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PHYSICS
Theory
Paper 1
November 2024
$2\frac{1}{2}$ hours

ASK INTEGRATED TEACHER'S EXAMINATIONS BUREAU LTD

Uganda Lower Secondary Certificate of Education

END OF YEAR ASSESSMENT 2024

PHYSICS PAPER 1

SENIOR ONE

(Theory)

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

INSTRUCTIONS TO CANDIDATES:

*Answer **all** items in this paper*
All responses should written on the answer booklets provided

Item 1

In the upcoming city of Nakasongola, a group of ambitious youths has embarked on a journey to establish a modern unisex salon, thanks to a grant from the Parish Development Model. With a vision to provide exceptional service to their community, they have equipped their salon with essentials such as three big mirrors, two chairs, a bulb, shelves, and a counter. However, the challenge arises in obtaining a layout to allow customers to see multiple images of themselves simultaneously.

Task

a) Advice this youth group on how best they can arrange their mirrors in order to get multiple images of customers.

b) Determine the angle they have to incline any of the two mirrors in order for the customer to see 3 images

c) Suppose a customer is 2cm from one of the mirrors, what is the distance between him and his image? Give a reason for your answer

Items 2

In one of the clinics in the remote area lacked a thermometer for measuring patient's temperatures. They organized a fundraising to solicit funds to purchase thermometers and they managed to raise 250000 shillings. So entrusted the chairperson of the village and sent him to the nearest municipality to buy thermometers, on reaching the medical supplies shop he found there two same thermometers but one needs alcohol to work and another requires mercury to work. The mercury thermometer costs 12500 each and alcohol thermometer cost 8500. The chairperson was puzzled but decided to buy mercury thermometers however they were expensive. When the thermometers were handed to nurse, she found out that the thermometer had no values on it as she was puzzled one of community members found her in dilemma and promised her that he can mark the thermometers and she handed them to him. The man brought back thermometers with 0 mark at 4cm from bulb and 100 mark at 24cm from bulb, when he was asked to explain he couldn't. The nurse decided to insert it in the armpit of the patient and mercury rose to 14cm from bulb.

In addition the care taker of the patient could only understand temperature in kelvin and the father of patient only understands temperature in Fahrenheit.

Task

Help the nurse to understand how the thermometer was demarcated

Help the nurse to know the temperature of patient in order to guide the care taker and father

Explain why the chairperson chose the thermometer with that liquid

Item 3

The school director wants to pave a volley ball pitch measuring 500cm by 100cm. To achieve this, he intends to use pavers sized at 5cm by 4cm. However, he is puzzled because he doesn't know how many pavers he would need to cover the entire pitch.

Support

Task

a) Help the school director to know the number of pavers he will need for the entire volley ball pitch

b) If each paver costs shs 200, how much will he spend on buying the pavers for the entire volley ball pitch?

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.

Item 5

Muggaga a cattle keeper was rearing his cows in Nagadyonga forest and he come across

a piece of a glittering solid. He tried to analyze the shape of the solid and he failed to

come up with a clear shape. He picked it and took it home. On reaching there he placed it

at the dining table but her wife was not home. His wife was so happy on her return seeing

a glittering material and she called her friends to come and see the material. One of the

friends said that it is pure gold and told them that they can earn 7 million from their piece of gold. Muggaga and her wife are very happy.

Material	Density ($g\,cm^{-3}$)	Density ($kg\,m^{-3}$)
Glass	2.5	2500
Copper	8.9	8900
Gold	19.3	19300

Task:

Help Muggaga's family to prove whether the material they have is pure by writing a set of procedures they can follow on their own to test its purity.

END

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