

THE REVOLUTIONARY GOVERNMENT OF ZANZIBAR

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

PHYSICS

TIME: 2:30 HOURS

FRIDAY 25TH OCTOBER, 2024 A.M

INSTRUCTIONS TO THE CANDIDATE

1. This paper consists of THREE (3) sections A, B and C.
2. Answer ALL questions in section A and B, and TWO (2) questions in section C. Question NINE (9) is COMPULSORY.
3. Write your Examination Number on each page.
4. Write your answers in the space provided.
5. Use a blue or black pen in writing. Diagrams must be in a pencil.
6. Cellular phones and unauthorized materials are not allowed in the examination room.
7. Where necessary the following constants may be used.

Density of water = 1000kg/m^3 (1g/cm^3), $\pi = 3.14$, $g = 10\text{m/s}^2$

FOR EXAMINER'S USE ONLY

QUESTION NUMBER	MARKS	SIGNATURE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9a.		
9b.		
10.		
11.		
TOTAL		
CHECKER'S SIGNATURE		



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This paper consists of 14 printed pages

SECTION A: (30 Marks)

Answer ALL questions in this section.

1. Choose the correct answer from the given alternatives and write its letter in the table below.
 - i. What is the concept of Matter?
 - A. It has direction and occupies space
 - B. It has Mass and occupies space
 - C. It has magnitude and occupies space
 - D. It has weight and occupies unit
 - ii. Which one of the following is the safety rule in a Physics laboratory?
 - A. Avoid running or playing
 - B. Avoid following instructions
 - C. Avoid handling apparatus carefully
 - D. Avoid keeping the window open
 - iii. In Physics, unit can be fundamental or derived. Which of the following is a derived one?
 - A. Ampere
 - B. Joule
 - C. Kelvin
 - D. Kilogram
 - iv. When we burn kerosene lamp the fuel can be drawn up by the wick. This phenomenon is called
 - A. Capillarity
 - B. Cohesion
 - C. Osmosis
 - D. Surface tension
 - v. Which of the following is an example of second-class lever?
 - A. Bottle openers
 - B. Scissors
 - C. Shovels
 - D. Tweezers

- vi. Two magnets will attract together when
- A. Neutral points meet together
 - B. North pole meets with South Pole
 - C. North pole meets with North Pole
 - D. South pole meets with South Pole
- vii. One among the following is the form of energy
- A. Light
 - B. Mass
 - C. Weight
 - D. Work
- viii. A girl weighing 60 kg climbs up a staircase to a height of 4 m. The work done by the girl is
- A. 15 J
 - B. 56 J
 - C. 240 J
 - D. 2,400J
- ix. Half ($\frac{1}{2}$) litre is equal to
- A. 1 m³
 - B. 1000 cm³
 - C. 500cm³
 - D. 0.5 m³
- x. Which of the following is the property of translucent material?
- A. Allow all the light to pass through it
 - B. Allow some of the light to pass through it
 - C. Do not allow all light to pass through it
 - D. Produces light by itself

ANSWERS

i	ii	iii	iv	v	vi	vii	viii	ix	x

2. Match the statements in **LIST A** with their corresponding responses in **LIST B** as they are used in simple machine. Write the answer in the table below.

LIST A	LIST B
i. A smooth flat rigid surface slanted at an angle to the horizontal	A. Effort
ii. Consists of a wheel that rotates around a point	B. Efficiency
iii. Effort is between the fulcrum and the load	C. First class-lever
iv. A fixed point on which the bar moves	D. Fulcrum
v. Force applied in moving the load	E. Gears
vi. Fulcrum is between the effort and the load	F. Inclined plane
vii. It is a force magnifiers	G. Mechanical advantages
viii. Raised band which separates grooves	H. Pulley
ix. Ratio of the load to the effort	I. Second class lever
x. Ratio of the distance moved by the effort to the distance moved by the load	J. Third class-lever
	K. Threads
	L. Velocity ratio

ANSWERS

LIST A	i	ii	iii	iv	v	vi	vii	viii	ix	x
LIST B										

3. Fill the correct answer in the blank spaces provided.
- Cotton wool and bandages are used to clean and cover _____
 - The distance covered in a particular direction is called _____
 - The deviation from the true reading is referred as _____
 - 273 Kelvin is equivalent to _____ degree Centigrade.
 - The S.I unit of moment of a force is _____
 - An object which emits their own light is known as _____
 - The attractive force between molecules of same substances is called _____
 - A device used to store electric charges is referred as _____
 - Mercury has _____ meniscus.
 - A device used to convert solar energy into electrical energy is called _____

SECTION B: (50 Marks)

Answer ALL questions in this section.

4. a. i. State Archimedes' principle

- ii. Why does a piece of iron sink in water?

- b. The mass of an empty density bottle was 60g. When filled with the volume of 30cm^3 of kerosene its mass become 75g. Calculate the:

- i. Density of kerosene

- ii. Relative density of kerosene

5. a. State the Pascal's principle of hydraulic press.

- b. State three (3) factors that affect pressure in liquid.

i.

ii.

iii.

6. a. Briefly explain the term sustainable source of energy.

- b. i. Write two (2) importance of water energy.

- ii. State two (2) advantages of wind energy.

7. a. Give short explanation on the following terms.

- i. Joule

- ii. Watt

- b. A 9kg object is pulled by a force of 50N along a smooth floor through a distance of 0.8m for 4 seconds. Find the

- i. Work done by a force

ii. Power

8. a. i. Define the term volume of a substance.

ii. Name four (4) apparatus that are used to measure the volume of a liquid.

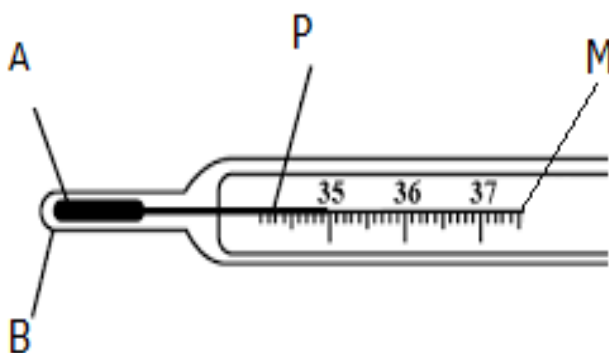
b. A cylinder tank has a radius of 3cm and a height of 7cm. Calculate its volume.

SECTION C: (20 Marks)

Answer TWO (2) questions in this section.

Question 9 is COMPULSORY, answer either 9 (a) or 9 (b).

9. a. A student was suffering from Malaria and went to the hospital. The doctor used an instrument shown in the figure below. The doctor measured the condition of the student body by placing the instrument under his tongue and the measurement in $^{\circ}\text{C}$ was taken.



- i. Name the instrument shown above.

- ii. Name the part labeled by letter A, B and P.

- iii. What is the physical quantity that the instrument measure?

iv. What is the reading of letter M in °C?

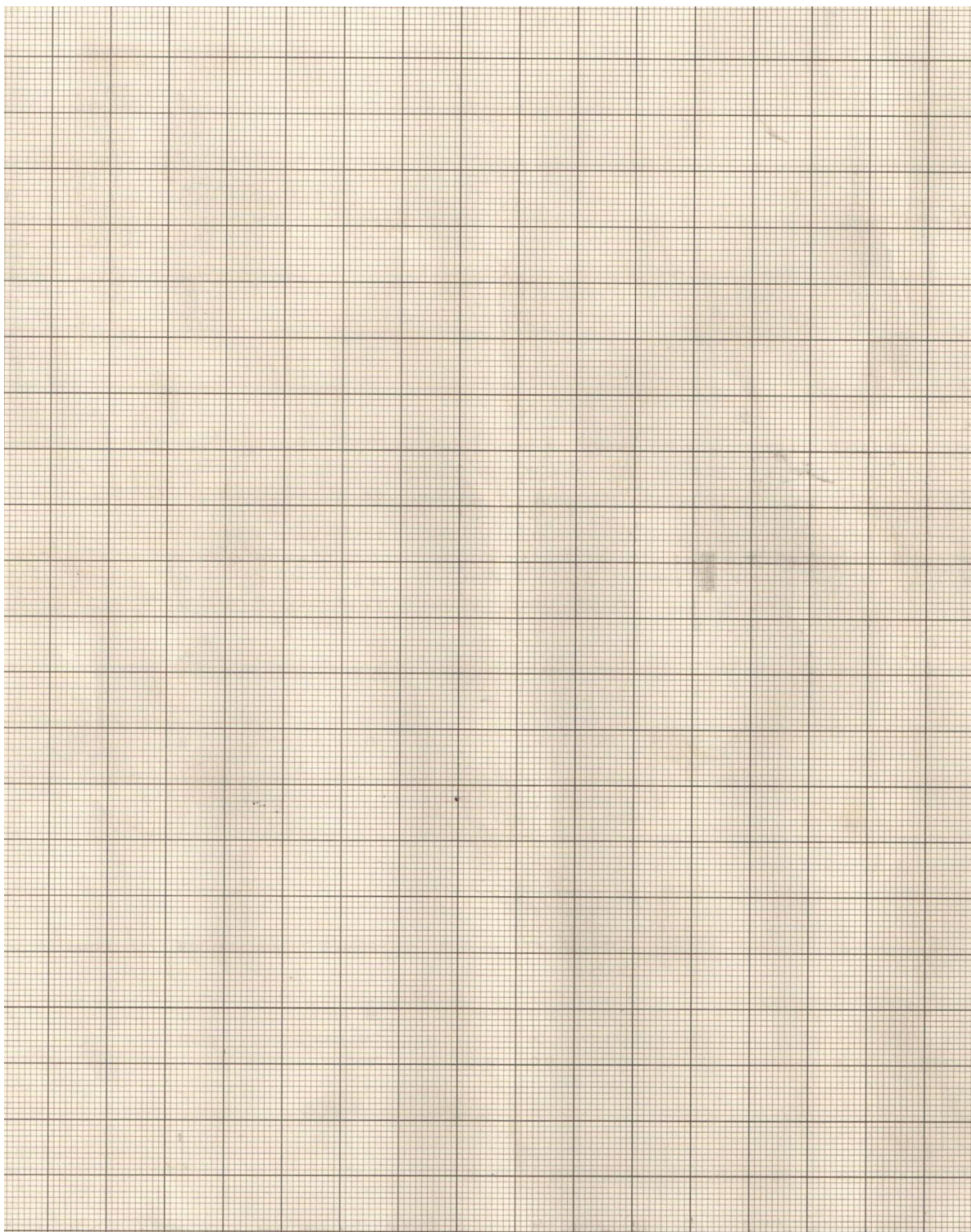
v. Convert the reading obtained in (iv) above into °F.

9. b. The students in a certain school conducted an experiment to investigate the number of images (n) formed by multiple plane mirrors, the following results were recorded.

Angle (Θ)	$n = \frac{360}{\theta} - 1$	$\frac{360}{\theta}$
	3	
		5
60	5	
	7	
30		12

- i. Complete the table shown above.

- ii. Plot the graph of n against $\frac{360}{\theta}$

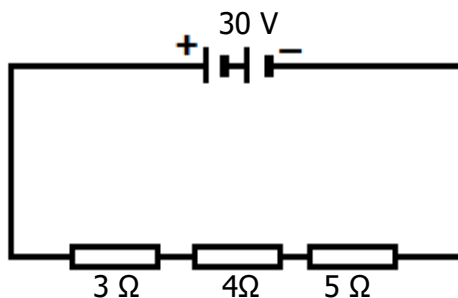


- iii. Determine the slope from the graph.

10. a. i. Write two (2) methods in which circuit components can be connected.

- ii. With the aid of example, define insulator.

- b. Consider the circuit below and answer the questions that follow.



- i. Calculate the current flowing through the circuit.

- ii. Calculate potential difference (p.d) across $3\ \Omega$ and $5\ \Omega$ resistors.

11. a. i. Define the term pressure.

- ii. Why tractor cannot stuck in the mud?

- b. A block of mass 60kg measures 2m by 3m by 4m . Calculate:

- i. The maximum pressure it can exert

- ii. The minimum pressure

Candidate's Examination Number _____

ROUGH WORK

