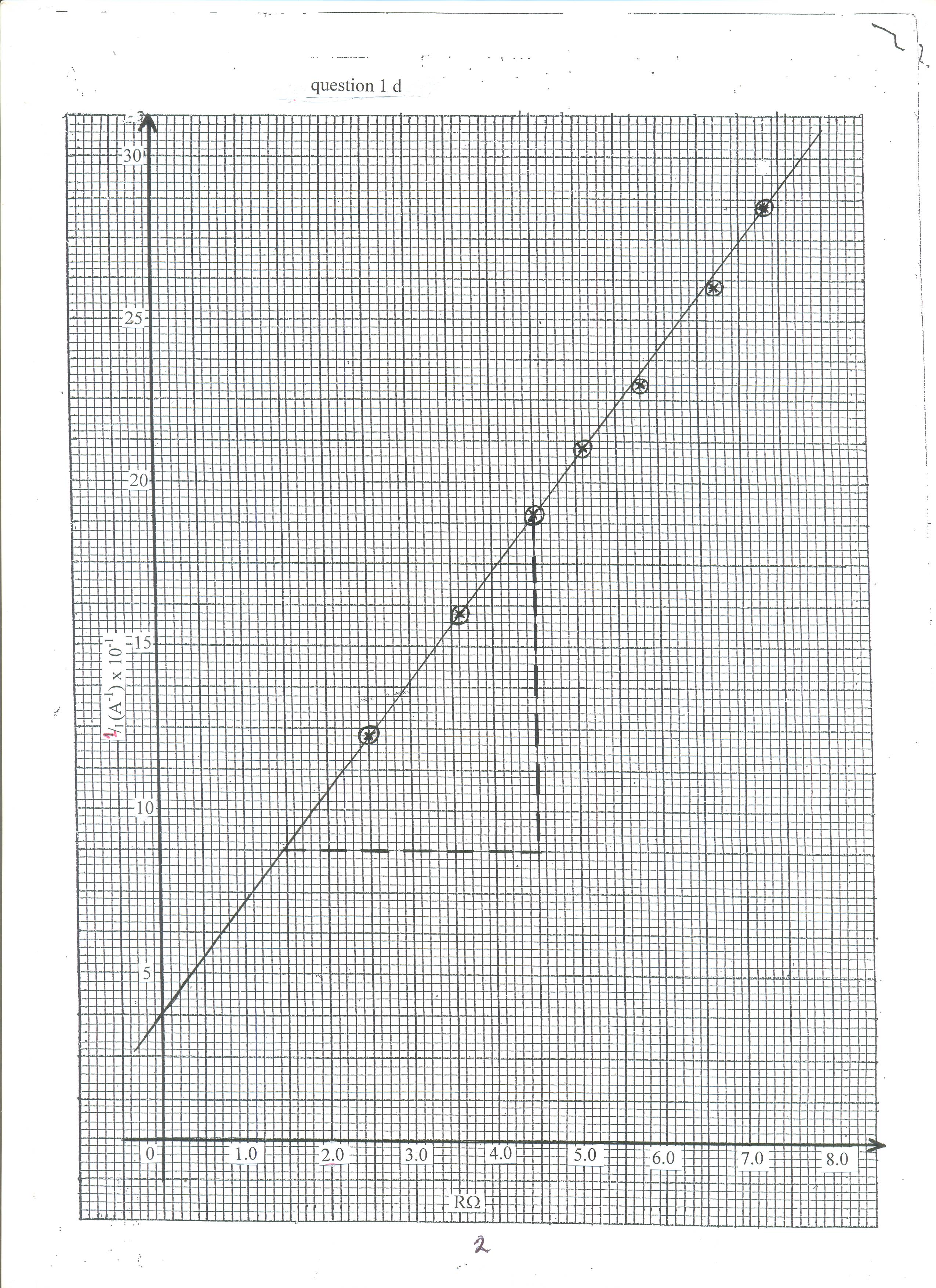
4.5 – 1.5

= 1.02 √ (1) (evaluation)

3.0 = 0.34 A-1 Ω-1 √(1) (Accuracy)

∴ S = 0.33 + 0.01

Range (0.32 – 0.34) 3mks



2.

(f) 1 = 1.R + r

I E E

Y = MX + C √

I = slope, S, = 0.34 √

E

E = I = 1 = 2.94√ V

Slope 0.34

3mks

r = y – intercept

E

r = y – intercept x E √

= 3.8 x 10-1 x 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, Δd = 16 – 0 √ = 16 = 0.9143

Δ x 17.5 – 0 17.5

2mks

(e) (i) W = 100 x 10 = 1N √

1000

F = SW = 0.9143√

2mks

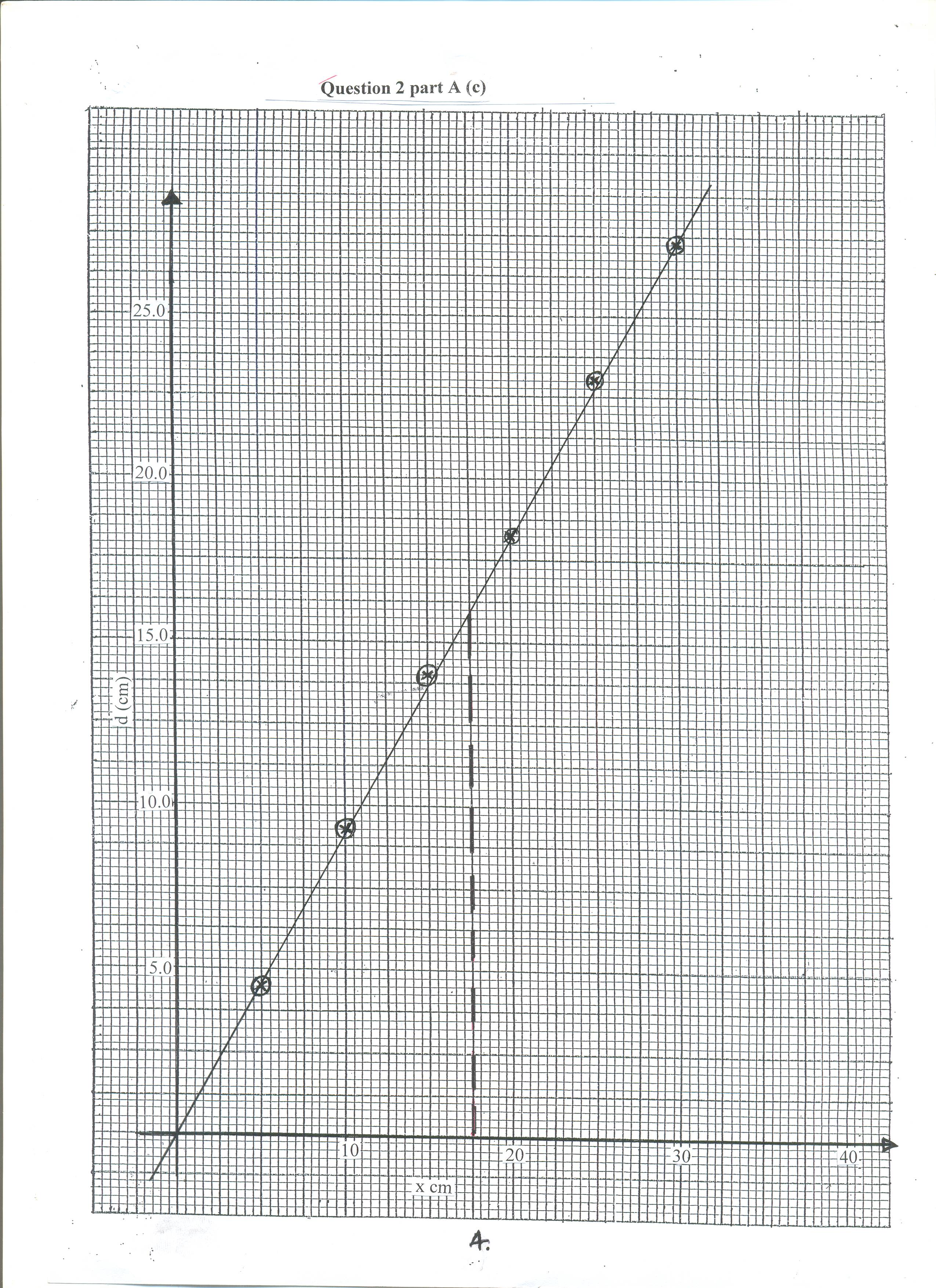
(ii) U = W – F

= 1 – 0.9143 √

= 0.0857 N √

2mks

3.



**4**

**Question 2 part A (c)**

**PART B**   
 (a) t = 28.53 + 0.02 √1

T = t/20 = 1.4265 √ ½

(b) T2 = 4π2L √½

g

g = 4π2 x 0.5

(1.4265)2  √½

= 9.700 √½ (3mks)

NB g = 10 + 1

**PART C**

(a) h = 20.0 + 2cm√

(b) h = 20 = 10cm + 1.0√

2 2

(2mks)