Candidate's Examination Number.....

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
FORM TWO SECONDARY EDUCATION EXAMINATION

031 **PHYSICS**

Time: 2:30 Hours **Friday, 20th November 2015 a.m.**

Instructions

1. This paper consists of sections A, B and C.
2. Answer **all** questions in the spaces provided.
3. **All** writing must be in blue or black ink **except** drawings which must be in pencil.
4. **All** communication devices and calculators are **not** allowed in the examination room.
5. Write your **Examination Number** at the top right corner of every page.
6. Where necessary the following constants may be used:
   (i) Acceleration due to gravity, $g = 10m/s^2$
   (ii) Density of water = $1g/cm^3$ or $1000kg/m^3$
   (iii) Pie, $\pi = \frac{22}{7}$

FOR EXAMINERS' USE ONLY		
QUESTION NUMBER	**SCORE**	**EXAMINERS' INITIALS**
1		
2		
3		
4		
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6		
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8		
9		
10		
TOTAL		

Candidate's Examination Number.....

SECTION A (20 Marks)

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

(i) A beam balance is used to measure
A Weight B Mass C Volume D Density.

(ii) Which of the following is **not** a form of energy?
A Chemical B Nuclear C Heat D Joule.

(iii) The speed of 72km/hr is equivalent to
A 120m/s B 1200m/s C 20m/s D 200m/s.

(iv) To minimize zero error the pointer of the instrument should be adjusted
A at zero mark B before zero mark C after zero mark
D at the middle mark.

(v) The region around a magnet is called
A Magnetization B Demagnetization C Magnetic field
D Magnetic domains.

(vi) The tendency of an object to fall or drop to lower levels in a fluid is called
A Floating B Sinking C Upthrust
D Buoyant.

(vii) The ability of a material to return to its original shape after deformation is called
A plasticity B plastic deformation C elastic limit
D elasticity.

(viii) The energy associated with areas of frequent earthquakes is known as
A Tidal energy B Solar energy C Geothermal energy
D Wind energy.

(ix) The image formed by plane mirror is always
A real B inverted C magnified
D left-right reversal.

(x) An instrument used to store electric charges is called
A Capacitance B Capacitor C Resistor
D Inductor.

(xi) A huge discharge of static electric charges between two clouds is called
A radar B thunder C lightning
D lightning conductor.

(xii) 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.

(xiii) The pressure exerted by a force of 120N over an area of $10cm^2$ is
A $20000N/m^2$ B $2000N/cm^2$ C $12000N/m^2$
D $120000N/cm^2$.

(xiv) The change in momentum of an object to which force is applied within a very short of time is called
A inertia B moment C impulse
D deceleration.

(xv) Molecular forces that are exerted between molecules of the same kind are known as
A adhesive B cohesive C upthrust
D surface tension.

(xvi) The point of support about which a bar or lever turns is referred to as a
A pointer B load arm C fulcrum
D pulley.

(xvii) The rate at which work is done is called
A energy B watt C joule per unit time D power.

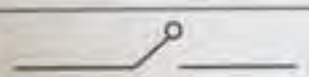
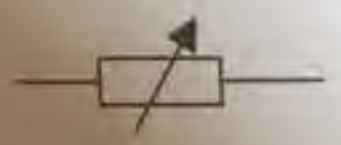
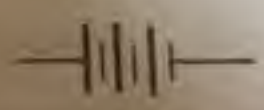
(xviii) The state of balance of a body is known as
A equilibrium B static equilibrium C dynamic equilibrium
D neutral equilibrium.

(xix) Water is unsuitable as a thermometric liquid because it
A boils at 80^0C B freezes at -112^0C C wets glass D does not wet glass.

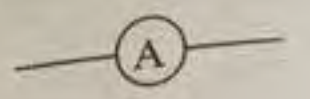
(xx) Which of the following is the property of gravitational force?
A It is repulsive in nature B It acts over a very long distance
C It is much stronger D It is non-central force.

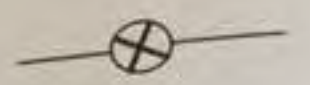
SECTION B (40 Marks)

2. Match each item in **List A** with a correct electric symbol in **List B** by writing its letter below the number of the corresponding item in the table provided.

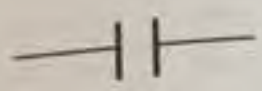
LIST A	LIST B
(i) Supplies electrical energy.	A. 
(ii) Convert electrical energy to heat and light.	B. 
(iii) Impedes the flow of current.	
(iv) Detect the presence of current.	C. 
(v) Measures current.	
(vi) Stores charge.	D. 
(vii) Measures potential difference.	
(viii) Opens and closes a circuit.	E. 

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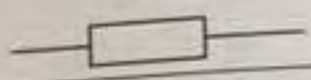
F. 

G. 

H. 

I. 

J. 

K. 

ANSWERS

List A	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)
List B								

3. Complete each of the following statements by writing the correct answer in the space provided.

(i) The quantity of space that an object occupies is known as.....

(ii) Occurs when a body's rate of change of displacement is constant .....

(iii) A physical quantity measured by using thermometer is referred to as.....

(iv) Causes an object to rotate or turn about a fixed point.....

(v) The angle between the geographic north and the magnetic north is called.....

4. (a) What is meant by capillary action.....

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(b) Differentiate between the following terms:

(i) Magnetization and demagnetization.

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(ii) Luminous and non-luminous bodies.

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(iii) Regular and irregular reflection of light.

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(iv) Conductor and insulator.

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5. (a) (i) Define friction.....

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(ii) Identify three effects of force.

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(b) (i) Define density and give its SI unit.

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(ii) List three applications of density in real life.

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6. (a) What is meant by First Aid?

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(b) Draw the symbols or warning signs for each of the following:

(i) Irritant.

(ii) Danger of an electric shock.

(iii) Toxic.

(iv) Flammable.

SECTION C (40 Marks)

7. (a) (i) Write three equations of motion.

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(ii) Distinguish between elastic and inelastic collision.

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(b) (i) State the principle of conservation of linear momentum.

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(ii) A 4kg object is moving to the right at 2m/s when it makes a head-on collision with a 5kg object moving with a velocity of 1m/s in the opposite direction. If both objects stick together after collision, calculate their common velocity.

8. (a) What is meant by the following terms as used in simple machines:
   (i) Pitch of the screw.
   .....
   .....
   (ii) Velocity ratio.
   .....
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(b) A screw jack with a pitch of 0.1cm and a handle of length 21cm is used to lift a car of weight 528N. If the efficiency of the screw is 20%, Calculate the

(i) Velocity ratio.

(ii) Effort required to raise the car.

9. (a) (i) Define potential energy.
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   (ii) A ball of mass 0.5kg is dropped from a height of 10m and on impact with the ground it loses 30J of energy. Calculate the height it reaches on the rebound.

(b) (i) State the principle of conservation of energy.

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(ii) Briefly describe the energy changes when the bob of a simple pendulum swings from one side to another.

10. (a) (i) Distinguish between a real and a virtual image.

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(ii) Calculate the number of images formed between two plane mirrors placed at 60^0.

(b) (i) List three applications of periscope in everyday life.

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(ii) State two properties of the final image formed in a periscope.

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