**PHYSICS PAPER**

**April, 2024**

**21/2 hours**

**END OF TERM ONE EXAMINATION-2024**

SENIOR FOUR

PHYSICS PAPER

ONE

**2 : 30 MINUTES**

**INSTRUCTIONS:**

1 Attempt any four items in this paper

2 All items carry equal marks

ITEM ONE

Anna and Joseph got married from church and they are supposed to go to the reception where the party is going to be. If there vehicle started moving from church with a uniform acceleration until it attained a velocity of 30m/s in 20s and then maintained the same velocity for 120 s, then it came to rest at the reception in 15 s. As the party was going on, a mango fell down from a tree at a height of 12m above the ground.

Task,

(a) Represent there journey from church to the reception on velocity - time graph.

(b) How far is the church from the reception

(c) If the mass of the mango was 2kg, Obtain the potential and kinetic energy possessed by the mango . (15 marks)

ITEM TWO

It was starting to rain one day and all the sudden the house of a certain citizen in one village was set on fire by natural disaster and it started burning, immediately after a lound sound was hard by the neighbours and this left very many wondering what caused the house to burn. Others were calming that it's an act of Witchcraft. While in the some neighborhood John's mother refused him from moving out of the house anyhow so he decided to remain inside the house, so he picked two items one which was made out of rubber and the other made out of steel. He wanted to check which item could help him connect the battery to bulb and the bulb lights.

Task

(a) Explain what caused the above natural occurrence to took place.

(b) Describe with diagram how the citizens can control their houses from being destroyed by such natural occurrences.

(c) Which of the two items would make the bulb to light and why?

(d) With diagram Explain charge distribution in uniform conductor and pointed conductor. (15 marks).

ITEM THREE

Joan and her young sister were cleaning their swimming pool, the young sister saw that the swimming pool was very shallow and decided to jump in but only to find out that it was deeper. Joan rushed and saved her and asked why she jumped in, the young sister told her that the pool looked very shallow and started wondering why but Joan also didn't know very well why the pool looked very shallow when seen from above. Later that day the young sister opened Joan's book at home and found this question. A ray of light traveling through air strikes a glass at an angle of 45 degrees. Find the angle of Refraction and angle of Deviation but it wasn't answered . Joan also calmed that she's doing research on how the question is to be answered.

Task

(a) Help Joan explain to her young sister why the pool looked very shallow?

(b) Explain to her the meaning of apparent depth and real depth.

(c) Obtain the solution to the question in her book. (15 marks)

ITEM FOUR

Ian is a s.4 student at NACOS, their class had organized prom party at school . As he was going to school around midday he wasn't able to hear any music until when he reached the school compound, then later at night his friends also came to join him and they told him that the where hearing the music from very far as they were coming and this made him wonder why? The next day he went to the physics laboratory and tried out a certain experiment where he partially immersed a tube in water and sounded a turning fork of frequency 425Hz above it, He gradually raised the tube until the first resonance occured. He continued until the second resonance. But his work wasn't organized.

Task

(a) Explain to Joan why he wasn't able to hear the music as he was coming compared to his friends.

(b) Help him to clearly describe the experiment he was trying out. ( Experiment to determine the speed of sound using resonance tube).

(c) If the speed of sound is 340m/s and the end correction is neglected, find the length of the tube for which the first resonance occured. (15 marks).

ITEM FIVE

In Abamu Hospital there is shortage of thermometers used to measure the temperature of patients since most of them are very old and the scale or marking are not easily seen anymore, thought the liquid in is still very okay. Amina went to visit her grandmother and on reaching she was told that the grandmother had gone to the hospital for medical check up. Since she wanted to see her very much Amina decided to go to the hospital and found the grandmother still waiting to be checked and when she tried to ask why it's taking long for patients to be checked they told her of the above problem.

Task

As a student of physics,

(a) Help Amina come up with a better solution that should be done to this old thermometers and describe all the procedure needed to make these old thermometers important again?

(b) State the name and any three reasons why this liquid is used in thermometers than water.

(c) On measuring the temperature of grandmother, the thermometer reading was 28 degrees Celsius. What will be the reading on the Fahrenheit scale? (15 marks)

**END**