**232/3**

**PHYSICS**

**Paper 3**

**PRACTICAL**

**November, 2021.**

**MARKING SCHEME**

**Question One**

1. (i) I = 0.5 ± 0.05A ✓$^{1}/\_{2}mk$

 p.d = 2.50 ± 0.2V ✓$^{1}/\_{2}mk$

(ii) e.m.f, E = 3.0V ± 0.2✓1 mk

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Length AB (cm)**  | 100 | 70 | 60 | 50 | 40 | 30 | 20 |  |
| **Current (A)** | 0.50 | 0.60 | 0.65 | 0.70 | 0.75 | 0.80 | 0.90 | ± 0.05 |
| **p.d (V)** | 2.50 | 2.30 | 2.25 | 2.15 | 2.10 | 2.00 | 1.90 | ± 0.2 |
| **E – V (V)** | 0.50 | 0.70 | 0.75 | 0.85 | 0.90 | 1.00 | 1.10 |  |

1. (i) Graph
	* Axis labeled with units ✓1
	* Scale: uniform and simple✓1
	* 4 correctly plotted points✓ 1
	* Line through at least 3 correctly plotted points✓ 1

 Total 5mks

(ii) Gradient

$$=\frac{∆Y}{∆X}$$

$$=\frac{∆\left(E-V\right)}{∆I}$$

$$=\frac{0.5}{0.3}$$

$$=\frac{5}{3}=1.67^{V}/\_{A}$$

Internal substitution✓ 1

Correct evaluation ✓ 1

Accuracy ✓ 1

Total 3mks

NB: No line no slope



**Question Two**

**Part A**

 (c) c.o.g = 50.0 ± 0.5 ✓1

(e) (i)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Mass, m (g)** | 10 | 20 | 30 | 40 | 50 | 60 |  |
| **Distance, d1 (cm)** | 3.70 | 7.00 | 10.00 | 12.30 | 14.40 | 16.40 |  |
| **Distance, d2 (cm)** | 44.80 | 41.50 | 38.50 | 36.20 | 34.20 | 32.20 |  |
| **Mass, (cm) x****Distance, d2 (md2)** | 448.0 | 830 | 1155 | 1448 | 1710 | 1932 | V1 |

* Axis labeled with units (1mk)
* Scale simple and uniform (1mk)
* Atleast 4 correctly plotted points (2mks)
* Line through atleast 3 correctly plotted points (1mk)

Total marks 5mks

 (iv) Gradient

 $=\frac{∆Y}{∆X}$

 $=\frac{∆md\_{2}}{∆d\_{1}}$

 $=\frac{360-444}{12.4-4}$

 $=\frac{-84}{8.4}$

 $=-10$

 ✓1 Evaluation

✓1 answer

Total 2mks

|  |  |  |
| --- | --- | --- |
| u (cm) | v (cm) | m = $^{v}/\_{u}$ |
| 20 | 60✓1 | 3✓$^{1}/\_{2}$ |
| 30 | 30✓1 | 1✓$^{1}/\_{2}$ |

$$f=\frac{v}{1+m}=\frac{60}{1+3}=10cm+2cm$$

$f=\frac{v}{1+m}=\frac{30}{1+1}=15cm+2cm$ ✓ 1✓ 1

$$Average Value=\frac{15+15}{2}=15cm\pm 2cm$$