

PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
FORM TWO OPENING TEST
PHYSICS

TIME: 2:30 HRS

January 2024

INSTRUCTIONS

1. This paper consists of section A, B and C with total of ten (10) questions
2. Answer all questions
3. Section A carries 15 marks, section B 70 marks and section C carries 15 marks
4. Where necessary the following constants may be used
5. Acceleration due to gravity, $g = 10 \frac{\text{N}}{\text{Kg}}$
 - Density of water = $\frac{1\text{g}}{\text{cm}^3}$ or $\frac{1000\text{kg}}{\text{m}^3}$
 - Pie, = $\pi 3.14$

SECTION A (15 Marks)

Answer ALL questions

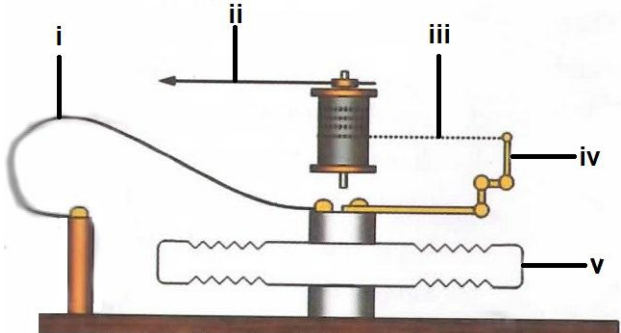
1. Write the letter of the most correct answer in the space provided

- i) An auto-mechanic wants to measure the diameter of a wire to the nearest 0.0001cm. which of the following instruments can be used
- a) Vernier caliper
 - b) Micrometer screw gauge
 - c) Metre rule
 - d) Pair of compasses
 - e) Engineer's caliper
- ii) The mass of 1.5litres of water iskg
- a) 1500
 - b) 150
 - c) 15
 - d) 1.5
 - e) 0.15
- iii) A rectangular wooden block of density 0.8g/cm^3 has dimensions $0.5\text{m} \times 0.8\text{m} \times 6\text{m}$. What maximum pressure will it exert on the ground?
- a) 48,000
 - b) 4,000
 - c) 2.4
 - d) 19,200
 - e) 400
- iv) An air ship is floating high above the ground. In this case the air
- a) Density outside the airship is less than the air density inside
 - b) Density outside the airship is greater than air density inside
 - c) Upthrust is greater is equal to airship weight
 - d) Upthrust is greater than the airship weight
 - e) Temperature inside the airship is equal to the air temperature outside.
- v) When using a measuring cylinder, one precautions to take is to
- a) Check for zero error
 - b) Look at the meniscus from below the level of the water.
 - c) Obtain more readings by looking from more than one directions
 - d) Position the eye in the line with the base of the meniscus
 - e) Make sure that the measuring cylinder is clean.

- vi) A pin-hole camera gives a sharp image
 - a) Because the image is small
 - b) If the hole is small
 - c) If the extremely small
 - d) Because the object is a long way from the hole
 - e) Because the screen is in a short distance from the hole.
- vii) What happens when a liquid changes into gaseous state?
 - a) Some surface molecules absorb latent heat of vaporization and escape
 - b) It gives its own latent heat that can be used to heat up the surrounding
 - c) The potential and kinetic energies of the molecules increase
 - d) The molecule attractive forces to one another increase and their average kinetic energy decreases.
 - e) There is no adhesive force between molecules
- viii) Water spreads and wets a surface when spilled on it because the:
 - a) Adhesive forces between water molecules and surface molecules are large
 - b) Cohesive forces between water molecules and surface molecules are large
 - c) Adhesive forces between water molecules are small
 - d) Cohesive forces between water molecules are small
 - e) Cohesive forces are greater than adhesive forces.
- ix) The image formed by plane mirrors are always:
 - a) Real, magnified and laterally inverted
 - b) Virtual, laterally inverted and same size as the object
 - c) Laterally inverted, same size as object and real
 - d) Erect, real and magnified.
- x) What physical phenomenon is observed when a tea bag is dipped into a cup containing hot water?
 - a) Surface tension
 - b) Capillarity then diffusion
 - c) Diffusion
 - d) Osmosis then diffusion
 - e) Osmosis only

2. Match each item in **COLUMN A** against its corresponding item from **COLUMN B** by

Writing the number of the correct response in the answer column.

COLUMN A	COLUMN B
	<p>A. Metal spring B. Pointer C. Chain D. Levers E. Partially evacuated box F. External appearance G. Arrow H. Totally evacuated box</p>

SECTION B (MARKS 70)

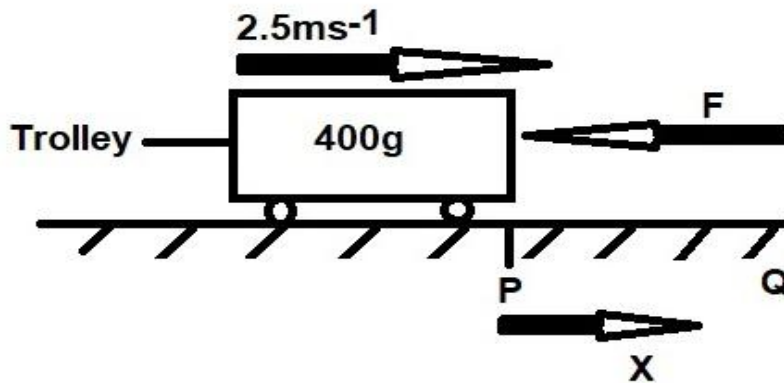
Answer **all questions** from this section

- 3 (a) Identify the name of the weight of a body full or partially submerged in a fluid
 (b) Explain why a piece of metal sinks in water but a ship floats.
 (c) A piece of pure gold (density 1900kg/m^3) is suspected to have a hollow centre. It has a mass of 86.85g when measured in air and 80.35g in water, what is the volume of the central hole?
4. (a) On your way back home you hear two students complain about the difference between K.E and P.E. As an expert of physics how can you finish this argument?
 (b) A stone is thrown upwards with a speed of 22m/s. find:
 (i) How long will it take for its speed to decrease to 10m/s.
 (ii) How high up is it when its speed is 10m/s?
5. (a) State two conditions necessary for work to be done
 (b) List five nature of light energy
 (c) If an object is 0.8m from plane mirror, what is the distance between this object and its image?
6. (a) State Pascal's principle of hydraulic pressure
 (b) Why water is not used as barometric fluid?
 (c) With illustrations, explain three applications of atmospheric pressure.
7. (a) Explain why a dam is much thicker at the bottom than at the top.
 (b) Give four applications of hydraulic press
 (c) Find a force acting a door of a submarine which is 10m below the surface of sea water and has an area of 0.2m^2 . Density of sea-water is 1025kg/m^3
8. (a) State four characteristics of an image formed on a plane mirror.
 (b) State the laws of reflection
 (c) Calculate the number of images produced by two mirrors placed at an angle 25° between them.
9. (a) Give four examples of luminous bodies
 (b) Describe materials which are
 (i) Transparent (ii) Translucent (iii) Opaque
 (c) Explain the mechanism of capillarity

SECTION C (MARKS 15)

Answer **question number (10)** in this section

10. A trolley of mass 400g is moving to the right at a constant velocity of 2.5m/s as shown on the figure.



b) With the aid of a clear labeled diagram explain the mechanism of hydraulic brake system

KWA MAHITAJI YA

01. MITIHANI YA KILA MWEZI (MONTHLY TEST) KWA MASOMO YOTE NA VIDATO VYOTE

02. SERIES ZA 0-LEVEL KWA MASOMO YOTE NA VIDATO VYOTE

03. MITIHANI YA KIDATO CHA TANO NA SITA (ADVANCED SERIES) KWA COMBINATION ZOTE

OFA OFA

U.B.N COOPERATION TUNATOA OFA MAALUM YA KUJIUNGA NA GROUP LETU LA “U.B.N COOPERATION” KWA WAKUU WA SHULE NA WATAALUMA KWA TSH 50,000/= KWA KIDATO KIMOJA AMBAPO UTAPATA MITIHANI YA KILA MWEZI (MONTHLY TEST) KWA MASOMO YOTE NDANI YA MIEZI SITA. OFA HII NI KWA KIDATO CHA PILI NA CHA NNE TUU. ITAANZA (MWEZI JANUARI – JUNE) MWISHO WA KUJIUNGA NA OFA HII NI TAREHE

05/01/2024

KWA MAWASILIANO TUCHEKI KWENYE NAMBA

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