535/4
Physics Practical
Paper 4
July/August 2019
2¼ hours

BUGANDA EXAMINATIONS COUNCIL MOCKS

Uganda Certificate of Education

PHYSICS PRACTICAL

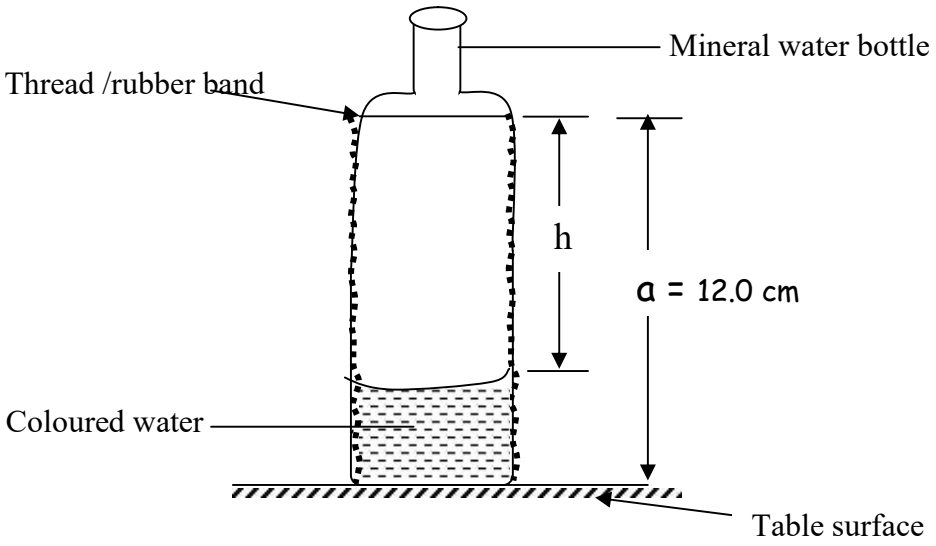
PAPER 4

2HOURS 15 MINUTES

INSTRUCTIONS TO CANDIDATES

- *Answer question 1 and ONE other question*
- *Any additional question(s) answered will not be marked.*
- *You will not be allowed to start working with the apparatus for the first quarter of an hour*
- *Marks are given mainly for a clear record of the observations actually made, for their suitability and accuracy and for the use made of them.*
- *Candidates are reminded to record their observations as soon as they are made. Where possible, candidates should put their observations and calculations in a suitable table drawn in advance.*
- *An account of the method of carrying out the experiment is not required.*
- *Squared papers are provided*
- *Mathematical tables and silent non-programmable.*
- *Calculators may be used.*

1. In this experiment, you will determine the average base area, **A** of the plastic Rwenzori water bottle provided. (30marks)



(a) Tie a piece of thread/ Rubber band at a distance a = 11.5cm from the base of the bottle as shown in figure 1 above.

(b) Measure a volume, V = 40cm^3 of coloured water and pour it into the bottle.

(c) Measure the height, **h** of the air column between the water surface and the thread.

(d) Repeat procedures (b) and (c) for values of V = 80, 120, 180, 240 and 300cm^3.

(e) Tabulate your results in a suitable table including values of;

$$1/V \; and \; \frac{1}{(a-h)}$$

(f) Plot a graph of $1/v \; against \; \frac{1}{(a-h)}$

(g) Find the slope, λ of the graph.

(h) Determine the average base area, A of the plastic bottle from the expression.

$$A = \frac{1}{\lambda}$$

2. In this experiment, you will determine the rate of cooling, **R**, of a body. (30marks)

(a) Place a thermometer in a container of boiling water.

(b) Read and record the steady temperature, $\mathbf{T_o}$ of the water.

(c) Remove the thermometer and immediately start the stop clock.

(d) While holding the thermometer in air, record the temperature reading, **T** of the thermometer at every time, **t** = 0.5 minutes for 5 minutes.

(e) Record the results in a suitable table.

(f) Plot a graph of **T** against **t**.

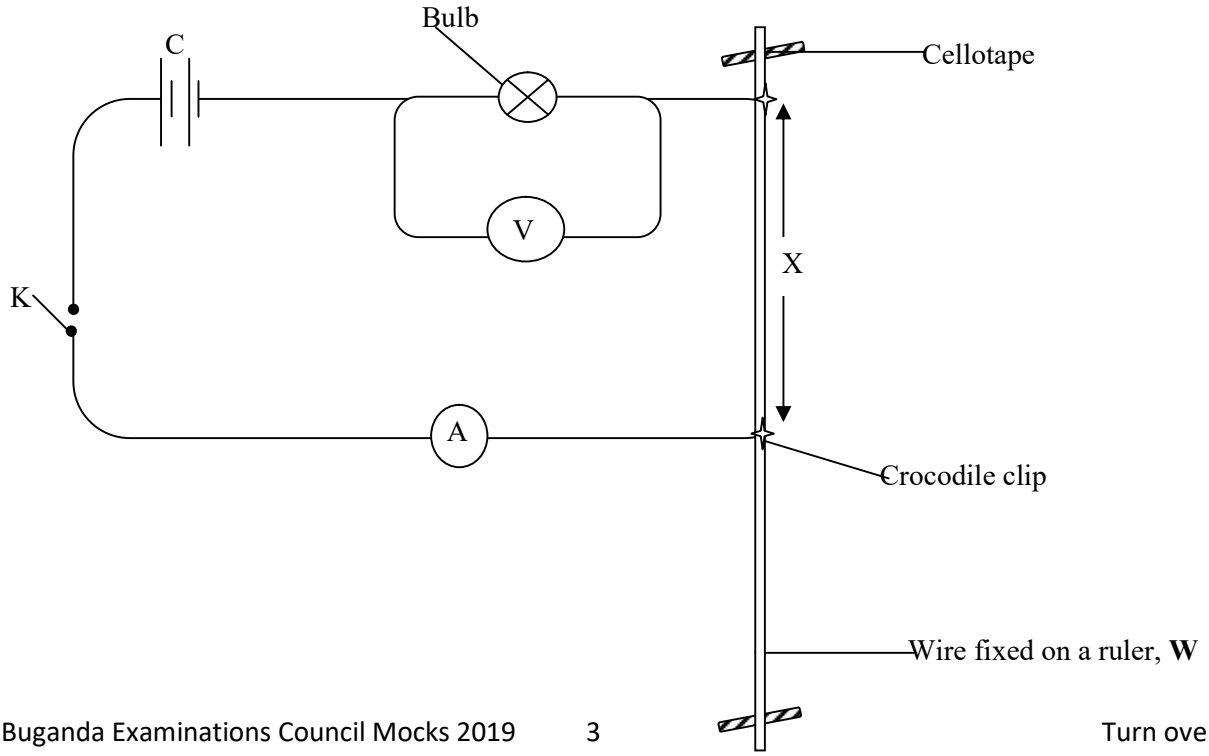
(g) Determine the time, t_1 taken for the temperature to fall from,
T = 45°C to **T** = 30.0°C.

(h) Calculate the rate of cooling, R, from

$$R = \frac{-15}{t_1}$$

Items:
- Source of heat (Boiling water)
- Stop clock (Digital watch)
- Thermometer

3. In this experiment, you will determine the constant, σ of the bulb provided. (30marks)



(a) Connect the circuit as shown in figure above.

(b) Set X = 20.0cm, read and record values **I** and **V**.

(c) Repeat procedure (b) for values of x = 30.0, 40.0, 45.0, 50.0 and 60.0cm.

(d) Dismantle the set up.

(e) Tabulate your results in a suitable table.

(f) Plot a graph of $Log_{10}I$ against $log_{10}V$.

(g) Determine the slope, η, of the graph.

(h) Read and record the intercept C on the long I-axis.

(i) Find the value of δ from $\delta = 10c$

(j) State two precautions to ensure accuracy

END