END OF TERM ONE ASSESSMENT
SENIOR FIVE
PHYSICS TWO
$1\frac{1}{2}$ HOURS

INSTRUCTIONS:

- ***Answer ALL items.***

OPTICS

Item One:

a) In real life situations, substances like wood or bricks allow no light to pass through them and they are called opaque substances. Unlike an opaque object which is perfectly black, some of the light falling on it is reflected.

When the reflected light enters our eyes, it produces the sensation of vision provided it has not been blocked by an opaque object where it is cut off from the observer a process called rectilinear propagation of light.

Task.

As a learner of Physics;

i) State and explain the types of reflected light received from the opaque object that cause the sensation of vision.
ii) Explain how the rectilinear propagation of light can be verified.

b) Two students of S5 class known by the names Musa and Alex started an argument when they tried to view their images using a small vertical lane mirror of height 50cm Musa was wondering whether Alex could be able to view the whole of himself through the mirror which Alex confirmed true yet he was taller than the mirror. Later on, Musa placed the plane mirror horizontally with its reflecting surface facing upwards and he was able to see the image of the roof of the science block. Alex tried to turn the mirror about a fixed point in an anticlockwise direction towards Musa's side from where he was observing.

During the process, the image was cut off from Musa. They could all not believe until when Musa moved through **30^0** anticlockwise to see the image again.

Task

As a learner of physics,

i) Identify the nature of the images as seen by both Musa and Alex through the mirror
ii) Explain how Alex was able to convince Musa that he could see the whole of himself through the mirror.
iii) Help Musa to know Alex's height.
iv) Explain why the image of the roof of the science block was cut off from Musa and determine the angle through which the mirror was turned to achieve this.
v) Explain one application of the phenomenon in **b(iv)** above.

ELECTROSTATICS

Item Two:

On a prom party day early in the morning, a s.6 girl observed a unique phenomena as she was combing her hair using a plastic comb.

As she combs her hair with a plastic comb, she notices her hair stands upright, and the comb attracts small pieces of paper when placed on a table with scattered small pieces of paper. Later on during the day it started raining and the music system was disrupted by the lightning and thunder storms which damaged the speakers, amplifiers and the power installation only in the block of building where the party was taking place from, leaving other building blocks with lightning conductors on top unaffected. The students were left confused and wondering and attributed the incident to witchcraft targeting their part.

Task;

As a learner of physics help the girl and the students to;

a) Describe why the comb attracted small pieces of paper.
b) Explain why girl's hair stands upright when combed and suggest a way to prevent the comb from attracting small pieces of paper.
c) What causes lightning and show how the buildings were able to be protected from the lightning effects**.**

END