NAME…… INDEX……..

SCHOOL…… CANDIDATE SIGN…….....

DATE…….

232/1
PHYSICS
Paper 1
July/August- 2015
Time: 2 Hours

BONDO SUB-COUNTY SECONDARY SCHOOLS JOINT EVALUATION- 2015

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

232/1
PHYSICS
Paper 1
July/August- 2015
Time: 2 Hours

INSTRUCTIONS;

- Write your name and index number in the spaces provided above
- Sign and write the date of the examination in the spaces provided above
- This paper consists of two Sections A and B
- Answer all the questions in sections A and B in the spaces provided
- All working MUST be shown in the spaces provided in this booklet
- Non- Programmable silent electronic calculators and KNEC mathematical tables may be used except where stated otherwise.

FOR EXAMINER'S USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
A	1-14	25	
B	15 16 17 18 19	10 13 14 19 09	
TOTAL		**80**	

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

SECTION A (25 marks)

1 Two burettes A and B were arranged as shown in figure below.Burette A leaked into be at a rate of 10drops per minutes.If the initial reading in both the burettes was $25cm^3$.What would be their reading at the end of one hour if B does not leak? (Take volume of one drop of water=$2.0x10^{-9}cm^3$ (3marks)

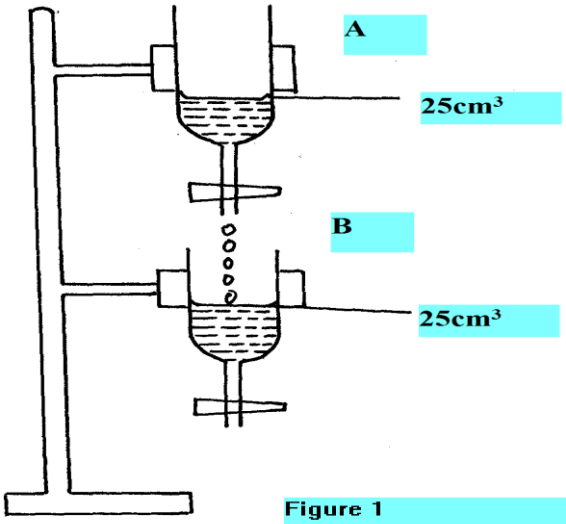


Figure 1

2 Two identical solid cuboids A and B are placed on a uniform meter rule pivoted at its centre,as shown in figure 2.State and explain the observation (2marks)

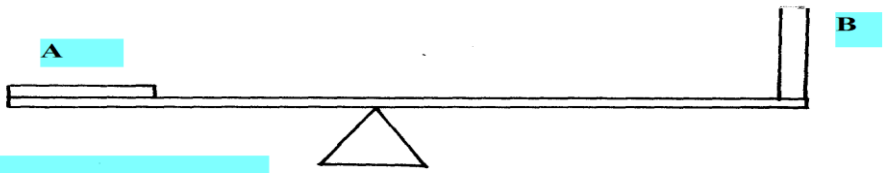


Figure 2

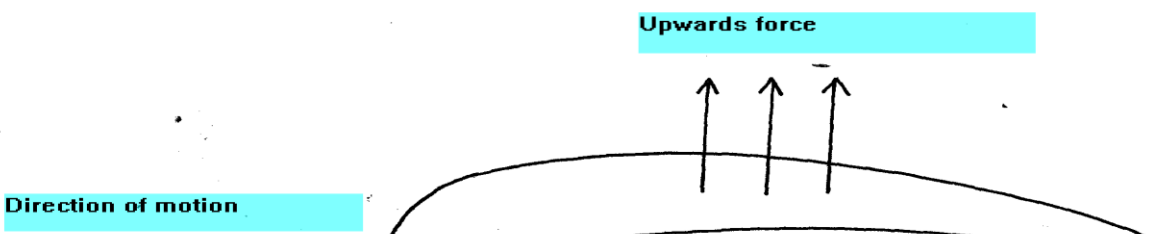
3 Use the kinetic heavy to explain why pressure of a gas in a sealed container increases when it is heated (2marks)

……

……

……

4 Figure 3 shows a cross-section of an aeroplane wing as it moves at a constant speed.An upward force equal and opposite to its weight is exerted on its wings



(a) What is the cause of the upward force (2marks)

……

……

……

……

(b) Why is the shape of the wings crucial in producing this upward force (1mark)

……

……

5 Figure 4 below shows a trolley on a level surface

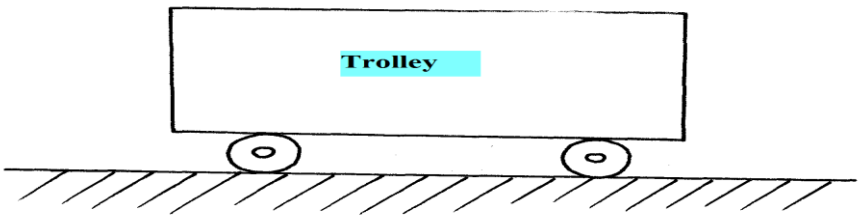


Figure 4

The frictional between the trolley and the surface is 0.5N.Describe the motion of the trolley when pulled by a force of 0.5N to the right (1mark)

……

……

……

……

6 Figure 5 below shows a test tube with hot water placed equidistant between two thermometer A and B

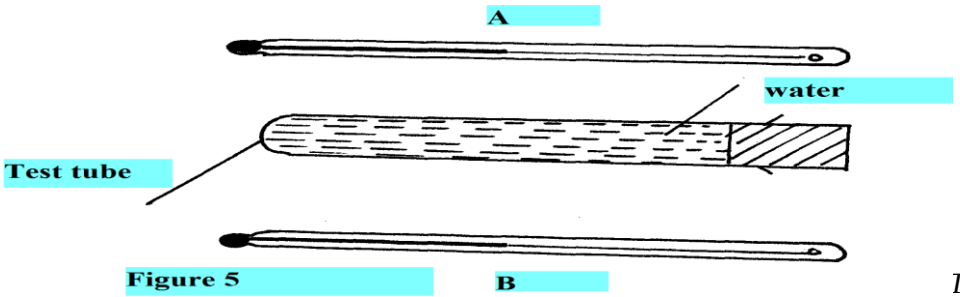


Figure 5

State giving reason,the thermometer that registers higher reading 10minutes later (2marks)

……

……

……

……

7 A balloon is filled with hydrogen and released in air.The balloon stops rising after gaining certain heights.Explain (1mark)

……

……

8 Figure 6(a) shows a distance time graph for the motion of a given particle

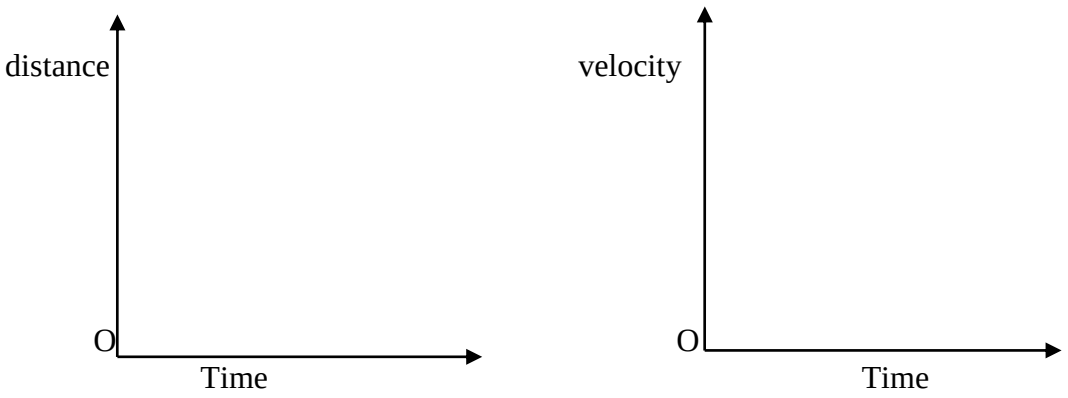


Figure 6(a)

Sketch in figure 6(a) the velocity time graph for the same motion (1mark)

……

……

……

……

9 The figure 7 shown below is a plastic cylinder with a hollow section resting on a flat surface

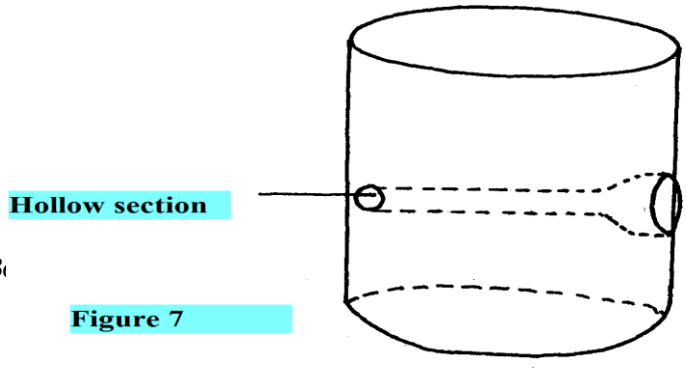


Figure 7

A vacuum pump is connected to the hollow section and air pumped out of it.Explain the change in stability of the cylinder (1mark)

……

……

10 The moon goes round the earth at aconstant speed.Explain why it is true to say that the moon is accelerating (1mark)

……

……

……

11 Figure 8 below shows air trapped in a J shaped tube.Determine the pressure exerted on the trapped air(density of mercury=13600kgm^{-3}, atmospheric pressure=1.0x10^{5} pa)
Give your answer in SI units (2marks)

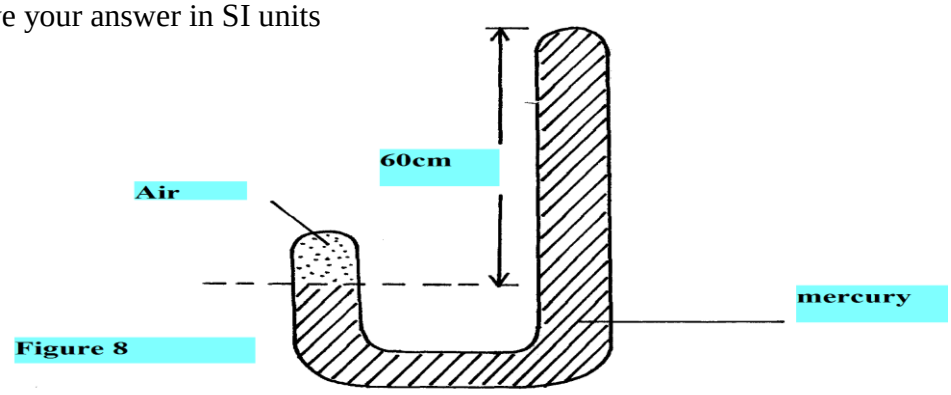


Figure 8

12 A pump was used to sack air bubbles through a tank of either resting on a surface of water as shown in figure 9

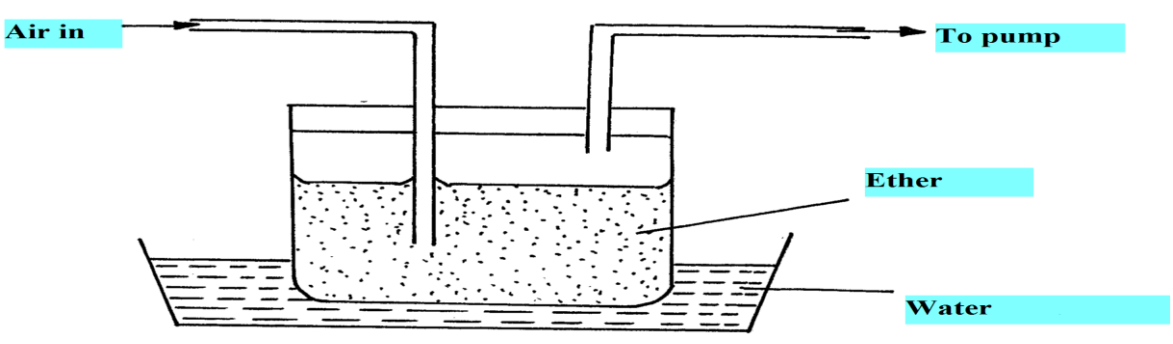


Figure 9

State and explain the observation made after sometimes (2mark)

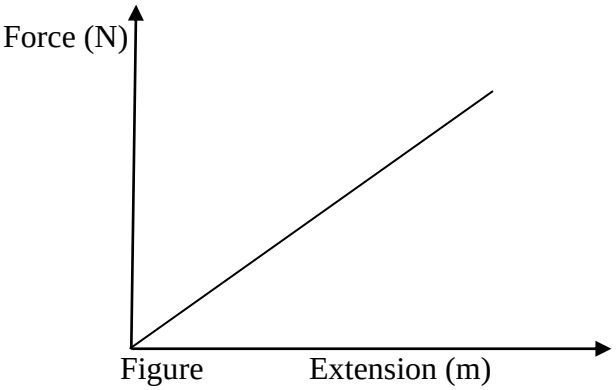
……

……

……

……

13 The diagram shown below is a graph of force against extension for a certain spring.On the same axes sketch the variation of the force with extension for another similar spring where length is double the first one (1mark)



Figure

14 (a) Figure 11 below shows a bimettalic strip in electric circuit made of two metals A and B.B expands more than A

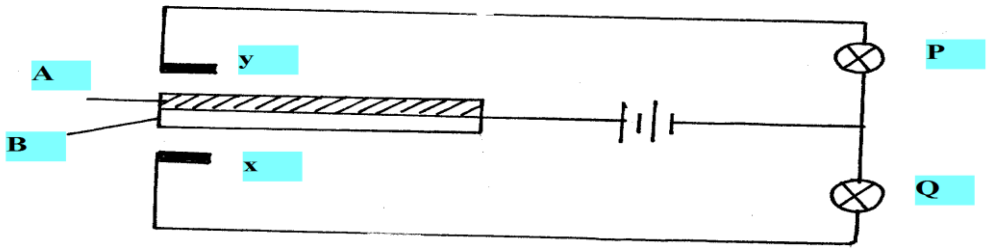


Figure 11

X and Y are metal contact while while P and Q are identical bulbes.Explain the effect on the bulb when ice cold water is poured onto the strip (2mark)

……

……

……

……

(b) In Brownian motion experiment using smoke particles,it is observed that smoke particles are in a state of continuous random motion.Explain why the motion will be slower when the temperature of the surrounding air is lowered (1mark)

……

……

SECTION B (55MARK)

15 In an experiment to determine the diameter of oil molecule,two wooden plunks were used on thesurface of water sprinkled with lycopedium powder as shown in the table 12

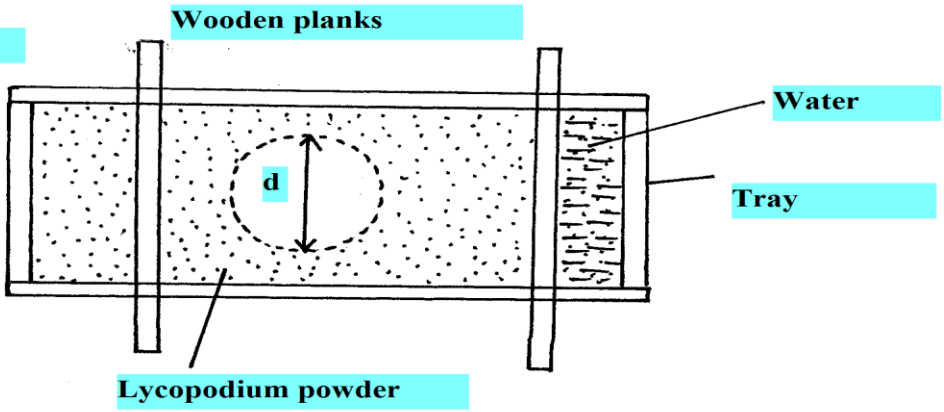


Figure 12

(a) State the functions of the following in the experiment

(i) Waxed wooden planks (1mark)

……

……

(ii) Lycopodium (1mark)

……

……

(b) In the experiment the diameter of the path was measured to be 20cm for an oil drop of radius 0.25mm.Determine:

(i) The area of the patch (2marks)

……

……

……

……

……

(ii) The volume of the drop (2marks)

……

……

……
……
……

(iii) The diameter of one molecule of oil (2marks)

……
……
……
……
……
……

(c) Give any two reasons why the diameter calculated in b(iii) alone is just an estimate (2marks)

……
……
……
……

16 (a) Distinguish between heat capacity and specific heat capacity of a substance(1mark)

……
……..
……
……

(b) 150g of steam was bubbled into 250g of water at 0^oC contained in a calonmeter of heat capacity 4000J/K.The water in the calonmeter had 50g of melting ice.The mixrure was well stirred and final steady temperature of 0^oC was achieved(Taking specific latent heat capacity of water to be $4.2Jg\text{-}1k^{-1}$,specific latent heat of fusion of ice $=3.34x10^5Jkg^{-1}$ and specific latent heat of vaporization of water $=2269kgkg^{-1}$ boiling point of water is 98^oC).Determine;

(i) Heat lost by steam to a final temperature of Θ^0C
(You may leave your answer in terms of Θ^0C) (3marks)

……

……

……

……

……

……

(ii) Heat gained by ice cold water and calonmeter to be final temperature of Θ^0C

(4marks

……

……

……

……

……

……

……

……

……

……

……

……

(iii) The final steady temperatureΘ^0C (marks)

……

……

……

……

……

……

(iv) State one reason why;

I The boiling point of water if 98^0C (1mark)

……

……

……

II The answer calculated in b(iii) above may not be accurate (1mark)

……

……

……

17 (a) State the law of conservation of linear momentum (1mark)

……

……

……..

(b) A minibus of mass 1200kg travelling at a constant velocity of 15mins^{-1} collides with a stationery car of mass 600kg.The impact takes 1.5seconds before the two moves together at a constant velocity for 25 seconds.Determine;

(i) The common velocity (2marks)

……

……

……

……

(ii) The distance moved after impact (2marks)

……

……

……

……

(iii) Impulsive force (2marks)

……

……

……

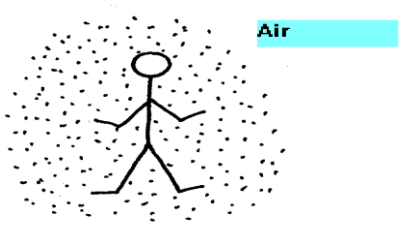
……

(iv) Change in kinetic energy (2marks)

……

……

(c) A boy freely falling in air from high altitude as shown below



(i) Name the force acting of the boy (1mark)

……

……

……

(ii) Explain any changes in the forces named in (i) above,if any when the boy is made to fall in deep water(2mark)

……

……

……

……

(iii) On the axis provided,sketch the velocity time graph for the boy falling in air (i) and falling in water(ii) (2marks)

……

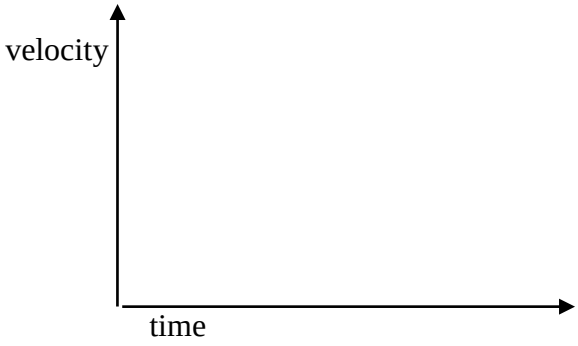
……..

……

……

……

……..



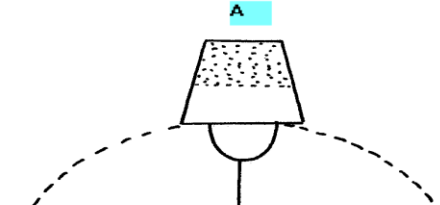
18 (a) Define angular velocity (1mark)

……..

……

……..

(b) Figure 13 shown below is a pail of water being whirled in a vertical circle



Explain why the water does not pour out when the pail is in position A as shown above(1mark)

……

……

……

(c) A string of negligible mass has a bucket tied at the end.The string is 60cm long and the bucket has a mass of 45g.The bucket is whirled in a horizontal circle making six revolutions per seconds.Determine;

(i) Angular velocity (1mark)

……

……..

(ii) Centripetal acceleration (2marks)

……

……..

……

……

……..

(iii) Tension on the string (2marks)

……

……..

……

……

……..

(iv) The linear velocity (2marks)

……

……..

19 (a) What is meant by the term mechanical advantage of a machine(1mark)

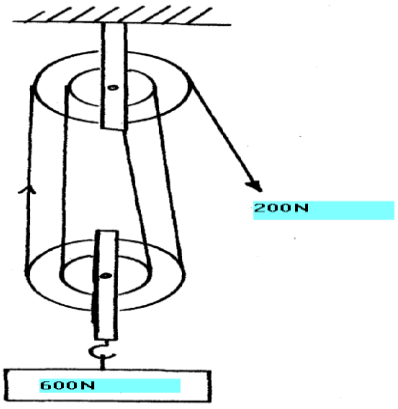
……

……

……..

(b) The figure 14 shown below is a pulley system used to lift a load by an effort of200N

Figure 14



(i) Determine the velocity ratio of the system (1mark)

……

……

……

……

(ii) Determine the work done by the effort in lifting the load through 1metre(3marks)

……

……..

……

……

……..

(iii) Determine the efficiency of the machine (3marks)

……

……..

……

……

……..

(c) State two reasons why the efficiency calculated in (iii) above is not 100% (2marks)

……

……..

END