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

UGANDA TEACHERS' EXAMINATIONS SCHEME

Uganda Certificate of Education

JOINT MOCK EXAMINATIONS

PHYSICS PRACTICAL
Paper 2

2 hours

INSTRUCTIONS TO CANDIDATES

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

Answer **one** *item in all.*

Any additional items answered will **not** *be scored.*

Candidates are **not** *allowed to start working with the apparatus for the* **first quarter of an hour**. *This time is to enable candidates to read the items thoroughly. Check for all the apparatus needed and plan appropriately.*

A graph paper will be provided.

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

Turn Over

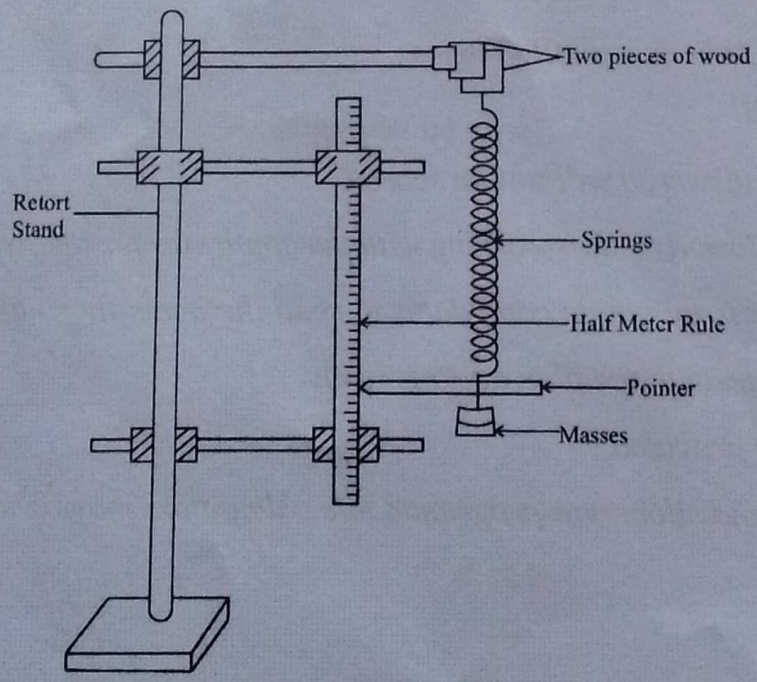
ITEM ONE

During a S.3 Physics Class, a teacher organised the students into 10 groups, each given a specific project. One group was instructed to fabricate two spring balances with a force constant of $20Nm^{-1}$. To fund the project, the students pooled 2800 shillings under the leader of their group. However, upon acquiring the materials, a member expressed concern about the stiffness of the obtained spring. There was lack of specifications on force constant and it was the last one available.

Your task is to conduct a scientific investigation using the provided spring, which mirrors the properties of the springs purchased by the group and find its force constant.

Hint

Experimental Set up



Use the experiment expression
$M = (100k)e$ where e is the extension of the spring.
M is the mass in grams and K is the force constant.

Other experimental setup may be used.

ITEM TWO

A man from a certain village in Uganda went to town to procure glass windows each measuring 2.5m by 3.0 metres with a specified refractive index of 1.5 as per his engineer's instructions. Upon visiting a shop, he encountered glass windows sized at 6.5cm by 12.0cm as their smallest offering. Having the same refractive index, priced at 4000 shillings per piece the man is uncertain whether these glass windows align with his requirements and lacks the means to verify their suitability.

TASK

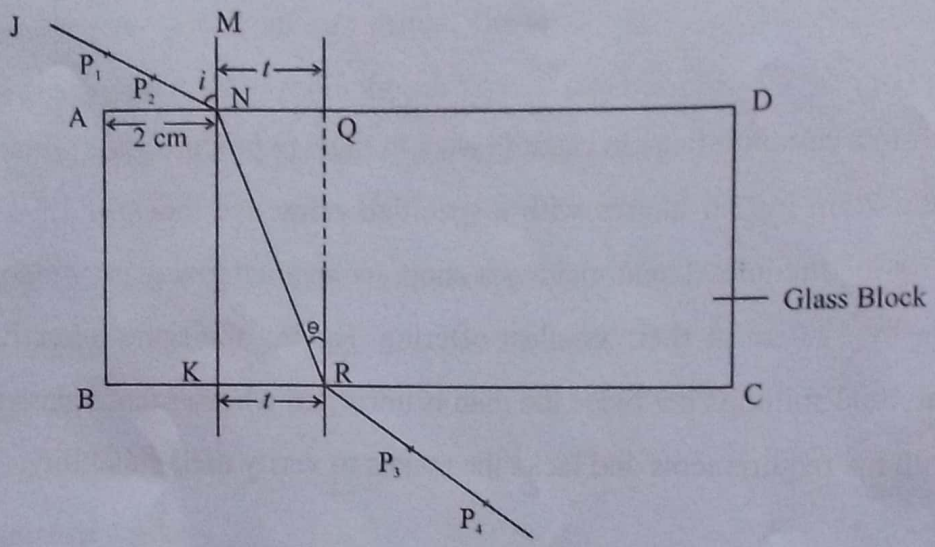
Given a glass block with identical properties to desired glass windows. Conduct a scientific investigation as a student of physics.

Advise the man on whether to purchase the glass windows from the shop and determine the total cost for all glass windows if the installation cost per window is 20,000 shillings.

Turn Over

Hint

Experimental set up



Where $\overline{NQ} = t$ and $\overline{NR} = y$

Any other experimental set up may be used.

END