NAME _____ CLASS _____

DATE _____ SIGNATURE _____

232\
PHYSICS
FORM TWO
2ND TERM 2015
2 HRS.

Kenya Certificate of Secondary Education
PHYSICS
FORM TWO 2ND TERM EXAMINATION 2015

Instructions
- *Write your name and your class in spaces provided*
- *Answer all the questions in the spaces provided .*
- *Mathematical tables may be used*
- *All working must be Clearly shown where necessary*

For Examiner's Use Only

	Questions	Maximum score	Candidates score
A	1-13	25	
B	14 -18	55	
TOTAL		80	

This paper consists of 11 printed pages. Candidates should check to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A-(25 MARKS)
### Answer all questions in this section in the spaces provided

1. *Figure 1* shows the readings on vernier calipers that was used to measure length of a small piece of glass block.
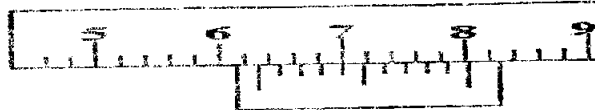
Figure 1

Given that the instrument had a positive error of 0.15cm, determine the actual length of the glass block. (3 marks)

2. *Figure 2* shows a Bunsen burner. When the gas tap is open, air is drawn into the burner. Explain this observation (3 marks)
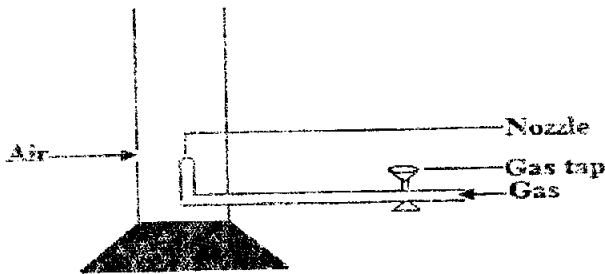
Figure 2

_____

_____

_____

_____

3. State one factor that increase the stability of a body. (1 marks)

_____

_____

4. *Figure 3* shows a vacuum flask. Study the diagram and answer the questions that follow
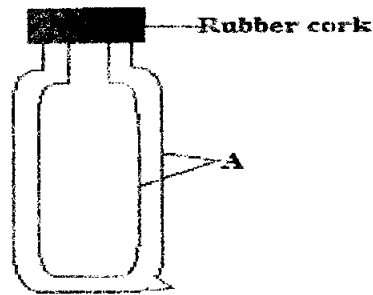

Figure 3

a) Name the part marked A in the figure   (1 mark)

_____

_____

b) State how heat losses by convection are minimized in the flask   (1 mark)

_____

_____

5. *Figure 4* shows a set-up that was used to experiment on the factors that affect pressure in liquids. The holes A, B and C are of the same diameter and the water was allowed to flow out through the holes at the same time.
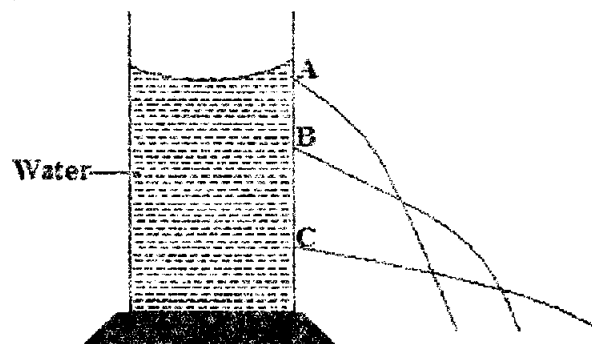

Figure 4

The water through hole C is observed to a flow a longer distance than A and B. explain the observation   (2mark)

_____

_____

6. State the factor that is being experimented in the set-up   (1 mark)

_____

_____

7. One property of a good brake fluid is that the liquid is supposed to be incompressible.
State any other property of a good brake fluid (1 mark)

_____

_____

8. State one advantage of convex mirrors over plane mirrors as car side mirror
(1 mark)

_____

_____

9. *Figure 5* shows a soft iron ring placed between unlike poles of a magnet. Draw a magnetic field pattern between the two bar magnets (2 marks)
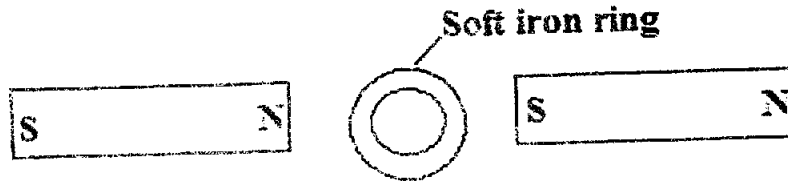

Figure 5

10. Calculate the volume of an oil drop that would spread out on water to form a circular film of diameter 2×10^{-1} m and thickness of 3.18×10^{-8} m (3 marks)

11. During determination of the size an oil molecule using oil-drop experiment, spherical oil-drop is released to the surface of water to form a patch. One of the assumptions during the calculation is that the patch is perfectly circular. State any other two assumptions for this experiment (2 marks)

_____

_____

12. State two advantages of electromagnets over permanent magnets (2 marks)

_____

_____

13. On the grid in *figure 6*, draw the graph of volume against temperature to show the behavior of water between 0°C-10°C   (2 marks)
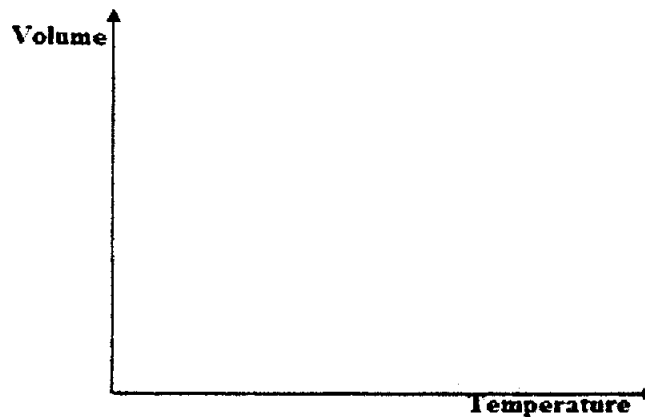

Figure 6

SECTION B-(55 marks)
Answer all questions in this section in the spaces provided

14.a) *Figure 7* shows water flowing through a horizontal pipe of varying cross-section area A and B as shown in figure. The velocity of water in pipe A is 4 m/s
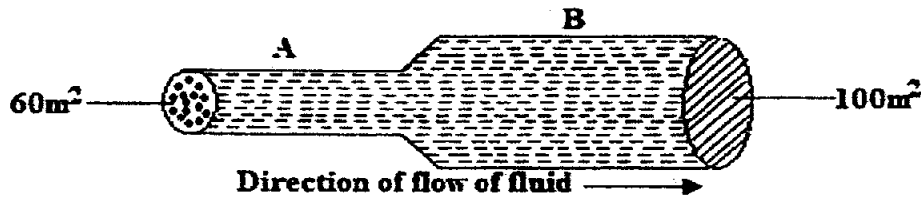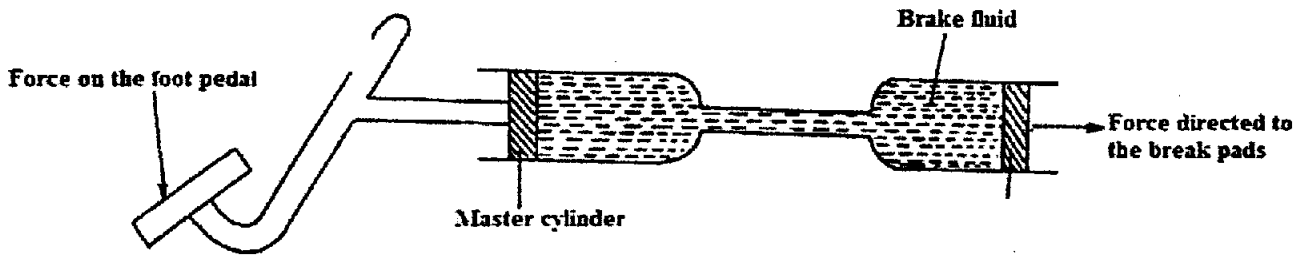

Figure 7

i) Determine the velocity of water in pipe B.   (3 marks)

ii) State the one condition for a liquid to experience streamline flow   (1 mark)

_____

_____

b)   **Figure 8** below represents a part or a car hydraulic braking system. Study it and answer the questions that follow

Figure 8

i)   Explain briefly how the system operates.   (3marks)

_____

_____

_____

_____

ii) Explain why the break system would fail if the liquid is replaced with air   (2marks)

_____

_____

iii) Give two reasons why water is not a good brake fluid   (2marks)

_____

_____

iv) Give one advantage of the use of hydraulic brake system over electrical braking systems
                                                                            (1 mark)

_____

_____

15.a) Differentiate between transverse and longitudinal wave   (2 marks)

_____

_____

_____

b)   Give a reason why sound does not travel in a vacuum   (1 mark)

_____

_____

c)i)   A girl standing in front of a cliff at a point claps his hands and hears an echo after 1.0s. She then moves 34m further away from the point and claps the hands again and now hears the echo after 1.2s. determine the speed of sound   (3 marks)

ii)   Apart from determination of speed of sound in air , state the other two uses of reflection of sound   (2marks)

_____

_____

d)   *Figure9* shows the variation in displacement and time for a progressive wave. Study the diagram and answer the questions that follow
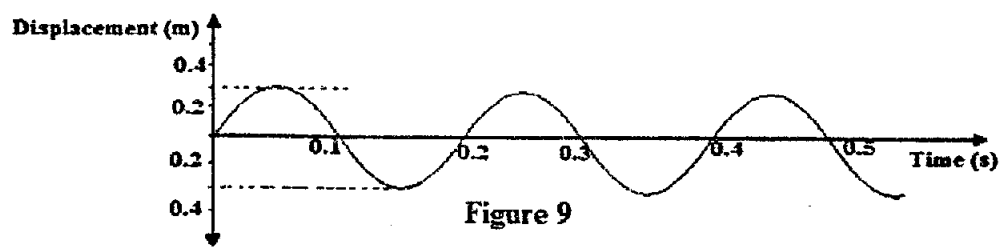
Figure 9

i)   State the amplitude of the wave   (1 mark)

ii)   Determine the frequency of the wave   (2 marks)

16.a) Define the term magnetic field as used in magnets   (1marks)

_____

_____

b) Differentiate between the terms soft magnets and hard magnetic materials (2 marks)

_____

_____

_____

c) **Figure 10** shows a method of magnetization used to magnetize a soft iron nail. Study the method and answer the question that follow
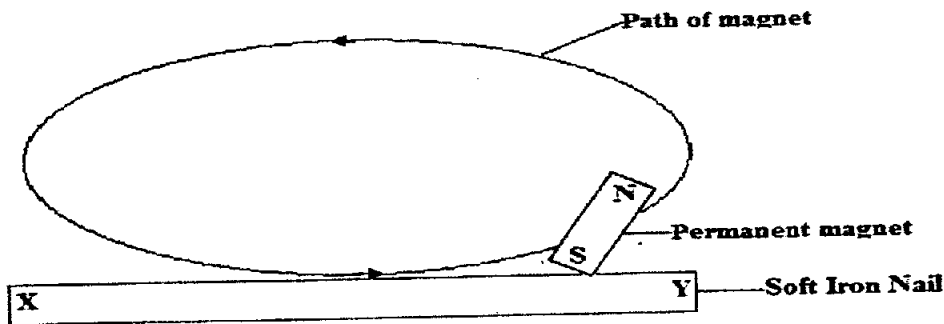

Figure 10

i) Name this method of magnetization   (1 mark)

_____

ii) State the pole is acquired by the nail at end Y   (1mark)

_____

d) During magnetization using electric current, the strength of electromagnet increases with increase in the amount of current. The graph in **figure 11** shows the variation of the strength of magnet with the amount of current
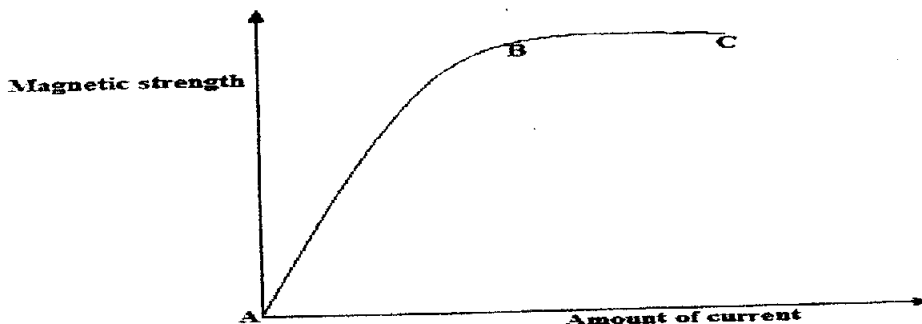

Figure 11

By use of Domain theory, explain the shape of the graph between the parts marked

i)   A-B   (1 mark)

_____

_____

ii)   B-C   (2 marks)

_____

_____

17.   *Figure 12* shows a simple cell. Study it and answer the questions that follow
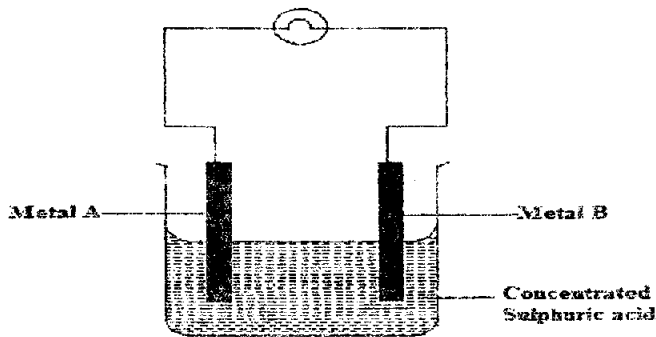

Figure 12

Use the information on the figure to answer the questions below.

a)   Name one metal that can be used as the terminal of the cell   (1mark)

_____

b)   It is observed that the bulb goes off after a short time.
i)   Name the defects that contribute to the reduction in the brightness of the bulb   (2marks)

_____

_____

ii)   State how of the defect of the simple primary cell is minimized   (2marks)

_____

_____

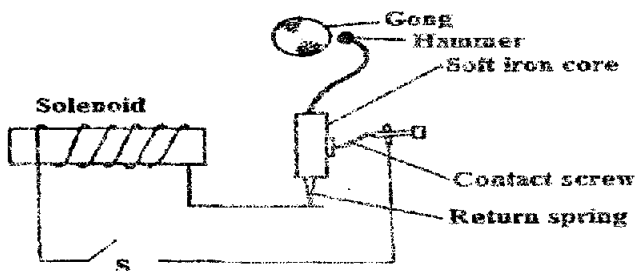c)   *Figure 13* shows a simple circuit diagram of an electric bell.

Figure 13

i) When the switch S is closed, the bell is observed to ring. Explain this observation

(3marks)

_____

_____

_____

_____

ii) Give one reason why soft iron core is appropriate for use in the electric bell   (1 mark)

_____

_____

18.a) State Hooke's law   (1 mark)

_____

_____

b) Calculate the work done when a force of 20N causes an extension of 10 cm on elastic spring   (3 marks)

c) *Figure 14* shows the length of unloaded elastic spring and when loaded with a mass of 50g and also with an object of unknown mass m. study the diagram and answer the question that follow
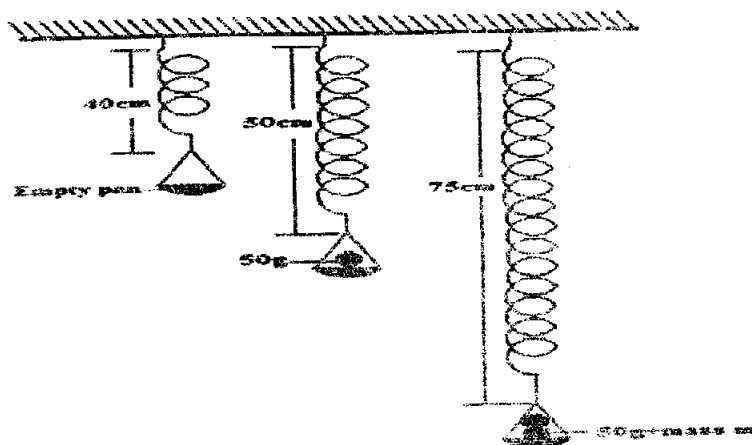

Figure 14

Determine the mass m in grams   (3 marks)

d)   The following results in *table 1* were obtained in an experiment in which an elastic
      material was extended by loading it progressively with various masses to breaking point

Load (N)	0	2	4	6	8	10	12
Length of the wire(cm)	40.0	40.6	41.2	41.8	44.2	47.4	51.6
Extension(cm)							

Table 1

i)   Fill the table with the correct values of extension obtained from the spring from the
      various masses   (3marks)

ii)   Plot a graph of extension (y-axis) against load (x-axis)   (5marks)