CANDIDATE'S NUMBER _____

042 SMZ

ZANZIBAR EXAMINATION COUNCIL

FORM THREE ENTRANCE EXAMINATION

PHYSICS

TIME: 2.30 Hours **Friday 18th September, 2015**

INSTUCTIONS TO CANDIDATES

1. This paper consists of THREE sections A, B and C.
2. Answer all questions in section A and B. Choose any two questions in section C, Question 9 is compulsory.
3. All answer must be written in the space provided under each question.
4. Write your examination number on each page.
5. Cellular phones are not allowed in the examination room.
6. Where necessary the following constant may be used.
   I) Acceleration due to the gravity, $g=10m/s^2$ ii) Pie, $\pi = 3.14$

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	MARKS	SIGNATURE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10		
11.		
TOTAL		

THIS PAPER CONSISTS OF 16 PRINTED PAGES

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SECTION A

SECTION A (30 Marks)

Answer all questions in this section

1. Write the letter of the most correct answer in the bracket against each question.

i) The force which causes tear and wear between machine part is known as ( )

A Friction B Torsional
C Repulsive D Magnet

ii) Ferry boats floats in sea water because its density is ( )

A Greater than that of water

B Smaller than that of water

C The same as its weight

D Greater than its weight

iii) The area under velocity-time graph represents ( )

A: Distance B: Speed
C: Acceleration D: Deceleration

iv) A temperature of 68^0 C is equivalent to ( )

A: 20^0 F B: 45^0 C
C: 154.4^0 F D: 90.4^0 F

v) "Action and reaction are equal in magnitude ( )
but opposite in direction." This statement refers to the

A Law of inertia B Newton "second law of motion
C Principle of moment D Newton's third law of motion

vi) Which of the following properties of mercury thermometric liquid. ( )

A: Boiling at 78^0 C B: Boils at 360^0C

C: Wet glass D: Expand rapidly

vii) Which of the following apparatus is used for measuring the volume of an irregular solid? ( )

A: Vernier clipper B: Micrometer screw gauge

C: Meter rule D: Measuring cylinder

viii) Which of the following is a magnetic material? ( )

A: Copper B: Cobalt C: Zink D: brass

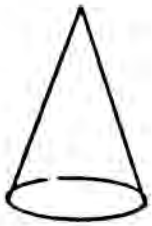
ix) The process by which water soaks through the cell of rice and bean is called ( )

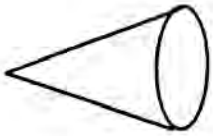
A: Capillary B: Cohesion

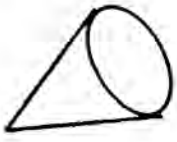
C: Diffusion D: Osmosis

x) Which of the following in stable equilibrium? ( )

A 

B 

C 

D 

2. **Match each item in list A with a correct response in List B by writing is letter below of the corresponding item in the table provided**

LIST A	LIST B
i) Fundamental quantity____ ii) Volume ____ iii) Relative density ____ iv) Measurement _____ v) Density ____ vi) Mass _____ vii) 1 tonne ____ viii) Digital balance ____ ix) Pipette ____ x) Tape measure _____	A. measure mass of gram 0.001 g B. Kg/m^3 C. Ratio of density of the substance to the density of water D. Archimedes principle E. The quantity of matter in an object F. 2000kg G. Transfer gas from one point to another H. 1000kg I. Measure the length of an object J. Transfer liquid from one container to another K. Length, mass and time L. Matron M. Length x width x height N. Tortional O. 8000 kgm

3. **For each of the items (i) – (x), fill in the blank spaces by writing the correct answer on the answer booklet provided**

i) Action and reaction forces never cancel because they act on_____ body.

ii) The property of liquid to form a layer which supports a pond skater to walk on it is called _____.

iii) The length of path taken by an object in motion _____.

iv) Sea wave energy is as a result of _____ the sea.

v) A screw jack work in the same way as _____.

vi) The suns ray travel in _____ line.

vii) Point where the net magnet field is zero is called _____.

viii) The automatics flushing tank uses the working principle of _____.

ix) The force that resists the movement of object through air_____.

x) The presence of electric charge in a body can be detected by means of _____.

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

4. a) State Pascal's principle of hydraulic press

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b) Explain why hitting an inflated balloon with hammer will not cause it to burst but sticking it with pin will burst

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c) A hydraulic break in certain machine has force of 600N applied to piston whose area is $5m^2$.

i) What is the pressure transmitted throughout the liquid?

ii) If the other piston has area of $20m^2$, what the force exerted on it?

5. a) State Archimedes principle

b) Explain briefly why a ship made of steel float in water while coin sink in water

c) An object weighs 60 N when in air and 40N when immersed in water.

Determine its

i) Relative density?

ii) Density

6. a) Differentiate between

i) Load and effort

iii) Mechanical advantage and velocity ratio

b) Explain why the efficiency of simple machine is never 100%

c) A machine having a velocity ratio of 5 required 600 J of work to raise a load of 400N. if the load moved through the distance of 0.5m, calculate:

i) Mechanical advantage of machine

ii) Efficiency

7. a) State Newton's second law of motion

b) Differentiate between elastic collision and inelastic collision

c) Trolley of mass 1.5kg is travelling at 6m/s. it collides with a stationary trolley B of mass 2kg. After the collision, the two continue traveliing together at 3m/s.

i) What is the momentum of A before the collision?

ii) What is the momentum of A after collision?

iii) Calculate the kinetic energy of each trolley after?

8. a) Define following term

i) Work

_____

_____

_____

_____

ii) Power

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_____

b) Explain why wonder wheel which was rotating become hot after Sudden stop?

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c.) A 1000kg car is travelling down the road at speed of 15m/s. how much kinetic energy does it have?

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SECTION C (20 Marks)

Choose any two 2 questions in this section. Question 9 is compulsory and. Answer either 9(a) or 9(b)

9. a) In one experiment small, a small steel sphere was released from an electromagnet and fell under the gravity until it hit a metal surface. The reading recorded in the table below were obtained

H (cm)	28	40.5	52.8	65.6	78.1	92.0
T (s)	2.40	2.87	3.38	3.67	3.99	4.33
$T^2(s^2)$						

i) Complete the table above by calculating the value of T^2

ii) Plot the graph of H against T^2

ii) Find the slope of the graph in (a) (ii) above.

iii) If the slope of your graph is $\frac{g}{200}$ where g is the acceleration due to gravity, calculate g

b) An experiment made by the two students from Haile sallasie secondary school to determine the résistance of the given conductor was carried out and part of the result were as follows:

Votage,V(v)	2	6	10	14	18
Current I(A)	0.1	0.4	0.7	1.0	1.3

i) Plot of the graph of V against I

ii) Find the slope of the graph, what the slope mean

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iii) State the law that obey in this experiment

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10. Explain the applications of earth's magnetic field in our daily life activity.

11. a) State the important of physics in your life.

b) Explain the four areas where physics is applied.