G.H.S

MID TERM 3, 2022

S.2 PHYSICS EXAMINATION

1 HOUR 45 MINUTES

Instructions:

Attempt all questions in **Section A** and two from **Section B.**

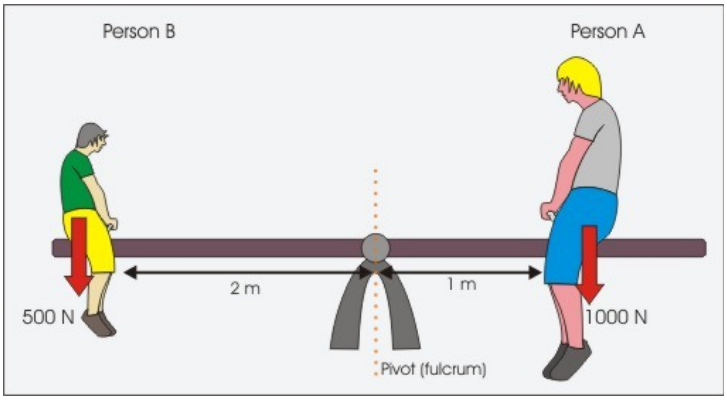
SECTION A

1. A driver wanted to observe the type of the car behind him, which type of mirror is preferred for such view and give reason for your answer?
2. During the Covid-19 outbreak in 2019, the use of thermometers defined each and every place on earth from malls, arcades, supermarkets, airports, schools, offices, industries among others. Explain four other reasons why temperature measurements is really that essential to health living.
3. The length of mercury thread in a mercury thermometer is 2mm at the ice point an 26mm at the boiling point of water. What will be the length of the mercury thread in this thermometer if it is used to measure a temperature of 75^0C?
4. The diagram below shows two people seated on either sides of a simple machine. Giving reasons,

   (a) Identify the type of the simple machine below.

   (b) State the principle on which this simple machine operates.

   (b) State whether the system is in equilibrium or not.



5. Food for communities in towns and cities is usually obtained from far away villages. This food is usually transported on trucks that are in many cases overloaded. The diagram shows an overloaded car.

(a) Giving reasons, identify the type of equilibrium that the car is in.

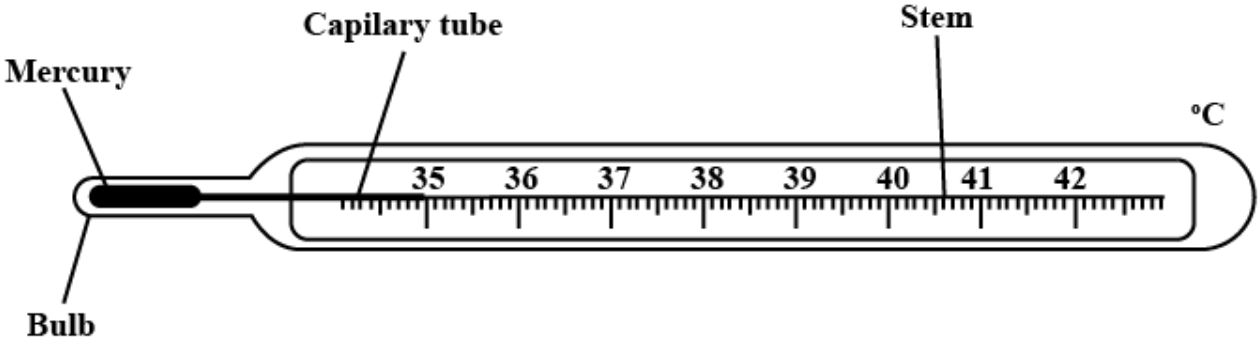
(b) Suggest three practical ways through which food may be transported from villages to towns safely. (use knowledge of stability and equilibrium)

6. After calculations, Gina got the following answers.
   (i) 0.0004693
   (ii) 105578400

   The teacher asked her to express them in scientific form to 3 significant figures. Help Gina to accomplish her task.

SECTION B

7. A nurse uses a mercury-in-glass thermometer to measure the temperature of a patient. The figure below shows the structure of a clinical thermometer.



a) The clinical thermometer has a small range and high sensitivity. State what is meant by; (i) Range (ii) Sensitivity

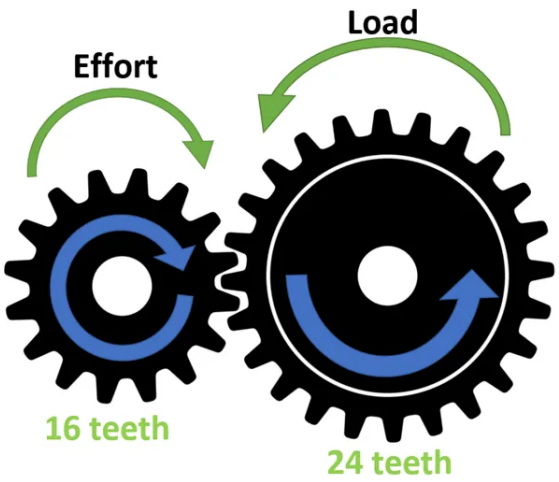
b) State and explain one feature of this clinical thermometer that produces a high sensitivity.

c) State the purpose of a constriction in the clinical thermometer.

d) Give any two reasons why mercury is used over alcohol when making a thermometer.

8. An object of height 5cm is placed 15cm infront of a concave mirror of focal length 0cm. Using graphical construction method, determine the position, size and nature of the image formed.

9. (a) The diagram below shows a type of a simple machine.



(i) Identify the machine

(ii) Give two applications of this machine in daily life.

(iii) If the machine has a mechanical advantage of 1.2, how efficient is this machine?

(b) When drawing water from the well, Fred uses a machine that requires 6000 J of energy to lift a jerrycan of mass 55 kg through a vertical distance of 8 m.

(i) which type of machine did Fred use?

(ii) What is the efficiency of this machine.

10. In your home village there is a group of youth who have acquired some funds through the Parish Development Model (PDM) which is a government program designed to empower people economically. The youth have designed a project which will involve production dairy products such as milk, ice cream and eggs They plan to use part of the money to buy a piece of a piece of land measuring 100m x 100m and the rest stock animals , birds as well as buy the necessary machinery and other accessories. As Physics student

(a) Help the group draw a simple plan for land to accommodate animals, birds, production lines, offices, parking lot and other relevant facilities.

(b) Briefly advise the group on some of the relevant measurement tools that they might need in their project.

END

NEVER GIVE UP