P535/1

Physics

Paper 1 (Theory)

April/May 2024

$2\frac{1}{2}$ Hours

MEBU EXAMINATIONS CONSULT

UGANDA LOWER SECONDARY CERTIFICATE OF EDUCATION

END OF TERM 1 ASSESSMENT 2024

PHYSICS

PAPER 1 (THEORY)

SENIOR TWO

2 Hours

INSTRUCTIONS TO CANDIDATES

This paper consists of **seven** (7) scenario-based items carrying equal marks with **two** sections **A** and **B**. Section **A** consists of only **three** (3) compulsory items.

Section **B** has **two** parts **I** and **II**, each containing **two** (2) items.

You are required to attempt any **one** (1) question from each part of section **B**. Any additional question(s) attempted shall not be marked.

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.

Where necessary, assume;

- Acceleration due to gravity, g = 10 ms^{-2}
- Density of water = 1000 kgm^{-3}

- Specific heat capacity of water = 4200 $Jkg^{-1}K^{-1}$
- Speed of light in vacuum , C = 3.0 x 10^8 ms^{-1}

Section A: (Compulsory)

Item 1

The school welfare department is facing a challenge of rain affecting their catering activities due to lack of a kitchen. The school is planning to construct a modern kitchen, which can save energy and reduce on the temperature inside.

Task

You are appointed as the head of construction committee for this kitchen, conduct a survey and compile a report you will present to the school welfare department showing the kind of cooking utensils required, how to paint the walls to reduce heat inside and outside the kitchen and how to manage air exchange inside the kitchen. (**20 scores**)

Item 2

At a construction site, Mbwali Milly was tasked to carry bricks from where they were to the masons. The task was tiresome. She applied a lot of energy and would carry a few bricks a day. She asked the foreman for a wheelbarrow. Soon, she had to take the bricks up the building. This time, she asked for a plank of wood which she used to make an inclined plane. But she would be tired by noon! So, the foreman suggested that she makes a single machine that would move the bricks up vertically.

When the foreman looked in the vicinity, he realised that there was a motorcycle wheel, long ropes, straight poles, tall enough to reach the position where the bricks were to be put, and a large hemispherical pan.

Tasks

(a) Make a brief explanation why and how each machine was able to simplify work.(**08 scores**)

(b) Show how Milly could assemble the items to come up with a simple machine and how she would use it to lift the building materials up to the floor in the shortest time possible. (**12 scores**)

Item 3

During preparation for the function or party at your school, two decorators disagreed on the right position to hang the balloons. One preferred the balloons to be placed in direct sunshine. However, the other insisted that they should be inside the tent.

Task

As a Physics Learner, write an advisory message, with reasons, indicating the place where the balloons should be placed. (**20 scores**)

SECTION B: (ATTEMPT ANY ONE QUESTION FROM EACH PART)

PART I

ITEM 4

A certain family stays near the marram road and a school. Every day, the family receives dust raised by moving vehicles from the road and the bad smell from the school pit latrines. In the morning hours, the dust is not so much and the smell from the pit latrine is not so much either. These conditions worsen around midday on hot sunny days. The family is disgusted by these conditions. They do not know the cause of these conditions. As a Physics student, write a message to this family explaining what **causes** the above conditions and **possible ways** of solving the above problem. (**20 scores**)

Item 5

There has been an outbreak of malaria in your community and your friend is admitted in hospital. You have been delivering a warm meal; however, you are required to deliver a hot meal for her in the hospital.

Without using a food flask, how would you ensure that the food you have prepared remains hot until you reach the hospital? (**20 scores**)

Part II

Item 6

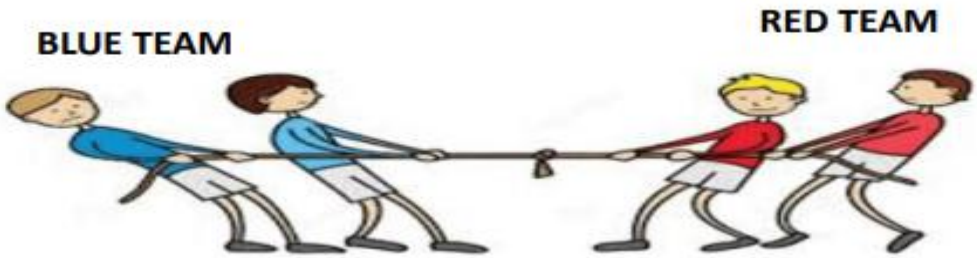
A one-day old chicks are vulnerable to extreme temperatures. Patience is rearing chicken on a commercial scale and she has bought **1000** one-day chicks.

(a) Suggest possible causes of extreme coldness and hotness in the chicken house.(**12 scores**)

(b) Explain what Patience should do to regulate the temperature in the chicken house.(**08 scores**)

Item 7

You all have experienced a force in some way. Forces play a role in everything that we do. It may be kicking a ball, playing games and others. **BLUE** team and **RED** team are playing a tag of war. If each person in the blue team pulls the flag with a force of **200N** and each person in the red team pulls the flag with force of **100N**.



Task

By showing your working, which team do you think will win the game? In addition, how many people should be added to the losing team to match the strength of the winning team?
(**20 scores**)

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