

PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
GAIRO DISTRICT COUNCIL
FORM TWO JOINT EXAMINATION – 02
PHYSICS

031

17TH MAY 2023 (am)

Time 2:30 Hrs

Instructions

- This paper consists of section A, B and C with total of ten (10) Questions.
- Section A carries 15 marks, section B carries 70 marks and section C carries 15 marks.
- Answer all questions.
- Write your number on every page of your answer sheets.
- Use the following constants where necessary,
- Acceleration due to gravity. $g = 10\text{m/s}^2$
- Density of water = 1g/cm^3 or 1000 kg/m^3 .

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SECTION A (15 Marks)

- 1.** For each of the items (i) - (x), choose the correct answer from among the given alternatives and write its letter in the answer booklets provided.
- (i). The SI units of the basic quantities we have to measure in mechanics are:
- | | |
|--------------------------------|---------------------------------|
| A. Newton, watt and joule | B. Newton, kilogram and second. |
| C. kilogram, metre and second. | D. Newton, metre and second. |
- (ii). Why are laboratory apparatus and chemicals containers labelled with warning signs?
- | | |
|-----------------------|--------------------------|
| A. For safety purpose | B. For advertisement. |
| C. For school use. | D. For security purpose. |
- (iii). An atom is electrically neutral because it consists of an equal number of;
- | | |
|---------------------------|-------------------------------------|
| A. Protons and neutrons | B. Protons and electrons. |
| C. Electrons and neutrons | D. Protons, electrons and neutrons. |
- (iv). The force of friction between the layers of liquid is called;
- | | | | |
|---------------------|-----------|---------------|-----------------|
| A. Surface tension. | B. Strain | C. Viscosity. | D. Electricity. |
|---------------------|-----------|---------------|-----------------|
- (v). The upthrust on a body totally immersed in a liquid is equal to;
- | | |
|------------------------------------|--|
| A. The weight of liquid displaced | B. The mass of liquid displaced. |
| C. The volume of liquid displaced. | D. The weight of the spring balanced used. |
- (vi). The SI unit of pressure is;
- | | |
|------------------|-----------------------------|
| A. Joules. | B. Newton metre |
| C. Newton second | D. Newton per square metre. |
- (vii). Which one of the following statement is not true?
- | |
|--|
| A. Pressure is the force acting on unit area |
| B. pressure is calculated from force/area. |

C. The SI unit of pressure is the Pascal (Pa) which equals (1N/m²).

D. Force=Pressure X volume.

(viii). Magnets are often fitted on the doors of freezers and some cupboards so as to;

A. Keep a way heat.

B. Keep inside environment warm.

C. Keep a way cold.

D. Keep iron a way.

(ix). How can real image be distinguished from a virtual image?

A. Real image is inverted while virtual image is upright.

B. Real image is upright while virtual image is inverted.

C. Virtual image is formed by convergent rays while real image is formed by divergent rays.

D. Real image it's distance is negative and virtual image it's distance is positive from the mirror.

(x). Three capacitors whose capacitances are 1, 2 and 3 microfarads are connected in series, the value of a single capacitor that can replace them is;

A. 6.

B. .0.55

C. 5.5

D. 1.83.

Answers

i	ii	iii	iv	v	vi	Vii	viii	ix

2. Match the item in list A with correct responses in list B by writing the letter of correct responses below the corresponding item number in the table provided.

List A	List B.
i. The tendency of liquid surface to shrink into the minimum area.	A. Diffusion.
ii. The tendency of liquid to rise or fall in narrow tubes or porous or void.	B. Osmosis.
iii. The tendency of gas molecules to spreads over the space.	C. Surface tension.
iv. The tendency of solvent to move from a region of low concentration to that of higher concentration.	D. Capillarity.
v. Tendency of particles of matter to move in random manner.	E. Elasticity.
	F. Brownian motion.
	G. Kinetic theory of matter.

Answers

i	ii	iii	iv	v

SECTION B (70 marks).

Answer all questions in this section.

- 3.** (a) Suppose that the school laboratory is made of slippery tiles, convince the headmaster to replace them by advising him as to why slippery floor is dangerous in the laboratory. (4 marks).
- (b) (i) Why does stone weigh more in air than when immersed in water? (2 marks)
- (ii) Genoveva measured the weight of a stone in air and found it is 8N and when she measured the stone in water she found it is 6N. What is upthrust and the density of the stone? (4 marks).
- 4.** (a) Differentiate paramagnetic materials from ferromagnetic materials by giving typical examples and uses. (4 marks).
- (b) Advise a laboratory technician three proper ways of storing magnets so that they can last longer. (6 marks).
- 5.** (a) Briefly explain the terms as applied to simple machines.
- (i) Mechanical advantage (1 mark).
- (ii) Velocity ratio (1 mark).
- (b) A 600N crate is to be loaded onto the bed of the truck that is 1.4m above the ground. A metal ramp 7m long is leaned against the truck bed and the crate pushed up along it. If the efficiency of the system is 80%. Calculate the force required to push the crate. (8 marks).
- 6.** (a) Briefly explain the terms as applied in physics and state their SI units.
- (i) Work (1 mark).
- (ii) Power (1 mark).
- (b) An object is dropped and falls to the ground. Is there any work done while it is falling? Explain (2 marks).
- (c) A man lifts an object of mass 100kg to a height of 5m above the ground in 3 seconds. Calculate the power developed by the man. (6 marks).
- 7.** (a) Describe one experiment that proves the evidence for the existence of atmospheric pressure. (4 marks).

(b) Suppose that a nurse is to inject a patient using a needle of 0.0002m^2 cross section ,What is the minimum force required to the applied is at least 4000Pa ? (06 marks).

8. (a) Explain why hot soup taste than cold one? (05 marks).

(b) Explain how bad smell from dirty toilet reach your in class? (5 marks).

9. (a) Ayuob Hinjo a form two student at Mtunduru secondary school, he didn't understand the different between the classes of lever, you as an expert of physics in help of diagram, differentiate between first, second and third classes of lever. (6marks).

(b). Draw the pulley system which have;

(i) $VR = 4$ (2 marks).

(ii) $VR = 5$. (2 marks).

SECTION C (15 Marks)

10. Suppose you are asked by the teacher to prepare a circuit which consists of two resistors of $20R$ and $4R$ in parallel and a battery of two cells each of $1.5V$.

(a) Draw a well labelled circuit and indicate the direction of current. (5 marks).

(b) Calculate the effective resistance (5 marks).

(c) Calculate the current flowing in each resistor. (5 marks)