535/2
PHYSICS
PRACTICAL
Paper 2
July/Aug. 2024
2 hours

HOIMA DIOCESE EXAMINATIONS BOARD

UCE Mock Examination, 2024

PHYSICS PRACTICAL

Paper 2

2 hours

INSTRUCTIONS TO CANDIDATES:

This paper consists of **two** *examination items.*

Respond to **one** *item in all.*

Any additional item responded to will **not** *be scored.*

For each item, candidates are required to select suitable apparatus from the apparatus provided.

You are **not** *allowed to start working with the apparatus for the* **first quarter** *of an hour. This time is to enable you read through the items thoroughly, checking the apparatus you need and prepare appropriately.*

Graph papers are provided.

Mathematical tables and silent non-programmable calculators may be used.

Item 1

A paint-manufacturing industry uses a special liquid, ***L***, as one of the ingredients. For quality paint to be produced, the liquid used must have a density between 800 kg m^{-3} and 1200 kg m^{-3}. The industry bought a liquid for use to make paint but the liquid was suspected not be of the right density. The quality control officer of the industry is not available to analyse the liquid. You have been given a sample of the liquid.

Task

Using the knowledge of Physics, carry out a scientific investigation on liquid ***L*** to determine if it can be used to produce quality paint.

Guiding diagram

You can use the diagram shown in **Figure 1** or a different one of your choice.

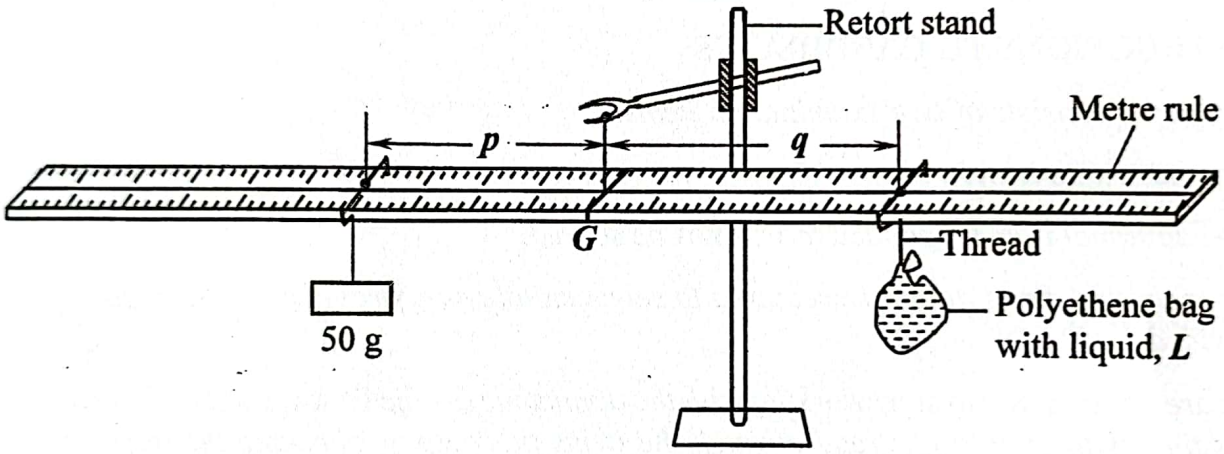

Fig. 1

Hint:

The principle of moments from which the formula $F_1 \times d_1 = F_2 \times d_2$ is obtained may be useful; where:

F_1 and F_2 are forces due to 50 g mass and mass of the liquid, ***L*** respectively and;

p and q are balance distances of the 50 g mass and liquid ***L*** respectively from the centre of gravity of the metre rule.

Item 2

A technician repairing a radio discovers that a resistor of resistance 2 Ω has been damaged due to short circuit. He wants to replace the damaged resistor so that the radio is able to work again. The technician works on the cause of short circuit. The technician checks in his box of resistors to look for such a resistor. He lands on a resistor but the value of resistance on its label is not clearly seen. He is therefore, not sure whether it is the right resistor to use or not. You are provided with a resistor, *X*, which the technician found in the box.

Task

Using the knowledge of Physics, carry out an investigation on the resistor, *X*, and advise the technician whether it should be used in a radio or not.

Guiding diagram

You may use the diagram shown in **Figure 2** or come up with another one of your choice.

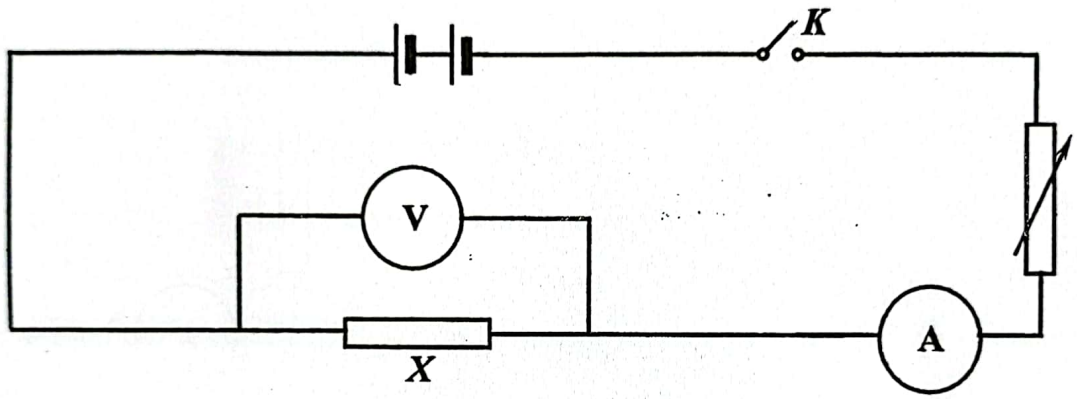

Fig. 2

Hint

Ohm's law may be useful to you and states that: the current flowing through a conductor is directly proportional to the potential difference across its ends provided temperature and other physical factors are constant. The formula $V = IR$ may also be of help.

END