**S.1 PHYSICS**

**MID OF TERM 3 EXAM 2022**

**Time:1hr 30minutes**

**ATTEMPT ALL QUESTIONS.**

1. Angellica wishes to measure the following lengths. Advise her on the most appropriate instrument she can use for each of them.

   (i) The length and width of her classroom: ……

   (ii) The diameter of her cylindrical pencil……

   (iii) The width of her classroom desk…….

   (iv) The thickness of a thin wire…….

2.(a) A jug is filled with water and placed on a beam balance. Another jug identical to the first, is filled with honey and placed on the same beam balance after the first jug has been removed. The measurements are taken note of and recorded. Use this information to answer the questions below.

(i) What does a beam balance measure?.....

(ii) The second reading was found to be greater than the first reading. Explain the cause of the difference.

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(iii) Explain which of the two liquids has a greater density.

(b) A solid cube of Aluminium of side 10cm has a density of 2.7g/cm$^3$.

(i) Calculate its mass

(ii) What volume of Aluminium has a mass of 100g?

3.(a) A group of seven mourners in a village at the home of their friend who has lost his father decide to start a fire in the compound during night vigil. The fire is lit using firewood. Around the fire source, seven stools are placed in a circle and each of them takes a seat.
Use this information to answer the following questions.

(i) Why did they start the fire?

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(ii) By what means of heat transfer do the mourners acquire heat from the fire?.....

(iii) Mention two steps that can be undertaken by the mourners in order to receive more heat energy from the fire?

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(b) One of the mourners holding a long iron rod in one hand places the other end in the midst of the fire.

Explain what happens in the metal rod and state the mode of heat transfer.

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4.(a)Write down four states of matter.

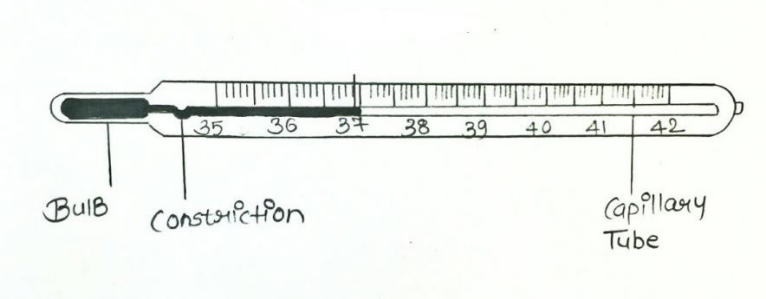
(i)……..(ii)…….(iii)…….(iv)……

(b)A block of ice at a temperature of $-10^{o}C$ is heated for a long time until it undergoes two transformations of states of matter.

(i)State three properties of it's initial state of matter.

(ii)Explain what is observed as it's being heated, stating temperatures at which there's change of state.

5.A medical Doctor uses a clinical thermometer shown in the diagram below to measure the temperature of his patients. The thermometer that the doctor has consists of a thin walled bulb containing mercury and a narrow capillary bore of uniform diameter. The thermometer also has narrow constriction just above the bulb.



Explain why;

(i)the walls of the bulb are thin.

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(ii)the thin capillary tube is of uniform cross section.

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(iii)there is a constriction in the thermometer.

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If after withdrawing the thermometer from the patient's armpit the reading is as shown above (record it as whole number), covert that temperature to kelvin.

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6.(a)Give three differences between the mass of a body and it's weight.

| Mass | weight |
| --- | --- |

(b)A minibus of mass 5000kg is authorized to carry a maximum of 30 passengers. (This includes the driver and conductor).

(i)Calculate the weight of the passengers if on average each passenger is 60kg.

(ii)the total weight of the minibus when fully loaded.

(c)(i) On sports day there was ‘tug-of-war’ between the teachers and students. The teacher’s side won the contest. Suppose that the teachers exerted a force of 6500N on the rope and the resultant force was 1500N, what force was exerted by the students?

(ii)What name is given to the type of force in the stretched rope?

7.(a)A cleaner in a hospital earns a salary of 786,234/=. How much does the worker earn if the salary is expressed as;

(i) three significant figures?.....

(ii)two significant figures?.....

(iii)one significant figure?.....

(b)Write the following in standard form

(i) 0.0000897 …….

(ii)234500 ……

(iii) $\frac{12}{9600}$ …….

8.(a) What is friction force?

(b) List five scenarios in which friction is important in our daily life.

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(c) At other times friction can be a nuisance, mention two instances when friction is undesirable.

9.(a)Explain the following;

(i)why the density of a gas is much less than that of a solid.

(ii)a ship despite its size, floats on water, while a needle sinks.

(b) Give one advantage of using a burette over a one-mark pipette in measuring volume of a liquid.