P535/2

Physics

Paper 2 (Practical)

April/May 2024

2 Hours

MEBU EXAMINATIONS CONSULT

UGANDA LOWER SECONDARY CERTIFICATE OF EDUCATION

END OF TERM 1 ASSESSMENT 2024

S.4 PHYSICS

PAPER 2 (PRACTICAL)

2 HOURS

INSTRUCTIONS TO CANDIDATES

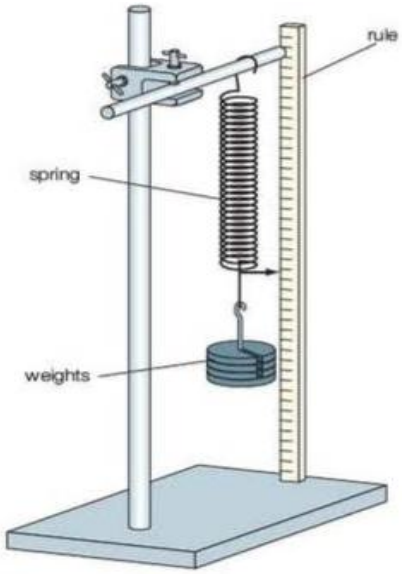
- ✓ This paper consists of **only two** (**2**) scenario-based items carrying equal marks.
- ✓ You are required to attempt any **one** (**1**) question. Any additional question(s) attempted shall not be scored.
- ✓ Candidates are **not** allowed to start working with the apparatus for the **first quarter of an hour**. This time is to enable candidates; read the items thoroughly, checking for the apparatus they will need and plan appropriately.
- ✓ A graph paper shall be provided for data representation.
- ✓ Silent non-programmable scientific calculators may be used.
- ✓ You may lose marks if you do not show your working or if you do not use appropriate S.I units.
- ✓ Poor handwriting and untidy work shall lead to loss of marks.
- ✓ At the end of the examination, fasten all your work securely together.

Item 1.

According to the information provided by the Uganda National Examinations Board (UNEB) in a given year, schools were required to provide each learner with a helical spring of force constant **20 Nm^{-1}**. A certain Head teacher at Ndeeba Senior Secondary School, without consulting the concerned teacher, went and bought some springs from a certain laboratory-equipment supplier in the nearby town.

On returning with the springs, he called the concerned teacher to heck them, but the teacher doubted their force constant(s). However, when the teacher was moving out to get the other materials that were required, he picked one of the springs and gave it to a learner to find its force constant.

Experimental Setup



Task:

As a Physics learner, carryout an investigation to determine whether the force constant of the springs provided was **20 Nm^{-1}**.

Hint:

The period, **T** is related to the mass, **M** by the equation; $\boldsymbol{T = \left(\frac{4\pi^2}{K}\right) M.}$

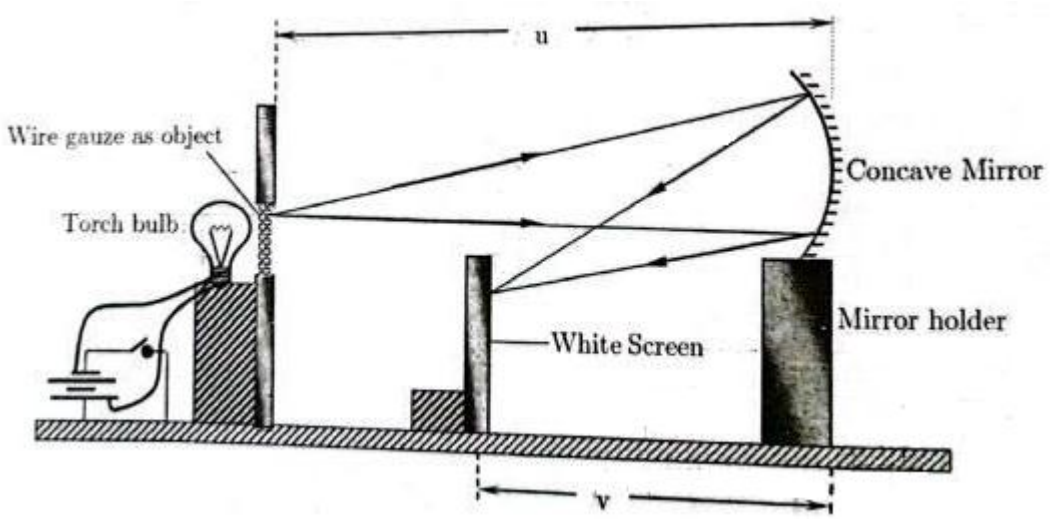
Item 2.

Last week, Muwonge visited his elder brother, whom he found using a concave mirror as a shaving mirror. To his amazement, his image in the mirror was bigger. When he returns home, he decided to buy a concave mirror and use it as his shaving mirror, instead of a plane mirror.

The following day, He went to a mirror shop, whose attendants asked him for the focal length of the concave mirror he wanted to buy but he could not specify it. After asking him the purpose for which he wanted the concave mirror, it was recommended that he buys concave mirror of focal length **10 cm**.

Unfortunately, the available concave mirrors we are not labelled with their focal lengths. However, one of these concave mirrors had been packed together with an unlabelled smaller concave mirror of the same focal length. Since the shop attendants wanted to serve their client, they were determined to find the focal length of one of the mirrors, but did not have sufficient knowledge to do so.

Experimental set-up



Task:

As a Physics learner, carry out a scientific investigation to determine the focal length of the sample concave mirror.

Hint:

The object distance, **u**, image distance, **v,** and focal length, **f**, are related using the expression; $(\mathbf{u}+\mathbf{v}) = \mathbf{f}(\mathbf{uv})$.

*****THE END*****