ST. BRUNO SERUNKUUMA S.S MITUJJU

S.3 MID TERM THREE PHYSICS EXAMINATION 2023

TIME 2 *hours*

Name……..Stream……

1. 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. What advice would you offer him using the knowledge of reflection of light to overcome such losses due to theft of his goods. (05 marks)

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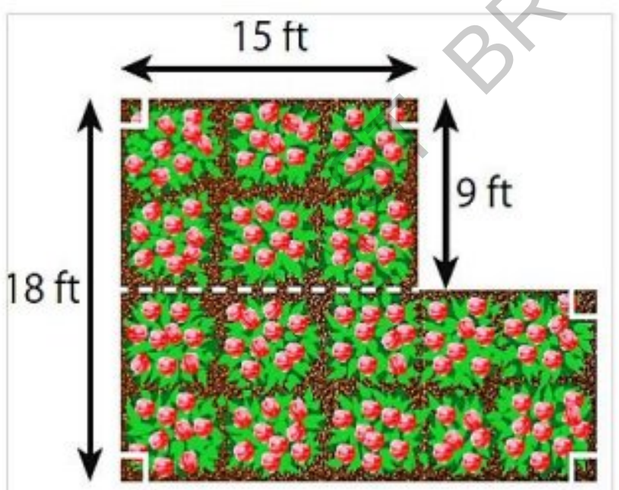
2. **The diagram shows the shape and dimensions of Teresa's rose garden**.



(a) Teresa wants to buy mulch for her garden. One bag of mulch covers 12 square feet. How many bags will she need? (05 marks)

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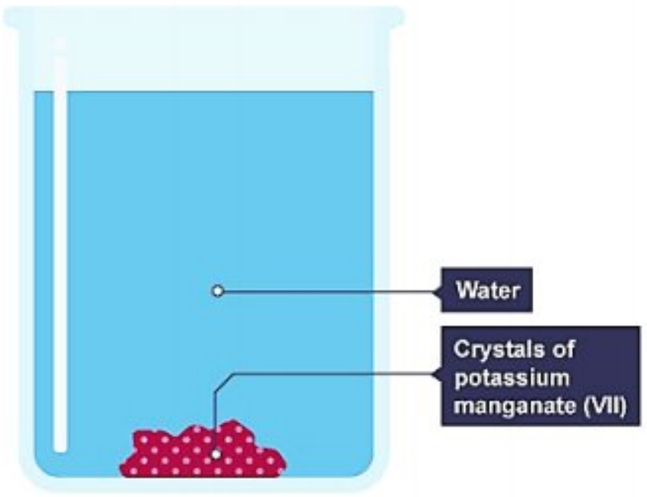
3. Potassium permanganate was put in the beaker having water as shown below.



a) Describe and explain what happens after some time. (05 mks)

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4. Most truck drivers overload their trucks, and this has led to many road accidents which has claimed many innocent lives, loss of properties and has caused so much harm to our transportation sector in today's economy. If you are appointed the traffic police officer in Uganda today, briefly explain **three** possible advice you can offer to truck drivers to minimise on the accidents caused by overloading of the truck. (05 marks)

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5. shaving beards can be hard especially when alone but there is a mirror which makes it

a) Which type of mirror is shown above?……

……(01 mk)

b) Which type of image is formed?……(01 mk)

c) State the features of the image formed. (03 mks)

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6. An object is pulled through a distance of **2 m** by a force of **55 N** on the first day. The same object is again pulled through a distance of **20 cm** by a force of **1500 N** on the second day. Calculate the work done on;

(i) First day (02 mks)

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(ii) Second day (02 mks)

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(iii) On which day was much work done? And why do you think so? (01 mk)

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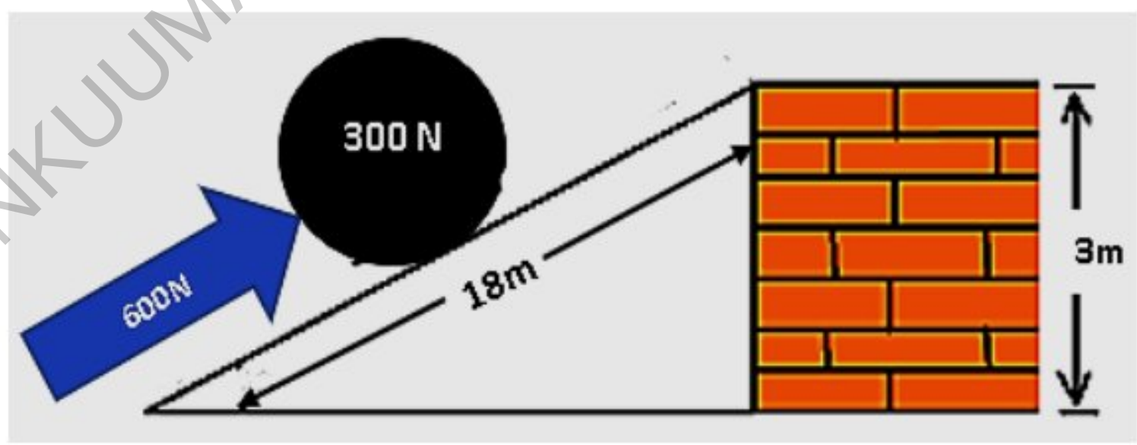
7. A force of **600 N** is used to move a load of **3000 N** up an inclined plane. Given that the slanted height and vertical height of the plane are **18 m** and **3m** respectively.
Find

a) Velocity ratio of the plane (02 mks)
b) Mechanical advantage (02 mks)
c) Efficiency of the plane (01 mk)



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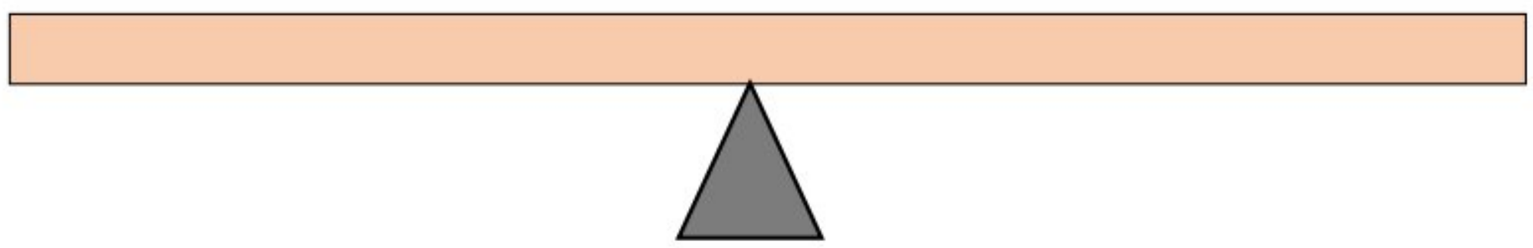
8. The figure below shows a metre rule balancing horizontally on a pivot



a) Locate the centre of gravity on the above metre rule using letter **G (01 mk)**

b) Briefly explain why the metre rule balances only at that point of contact. (03 mks)

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c) How useful is this knowledge of balancing the centre of gravity in real life (01 mk)

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9. If you're walking in snow, and you had these shoes to pick from for that exciting venture,

A

B

a) Which of the two shoes would you opt for?.....(01 mk)

b) Briefly explain why you would wear that shoe in question 10 (a) above instead of the other? (03 mks)

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c) What are the other applications of knowledge in other fields? (01 mk)

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10. Concrete is made by mixing **gravel** or small stones, **sand**, **cement** and **water** in right proportions. The gravel or stones make the concrete very strong; the sand fills up the spaces between the stones.

a) What are the mechanical properties of concrete (03 mks)

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b) Concrete normally has great compressional strength but weak tensile strength. Explain briefly how you can possibly improve on the strength of ordinary concrete (02 marks)

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SECTION B (attempt only one question in this section)

Question one

You have been hired by a discovery and jewel shop that deals with buying different chemicals, jewels, minerals, and other rare earth metals. You have been provided with a table containing density of different substances in their pure form. You are required to help the company identify the pure substances to be purchased.

Substance	Density (g/cm^3)
Ice	0.90
Olive oil	0.92
Water	1.0
Aluminum	2.7
Copper	8.9
Silver	10.5
Lead	11.3
Gold	19.3

The second table below has all the substances that have been brought to the jewel shop to be purchased.

Substance	**Mass (g)**	**Volume (cm^3)**
A shiny ring	21	2
A chunk of metal	50	4.42
A white solid	63.72	23.6
A brownish metal	52.0	2.69

TASK (show all your working clearly)

As the newly hired shop attendant help the company identify each of the above substances so that you can pay the customers the rightful amount of money. (You can make use the first table to help you identify the substances in the second table) (10 marks)

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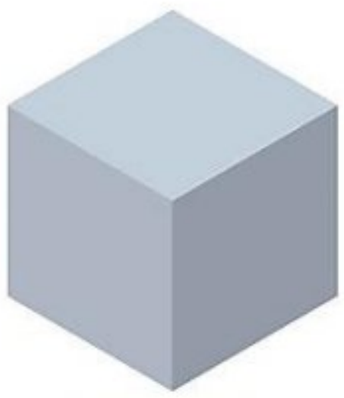
Question two (10 marks)

A student wants to calculate the density of the two objects shown below: He however has some challenges in doing so help him write him all the procedures to be followed for accurate results.

SUPPORT MATERIAL



Metal cube

statue

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The end