535/1

PHYSICS

Paper 1

2024

$2\frac{1}{4}$ hours

KING SOLOMON'S COLLEGE, KYATEGA

SENIOR THREE BEGINNING OF TERM TWO EXAMINATIONS

Uganda Certificate of Education

PHYSICS

Theory

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of two sections: A and B it has five examination items.

Section **A** has **two** compulsory items.

Section **B** has **two** parts: **I** and **II**. Answer **one** item from **each** part.

Answer **four** items in all.

Any additional item (s) answered will not be scored.

All answers **must** be written in the booklets provided.

SECTION A:

It contains two compulsory items

Item 1:

In an experiment carried out by a S.4 student to verify Hooke's law, a force of 50 N was used on a spring of length 10 m with radius 0.64 mm. When a student suspended the 50 N at the end of the spring, the spring extended by 2 cm downwards.

In a certain nursery school, pupils are encouraged to play with one another during break and lunch time to avoid home fever. Two pupils then went to swing on a wooden see-saw of 4.0 m long pivoted at its center at children's playing ground. A pupil of mass 32 kg sat at a distance 1.6 m from the pivot point and another pupil of mass 40 kg sat at a distance of 0.5 m from the other end of the see-saw.

Kyegegwa being a new district, the government of Uganda has just completed constructing the district headquarters. The structure of the district headquarter is a storage building. During the construction process, helpers and building found difficulties to transport the building materials to the second floor because of their heights.

Tasks:

As a physics learner;

(i) Support your fellow student understand how much **tensile stress** and **strain** developed in the spring. (**6 scores**)

(ii) Determine if the see-saw was at balance. (**4 scores**)

(iii) Imagine you were the site engineer, what other two options did you use that made your workers complete the building construction of the headquarter yet their heights could not them reach greater heights? (**2 scores**)

Item 2:

During a science project, learners are given two devices ,a pinhole camera of lengths 50 cm and a plane mirror of uniform shape of length 100 cm by 50 cm.

Task:

(i) As a physics learner, help a student determine which instrument forms a bigger image of man of height 1.6 m standing 2 m away from each device and explain what would happen if the size of the pin hole was enlarged **(8 scores).**

(ii) As a senior three learner, where can you apply the knoweledge of plane mirror in your life. (**4 scores**)

SECTION B:

PART I

Attempt one item

Item 3:

a) In a certain village, a boy went out to pick some avocado fruits from their farm yard. On reaching the farm yard, the boy climbed the avocado tree with his bag on his back such that he could pick them very fast and put them in his bag directly without throwing them down. As he was picking the avocados, one avocado slipped off his hand and felt down to the ground.

Your school hosted district workshop on a topic "CLEAN ENERGY". You attended the work shop and during the work shop one of the speakers spoke about renewable and non-renewable energy.

Tasks:

(i) Help the boy know the energy transformation that was possessed by the avocado when it left the boy's hand until it reached the ground. (**3 scores**)

(ii) Write a report to your head of physics department stating clearly the meanings of renewable and non-renewable energy. Also include in your report two examples in each case. (**3 scores**)

b) On a Valentine Day 14th February, 2024, a man in a certain village bought his lovely wife a very nice pair of leather shoes that made her applauded her husband. One month later of using the shoes on rough surfaces, the wife realized that the soles of

her shoes were wearing out. This brought complaints that her husband did not buy her quality shoes.

Tasks:

Imagine you were present at the time of incident; explain to the wife the **cause** of her shoes wearing out. What are the advantages of this **cause** in our daily life and how can you reduce it. (**4 scores**)

SECTION B: PART II

Attempt one item

Item 4:

In your village, among the playmates you grew up with, you are the luckiest one that reached secondary school level. During holidays, you happened to speak to them that you learned about a topic called Magnetism in Physics while at school. This news arose interests of your playmates to understand about this strange thing call magnet. They then asked you to help them make some magnet so that they also see how magnets work.

Task:

As a senior four student who learned about Magnetism, help your playmates on the different methods they can use to produce their own magnets in their history despite their levels of education. **(6 scores)**

Item 5:

The community members of Kyatega village in Kyegegwa district in Western Uganda have a myth that people are killed by lightning in the village is caused by bad fortunes from their ancestors or wicked people in the village. This has caused fear to the village members always. **(6 scores)**

Task:

As a physics student who learned about electrostatics, educate the community on how lightening occurs and ways they can safely guard from the lightening.