

NAME.....INDEX NO.....
CANDIDATE'S SIGN.....DATE.....
SCHOOL.....

232/1
PHYSICS
PAPER 1
THEORY
MAY/JUNE 2014
TIME: 2 HOURS

EKSIKA JOINT EVALUATION TEST.

Kenya Certificate of Secondary Education (K.C.S.E)

232/1
PHYSICS
PAPER 1
THEORY
MAY/JUNE 2014
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES.

- 1) Write your name and index number in the spaces provided above.
- 2) Sign and write the date of examination in the spaces provided above.
- 3) This paper consists of section A and B.
- 4) Answer **ALL** questions in section A and B.
- 5) All your workings must be clearly shown as must be awarded for correct working even if the answer is wrong.
- 6) Non programmable silent scientific calculators and KNEC mathematical tables may be used.

FOR EXAMINERS' USE ONLY.

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATES SCORE
A	1 - 13	25	
B	14	10	
	15	12	
	16	10	
	17	12	
	18	11	
		80	

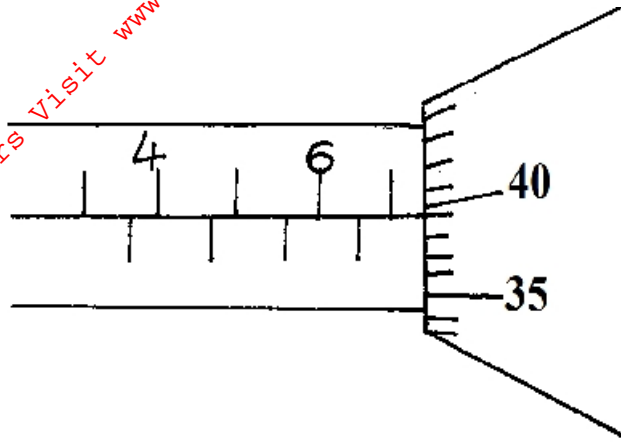
This paper consists of 8 printed pages.

Candidates should check the question paper to ascertain that all pages are printed as indicated and no questions are missing.

SECTION A (25 MARKS)

Answer All the questions in this section in the spaces provided after each question.

- 1 The micrometer screw gauge shown had an error of -0.03mm and was used to measure the diameter of a ball bearing.



Find the radius of the ball bearing whose diameter is recorded by the instrument.

(2mks)

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- 2 State **two** properties of a liquid that is considered during the construction of a liquid – in – glass thermometer.

(2mks)

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- 3 Explain why steel is selected as a better material for reinforcement for a concrete beam.

(1mk)

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- 4 Water tanks supplying showers and taps in a house are erected as high as possible. Explain.

(2mks)

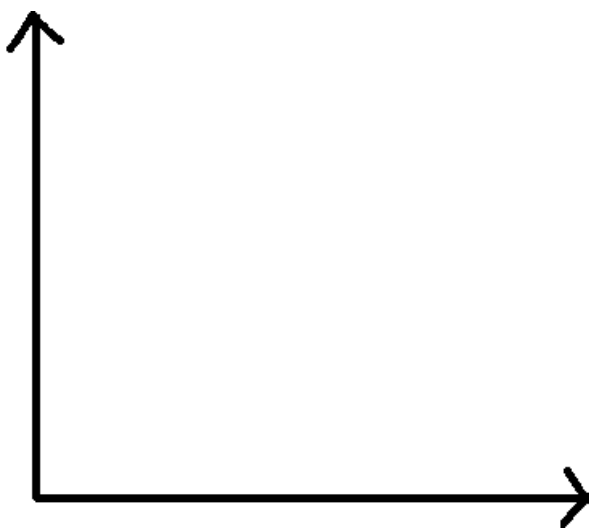
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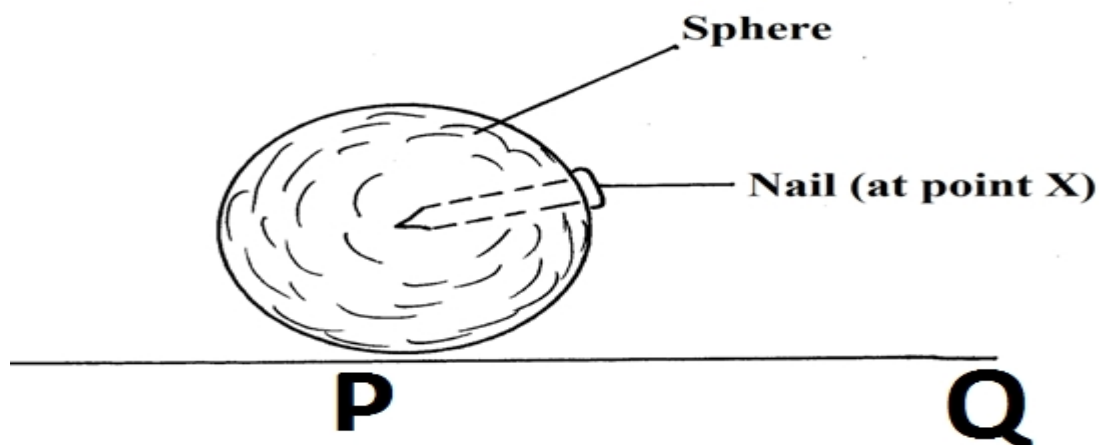
- 5 Explain why a dead dog thrown next to school smells so much during the day than during cold morning. (1mk)

- 6 Pure water at 0°C is heated upto 10°C sketch the graph its volume against temperature on the axis given below. (2mks)



- 7 State **one** limitation of the gas law. (1mk)

- 8 The figure below shows a homogenous wooden sphere with a nail driven or hammered into it at a point x as shown below.



The sphere is allowed to roll after a little push on it. On what position will it settle along the plane PQ. Give a reason for your answer. (2mks)

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- 9 A drop of oil has a volume of $3.0 \times 10^{-6} \text{ m}^3$ and spreads to form a patch of radius 16cm on the surface of water. Determine the thickness of the oil patch. (3mks)

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- 10 A ball is kicked from a table top horizontally so that it moves and fall some distance on the horizontal ground 65cm away from the base of the table. If the table is a half a metre tall, calculate the initial horizontal velocity of the ball. (3mks)

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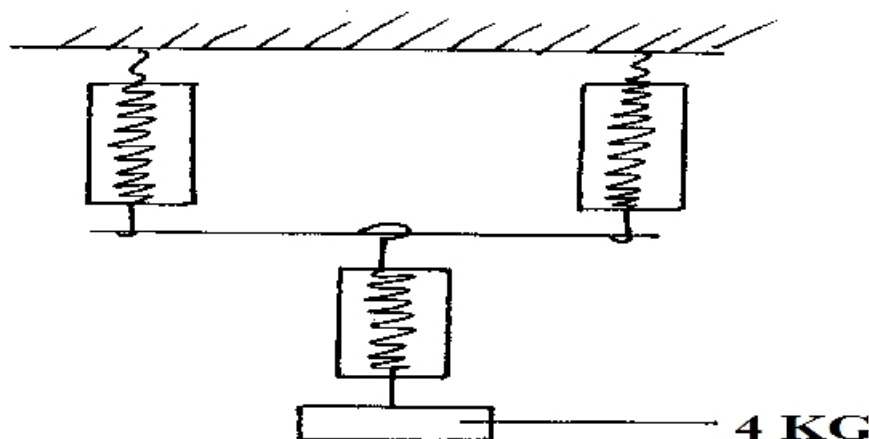
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- 11 Three identical spring balances of spring constant 40N/M and weight 0.5N are used to support a load as shown. Determine the total extension of the system. (3mks)



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- 12 Curtains on the doors and windows are seen to bulge or hang outwards when there is a wind blowing across them. Explain this phenomenon. (2mks)
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- 13 The temperature of a cold drink from a fridge was found to be 261kelvin.What temperature would this be in degrees centigrade. (1mk)
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SECTION B (55MARKS)

Answer All the questions in this section in the spaces provided after each question.

- 14 a) State the Archimade's principle. (1mk)
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- b) The reading on a spring balance is 7.2N when a metal ball bearing is hung from its lower end in air the density of the metal is 9.00g/cm^{-3} and that of water is 1.00g/cm^{-3} .The ball is immersed in water in a Eureka can until it is completely submerged. (3mks)
- i) What is the volume in m^3 of water displaced.
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- ii) What is the reading of the spring balance in N when the ball is completely submerged in water. (3mks)

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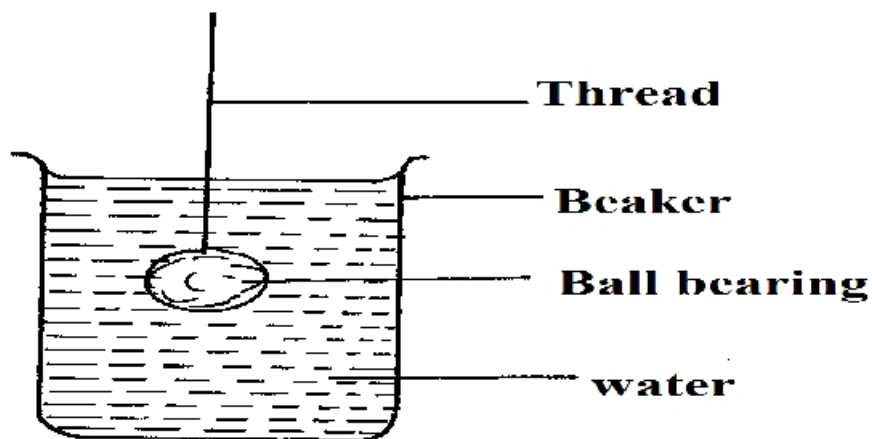
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- c) Using the model below show all the forces that are acting on the metal ball bearing as it moves through the water (indicate with arrows). (3mks)



- 15 a) Name the two necessary conditions for a body to be in equilibrium.(2mks)

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- b) The handle of a door is fitted furthest from the hinges during its assembly for easy operation. Explain this. (2mks)

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- c) If the handle were to be at 75cm from the hinges and a force of 70N were applied on it to open the door, determine the moment of force that would be experienced. (3mks)

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- d) Explain what is meant by a uniform beam in equilibrium. (2mks)

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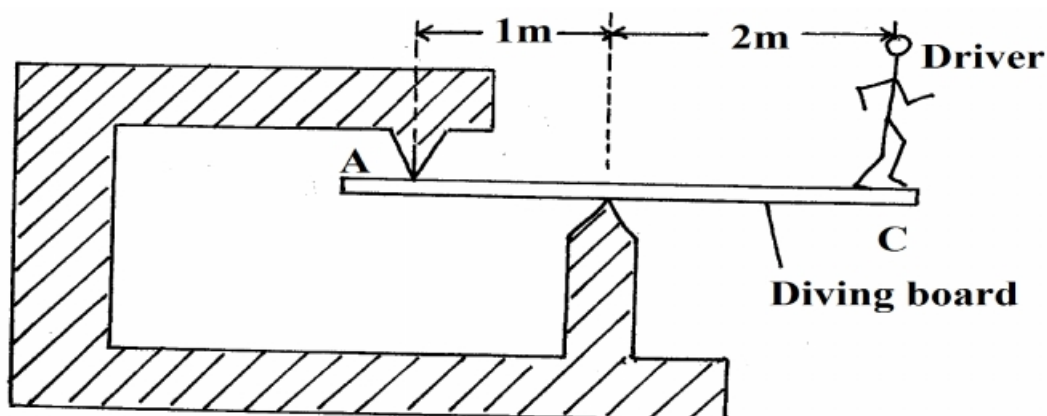
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- e) The figure below shows a simple form of a diving board.



The diver has a mass of 60kg. Calculate the magnitude and show the direction of the force acting at A if the board is uniform and has a mass of 20kg. (3mks)

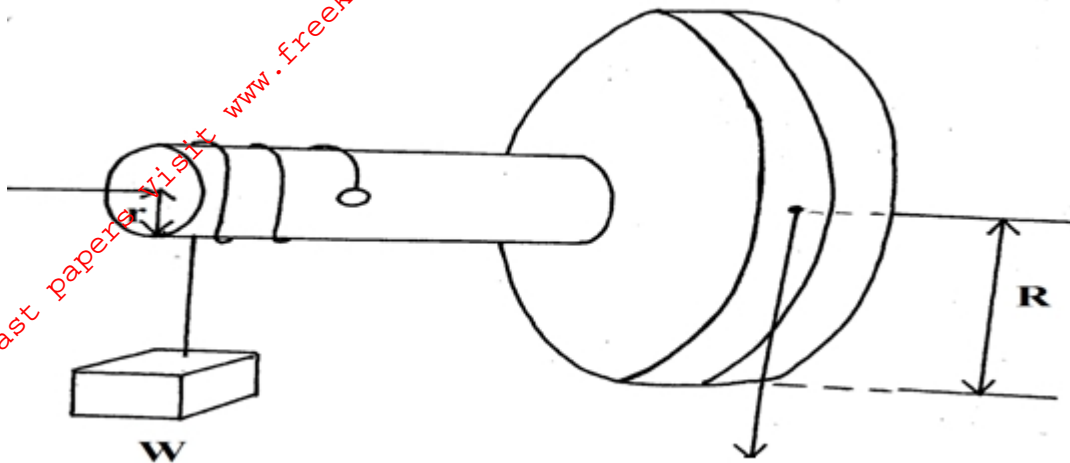
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- 16 a) The following figure shows a wheel and axle used to raise a load W by applying an effort, F . The radius of the large wheel is R and that of the small wheel is r .



- i) Show that the velocity ratio (V.R) of the machine is given by $\frac{R}{r}$ (2mks)

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- ii) Given that $r = 8\text{cm}$ and $2R = 20\text{cm}$, determine the effort required to raise a load of 40N if the efficiency of the system is 85% . (4mks)

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- b) i) Give **two** examples of renewable sources of energy. (2mks)

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- ii) Distinguish between work and effort. (2mks)

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- 17 a) An object which is moving over a horizontal surface does not continue its motion with a constant acceleration when the acceleration force is discontinued. The motion decays to zero finally. Explain what is responsible for this observation. (2mks)

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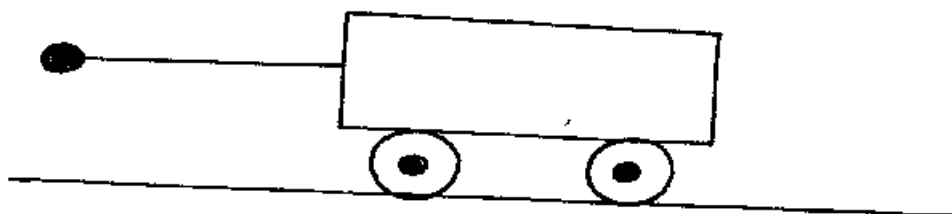
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- b) A trolley of mass 5.00kg rests on a plain horizontal ground shown in the figure below.

- i) On the sketch below show the forces acting on it when pulled in one direction (4mks)



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- ii) When trolley is pulled with a horizontal force of 24N, the trolley accelerates at 3ms^{-2} . Find the frictional force acting on the trolley. (3mks)

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- c) An automobile of mass 500kilograms is accelerated from rest a long a horizontal surface. The force produced by the engine is 300N and that due to friction is 50N.What is the accelerating force and what is the acceleration produced? (3mks)

- 18 a) State what is meant by streamline flow. (1mk)

- b) The figure below shows a cross-section of an aeroplane wing (aerofoil) with the aeroplane moving in the direction shown by the arrow.



- i) Sketch treamline to show how air flows past the wing as the aeroplane move. (1mk)

- ii) Explain how dynamic lift of the aeroplane is caused by the wing. (2mks)

- c) i) Write down the expression for the equation of continuity and explain its components. (2mks)

- ii) Explain how air is drawn into the barrel of a Bunsen burner when the gas supply is opened. (2mks)

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- d) A water pipe of diameter 5.2cm is connected to another pipe of diameter 1.3cm. The speed of the water in the smaller pipe is 3ms^{-1} . What is the speed of the water in the larger pipe. (3mks)

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