# GBHS YAOUNDE
## MOCK EXAMINATION

**MARCH 2021** **ADVANCED LEVEL**

| | |
|---|---|
| Subject Title | PHYSICS |
| Paper No | Paper 3 |
| Subject Code | 780 |

*Time allowed: Two hours*

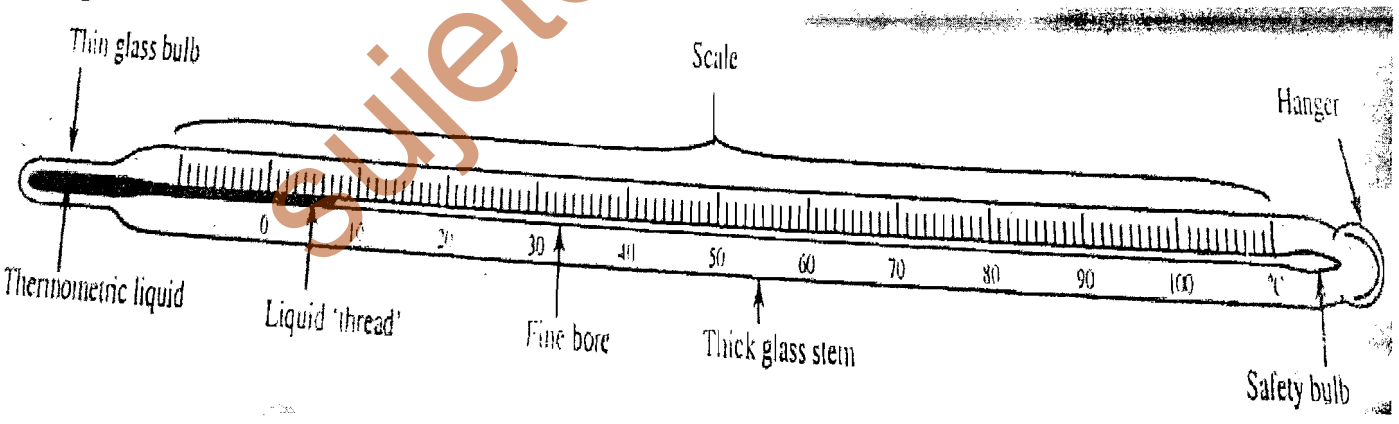
## INSTRUCTIONS TO CANDIDATES

***Do not write in pencil except for diagrams and graphs. ******
***If you have difficulty understanding the requirements of the questions, or other problems you should ask the supervisor for advice.***
You are advised to spend **1hr 20minutes** in the **MAINSTREAM** and **40 minutes** in section **STATIONS.**

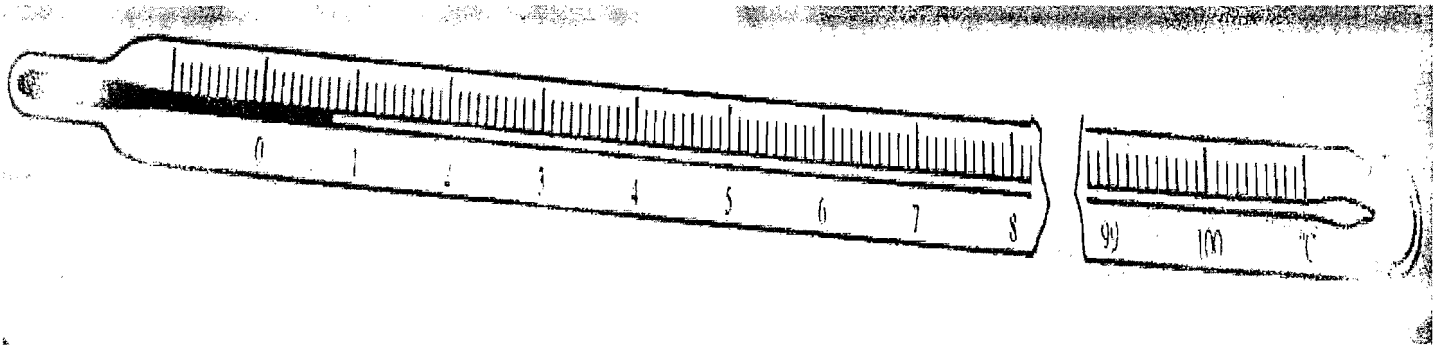
The approximate mark distribution is as follows:

| | |
|---|---|
| Diagram, precautions and presentation | 6marks |
| Observations | 20marks |
| Graph (s) | 6marks |
| Calculations | 8marks |
| Stations (4) | 40 marks |
| SBA | 20 marks |

1. Figure 1 below shows two thermometers labelled A and B.




(A)




(B)

a) **What is the precision of thermometer A?**

b) What is the accuracy of A?

c) Write down the reading of A.

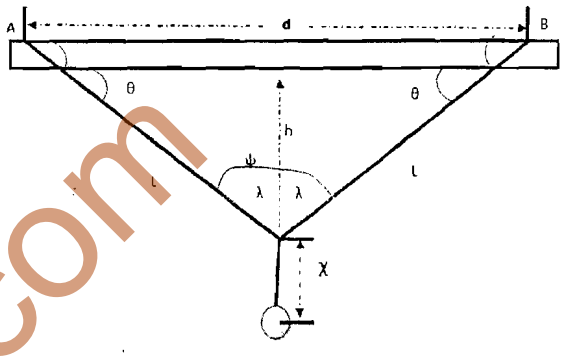
d) What is the precision of thermometer B?

e) Write down the reading of thermometer B?

(5marks)

## MAINSTREAM

### *SECTION ONE: (40 MARKS) (80 MINUTES)*




1. Clamp an unmarked wooden bar horizontally on the stand.
2. With one end of a short string tied firmly on the pendulum bob, mark a loop at the other end of it. also make loop at each end of the longer string.
3. Pass one end of the longer string through the loop of the shorter one.
4. Pass each end of the wooden bar to through one loop so that when the longer string is left on its own it forms a "**V**", with a pendulum bob hanging from it midpoint as shown.
5. Adjust the position of the loops AB = d until the distance between them is about 90 cm.
   d = _____ (1 mark)
6. Measure the distance $l$ and $\chi$ from the centre of mass of the bob

   $l$ = _____ $\chi$ = _____ (2 marks)
7. Measure the angle θ _____ (1 mark)
8. Pull the pendulum slightly towards you so that the plane of the V makes a small angle of about 8° with vertically. Release the bob.
9. Determine the period (T) of it oscillations
10. Vary the distance AB between the loop by moving it appropriately, repeat steps (7) through (9) and record your results on the data table below

**Table of values** (20 marks)

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

11. Plot a graph of $T^2$ as ordinate against $l\sin\theta$ as abscissa (5 marks)

12. Determine the slope of the graph (S) of you graph and calculate $\delta = \frac{4\pi^2}{S}$

_____

_____

_____

_____

_____

_____

_____ (4 marks)

13. Obtain the intercept (I) on the $T^2$ – axis and calculate $K = \frac{I}{S}$

I _____ (1 mark)

K _____ (1 mark)

14. State the physical significance of $\delta$

_____ (1 mark)

15. Compare your value of K with $\chi$

_____

_____

_____ (2 mark)

Diagram of set up



## SECTION TWO: STATIONS (40 MARKS) (40 MINUTES)

### *Station 1 : Determination of specific heat capacity (10 marks) (10 minutes)*

You are provided with 50 $cm^3$ of liquid B, a spring balance, a measuring cylinder, hot water in a plastic cup and a thermometer. Determine the specific heat capacity of liquid B

***Diagram***

*Procedure*

*Observations*

*Calculations*

*Conclusion*

*Precautions*

***Station 2 : Optics- (10 marks) (10 minutes)***

You are provided with a plane mirror in its holder, a white sheet of paper, a 30 cm ruler, four optical pins and a protractor. Investigate the relationship between angle of incidence and angle of reflection of a ray of light incident on a plane mirror.

***Diagram***



*Procedure*

*Observations*

*Conclusion*

*Precautions*

## *Station three - (10 marks) (10 minutes)*

You are provided with a copper wire, a digital multimeter, a ruler and a micrometer screw gauge. Determine the resistivity of the wire.

***Diagram***

***Procedure***

***Observations***

***Inference***

***Conclusion***

***Precautions***



## Station 4 –Surface tension γ (10 marks) (10 minutes)

You are provided with water in a container A, a capillary tube and a 30.0 cm ruler. Insert the capillary tube in the water and hold it vertically. Measure the height of the liquid in the tube. Determine the radius r of the tube, given that

$\gamma = \frac{rh\rho g}{2}$, ( $\rho = 1000 kgm^{-3}$ and $\gamma = 0.07\ \text{Nm}^{-1}$)

***Diagram***

*Measurements*

*Calculations*

*Conclusion*

*Precautions*

*Stop! Go back and check you work!!!!!!*