**PHYSICS PRACTICAL (232/3**

**END TERM 2022)**

**MARKING SCHEME**

**QUSTION:**

|  |  |
| --- | --- |
| **PART 1** | **PARTII** |
| 1. Mass m0 of the marble used=6.7g(mass depends on the marble used)(height depends on the amount of water put in the boiling tube)
2. Height h1 of the water column=7.8cm
 | 1. Total lengthl1, of the boiling tube

L1=14.5+ 0.1cm1. (i) Length L2 to the tube above the liquid level l2=3.6+ 0.1cm

(ii) length of the tube immersed in the liquid L1-L2 =14.5-3.6=10.9+0.1cm |
| 1. New height of h2 of the water column=8.5cm
 | (c) Mass M of the boiling tube with its content m=48.5+0.1g=0.0485kg |
| 1. Internal diameter d of the boiling tube=2.14+ 0.01cm
 | (d) Outer diameter, d, of the boiling tubeD=2.39+0.1cm |
| 1. V0=$\frac{πd(h2-h1)}{4}$

=$\frac{22}{7}x\frac{2.14}{4}$(8.5-7.8)=2.52cm=2.52cm3(3d.p) | (e) volume vx of the liquid x displaced Vx=π$\left[\frac{d}{2}\right]$2 $\left(l1-l2\right)$$\frac{22}{7}\left[\frac{2.39}{2}\right]$2 = 48.92cm(3d.p) |
| 1. Density d0=$\frac{mass m 0}{volumevo}$ =$\frac{6.7}{2.66}$ = 2.66g/cm3 (3d.p)
 | (f) Mass mx of the liquid x displaced Mx=v xℓ=48.92ℓ grams where ℓ is in g/cm3 |
|  | Weight=$\frac{48.92l}{1000}$x10=0.4892ℓ Newtons |
| (g)Weight of liquid x displaced = Weight of the boiling tube + its content.0.4892ℓ=0.485 ℓ=0.485 0.4892 =0.99g/cm3(3d.p) (Range: 0.95-1.05g.cm3) |

**QUESTION 2**

**PART 1**

1. (iii) Table of results

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Length L(m) | 0.70 | 0.60 | 0.50 | 0.40 | 0.30 | 0.20 |
| Current 1(A) | 0.12 | 0.14 | 0.16 | 0.18 | 0.22 | 0.28 |
|  1/1(A-1) | 8.33 | 7.14 | 6.25 | 5.56 | 4.55 | 2.78 |

1mark each to a maximum of 4

$\frac{1}{A}$value-1max for all correct

 **(iv) Graph of 1/1(y-axis) against L.**

 (v) Slope S of the graph S=$\frac{6.75-1.9}{0.55-0}$ = $\frac{4.85}{0.55}$ =8.818A$-1$m-1 (Range:8.375-8.960A-1m-1)

(b) (i) Diameter, d,of the nichrome wire d=0.35+0.01mm$Type equation here.$