Name ……..…… **Index No. ..……..…….…**

School ……... **Candidates Sign: ……....…..…**

Date: ……..

232/1
PHYSICS
Paper 1
July / August – 2008

BONDO – RARIEDA DISTRICTS JOINT EVALUATION TESTS- 2008

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

232/1
PHYSICS
Paper 1
July / August – 2008

INSTRUCTION TO CANDIDATES

- Write your name, index number and school in the spaces provided.
- This paper consists of TWO sections: A and B.
- Answer ALL questions in section A and B in the spaces provided.
- ALL workings MUST be clearly shown.
- Mathematical tables and electronic calculators may be used.

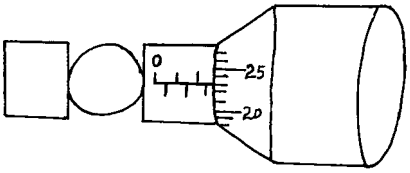
FOR EXAMINERS USE ONLY

Section	Question	Maximum Score	Candidates Score
A	1 – 12	25	
B	13	13	
	14	10	
	15	11	
	16	10	
	17	11	
	TOTAL	80	

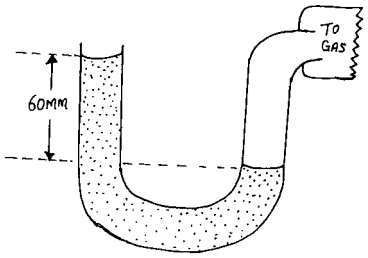
This paper consists of 13 printed pages.
Candidates should check the question paper to ensure that all the
Pages are printed as indicated and no questions are missing.

SECTION A (25 MARKS)

A ball bearing of mass 0.0015Kg is held between the anvil and spindle of a micrometer screw gauge. The reading on the gauge when jaws are closed without anything in between is 0.11cm. Use this information and the portion of the scale in the figure below to answer questions 1 and 2.

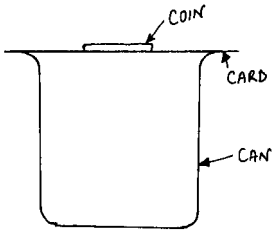


1. What is the diameter of the ball bearing? (2 mks)
2. Find the density of the ball bearing giving your answer correct to three significant figures. (2 mks)
3. Lycopodium powder is lightly sprinkled on a clean water surface in a large tray. A red hot needle is plunged into the centre of the water surface. State and explain the observation. (2 mks)
4. The figure below shows a U-tube manometer containing oil. One end is connected to a gas tap.



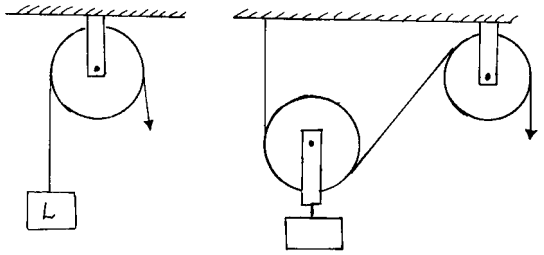
Given that atmospheric pressure is 1.0×10^5 Pa, determine the pressure of the gas. (The density of the oil is $900Kgm^{-3}$) (3 mks)

5. Water at 24^0C fall through a height of 72m to the bottom of a dam. Calculate the temperature of the water at the bottom of the dam. (Take specific heat capacity of water as $4200JKg^{-1}K^{-1}$) (3 mks)
6. Use the kinetic theory of gases to explain pressure law. (1 mk)
7. The figure below shows a smooth card placed on the open end of a car. A coin is placed on the card. When the card is horizontally pulled away suddenly, the coin drops in the can.



Explain this observation. (2 mks)

8. A load was raised using the system shown below as in figure (a). The system was then modified as shown in figure (b) and used to raise the same load.

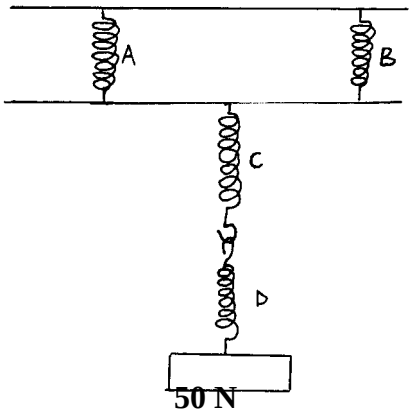


a) **L** b)

Explain the change in efficiency. (2 mks)

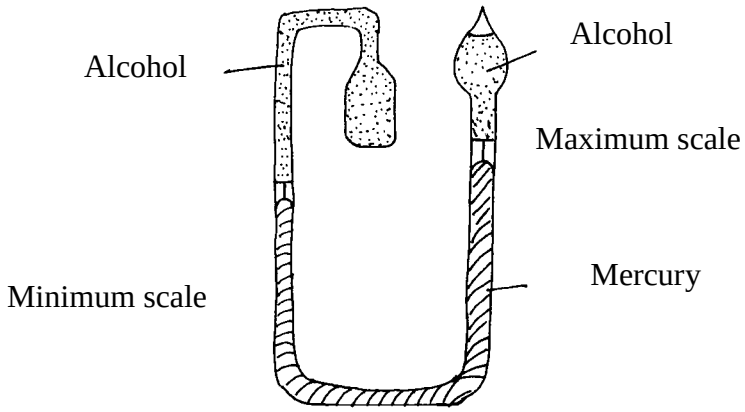
9. The passengers in a bus would complain about smoke if the driver smokes when in the driver's seat and the bus is stationary but not when the bus is moving. Explain. (2 mks)

Study the figure below and answer the question that follows.



10. The springs A, B, C and D are identical and each extends by 2cm. When a force of 10N is s suspended from it. Determine the extension of the system. (3 mks)

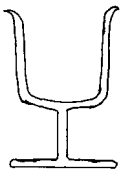
11. The figure shows a six's maximum and minimum thermometer.



(i) State the thermometric liquid of the thermometer. (1 mk)

(ii) State any one feature which makes the thermometers suitable for its function. (1 mk)

12. The figure below shows a wire glass.

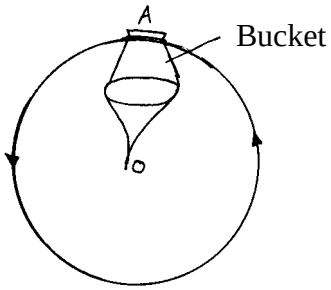


State how the stability of the wine glass is affected if it is being filled with wine. (1 mk)

SECTION B (55 Marks)

Answer all the questions in this section

13. a) The figure below shows a bucket filled with water of mass 5kg tied to a string 3.6m long being rotated in a vertical circle with a constant speed of Vm/s



Calculate the minimum speed the bucket takes to rotate in position A so that the water remains in the bucket. (Take g = 10m/s^2) (3 mks)

b) The table below gives the centripetal force F acting on a body moving in a circle of radius 2m for different speeds V of the body.

Force (F) N	0.4	1.6	3.6	6.4	10.0	14.4
Speed (V) m/s	1.0	2.0	3.0	4.0	5.0	6.0
V^2						

(i) Complete the table above. (1 mk)

(ii) Plot a graph of F against V^2 (5 mks)

(iii) Use the graph to determine the mass of the body. (4 mks)

14. a) (i) State <u>two</u> factors that affect melting and boiling points of a substance. (2 mks)

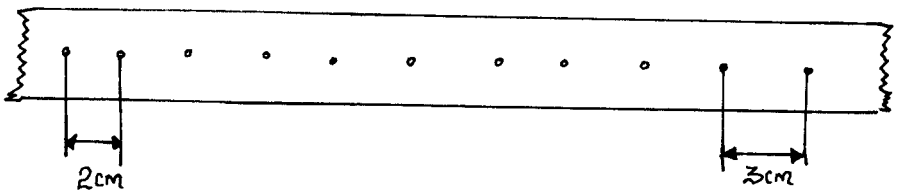
……

(ii) State <u>two</u> applications of the factors above on melting of ice. (2 mks)

(iii) Describe an experiment using a diagram you can use to show the effect of reduced pressure on boiling point. (5 mks)

b) Define the term specific latent heat of vaporization of a substance. (1 mk)

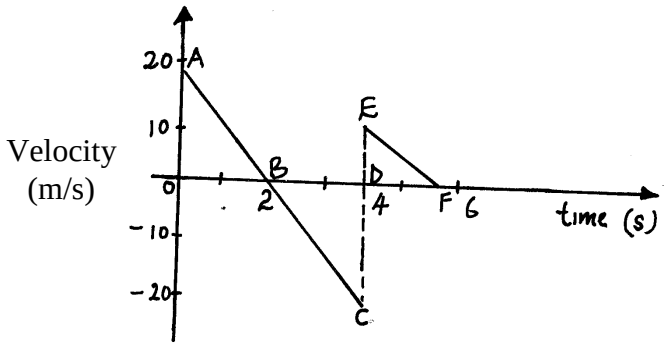
15. a) The figure below shows a section of a ticker tape. The dots were made at a frequency of 50Hz



(i) Determine the acceleration of the trolley pulling the tape. (3 mks)

(ii) Distinguish between the terms ‘uniform velocity’ and ‘uniform acceleration’ (1 mk)

b) The graph below shows a part of the motion of a basket ball which is projected vertically upwards from the ground and allowed to bounce on the ground.



(i) Describe the motion of the ball relating it to its different positions along the following.

I AB (1 mk)

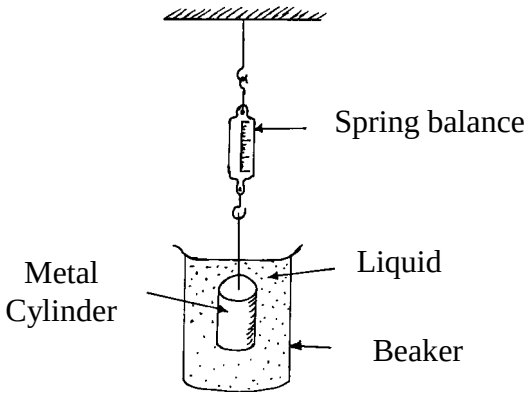
II BC (1 mk)

III CE (2 mks)

(ii) From the graph calculate the acceleration due to gravity. (2 mks)

c) State Newton's second law of motion. (1 mk)

16. a) In an experiment to determine the density of a liquid, a uniform metal cylinder of cross – sectional area 3.4cm^2 and length 4.5cm was hung from a spring balance and lowered gradually into the liquid as shown below. (Take g = 10m/s^2)



The upthrust was calculated from the spring balance and it was found to be 0.5N when the cylinder was fully submerged. Determine;

(i) The volume of the metal cylinder. (3 mks)

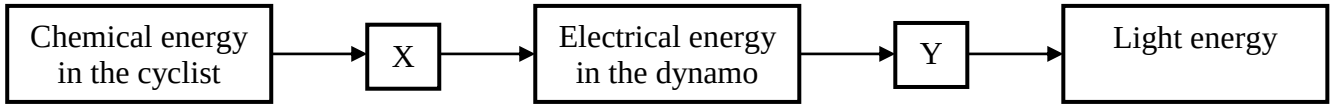
(ii) Mass of the liquid displaced by the cylinder. (2 mks)

(iii) Density of the liquid. (3 mks)

b) (i) State Archimede's principle. (1 mk)

(ii) State when the law of flotation is applicable. (1 mk)

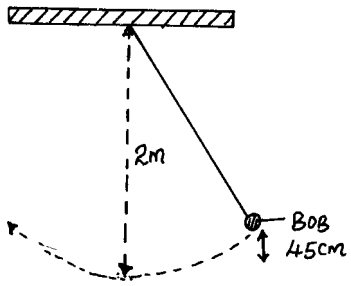
17. a) The energy chain below is of the lighting system of a bicycle.



(i) Fill in X and Y (2 mks)

(ii) Other than light energy, what energy is produced from Y? (1 mk)

b) A bob of mass 10kg is suspended using a string 2m from a support and swings through a vertical height of 45cm as shown in the figure below.

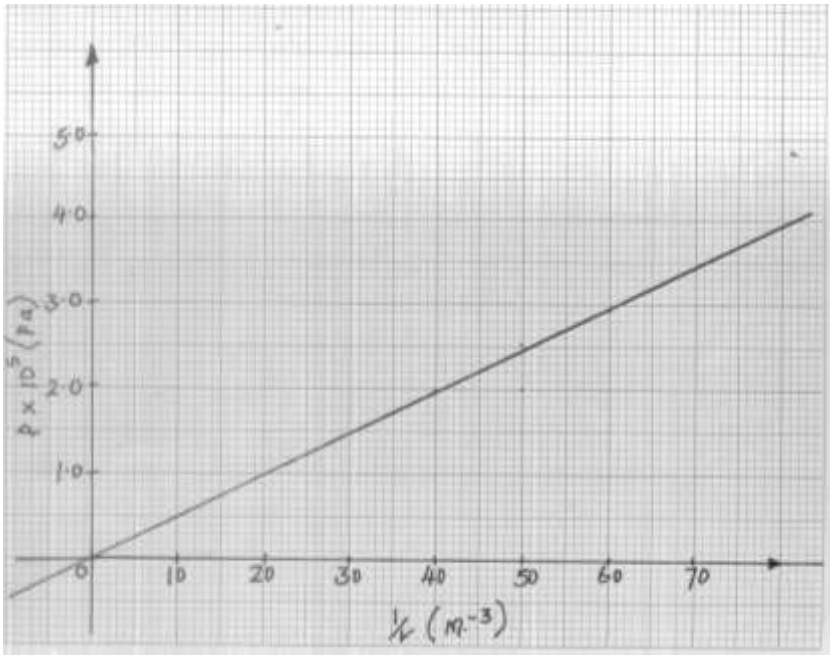


Determine

(i) The potential energy of the bob at its position. (2 mks)

(ii) The speed of the bob when passing through the lowest point. (2 mks)

c) The pressure P_1 of a fixed mass of a gas at constant temperature, T = 300K is varied continuously as depicted in the graph below.



(i) From the graph, determine the volume of the gas when the pressure read 2.5×10^5 Pa. (2 mks)

(ii) Given that pV = 2RT where R is a constant, use the graph to determine R. (2 mks)

END