PHYSICS PAPER 3 END TERM 2 2021

232/3

MARKING SCHEME. (8mks)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Mass (g) | 100 | 200 | 300 | 400 | 500 | 600 |  |
| Position of point (cm) | ***Correct pointers reading to at least 1dp (1mark)*** |
| Extension e, (cm) | Correct working of extension (1dp) 2 marks (3 correct -1mark; all correct 2marks) |
|  Time for 20 oscillations  | t1 (s) | Correct value to 2dp. ( 1 mk) |
| t2 (s) | Correct value to 2dp ( 1 mk) |
| Average time tav (s) | Correct value to 4 s,f ( 1 mk) |
| Periodic time, T(s) | Correct value to 4 s,f ( 1 mk) |
| T2(S2) | Correct value to 4 s,f ( 1 mk) |

Gradient =  correct evaluation 1 mark

 = 0.04 s2/cm (1mark) (wrong units no mark/no units ½ mark)

**T2 =** $\frac{4π2}{b}$ **e + c**

**Substitution of the slope i.e slope =**$\frac{4π2}{b}$ **1mark**

**Evaluation 1mark**

**Correct answer range 960-1020 cm/s2** (wrong units no mark/no units ½ mark)

b- represents the acceleration due to gravity or gravitational field strength/constant 1mark

2. PART A

 B) Current I = 0.12  ( ½ mk

 p.d(v) = 0.26  ( ½ mk

C) E = 3.0  ( ½ mk

D) (5mks)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Length L (cm) | 100 | 70 | 60 | 50 | 40 | 20 |  |  |
| ***Current I (A)*** | ***0.12*** | ***0.19*** | ***0.20*** | ***0.23*** | ***0.28*** | ***0.40*** | $\pm $***0.1*** | ***2mk(At least 2dp*** |
| ***P.d. (v)*** | ***2.6*** | ***2.5*** | ***2.4*** | ***2.4*** | ***2.3*** | ***2.0*** | $\pm $***0.2*** | ***2mk(At least 1dp*** |
| ***E- V (V)*** |  |  |  |  |  |  |  | ***1mk Values to at least 1 d.p.*** |

e) Graph

Labelled axis (both – A1)

Scale – simple and uniform and accommodating all points (S1) = both scale.

Plotting ½ each x 4 = P2 (At least 4 pts)

* 2pts – (P1)tpt = ½ mk
* Straight line with positive gradient passing through at least 3 correctly plotted points = L1

f) Slope (No line no gradient)

- Correct intervals – 1mk

- correct evaluation with unit. (1mk

- Wrong unit (0mks)

No unit but correct evaluation. (½ mk

g) r = slope.

 Answer and correct unit. (½ mk

**Q2 PART B**

OM = 11.7 $\pm 0.2cm $ to at least 1 d.p (1mk

MI = 7.8 $\pm 0.2 cm$ 1mk

Refractive index = Real depth = OM (1mk

 Apparent depth IM

 OR 11.7

 7.8

 = 1.50 $\pm $0.2 values to at least 1 d.p (1mk

Construction (1mk

(TOTAL MARKS (5mks))