NAME _____ CLASS _____

DATE _____ SIGNATURE _____

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PHYSICS
FORM THREE
1ST TERM 2016
2 HRS.

Kenya Certificate of Secondary Education
PHYSICS PP1
FORM III 1ST TERM EXAMINATION 2016

INSTRUCTIONS
- Write your name and your class in spaces provided
- This paper consists of two sections, section A and section B
- Answer all the questions in each section in the spaces provided .
- Mathematical tables and Electronic calculators may be used
- All working must be Cleary shown where necessary

For Examiner's Use Only

Section	Maximum score	Candidates score
A	25	
B	55	
Total	80	

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

1.   *Figure 1* below shows part of the micrometer screw gauge. Study it and use it to answer the question that follow
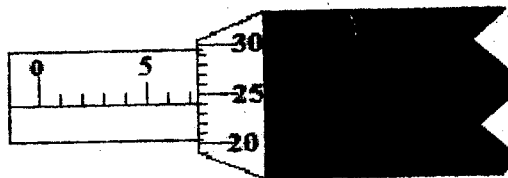

Figure 1

Write down the reading shown by the micrometer screw gauge shown in *figure 1*
(1 mark)

2.   *Figure 2* (a) shows the initial reading of a burette used to determine the volume of one drop of oil. After 50 drops of oil were run the final reading were as shown in *2(b)*
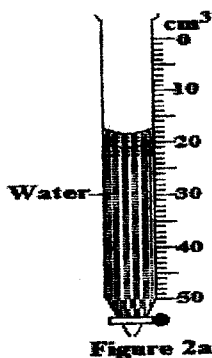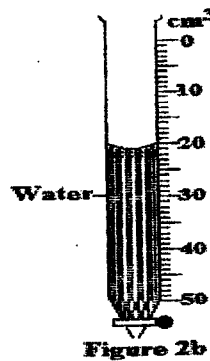

Determine the volume of one drop of water   (2 marks)

3.   Apart from gravitational force , state two factor that determine the pressure at a point of a liquid.   (2 marks)

_____

_____

4.   A student placed a steel nail on a soft ground on its sharp end and on its blunt head as shown in *figure 3 (i) and (ii)* respectively. He then placed a 50N force on each of the nail. Study the diagram and answer the questions that follow
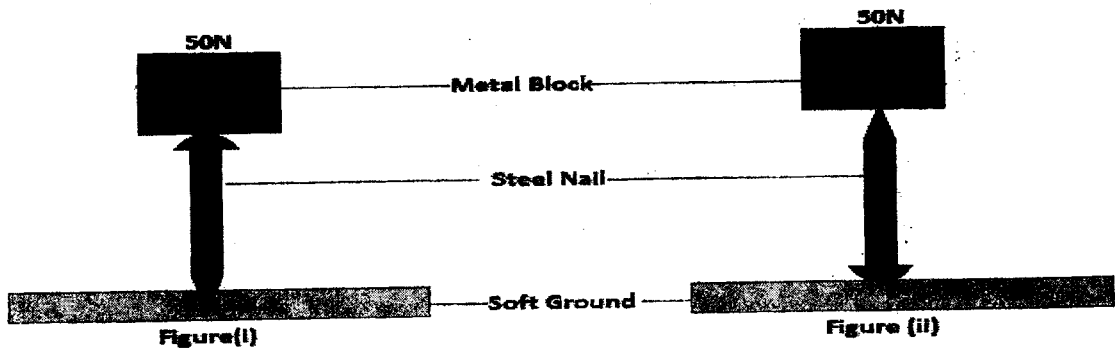
Figure(i)   Figure (ii)

State and explain the observations in the figure (i) and (ii)   (3 marks)

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_____

5.   *Figure 4* shows the arrangement of molecules in the three states of mater. Study the diagram and answer the questions that follow

State 1   State2   State 3
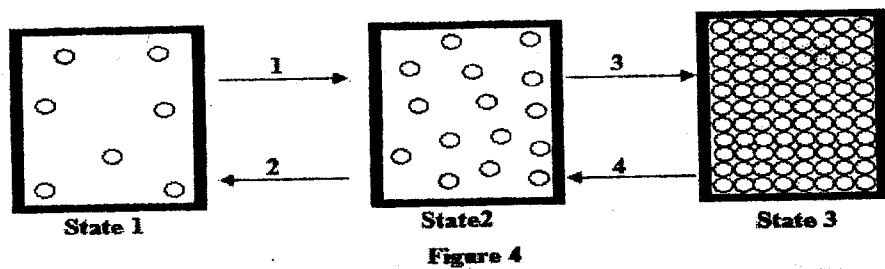
Figure 4

a)   Name the process marked **1**   (1mark)

_____

b)   State the reason for the arrangement of molecules in **state 3**   (1 mark)

_____

_____

6.   Give a reason why concrete walls can be reinforced using steel without cracking
            (1 mark)

_____

_____

7. **Figure 5** a meter rule balanced horizontally by two forces placed at its ends. use the diagram to answer the questions that follow

Figure 5

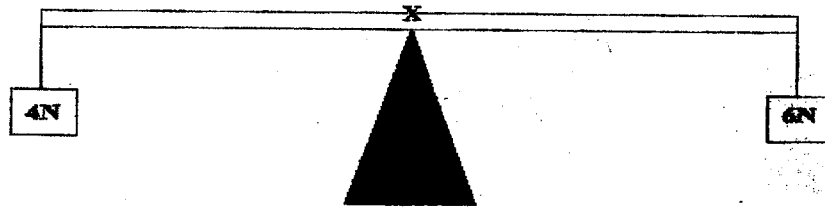Determine the position X where the pivot should be placed for the system to be at equilibrium   (3 marks)

8. **Figure 6** shows water placed in a large trough and two pipes A and B of same cross-section area are dipped into the water.

Figure 6

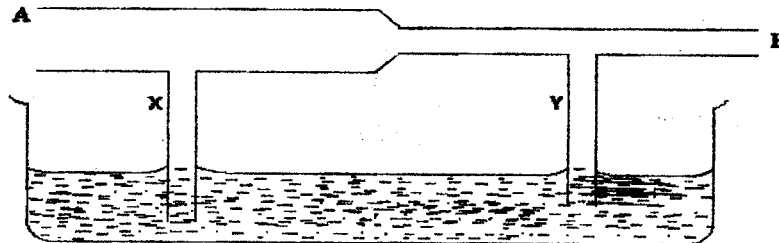Air is then blown from side **A** to **B** at high velocity. On the same diagram, show the level of water in pipes **X** and **Y**   (2 marks)

9. Give a reason why car tyres that have treads are better for use on a slippery road
                                                                                                    (1 mark)

_____

_____

10. **Figure 7** thermometers T_1 and T_2 inserted into equal volumes of hot water in metallic container of which one is shinny and the other surface is dull as shown in figure (i) and (ii) . study the diagram and answer the question that follow
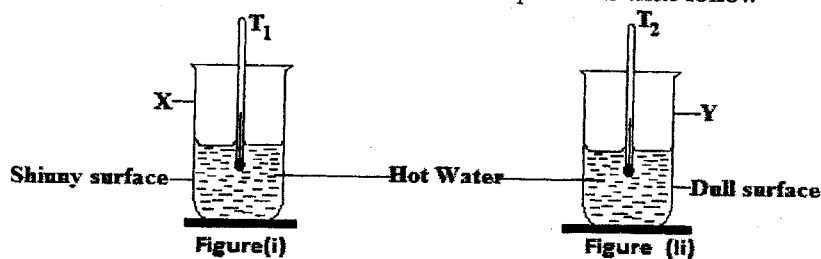

Figure 7

State and explain the difference in the readings on the thermometers T_1 and T_2 after the liquids were allowed to cool for some time   (2 marks)

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_____

_____

11. State the immediate action that needs to be taken in the laboratory in case of electric fire
                                                                                        (1 mark)

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12. **Figure 8** shows Six's maximum and minimum thermometer. Study the diagram and use it to answer the questions that follow
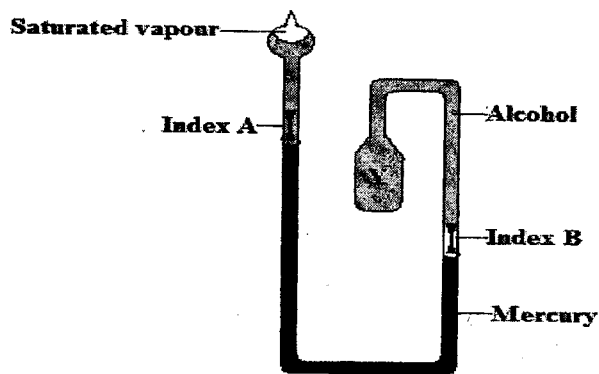

Figure 8

a) Which index records the maximum temperature of a day?   (1 mark)

_____

b) State two advantages of using alcohol over mercury for this thermometer (2 marks)

_____

_____

_____

13. **Figure 9** shows the level of mercury and water in capillary tubes of same cross-section area. Use the diagram to answer the question that follow
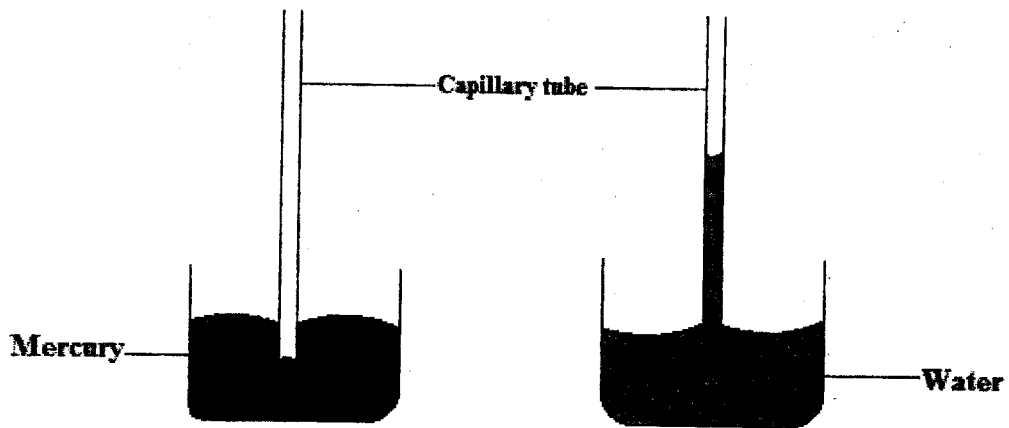

Figure 9

Explain the difference in the level of the liquids in the capillary tubes   (2 marks)

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_____

_____

SECTION B(55 MARKS)
ANSWER ALL QUESTIONS IN THIS SECTION IN THE SPACES PROVIDED

14.a) Explain why a body travelling at constant speed along a circular path is said to be accelerating   (2 marks)

_____

_____

_____

b) State **two** important factors to be considered when setting the banking angle of a road.
   (2marks)

_____

_____

c) A ball of mass 4kg is whirled at the end of a string in a horizontal circular path at a Speed of 10ms⁻¹. if the string is 4.0m long, determine:

i) The angular velocity of the **stone.**   (3marks)

15. The table below shows values taken for an object which was released and fell under gravity.

Distance (m)	5.00	20.00	45.00	61.25	80.00
Time (sec)	1	2	3	3.5	4
T2	1.00	4.00	9.00	12.25	16.00

a) Draw a graph of distance against time. (5mks

b) From the graph what can you conclude about the acceleration of the body. (1mk

c) What is the vertical velocity at the third second? (1mk

d) Draw a graph of distance against T^2 (5mks

e) Find the gradient of the graph. (2mks

f) Given that gradient = g/2 find the value of g. (1mk

16. The figure below shows a coin at the bottom of a tank full of water and light rays from it.
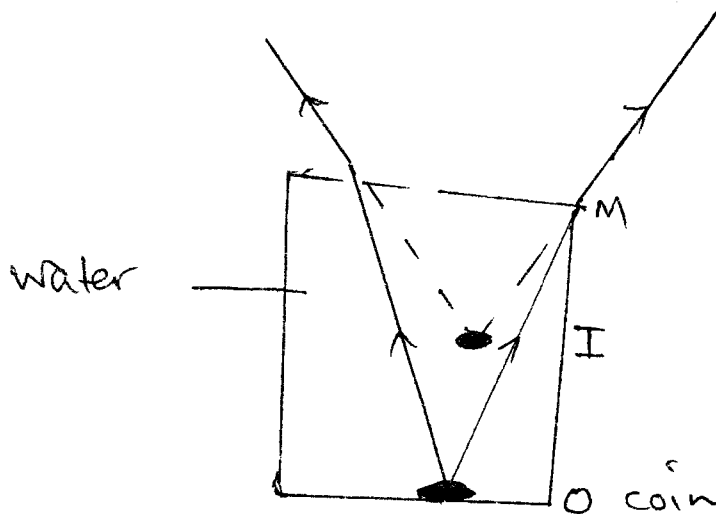
Name the lengths
i) OM (3mks

ii) IM

iii) OI

17.   A pool full of water appears to be 0.75m deep. If the height of water in the pool is 1.0m Calculate the refractive index of water.   (3mks

18.   Differentiate between elastic and inelastic collision.   (2mks

b)   A bullet of mass 20g travelling horizontally at a speed of 200m/s embeds itself in a block of wood of a mass 980g suspended from a light inextensible string so that it can swing freely. Find. The velocity of the bullet and block immediately after collision.   (3mks

19(a)   Define potential energy   (2mks

b)   A student raised a stone of mass 40kg through a vertical distance of 3m.
i)   How much work was done in raising the stone?   (3mks

ii)   What is the potential energy gained by stone after being raised.   (3mks

iii)   Comment on your answers in (i) and (ii) above   (1mk

20a)   State the law of conservation of energy.   (2mks

b)   A crane raised a block of mass 80kg through a vertical height of 20m in seconds. Calculate
(i)   the work done on the block.   (2mks

30

ii)   the power supplied by the crane.   (3mks

21.   Draw a single string pulley system of velocity ratio 3.   (2mks

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