

**UGANDA CERTIFICATE OF LOWER SECONDARY EDUCATION  
S.2 PHYSICS**

**END OF TERM TWO SET TWO**

**Paper 1**

**2 hours 15 minutes**

**NAME:** ..... **STREAM:** .....

**INSTRUCTIONS TO CANDIDATES**

- ✓ Answer all questions in this question paper.
- ✓ All answers must be written in the spaces provided.

**SECTION A**

1. During construction, an iron sheet of *relative density* 7.8 was identified to be used for roofing from Zebra steel material company limited.

**ZEBRA**  **STEEL MATERIAL**



- a) As young engineer, what do you understand by the term *relative density* of a material? **(01 score)**

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- b) Apart from identifying materials for construction, in which other field do we apply the knowledge of relative density. **(01 score)**

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- c) Since water is used as a reference substance, determine the density of the iron sheet used in construction.  
**(Density of water =  $1000\text{kgm}^{-3}$ )** **(02 scores)**

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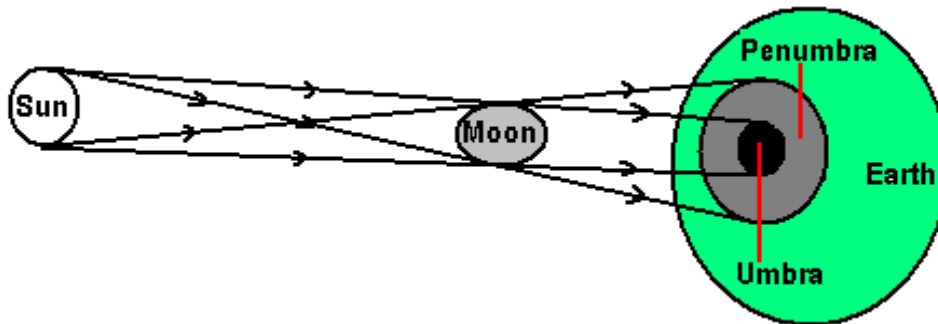
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2. The situation shown below took place in Pakwach (Northern Uganda) on 22<sup>nd</sup> May, 2021. It was witnessed by President Y. K. Museveni.



- a) As a physics student, help the president to properly classify the type of eclipse that was viewed from Pakwach. (01 score)

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- b) Help the president to distinguish between **penumbra** and **umbra** as applied in the above situation. (02 scores)

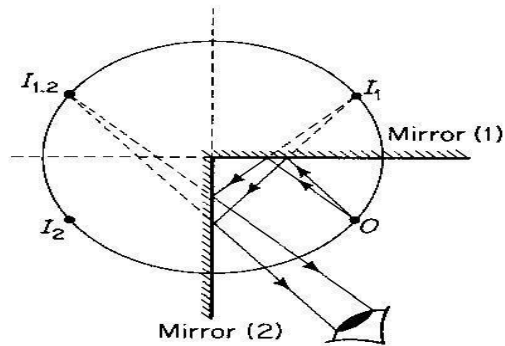
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- c) Plane mirrors in Gagamel Unisex Saloon are arranged as shown in the figure below.



- i. At what angle are the mirrors inclined? **(01 score)**

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- ii. How many images are formed with such an arrangement of mirrors at Gagamel Unisex Saloon?

**(01 score)**

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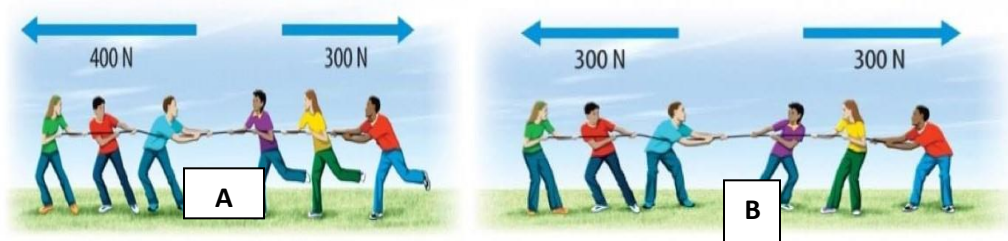
3. The word force is used in most of the concepts of Physics as discovered by Sir. Isaac Newton.

- a) Help your brother with the meaning of the word **force**.

**(01 score)**

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- b) Study the diagrams below and identify the categories of forces shown in each case. **(02 scores)**



A .....

B .....

- c) Sir. Isaac Newton discovered that a force that gives a body of mass 1kg an acceleration of  **$1\text{ms}^{-2}$**  is known as

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**(01 score)**

4. When a *VHT (Village Health Team)* member visited a patient in Kamwokya, he had to determine the temperature of the patient before giving the medication.

- a) As a medical doctor, help the VHT member to identify the points of reference that can help him to calibrate the instrument he has to use to determine the patient's body temperature.

**(02 scores)**

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- b) The VHT member used mercury in glass thermomometer. As a physicist, identify the physical property used by this thermometer.

**(01 score)**

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- c) Why do you think the VHT member chose mercury instead of Alcohol as a thermometric liquid? (Give one reason)

**(01 score)**

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5. The following quantities are important in physics during measurement. Complete the table below. **(08 marks)**

<b>Quantity</b>	<b>Unit</b>	<b>Symbol</b>
Mass		kg
	metres	
Time		s
Temperature		
	Kilograms per cubic metres	
Amount of substance		mol.
Energy	Joules	J

6. For man to earn a living, he has to do some work.

- a) As a physics scholar, help a lay man to understand the meaning of the term work. **(01 score)**

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- b) What do you think would be the appropriate unit of work? **(01 score)**

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- c) A man carries a bag of cement of mass 50kg from the ground floor to the first floor using stairs of height 0.01m each as shown in the diagram below.



Determine the work done by this man to move a bag of cement from the ground floor to the first floor.

**(03 scores)**

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7. (a) A thermo flask is used at home to keep hot substances hot and cold substances cold. Help your grandfather by drawing its structure and show how each part is able to minimise heat losses. **(05 scores)**

- b) The diagram below shows one of the applications of convection in our daily life.



- a) As a physics scholar, give a name to the above natural convection current shown in the diagram. **(01 score)**

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- b) Give two factors that affect the rate of heat transfer in metals. **(02 scores)**

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- c) When a digital thermometer was put under arm pits of a patient, it indicated the temperature shown in the figure below.



- i. Help the nurse to express the above temperature as to be taken from a thermodynamic scale. **(02 scores)**

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8. Ojok's shoe sole is reducing in size.

- a) What causes this? **(01 score)**

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- b) How is it advantageous to man? **(04 scores)**

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- c) Determine the resultant force of the body shown below. **(05 scores)**

