NAME: ……..……STREAM: ……

SIGNATURE: ……..……. DATE: ……..…….

535/2

PHYSICS

PAPER 2

2024

2HOURS

UGANDA CERTIFICATE OF EDUCATION

RESOURCEFUL PAPER

PHYSICS PRACTICAL

2HOURS

INSTRUCTIONS TO CANDIDATES

- *This paper consists of two (2) items.*
- *Respond to one (1) item only.*
- *Any additional item responded to will **NOT** be scored.*
- *Candidates are not allowed to start working with the apparatus foe the first quarter of an hour. This time is to enable candidates; read the items properly checking for the apparatus they will need and plan accordingly.*
- *A graph paper will be provided.*
- *Scientific calculators, long transparent rulers and mathematical sets may be used.*

Item one (1)

Umbrellas are used in both rainy and sunny weather, to protect people from rainfall and sunshine. A learner leaves home and carries an umbrella while going to school in the morning. Soon it starts raining, the learner uses the umbrella to protect the body from rain.

Unfortunately, strong wind starts blowing and damages the umbrella. The learner struggled and reached school. At the end of the day, the learner returns home with the damaged umbrella and explains to the father what happened. The father being concerned takes the damaged umbrella to a nearly mechanic for repair. On checking, the mechanic discovered that the steel spring in the umbrella of force constant $20Nm^{-1}$ was damaged. The father asked the mechanic to replace the damaged steel spring with another of the same force constant, but the only available steel spring had no specification.

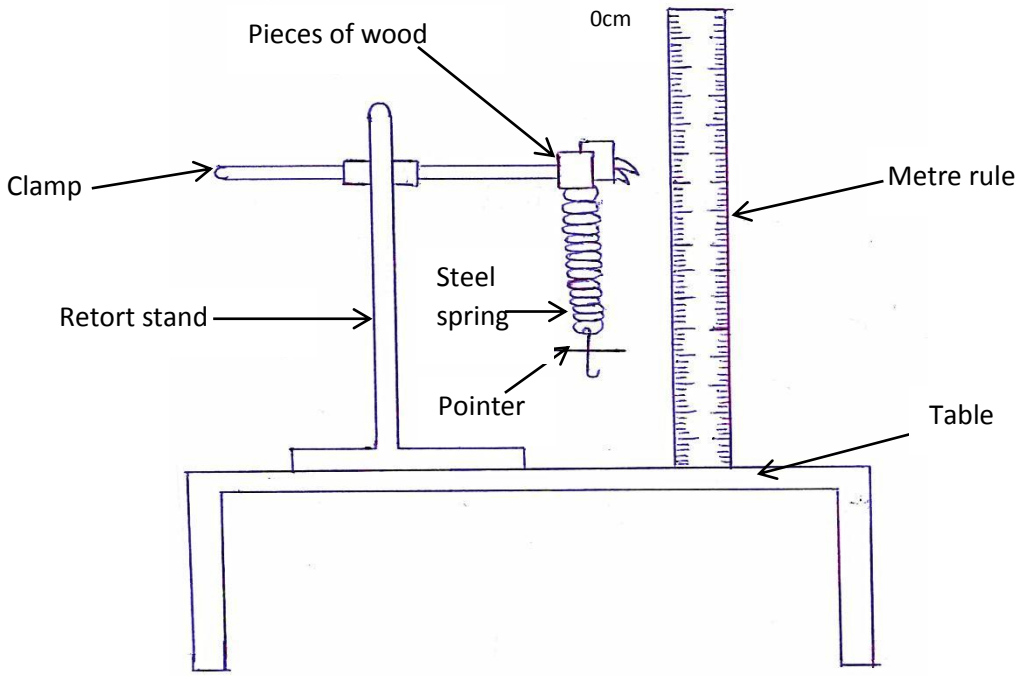

Fig.1

Task one (1)

As physics learner and using the set up in figure one, carryout a scientific investigation to determine the specification of the steel spring, so as to help the mechanic fix the damaged umbrella.

Hint

The mass, M is related to the extension by the equation; $M = (0.105K)\, e$.

Item two (2)

In one of the schools, in preparation for the end of cycle Physics practical assessment, the laboratory technician discovered that the two ohm (2.0Ω) resistors were among the other missing apparatus.

The laboratory technician immediately contacted the Head of Department Physics who in turn went to the Headteacher and made a requisition for the 2.0Ω resistors and some other apparatus.

The headteacher honoured the requisition and asked the head of Department Physics to pick money from the Bursar's Office and do the needful. The head of department Physics after picking the money gave it to the laboratory technician who moved to one of the laboratory supplier in town, then bought the resistors plus other apparatus required. The apparatus and the resistors were packed in a big box and sealed for safer transportation to school.

On reaching the school, the laboratory technician opened the box to verify the apparatus and the resisters but to his surprise, all he resistors were not labeled.

This annoyed the laboratory technician and was worried of failing the learners and what to tell the Head of Department Physics. The laboratory technician picks one of the resistors and wants to identify its value but would not do so at that time.

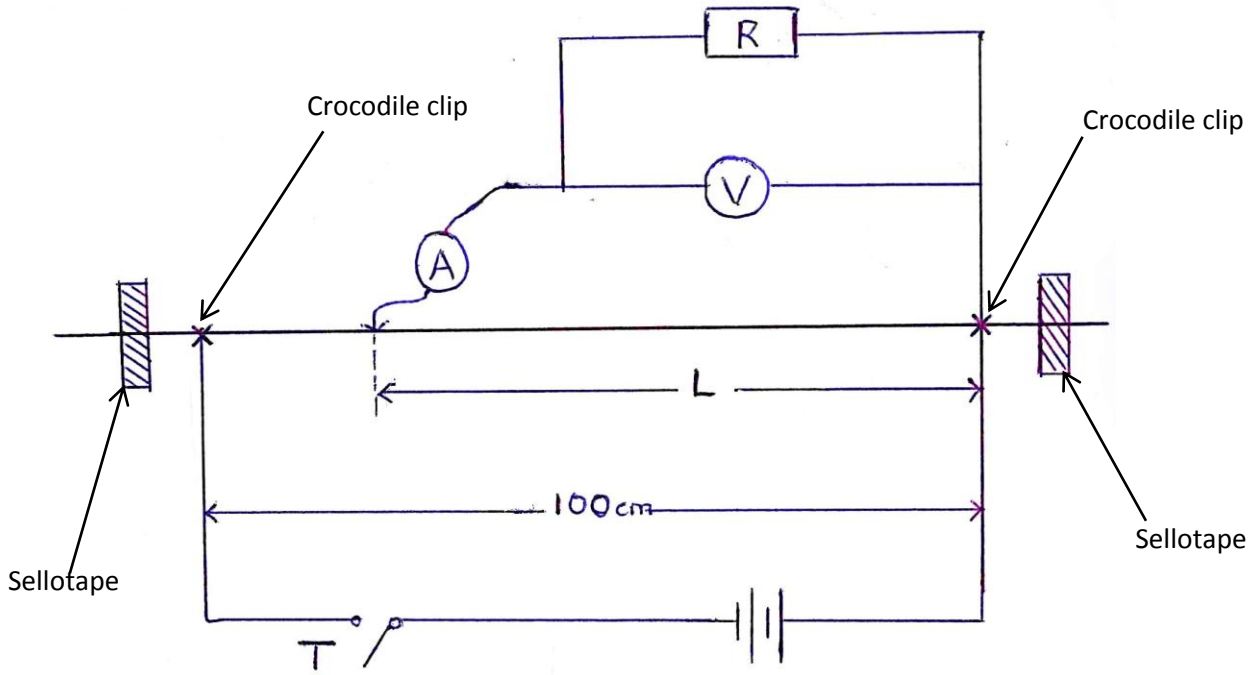

Fig 2.

Task two (2)

As a learner of physics using the set up in figure 2, carry out a scientific investigation to help the laboratory technician identify the value of the resistor.

Hint

V=RI

END