

THE UNITED REPUBLIC OF TANZANIA
PRESIDENTS OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT



MWANZA REGION

REGIONAL FORM TWO MOCK ASSESSMENT

031

PHYSICS

Time: 2:30 Hours

Year: 2025

INSTRUCTIONS

1. This paper consists of sections A, B and C with a total of ten (10) questions
2. Answer all questions in the space provided
3. Section A carries **fifteen (15)** marks, section B **seventy (70)** marks and section C carries **fifteen (15)** marks
4. Write in blue or black ink. Draw in pencil
5. Write your examination number on the top right corner of every page of this question paper.
6. Where necessary the following constants may be used:
 - (i) The earth acceleration due to gravity, $g = 10\text{m/s}^2$
 - (ii) Density of water = 1g/cm^3 or 1000kg/m^3

For Examiners' Use Only		
Question Number	Score	Examiner's Initial
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		
Checker's Initial		

This paper consists of 8 printed pages

SECTION A: (15 MARKS)

Answer **all** questions in this section.

1. For each of the items (i)-(x), choose the correct answer from the given alternatives and write its letter in the box provided.

(i) Which of the following best describes why the knowledge of physics is necessary to understand all other sciences?

- A. Physics explains how energy passes from one object to another
- B. Physics explains how gravity works ()
- C. Physics explains the motion of objects
- D. Physics explains the fundamental aspects of the universe.

(ii) A nurse places an unconscious patient with his/her legs slightly raised higher than his or her head. What is the main reason for using this position?

- A. To allow more blood to flow to the brain
- B. To expel toxic gases from the lungs ()
- C. To increase the pulse rate of the heart
- D. To ensure the brain is well supplied with water

(iii) Which of the following set of instruments are used to measure fundamental physical quantities?

- A. Beam balance, stop watch and vernier caliper
- B. Electronic balance, stop watch and measuring cylinder, ()
- C. Measuring cylinder, beam balance and metre rule
- D. Spring balance, stop watch and micrometer screw gauge

(iv) An object of unknown volume is immersed in 57cm^3 of water. What is the volume of object if the final volume of water is 80cm^3 ?

- A. 137cm^3
- B. -23cm^3 ()
- C. 23cm^3
- D. 80cm^3

(v) According to Archimedes principle, the upthrust acting on a body immersed in fluid is equal to:

- A. Weight of a body
- B. Weight of fluid displaced ()
- C. Volume of fluid displaced
- D. Density of fluid displaced

(vi) Which process enables perfume smell to spread throughout the room?

- A. Elasticity
- B. Osmosis ()
- C. Capillarity
- D. Diffusion

(vii) Engineers design buildings with wide foundations. What is the main reason for using wide foundations?

- A. To increase the pressure on the ground
- B. To increase the mass of the building ()
- C. To lower the pressure of the ground.
- D. To increase the volume of the building

(viii) A soldier in a submarine under water wanted to see enemies over the surface of water without surfacing. Which instrument would be most useful?

- A. Periscope
- B. Telescope ()
- C. Pinhole camera
- D. Microscope

2. Match the descriptions of the force in **List 'A'** with the correct corresponding concept used in force in **List 'B'** by writing a letter of the correct response below the item in the table provided.

List A	List B
(i) A force that explain difficult in pouring honey out of the vessel.	A. Torsional force
(ii) A force of attraction between objects and the earth.	B. Tension force
(iii) A force that causes object to float.	C. Gravity
(iv) A force transmitted through a string when pulled tightly.	D. Frictional force
(v) A force that opposes relative motion between two solid bodies in contact.	E. Buoyant force
	F. Viscous force
	G. Compressional force
	H. Normal force

SECTION B: (70 MARKS)

Answer **all** questions in this section

3. (a) How would you test whether a certain material is magnetic in nature?

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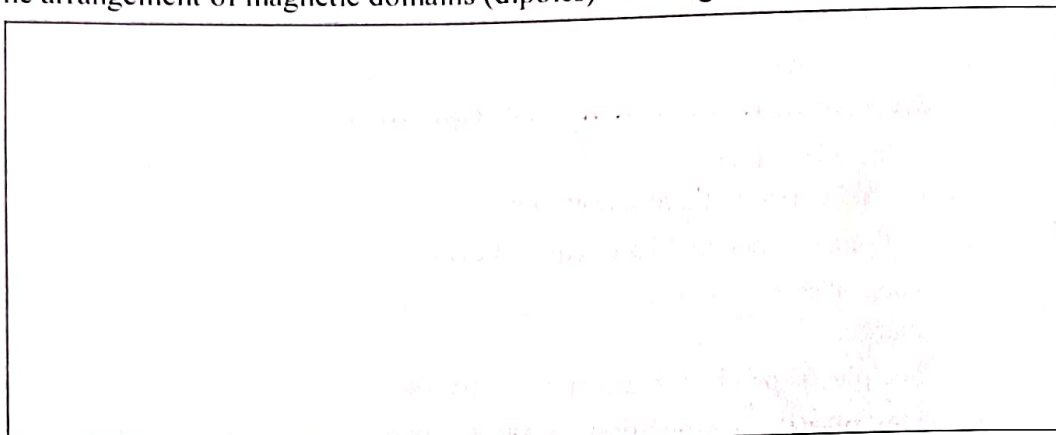
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- (b) Draw sketch diagrams to show the following:

- (i) The arrangement of magnetic domains (dipoles) in an unmagnetized iron bar.



- (ii) The arrangement of magnetic domains (dipoles) in a magnetized iron bar.



- (c) State any **four (4)** uses of magnets.

- (i)
- (ii)
- (iii)
- (iv)

4. (a) A nurse wants to determine the level of hotness or coldness of a patient in a hospital.

- (i) What instrument would you recommend for this purpose?

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- (ii) Provide **four (4)** reasons why the liquid used in the instrument mentioned above should be mercury.

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- (b) Briefly explain the meaning of the term “density.”

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- (c) A measuring cylinder with a volume 500cm^3 has a mass of 60g. When it is filled with dry sand, the total mass becomes 140g. What is the density of sand?

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5. (a) State Newton's third law of motion.

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(b) Mention **two (2)** real-life examples that demonstrate the application of Newton's third law of motion.

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(ii)
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(c) Find the linear momentum of a saloon car with a mass of 200kg.moving at a speed of 15m/s.

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6. (a) Distinguish between distance and displacement.

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(b) A mini bus starts from rest and accelerates uniformly to cover a distance of 49m in 7 seconds. Calculate its acceleration and final velocity.

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- (c) An engineer working on a tower accidentally drops a spanner. If the spanner reaches the ground after 5 seconds, calculate:

(i) The height of the tower

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(ii) The velocity at which the spanner hits the ground.

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7. (a) Explain briefly:

(i) Why are water tank outlets usually fixed at the bottom?

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(ii) Mount climbers experience nose bleeding and difficulty in breathing at high altitude.

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(b) A rectangular tank which measures 3m by 2m contains water to a height of 2m. Calculate the pressure and the force on the base of the tank.

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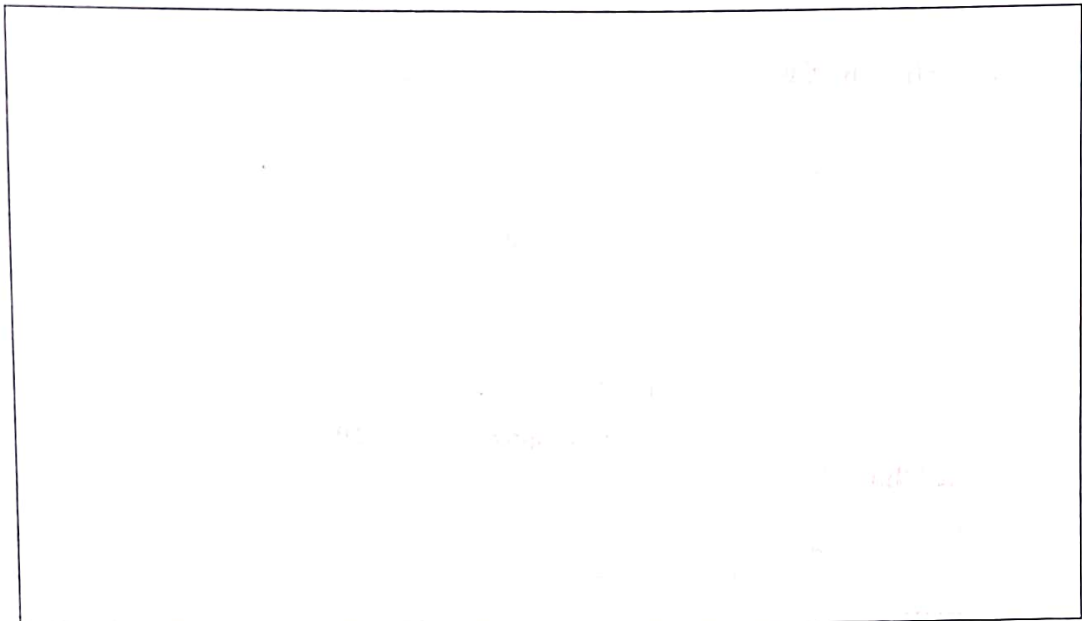
8. (a) Give **two (2)** reasons, why the efficiency of a pulley system is less than 100%.

(i)

(ii)

(b) A block and tackle pulley system has an efficiency of 80% and consists of 3 pulleys at the upper block and 2 pulleys at the lower block. If a load of 400N is raised by this system:

- (i) Draw a system of these pulleys.



- (ii) Calculate the Velocity Ratio, Mechanical Advantage and effort applied.

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9. (a) Explain briefly the following observations:

- (i) Auto mechanics choose a long spanner to loosen or tight a nut from a bolt.

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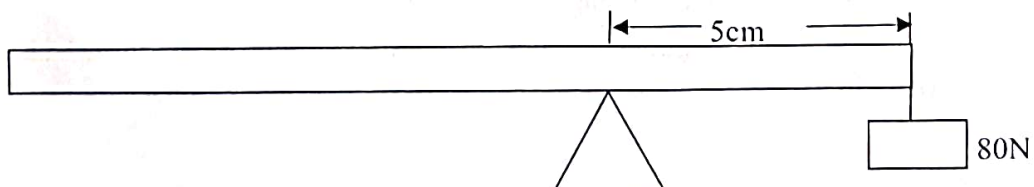
- (ii) Wine glass, Bunsen burner and conical flask have wide base area.

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- (b) A uniform half-metre rule is balanced across a pivot as shown below



- (i) Calculate the weight of half-metre rule.

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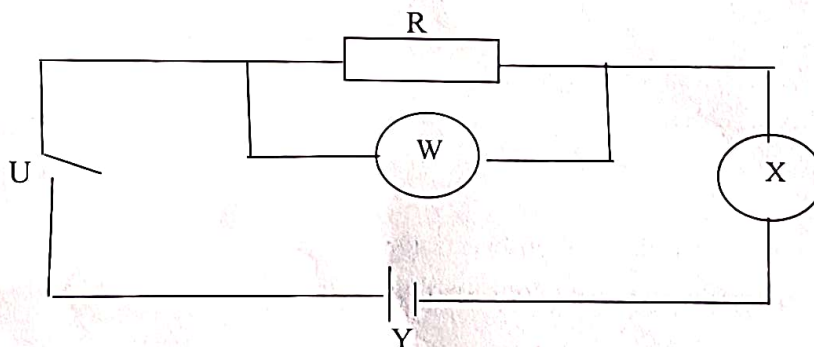
- (ii) State the law that governs you to calculate the mass of the rule

SECTION C: (15 MARKS)

Answer question **ten** (10)

10. (a) State Ohm's law

- (b) In an experiment to verify Ohm's law, the following circuit diagram was provided to students. Give the names of components **U**, **W**, **X** and **Y**



- (c) A potential difference of 10V is applied across parallel resistors of 3Ω and 6Ω .

- Draw a circuit diagram including a cell and switch.
 - Calculate the combined resistance.
 - Calculate the current flowing through a circuit
- (d) Why is it advised to connect bulbs in parallel arrangement during installation of electricity in most buildings?