

PHYSICS QUESTIONS NEW CURRICULUM BASED THEORY PAPER ONE 2026

2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES:

This paper consists of two sections; A and B It has seven examination items.

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.

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

All answers must be written in the booklets provided.

Section A

Item 1.

On November 7th 2022, Uganda launched its first satellite named pearl of Africa sat-1 into space with the help of National Aeronautics and space Administration (NASA). The purpose of the mission was to study weather patterns. Students of physics were availed with data collected over a certain period of time and they noticed the following while some places were having day time, other places were having night time and various places were having different seasons.

Task:

As a learner of physics

- (a) Explain why at some places it was daytime while night time at other places.
- (b) Explain why different places had different seasons and the satellites are used to predict weather patterns.
- (c) How world - wide communication is made possible through satellites.

Item 2.

The new appointed MDD committee has embarked on the process of preparing for the annual school MDD competitions. They are planning the following activities; painting the hall with colours reflecting the school official colours, decorating the stage with sources of multiple colour lights, and having the hall free from echoes. Competing houses have also requested for some musical equipment that can produce good quality music such as drums, guitars among others. However, during the preparations, they only

manage to acquire a source of light that produces only red. They also wondered how they would be able to vary the sound characteristics for a good production.

Hint: the length of the hall is about 20m from wall to wall,

speed of sound in air = 330ms^{-1}

Task:

As a physics student help;

- (a) the committee understand the factors that affect the sound characteristics.
- (b) Determine whether this hall will experience echoes and advise them on what they should do to minimize echoes in the hall.
- (c) One of the competing houses has cyan dresses with yellow dots. Explain the new appearance of the dress.

Item 3.

In a certain town, people are concerned about the waste disposal from the factory into nearly lake which is their source of water for house use. They raised this issue to the Chairperson Local Council 1 (LC1) who directed the management of the factory to stop disposing waste into the lake. A scientist was contacted to investigate the presence of radioactive material in the water. The scientist found out the water was indeed radioactive as shown in the table 1.

Time/ days	0	5	10	15	20	25	30
Activity/ counts per minute	1200	740	440	260	160	90	60

Although the water from the lake remains radioactive for along time, the scientist recommended that water will be safe for use again when the activity is less than 38 count per minute.

Task:

As a student of physics;

- (a) Advise the chairperson LC1 about the time the community will wait for the water to be safe for use again.
- (b) Sensitize the members of the community about the risks associated with radioactive materials and how such materials should be handled.

Section B

Part I:

Item 4.

Several citizens have complained to the outlet suppliers about the efficiency of a certain type of a vacuum flask. They claim that liquids put in those flasks lose heat at a very fast rate. The outlet suppliers have decided to report the complaint to the manufacturers of the flasks. To prove the claims, some tests are carried out at the factory. Tests done include; the impact and heat retention tests.

Hint: for heat retention, hot water at about 95°C is filled in the flask. Its temperature should not drop below 70°C with in a period of 6 hours.

For impact strength, the flask is dropped from a height of about 2m above the ground onto a hard surface. If it does not break, then it's a good flask otherwise it's not.

Specific heat capacity of water = $4200\text{Jkg}^{-1}\text{K}^{-1}$.

Acceleration due to gravity = 10ms^{-2} .

Task:

Using your knowledge of physics help;

- (a) The citizens understand how heat losses occur and how to minimize such losses.
- (b) During the test, water at 95°C is filled in a 2 litres flask under test and 28000J of heat are lost per hour by the flask. Determine whether the flask will pass the heat retention test.
- (c) Calculate the minimum velocity at which the flask will break as it hits the ground.

Item 5.

A boy was travelling with his parents by means of water transport. He carried a ball and a phone taking selfies along the journey. On their way, water waves disturbed the boat and all he had in his hands dropped in water, however with much disappointment of losing his phone, allover a sudden, he realized the ball was still on top of water through his phone was nowhere to be seen. This scene left them wondering the magic with the ball. As they continued, they looked in the air and saw two people seated in a bucket connected to a ballon with a burning

flame carrying them in space. The boy was confused and wondered how the two men would land safely on the ground through his parents could not explain anything to him.

Take the density of water = 1000kg/m^3

Acceleration due to gravity, $g = 10\text{ms}^{-1}$

Mass of the boat = 200kg

Mass of the phone = 500g

Mass of the ball = 10g

Volume of the phone = 50cm^3

Volume of the ball = 20cm^3

Volume of the boat = 3000cm^3

Task:

As a physics learner help;

The boy understand what was happening while on the boat and how the two heavy men were carried by just a ballon with burning air.

Part II:

Item 6.

Small pieces of metal which are unsafe to be eaten by chicken were found in feeds that had just been from a milling company by a poultry farmer. The small pieces of metal were later identified as iron. The farmer thought of disposing off the feeds.

Hint; a nail, connecting wires of resistance 0.5Ω , two dry cells each of 1.5V were available to the farmer.

Task

as a student of physics help;

- a) The farmer to remove the pieces of iron from the feeds.
- b) Comment on the effectiveness of has been designed if the current of 4A is enough to create a strong magnet.

Item 7.

A certain household has a set of appliances as listed in the table below.

Appliance	Power rating	Time of use
4 bulbs	20 W	13 hours every day
Cooker	2500 W	4 hours every day
Flat iron	1500 W	5 hours each week
Electric fence of low resistance wire	2200 W	10 hours every day

The owner of the household while making a budget for how much money would be required every week to cater electricity bill. He also wondered why low resistance instead of high resistance wire is used.

Hint: the owner only intends to spend sh. 50000 on electricity every week, one unit = Shs 500.

Task

Use your knowledge of physics help the house owner;

- determine if sh. 50000 would be enough to cater for electricity bill for a week.
- understand why low-resistance wires are used for the electric fence.
- Suggest measures on how to reduce the electricity bill.

END