URANGA PHYSICS EXAMINATION

Kenya Certificate of Secondary Education

232 FORM 1 PHYSICS

(Theory)

4TH EDITION (DEC. 2021, TERM 2) – TIME 2 Hours

Name: ……..……..…Adm No……...……

Class……..… School: ……..……..……

Student's Signature……Date: ……

Instructions to candidates

a) Write your **name, admission number, class** and **school** in the spaces provided above.
b) **Sign** and **Write** the date of Examination in the spaces provided above.
c) This paper consists of **two** sections; **A** and **B.**
d) Answer **all** the questions in section **A** and **B** in the spaces provided.
e) All working **must** be clearly shown.
f) **Silent non-programmable** electronic calculators may be used.
g) Students should answer the questions in **English**.

FOR EXAMINERS USE ONLY

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1-11	25	
B	12	12	
	13	09	
	14	13	
	15	10	
	16	11	
TOTAL SCORE		**80**	

This paper consists of 10 printed pages. Students should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

SECTION A (25 MARKS)

(Answer all the questions in this section)

1. State what thermodynamics as a branch of Physics deals with. **(1 mark)**

……

……..……..……..……

……..…….

2. Explain the **first aid measure** for electric shock as a form of injury in a Physics laboratory. **(1 mark)**

……

……..……..……

……..…...

3. A form one girl at Agoro Oyombe Secondary School did an experiment using a stop watch to measure the duration for **20 swings** of a simple pendulum and got the result indicated in **figure 1** below.

Fig. 1

Record the indicated tir **(1 mark)**

……

……..…….

4.

a) Name **two** main factors that should be put into consideration when choosing a measuring instrument for a given task. **(2 marks)**

……

……

……..……..……..…….

b) A student measured the length of a wire **four** times using a meter rule and obtained the following readings: **18.6cm; 18.5cm; 18.6cm**; and **18.5cm**. Determine the average length the student should record. **(2 marks)**

……

……

……..……..……

……..…….

5.Convert **204000 cm^3** into **SI** units. **(1 mark)**

……

……

……..……..……

……..…….

6. Name any **two** effects of force. **(2 marks)**

……

……

……..……..……

7. Name the type of force that**:** **(2 marks)**

(i) Opposes motion between two surfaces in contact.

……

(ii) Makes an object appear lighter when being lifted out of water.

……

(iii) Attracts pieces of papers to a plastic ruler when the ruler is rubbed on hair.

……

(iv) Enables a body to move in a circular motion.

……

8.

a) State **two** factors that affect the surface tension force on a water surface. **(2 marks)**

……

…..……..……

b) **Figure 2** shows a toy boat. A piece of soap is attached to end **A** and then the toy placed on a surface of clean water.

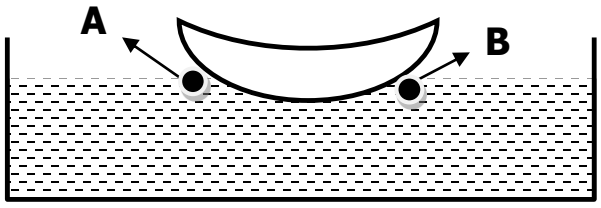

Fig. 2

Immediately, it is observed that the toy boat moves towards point B. Explain this observation.

(**2 marks)**

……

……

……..…

……..……..……

……..……

9. **Figure 3** shows the meniscus of water as it rises in a glass tube.

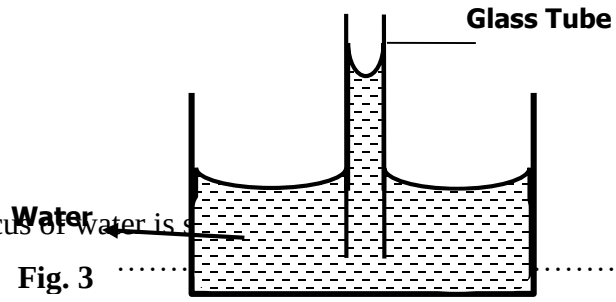

Fig. 3

Explain why meniscus of water is s **(2 marks)**

…… ……

……

……

……..……

……..……

10.

a) Define pressure and state its SI units **(2 marks)**

……

……..

……..……..……

……..……

b) A man of weight 840N stands upright on a floor. If the area of contact of his shoes and floor is 420cm^2, determine the average pressure he exerts on the floor. **(3 marks)**

……

……

……..……

……..……..……

……

11. Explain the following:

a. why a trailer carrying heavy loads have many wheels? **(1 mark)**

……

……

……

b. why water dams are built with thicker walls at the bottom than at the top? **(1 mark)**

……

……

……

……

SECTION B (55 MARKS)

(Answer all the questions in this section)

12.

a)

(i) What is the meaning of a derived physical quantity? **(1 mark)**

……

……

……

(ii) State **two** examples of fundamental physical quantities. **(2 marks)**

……

……

b) You are provided with the following: eureka can, measuring cylinder, water, a string and a stone. Briefly describe how you would determine the volume of an irregular piece of stone. **(4 marks)**

……

……

……

……

……

……

……

……..……

……..……..……..……

c) Give a reason why displacement method is unsuitable for determining the volume of solids such as charcoal. **(1 mark)**

……..

……..……..……

d) **Figure 4** shows a section of a measuring instrument.

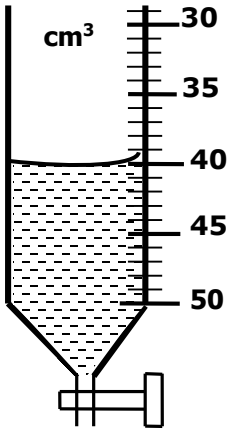

Fig. 4

(i) Name the measuring instrument shown above. **(1 mark)**

……..

(ii) What is the volume of water in it? **(1 mark)**

……..

(iii) Some **24** drops of water each of volume **0.5cm³** are **added** into the instrument above. Find the final reading of the instrument. **(2 marks)**

……..……

……..……..……..……

……..……..……..

……..……

13.

a) In finding the density of a liquid, why is the method of using a density bottle more accurate than the one of using a measuring cylinder? **(1 mark)**

……..……

……..……..……..……

b) In an experiment to determine the density of **liquid L** using a density bottle, the following measurements were recorded:

Mass of empty density bottle = 25.5 g

Volume of the density bottle = 40.0 cm^3

Mass of density bottle full of **liquid L** = 55.5g

Use the above data to determine the:

(i) Mass of **liquid L**. **(1 mark)**

……..……..……..……

(ii) Volume of the **liquid L**. **(1 mark)**

……..……..……..……

(iii) Density of **liquid L**. **(2 marks)**

……..……..……..……

……..……..……..……

……..……..……

c) An alloy is made by mixing **80cm^3** of copper of density **9g/cm^3** with **120cm^3** of alluminium of density **3g/cm^3**. Determine the

I. Total mass of the alloy **(2 marks)**

……..……..……..……

……..……..……..……

……..……

……..……..……

……..……..……

II. Density of the alloy in **SI** units. **(2 marks)**

……..……..……..……

……..……..……..……

……..……

……..……..……

14.

a)

i. Name **two** types of forces which can act between objects without contact. **(2 marks)**

……..……..……..……

……..……..……

ii. **Figure 5** shows a wire loop with two threads tied across it. The loop is dipped into a soap solution such that the soap film covers it as shown.

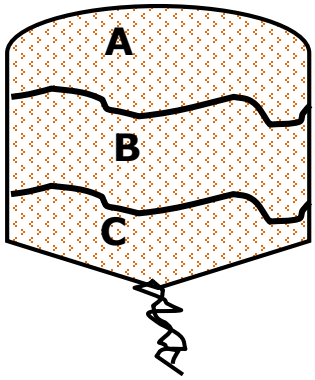

Fig. 5

Region **B** is punctured such that the soap film in that section is broken. On the space alongside the diagram sketch the resulting shape of the wire loop. **(1 mark)**

b)

i. Give **three** differences between mass and weight. **(3 marks)**

……..……..……..……

…….……..……..……

……..……..……

……..……..……..……

……..……..……..……

……..……..……..……

……..……..……

ii. A student was heard saying "the mass of a ball on the moon is one sixth its mass on earth". Give a reason why this statement is wrong. **(2 marks)**

……..……..……..……

……..……..……

……..……..……

iii. A man has a mass of 60kg. Calculate his weight on earth, where the gravitational field strength is 10N/kg. **(3 marks)**

……..……..……..……

…….……..……..……

……..……..……..……

c) Give **two** examples of vector quantities. **(2 marks)**

……..……..……..……

……..……..……

……..……..……

15.

a) Define atmospheric pressure. **(2 marks)**

……..……..……..……

……..……..……..……

……..……..……

b) A block of wood plank in the form of a rectangular block measures 10cm by 40cm by 90cm. The solid has a mass of 1800 grams. Calculate:

(i) the density of the solid in kg/m^3. **(3 marks)**

……..……..……..……

……..……..……..……

……..……..……

……

(ii) the weight of the plank. **(take g = 10N/kg)** **(2 marks)**

……..……..……..……

……..……..……..……

……..……

……..……..……

(iii) the minimum pressure it can exert. **(3 marks)**

……..……..……..……

……..……..……..……

……..……

……..……..……

16.

a)

i. Name **two** factors that affect pressure in fluids. (**2 marks)**

……..……..……..……

……..……..……

ii. The reading of mercury barometer is at **70.0cm**. What is the pressure at the place in N/m^2? {take the density of mercury as **13600 kg/m^3**} **(3 marks)**

……..……..…….……

…..……..…….……

……..……

……..……

…….……

b)

(i) State the Pascal's principle. **(1 mark)**

……..……..…….……

…..……..…….……

……..……

……..……..……

(ii) In a hydraulic press, the surface areas of the pistons are 0.0006 m^2 and 0.0002 m^2 respectively. If a force of 30N is applied downwards on the smaller piston, with what force does the larger piston move upwards? **(3 marks)**

……

……..……..……

……..……..……

……..……..……

……..

…….……

(iii) State **two** properties of the liquid used as hydraulic brake fluid. **(2 marks)**

……..……..…….……

……..……

……..……..……

THIS IS THE LAST PRINTED PAGE