

535/1

PHYSICS

Paper 1

2024

2 hrs.30mins

Uganda Certificate of Education

PHYSICS

Paper 1

Theory

2 HOURS: 30 MINS

INSTRUCTIONS TO CANDIDATES:

- The paper consists of **seven** examination items. It has two section **A** and section **B**
- Section A has **three** compulsory items.
- Section B has two parts: I and II. Answer **one** item from each part.
- Answer **five** items in all.
- Answers must be written in the booklet(s) provided.

SECTION A

Answer **all** items from this section

Item 1

There is a parent project in your school to construct two rectangular pit latrines. One at the girls 'wing and another at the staff quarter's wing. However, the Board of Governors and the school administration have failed to agree on the choice of materials to use in construction.

TASK

Using the knowledge and skills learnt in 'mechanical properties of materials'
Suggest the choice of materials you would advise the school board to use in the construction of the latrines

Item 2

Your uncle operates one of the largest supermarkets in Hoima city. However, he has been having some challenges especially theft of his goods in his supermarket.

TASK

Using the knowledge of reflection of light, what advice would you offer him to overcome such losses due to theft of his goods?

Item 3

A farmer in kamonkoli village went to the nearby trading center to buy 100kg of chick's food. Reaching home, he discovered that in the chick's food he bought there were small pieces of metal which were unsafe to be eaten by his chicks. Late on he identified the small metal as iron. As he was thinking of what to do, his son Mukisa arrived from school and asked him not to worry because their physics facilitator had taught them about Magnetism where they used the magnets to remove metal things from the ash at school. The parent wondered! How it will work.



TASK

- How would help the farmer to remove the pieces of iron
- Comment on the effectiveness of what you have designed, given that current of 4A is enough to create a strong Magnet?

SECTION B

PART I

Answer **one** item from this part.

Item 4

A heap of weed of mass 3 Tones is moving towards the turbines at the Jinja power station. A group of engineers needs to use a machine operating at 20 KW for five minutes to remove the weed from the river and place it at the bank which is 15 M above the river.

- a) Determine the efficiency of the machine.
- b) Comment on the efficiency of the machine.

Item 5

On a hot day, a student dropped three ice cubes at $-6\text{ }^{\circ}\text{C}$ in a jug of water at room temperature. If the final temperature of the mixture after all the ice has melted was $16\text{ }^{\circ}\text{C}$

- a) Sketch a temperature-time graph for the ice.
- b) Describe the key features of your graph in (i) above.

Part II

Answer **one** item from this part.

Item 6

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. But these conditions worsen around midday on hot sunny days. The family is disgusted by these conditions. They don't know the cause of these conditions.

TASK

- a) As a physics learner, what would be the causes of the above conditions?
- b) Evaluate the possible ways of solving the above problem in the scenario?

Item 7

In a certain country, a Television reporter was reporting live near the ocean about the high tides during night time. Viewers in another country were watching the live broadcast of the news bulletin during day time. The viewers wondered how it could be day and night at the same time, and how the event in one country could be watched live on TV in another country.

TASK

As physics learner, how would to help the viewers to understand;

- (a) The possibility of it being day in one place and night in another place.
- (b) The occurrence of High Ocean tides.
- (c) How an event in one place can be broadcast live in another country.