NAME ....CLASS .... C/NO ....

ADMISSION NUMBER...........................   Signature ....

NYABURURU GIRLS' NATIONAL
SCHOOL

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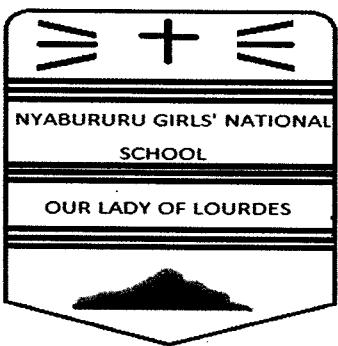
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Date revised	

FORM ONE PHYSICS
END OF TERM 3 2016
TIME: 2 HOURS

<u>**232/1$2 Physics Theory**</u>
Thursday 8.00am – 10.30pm
13/10/2016   (1st Session)

INSTRUCTIONS:

➢ Write your name, class and class number in the spaces provided above.
➢ This paper consists of two sections: Section A and B.
➢ Answer **all** questions in sections A and B in the spaces provided.
➢ All working must be clearly shown on the spaces provided.

## FOR EXAMINER'S USE ONLY

TOTAL SCORE	**80**	**%**
CANDIDATE'S SCORE		

This paper consists of 9 printed pages
Candidates should check to ensure that all pages are printed as indicated and no questions are missing

NAME ....CLASS .... C/NO ....

SECTION A (22 MARKS)

1. Figure 1 below shows the arrangement of particles in the three states of matter.

Figure 1
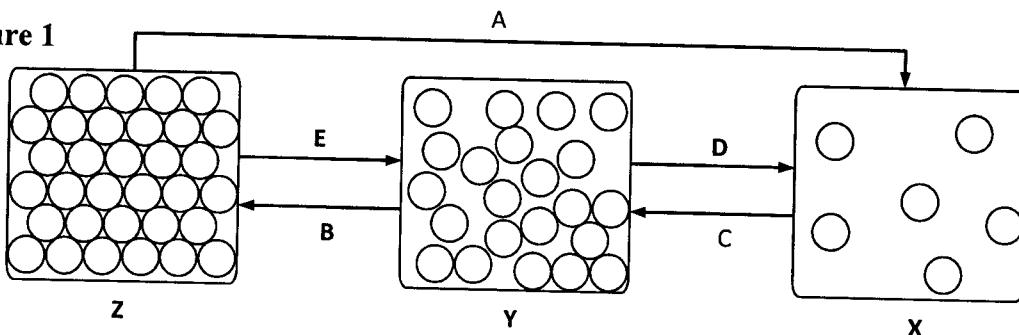
   (a) Name the state of matter Z.   (1mk)
   ....

   (b) Name and define process C.   (2mks)

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2. Give an example of a case where physics technology is used in medicine   (1mk)
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3. A rectangular body which weighs 30N has dimensions 3cmby 2cm by 1cm. determine the density of the body.   (3mks)
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4. Trucks carrying heavy loads have many wheels. Explain.   (2mks)
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5. State the process in which the smell of rotten eggs broken at one end of the room soon spreads throughout the room.   (1mk)
   ....

6. A metal pin was observed to float on the surface of pure water. However the pin sank when a few drops of soap solution were carefully added to the water. Explain his observation. (2mks)
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   ....

7. How much force must be applied on a blade of length 4cm and thickness 0.1cm to exert a pressure of 5×10^6 pa (3mks)

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8. **Figure 2** shows a flask containing air connected to a long glass tube and inverted into a beaker of water.

Figure 2

Air ——— Flask

Glass tube

Beaker

Water
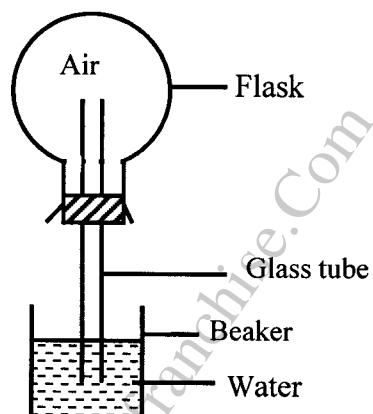
State and explain what is observed when the flask is gently allowed to cool. (3mks)

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9. Explain how heat loss by radiation is minimized in a vacuum flask. (2mks)

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10. State two advantages of mercury as a thermometric liquid. (2mks)

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NAME …………………………………………………………..CLASS ……… C/NO ………

SECTION A (58 MARKS)

11. (a) Some students constructed a simple barometer as shown in **figure 3** below.

i) Name the part labelled A. (1mk)

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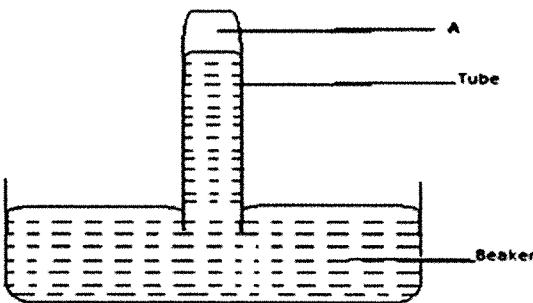
State and explain what would be observed when the barometer was taken high up a mountain. (2mks)

Figure 3

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(c) When a bicycle pump is in use, there is an increase in temperature of the pump barrel. Give a reason for this (1mk)

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(d) The barometer height at sea level is 76cm of mercury while that at a point on a highland is 74cm of mercury. (Given that g=10N/Kg, Density of mercury =13600kg/m³ and density of air1.25kg/m³) Determine:

(a) Pressure difference due to mercury column (2mks)

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(b) What is the altitude of the point on the highland? (3mks)

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NAME ………………………………………………………………..CLASS ……… C/NO ………

12. (a) Seen in a microscope during a Brownian motion experiment are '"bright specks".

    (i)   What are these "bright specks?"   (1mk)

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    (ii)   State the behaviour of these "bright specks"   (1mk)

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    (iii)   Explain the behaviour of these "bright specks".   (2mks)

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    (iv)   State **two** reasons why these "bright specks" are used.   (2mks)

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(c) Complete the table below.   (6mks)

Symbol of Units	SI Unit	Basic Physical Quantity
Kg		
K		
A		

13. (a) Define the term expansion   (1mk)

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....

(b) Explain expansion in terms of molecules in liquids.   (2mks)

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(c) Figure 4 below shows a domestic device which used thermal radiation.
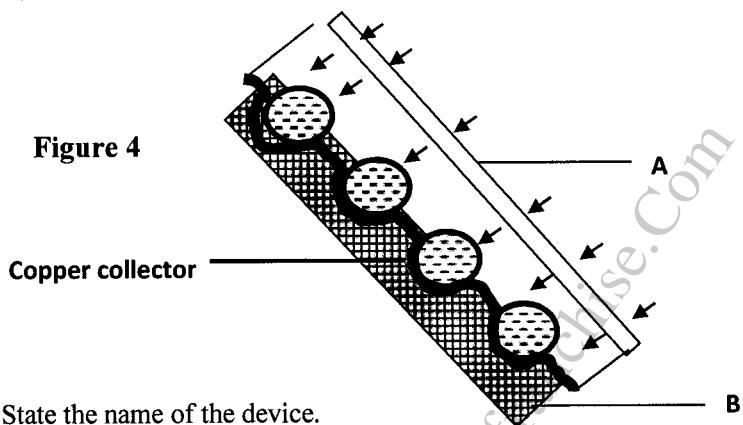
Figure 4

Copper collector

(i) State the name of the device.   (1mk)

....

(ii) State the part labelled: (2mks)

   A.......................................   B..

(iii) Give a reason why the collector is made of copper.   (1mk)

....

(iv) Give a reason why the pipe is blackened.   (1mk)

....

I) State two factors that affect thermal conductivity.   (2mks)

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II) Figure 5 below shows a bridge. Give a   ....
     reason why one end is free.   (1mk)   ....

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Figure 5

6
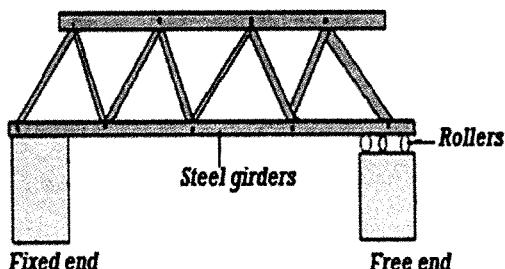
14. (a) Define volume and state its SI units. (2mks)

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(b) Alex found that the perimeter of his plot was approximately 200 strides; His stride was 0.9m long. What was the perimeter of the plot? (2mks)

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(c) A Eureka can of mass 60 g and cross-sectional area 60 cm^2 is filled with water of density 1g/cm^3. Calculate:

Figure 6

10 cm
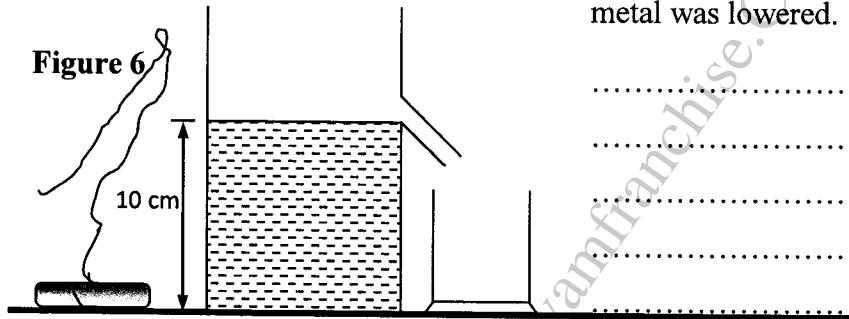
(i) The total mass of water in the Eureka can before the metal was lowered. (2mks)

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(ii) A piece of steel of mass 20g and density of 8g/cm^3 is lowered carefully into the can .determine the volume of water that overflowed. (3mks)

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(iii) The final mass of the contents in the eureka can. (2mks)

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15. (a) Define the term **reclinear propagation** of light. (1mk)

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(b) i) Figure 7 below shows how a shadow is formed by an opaque object placed in front of an extended source. Complete the ray diagram. (2mks)

Figure 7
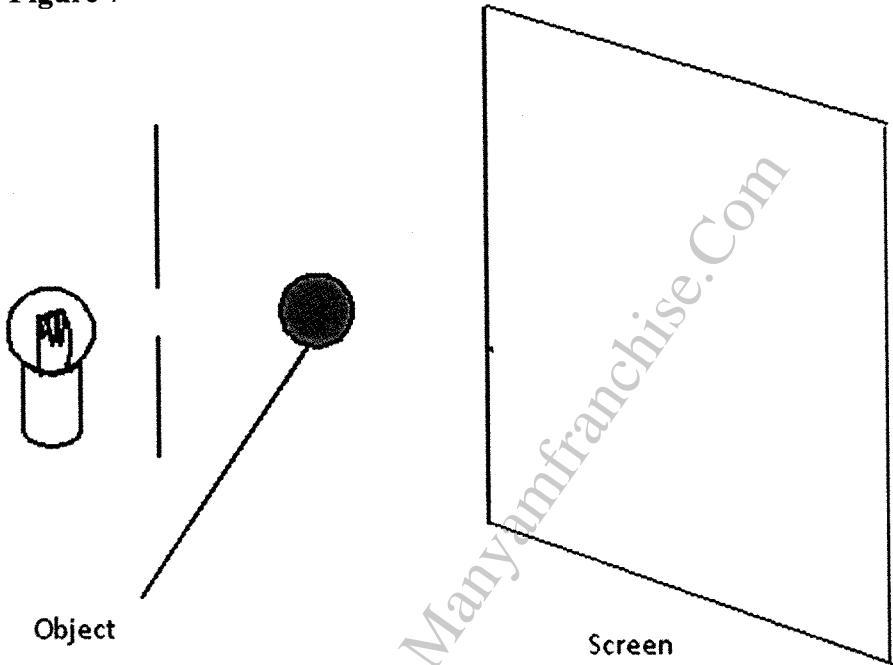
(ii) Describe the nature of the image formed. (2mks)

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....

(c) What effect of the following on the size of the image formed on the screen of a pinhole camera?

(i) Increasing, the distance of the object from the pinhole (1mk)

....

(ii) Decreasing the distance of the object from the pinhole. (1mk)

....

....

(d) A boy of height 180cm stands in front of a pinhole camera at a distance 2.4m. The camera screen is 8cm from the pinhole. What is the height of the image formed on the screen?   (3mks)

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(e) Determine the number of images formed by two mirrors inclined at an angle of 20^0 to each other.   (3mks)

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(f)   An incident ray strikes a mirror as shown below. Determine the angle of reflection.(**The diagram is drawn to scale**)   (1mk)

Figure 8
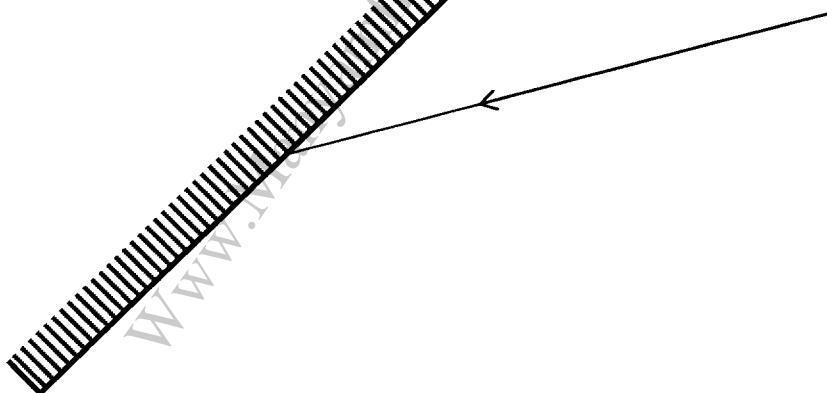
(g) State the name of an eclipse which is formed when the moon is between the sun and the earth.   (1mk)

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