Candidate's Examination number ………………………...

THE UNITED REPUBLIC OF TANZANIA
PRESIDENT'S OFFICE
REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT
NJOMBE REGION
FORM TWO MOCK EXAMINATION
031   **PHYSICS**

Time: 2 ½ Hours
AUGUST 2021

Instructions
1. *This paper consists of section A, B, and C with a total of ten (10) questions*
2. *Answer ALL questions in the spaces provided.*
3. *All writing must be in blue or black ink except for the drawings which must be in pencil*
4. *All communication devices, calculators and any unauthorized materials are not allowed in the examination room.*
5. *Write your examination number on the top right corner of every page of your answer sheets*
6. *Where necessary the following constants may be used*
   i) Acceleration due to gravity, g=10m/s2
   ii) Density of water ɣ=1g/cm3 or 1000kg/m3

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	SCORES	EXAMINER'S INITIAL
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
TOTAL		

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SECTION A (30 Marks)

1. For each of the item(s) (i)-(xx), choose the correct answer among the given alternatives and write its letter in the box provided.

(i) Any substance that has mass and occupies space is known as _____
   - A. Energy
   - C. Universe
   - B. Physics
   - D. Matter

(ii) An Engineer wanted to measure the diameter of a wire to the accuracy of three decimal places. Which of the following instruments would you recommend to be used?
   - A. Engineer's calipers
   - C. Vernier calipers
   - B. Metre rule
   - D. Micrometer screw gauge

(iii) Which phenomenon is taking place when kerosene rises up a wick?
   - A. Meniscus
   - C. Elasticity
   - B. Capillarity
   - D. Surface tension

(iv) Which of the following unit could be used for kinetic energy?
   - A. Ns
   - C. JS
   - B. $Kg\ m^2/s^2$
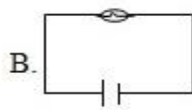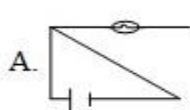   - D. kgm/s^2

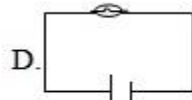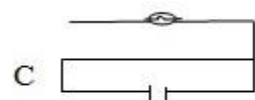(v) Materials that allow only part of light to pass through them are called _____
   - A. Translacent
   - C. Opaque
   - B. Transparent
   - D. Translucent

(vi) A force exerted by a pressure of $0.5m^2$ is _____
   - A. 0.05N
   - C. 0.025N
   - B. 0.0025N
   - D. 0.5N

(vii) For a device in an electric circuit to work the current must flow through it. Which of the following circuits will light the lamp?

(viii) Action and reaction never cancel each other because _____
   - A. They are in both opposite and the same direction
   - B. They are in the same direction
   - C. They act on different objects
   - D. They are not equal

(ix) If you need to measure your body temperature, which of the following instruments will you use?
   - A. Six's thermometer
   - C. Hydrometer
   - B. Maximum and minimum thermometer
   - D. Clinical thermometer

(x) Which of the following sources of energy are non-renewable?
   - A. Oil and all natural gases
   - C. Fossil, sun, oil and nuclear
   - B. Natural gas, water, nuclear and wood
   - D. Wind, sun, fossil and oil

(xi) The area under the velocity-time graph for a uniformly accelerated motion of a body represent_____
   - A. Acceleration
   - C. Velocity

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B.Retardation   D. Distance travelled

(xii) The change in momentum of an object when a force is applied is called _____

    A. Inertia   C. Impulse

    B.Movement   D. Deceleration

(xiii) The rate at which work is done is called _____

    A. Energy   C. Joule per time

    B.Watt   D. Power

(xiv)Electric current is expressed as _____

    A. Quantity of charge per unit time

    B.Voltage per unit time

    C.Resistance per unit voltage

    D. Charge per unit voltage

(xv) "All matter are composed of small particles" this is known as _____

    A. Liquid state   C. Kinetic molecular behaviour

    B.Solid state   D. Kinetic theory of matter

(xvi)An object measures 10N when in air and 9.2N when immersed in water. Its upthrust is _____

    A. 19.2N   C. -0.8

    B.0.8N   D. 19.82N

(xvii) The sticking together of two different objects is one of the application of _____

    A. Cohesion   C. Diffusion

    B.Adhesion   D. Osmosis

(xviii) Two plane mirrors making an angle of 60° to each other were placed in front of a pin. What is the number of images formed?

    A. 2   C. 4

    B.3   D. 5

(xix)Which of the following is an example of third class level? _____

    A. Scissors   C. Fishing rod

    B.Pliers   D. Nut cracker

(xx) Which of the following statement is correct about mass?

    A. It is measured by spring balance

    B.It can be zero

    C.It is measured by beam balance

    D. It varies with place.

2. Match each item in LIST A with correct response in LIST B by writing a letter of a correct response below the corresponding item number in the table provided.

LIST A	LIST B
(i) The energy associated with the volcanic activities. (ii) The energy due to afforestation and deforestation. (iii) The energy produced by the sun. (iv) The energy generated by means of large propeller on tall tower. (v) Natural resources that are used in the production of electricity without damaging the environment.	A. Sustainable energy sources B. Tidal energy C. Wood energy D. Wind energy E. Solar energy F. Hydroelectric energy G. Geothermal energy H. Chemical energy I. Non-renewable energy sources

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ANSWERS

LIST A	(i)	(ii)	(iii)	(iv)	(v)
LIST B					

3. Complete each of the following statement(s) by writing the correct answer in the space provided.
   (i) A tendency of a body to remain in its state of rest or uniform motion is called _____
   (ii) A device used in submarines to observe over an obstacle from a concealed position is called
   _____
   (iii) The basic physical quantities of measurement which cannot be obtained from any other quantities by either multiplication or division are called _____
   (iv) The weakest force among the four basic forces is called _____
   (v) Materials which do not obey Hooke's law are called _____

SECTION B (50 Marks)
Answer ALL questions in this section

4. (a) What do you understand by the following terms?
   (i) Surface tension

   _____
   _____
   _____

   (ii) Surfactants_____

   _____
   _____

   (b) Name the three factors affecting surface tension.
   (i) _____
   (ii) _____
   (iii)_____

   (c)Briefly explain why hot soup is testier than cold soup

   _____
   _____
   _____
   _____

5. (a)State two condition for a body to be unstable.
   (i) _____
   (ii) _____

   (b) Explain briefly why a ship has long and wide projecting plate extending from its base into the Water

   _____
   _____
   _____
   _____

   (a) A uniform half-metre rule AB is balanced horizontally on a knife edge placed 15cm from B with a mass of 90g at B.
   (i) Draw the diagram to show the above information

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(ii) Calculate the mass of the half-metre rule.

6. (a) Define the following terms as applied in physics
   (i)Floating_____
   _____
   (ii)Sinking_____
   _____
   (b) Briefly explain why a ship floats in water while a coin sinks
   _____
   _____
   _____

   (c)A piece of glass weighs 1.2N when in air and 0.8N when completely immersed in water.
      Calculate
      (i)The apparent weight loss

      (ii)The relative density of glass.

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(iii)The density of glass.

7. (a) Name three methods which are commonly used in magnetization process.
     (i)   _____
     (ii) _____
     (iii) _____
    (b) Define the following terms as applied in magnetism.
     (i)   Magnetism
           _____
           _____
     (ii) Magnetic field
           _____
           _____
           _____
    (c) With the aid of a well labelled diagram define neutral point in magnets

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8. (a) Explain the concept behind the following terms as applied in physics.

(i)Machine_____
_____
_____

(ii)Load_____
_____
_____

(b) The efficiency of the machine is not perfect 100%. Explain this by giving a reason.
_____
_____
_____

(c)A machine was used to raise a load 8000N through a height of height of 2M using an effort of 1600N. if the effort moved by a distance 5M. Calculate

(i) The mechanical advantage (MA)

(ii) The velocity ration (V.R)

SECTION C (20 Marks)
Answer all questions in this section

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9. (a) With the aid of diagram explain how pressure vary with depth

(b)Why is it easier to cut a piece of meat with sharp knife than with a blunt knife?
_____
_____
_____
_____
_____

(c)The piston of a hydraulic press has their areas given as $3 \times 10^{-4} m^2$ and $2 \times 10^{-2} m^2$ respectively. If the small piston is pushed down with a force of 120N. What is the force required to push the large piston?

10. (a) Distinguish between distance and displacement
_____
_____
_____
_____
_____
   (b) Write the three equation of motion of free fall starting with the first to the last
      (i) _____
      (ii) _____

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    (iii)   _____

(c) A car accelerates from a speed of 80m/s to a speed of 120m/s in 1minute. It then moves with this speed for 20seconds and finally decelerates uniformly to a stop after another 2minutes. Draw the velocity time graph to represent the motion and from the graph calculate:

  (i)   The deceleration of the car

  (ii)   The total distance travelled by the car