LEARNER'S NAME:		STREAM:	

LEARNER'S NO.					STUDY GROUP'S NAME:	

Physics
Paper 2023
$2^{1}/_{4}$hours

THE PHYSICS DEPARTMENT 2023

Uganda Certificate of Lower Secondary Education

S.2 Beginning of term.11. Assessment

2 Hours 15 Minutes

INSTRUCTIONS

- Use the blue or black ink pen only
- Attempt **ALL** questions in section A and B
- The paper constitutes of 70 marks.

SECTION A (50 marks)

(Short response)

Attempt all questions in this section

1. (a) A student is asked to find the volume of a small irregularly-shaped piece of rock. He has the following apparatus available.

balance

measuring cylinder containing water

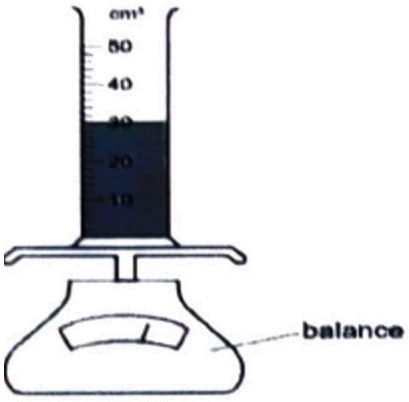
rule

Which apparatus must the student use to find the volume of the small piece of rock? (01 mark)

……

……

(b) A measuring cylinder contains $30cm^3$ of a liquid.



Some more of the liquid is added until the liquid level reaches the $50cm^3$ mark. The reading on the balance increases by 30 g. What is the density of the liquid in?

(i). gcm^{-3} (03marks)

……

……

……

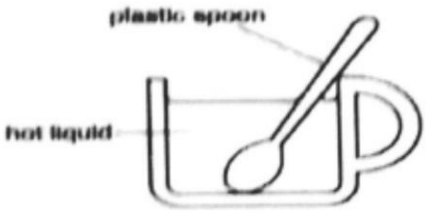
……

(ii). Kgm^{-3} (01 mark)

……

……

2. The figure below shows a cold plastic spoon that has just been placed in hot liquid in a cup



(a) Explain, in terms of molecules, why the temperature of the spoon increases. (03 marks)

……

……

……

……

(b) On a warm day, a carton of fresh milk is covered with a wet cloth. Why does this help to reduce the temperature of the milk? (02 marks)

……

……

……

……

3. A fresh egg is gently placed in a transparent beaker containing water.

(a) State the observation and explain it (02 marks)

……

……

……

……

(b) (i). What happens to the egg when some salt solution is added to the water in the beaker? (01 mark)

……

……

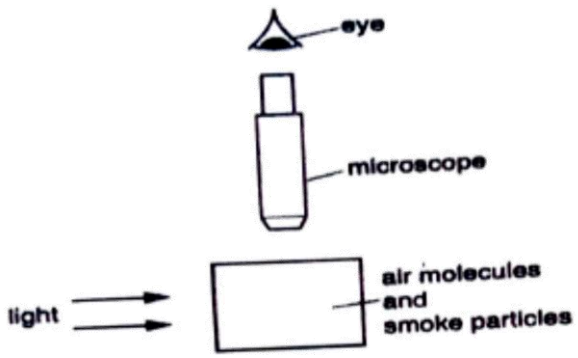
(ii). Explain the observation in b[i) above (02 marks)

……

……

……

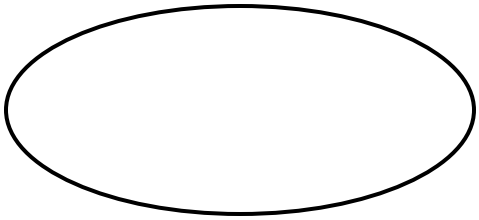
4. (a) The figure below shows the apparatus used to observe the motion of smoke particles that are in the air in a box.



Light from a lamp enters the box through a window in one side of the box.

The smoke particles are observed using a microscope fixed above a window in the top of the box.

(i) The motion of a single smoke particle is observed through the microscope. In the circle shown below, sketch the path of this smoke particle (01 mark)



(ii) Explain why the smoke particle follows the path that is observed. (02 marks)

……

……

……

(iii) Explain what happens to the smoke particles when the temperature of the box is increased. (02 marks)

……

……

……

……

5. (a) A student wishes to calibrate a mercury-in-glass thermometer with a °C scale. Which values should she use for the lower fixed point and for the upper fixed point? (02 marks)

……

……

(b) When a liquid is heated and it expands. How does this lead to the formation of convection current? (03 marks)

……

……

……

……

6. (a) Brownian motion is the random motion of particles due to molecular bombardment. In which states of matter is Brownian motion observed? (02 marks)

……

……

(b) State any three properties of any one state of matter mention in (a) above (03 marks)

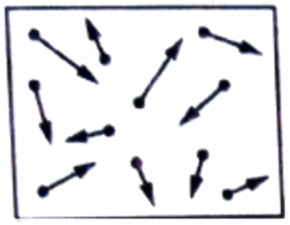
……

……

……

……

7. (a) The diagram represents particles of a gas inside a closed container of constant volume.



The gas is heated. What happens to the particles of the gas? (02 marks)

……

……

……

(b) Give three effects of expansion in solids (03 marks)

……

……

……

8. (a) A senior two student attempts to place the like poles of a bar magnet together and finds that it is not possible. State the type of force (01 mark)

……

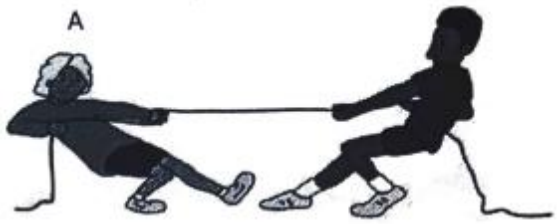
(b) The acceleration due to gravity on the Moon is $1.6Nkg^{-1}$. An astronaut has a mass of 75kg. What is the weight of the astronaut on the Moon?(02 marks)

……

……

……

(C) In a tag of war competition, student **A** applied a force of 80N on the rope while student **B** applied a force of 50N on the same rope at the same time.



Which of the students wins the competition? Explain your answer. (02 marks)

……

……

……

……

9. (a) A substance can exist in three different states: solid, liquid and gas. Each of the two statements below describes a change of state.

Change 1:

Particles move much closer together but continue to travel throughout the substance.

Change 2:

Particles stop travelling throughout the substance and just vibrate about fixed positions.

Which changes of state do these statements describe? (02 marks)

……

……

(b) A senior one student of Allhim.S.S smeared her skin with Vaseline and accidentally pours water on the smeared skin.

(i) State what is observed (01 mark)

……

……

(ii) Explain the above observation (02 marks)

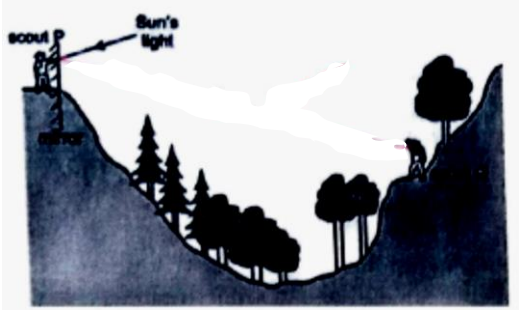
……

……

……

……

10. (a) Two scouts P and Q went to wilderness and they lost sight of each other. Scout P wanted to trace for scout Q and decided to use a mirror as shown below.



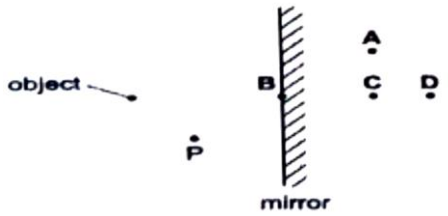
Explain how the light from the sun will enable scout P locate scout Q hence show on the diagram. (02 marks)

……

……

……

(b) An object is placed before a plane mirror as shown. A student views the image of the object in the mirror from point P.



Where does she see the final image? (01 mark)

……

(c) State the laws of reflection of light (02 marks)

……

……

……

SECTION (Extended response)

11. One rainy day one of your community members was struck by lightning and his body was having third degree skin burns and deep wounds. Most community members claimed it was witchcraft; maybe they are right or there maybe another better explanation to this scenario using knowledge of states of matter

(a). briefly explain to them what lightening really is and how lightening occurs? (05marks)

(b). What possible advices would you give to the community members to avoid lightning strikes in the future? (03marks)

(c). Name any other three examples of the above state of matter shown in the figure above (03marks)

(d). of what importance is studying the above states of matter (where is it useful in real life) (04marks)

END