

CANDIDATE'S NUMBER _____

042

SMZ

ZANZIBAR EXAMINATION COUNCIL
FORM THREE ENTRANCE EXAMINATION
PHYSICS

TIME: 2.30 Hours

Friday 18th September, 2015

INSTRUCTIONS 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, $g=10\text{m/s}^2$ 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

SECTION A

SECTION A (30 Marks)

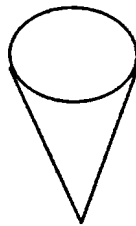
Answer all questions in this section

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

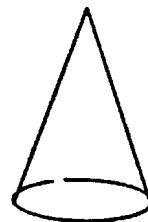
- i) The force which causes tear and wear between machine part is known as ()
A Friction B Torsional
C Repulsive D Magnet
- ii) Ferry boats floats in sea water because its density is ()
A Greater than that of water
B Smaller than that of water
C The same as its weight
D Greater than its weight
- iii) The area under velocity-time graph represents ()
A: Distance B: Speed
C: Acceleration D: Deceleration
- iv) A temperature of 68°C is equivalent to ()
A: 20°F B: 45°C
C: 154.4°F D: 90.4°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°C B: Boils at 360°C
 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? ()

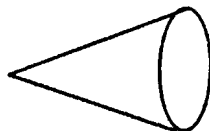
A



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_____	A. measure mass of gram 0.001 g
ii) Volume _____	B. Kg/m ³
iii) Relative density _____	C. Ratio of density of the substance to the density of water
iv) Measurement _____	D. Archimedes principle
v) Density _____	E. The quantity of matter in an object
vi) Mass _____	F. 2000kg
vii) 1 tonne _____	G. Transfer gas from one point to another
viii) Digital balance _____	H. 1000kg
ix) Pipette _____	I. Measure the length of an object
x) Tape measure _____	J. Transfer liquid from one container to another
	K. Length, mass and time
	L. Matron
	M. Length x width x height
	N. Torsional
	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 sun's rays travel in _____ line.
- vii) Point where the net magnetic field is zero is called _____.
- viii) The automatic flushing tank uses the working principle of _____.
- ix) The force that resists the movement of an 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

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

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

- i) What is the pressure transmitted throughout the liquid?

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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

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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 traveling 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

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

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

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

i) Plot of the graph of V against I

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

iii) State the law that obey in this experiment

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