Name .....Index No. .....

Adm.No: .....

232/1
PHYSICS
Paper 1
July / August - 2013
Time: 2 Hours

MARANDA SCHOOL MOCK-EXAMINATIONS - 2013

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

232/1
PHYSICS
Paper 1
July / August - 2013
Time: 2 Hours

INSTRUCTION TO CANDIDATES

- *Write your name and index number in the space provided above.*
- *This paper consists of TWO sections A and B.*
- *Answer ALL questions in sections A and B in the spaces provided.*
- *ALL working must be clearly shown.*
- *Mathematical tables and electronic calculators may be used.*
  Take g = 10 ms^{-2}

FOR EXAMINER'S USE ONLY

SECTION	QUESTIONS	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1 - 12	25	
B	13	15	
	14	12	
	15	14	
	16	07	
	17	07	
	TOTAL	80	

This paper consists of 12 printed pages. Candidates should check the question paper to ascertain that all the Pages are printed as indicated and no questions are missing.

SECTION A:

1. (a) Form one yellow students wanted to use a metre rule to take the dimensions of their physics text book. Give at least two things they must do in order to obtain accurate lengths. (2mks)

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(b) State one advantage that a Six's thermometer has over a mercury – in - glass thermometer. (1mk)

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2. A hosepipe of internal diameter 4.0 cm is connected to a sprinkler with 25 holes, each of diameter 0.04 cm. The water in the pipe flows at a speed of $5cms^{-1}$. Determine the velocity with which the water leaves the sprinkler. (2mks)

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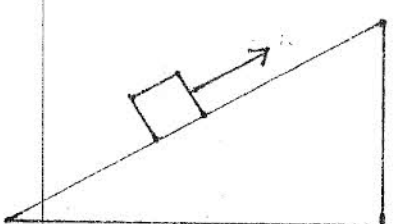
3. The diagram below shows a body of mass 5 kg being pulled up a smooth plane inclined at 60^0 to the horizontal by a force 60 N acting parallel to the plane.



Calculate the acceleration of the body. (3mks)

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4. Draw a diagram to represent a micrometer screw gauge of thimble scale 50 division with a reading of 5.95 mm. (2mks)

5. Explain why walking on water is more difficult than walking on hard surface. (1mk)

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6. Why are the balloons used for high altitude observation are not fully inflated before being released. (2mks)

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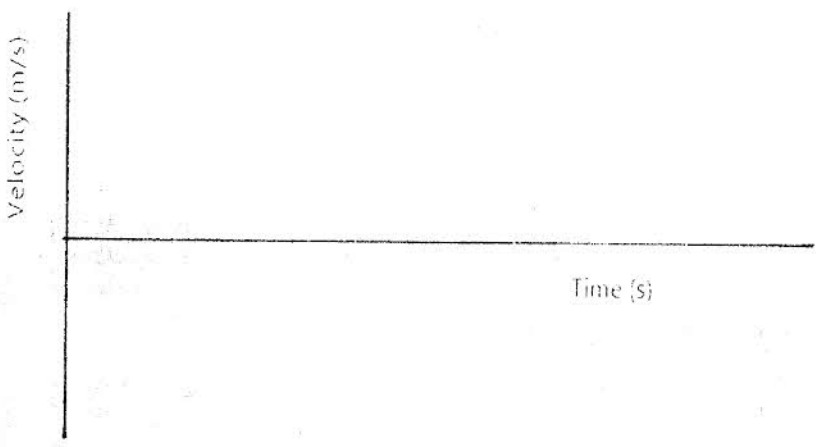
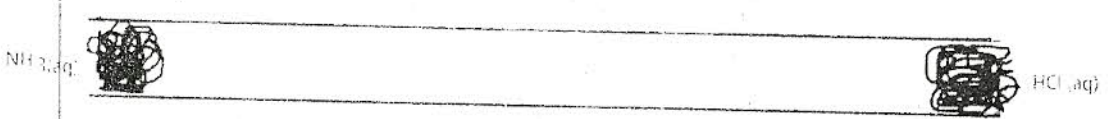
7. A ball is projected vertically upwards at 6 ms^{-1} .Draw the velocity-time graph for the ball's motion on the axes below? (1mks)



8. A piece of iron of mass 250g is heated to 1000°C and then placed in a well-lagged container of ice blocks at 0°C. Calculate the mass of the ice that melts if the temperature of the iron drops to 0°C. (Latent heat of vaporization of ice $3.4 \times 10^5 JKg^{-1}$, specific heat capacity of iron as 460 $Jkg^{-1}K^{-1}$)

(3mks)

9. The diagram below shows a set-up used to compare rates of diffusion of ammonia and hydrogen chloride gases.



(i) State the observation made in the experiment (1mk)

(ii) Explain the observation made above. (1mk)

10. In the diagram below, the liquid shaded is mercury and the atmospheric pressure 760mmHg.

Find the pressure of the air in the tube at A in mmHg. (2mk)

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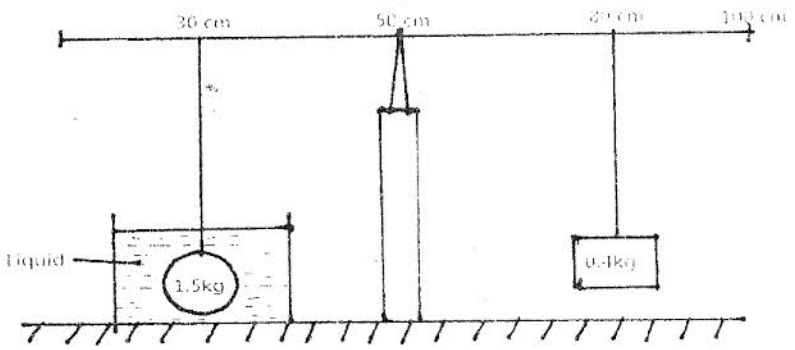
11. The diagram below shows two bodies hanging from the 30 cm and 80 cm mark of a uniform metre rule. One of the bodies of mass 1.5 kg and volume 0.001 m^3 is immersed in a liquid.



If the system is in equilibrium, calculate the density of the liquid. (3mks)

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SECTION B

13. (a) Distinguish between distance and displacement (1mk)

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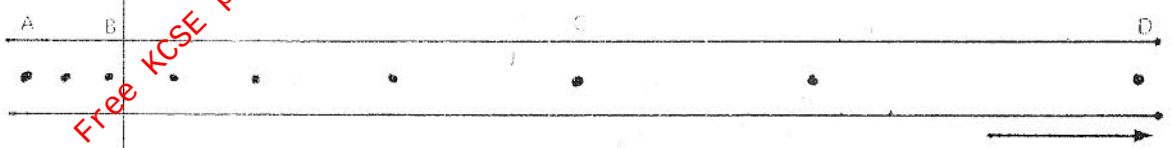
(b) The figure below shows the motion of a trolley on a ticker timer whose frequency is 50Hz.



If the tape is drawn to scale:

(i) Calculate the initial velocity and final velocity of the trolley. (2mks)

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(ii) Calculate the acceleration of the trolley throughout the motion. (2mks)

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(b) A small iron ball is dropped from the top of a vertical cliff 45m high. Given that velocity just before striking the sandy beach is 30m/s, and the ball penetrates the sand to a depth of 10cm, determine its average retardation. (3mks)

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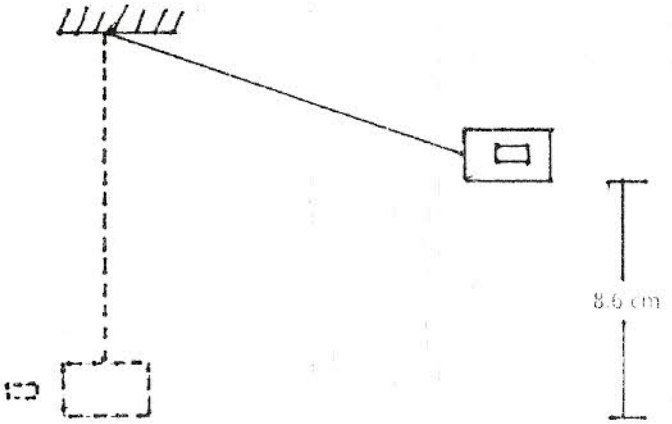
(c) A bullet of mass 2g is fired horizontally into a block of wood of mass 498g. The block is suspended by a light inextensible string so that it is able to move in a vertical plane. The block and the bullet move together through a vertical distance of 8.6cm as shown below.



(i) Calculate the change in gravitational potential energy of block and bullet. (2mks)

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(ii) Calculate the initial velocity of the block and bullet after they start moving together. (2mks)

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(iii) Determine the speed of the bullet before the impact with the block. (3mk)

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14. (a)State one factor that affect the rate at which water in a beaker will evaporate. (1mks)

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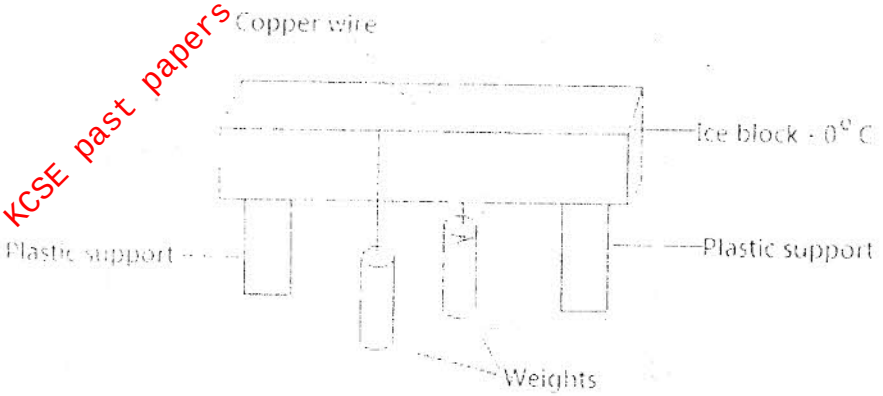
(b). Study the diagram below and use it to answer the questions (i) and (ii).



(i) State what is likely to be observation after sometimes. (1mk)

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(ii) The copper wire was then replaced with a cotton thread state and explains the observation. (2mk)

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(b) A block of metal of mass 150g at 100°C is dropped into a lagged copper calorimeter of heat capacity $40JK^{-1}$ containing 100g of water at 25°C. The temperature of the resultant mixture is 34°C. (C_{water} = $4200JKg^{-1}K^{-1}$)

Determine:

(i) Heat gained by calorimeter. (2mks)

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(ii) Heat gained by water (2mk)

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(iii) Heat lost by the metal block. (2mk)

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(iv) Specific heat capacity of the metal block. (2mks)

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15. (a)State the law of floatation. (1mk)

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(b) A hydrometer of mass 20g floats in oil of density 0.8 g/cm^3, with 5 cm of its stem a above the oil. If the cross sectional area of the stem is 0.4 cm^2. calculate:

(i) The total volume of the hydrometer. (3mks)

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(iii) The length of the stem out of water. if it floats in water of density 1 g/cm^3 (3mks)

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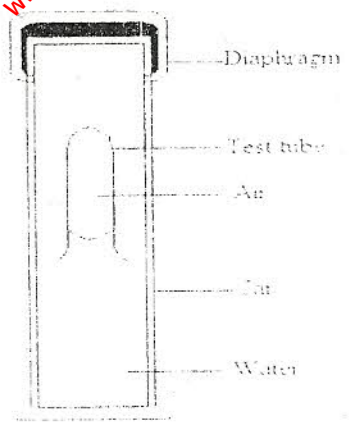
(c)A test tube containing some water and air is made to float inside a glass jar full of water and a tight diaphragm fixed at its mouth as shown below.



If the diaphragm is pressed downwards, state and explain this observation. (2mks)

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(d)A stone weighs 2 N in air and 1.2 N when totally immersed in water. Calculate;

(i) The volume of the stone (3mks)

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(ii) The density of the stone (2mks)

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16. (i) State Newton's first law of motion. (1mk)

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(ii). A lorry of mass 5,000kg and a car of mass 1200kg are both traveling on a dual carriage way at the same velocity. If both drivers apply the same breaking force. state with reason which one will come to stop first. (2mks)

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iv).A driver driving a car of mass 1200 kg at a constant speed of 72km/h is flagged down by a traffic police officer 145m away. It takes him 2 seconds to react to the police signal and brings the car to rest by applying a constant breaking force in 10 seconds. Determine:

(i) the minimum stopping distance (3mks)

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(ii) State whether it will hit the traffic police officer or not (1mks)

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17.(a) Define the term angular acceleration. (1mk)

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(b) A stone is tied to the end of a string is whirled in a circle. If the string is allowed to wrap round a stick, thus steadily reducing the radius of the circle, what happens to the speed of the stone. (1mk)

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(c) A mass of 2 kg is attached to a string of length 60 cm. It is whirled in a circle in a vertical plane at 10 revolutions for every 2 seconds. Calculate the tension in the string when the is at the: (3mks)

(i) Highest point of the circle

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(ii) Lowest point of the circle (2mks)

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