Name:..... Stream .....

Adm. No .....

Physics Form one

Term two cycle 2

June, 2018

Time: 2 hours

MARANDA HIGH SCHOOL

Kenya Certificate of Secondary Education

Instructions to candidates

This paper consists of two sections-section A and B

Attempt all questions in the spaces provided

All working must be clearly shown

Non programmable, silent calculators and mathematical tables may be used

Where necessary take:-Density of water = 1000kg/m³

Density of mercury= 13600kg/m³ Atmospheric pressure= 103360N/M²

Section	Question	Maximum Score	Candidate score
A	1-11	25	
B	12	15	
	13	14	
	14	10	
	15	10	
	16	6	
TOTAL		80	

This paper consists of 13 printed pages

SECTION A: (25 Marks)

1. In construction of a mercury barometer care is taken to make sure it has no gas in the space Above mercury.

   a. How would you test whether there is no gas above? (2mks)

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   b. State the problem caused by the presence of gas in the barometer. (1mk)

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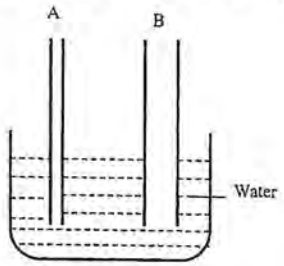
2. The figure below shows two capillary tubes of different sizes dipped in water



(a) Mark on the diagram the level of water in the capillary tubes. (1 Mark)
(b) Explain the difference in the level of water in the two tubes. (1mark)

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3. An object weighs 8.0 N on Earth. What would its weight be on another planet of gravitational acceleration 6.25 N/kg given that acceleration due to gravity on earth is 9.8N/kg (2marks)

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4. It is observed that when $20cm^3$ of alcohol is mixed with $20cm^3$ of water, the volume of the mixture is $39cm^3$. Explain the reason why the volume of the mixture is not $40cm^3$ (2 marks)

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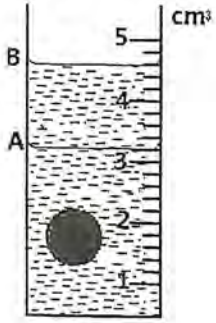
5. The figure below shows a measuring cylinder which contains water initially at a level A. A spherical solid of mass 11g is immersed in the water, the level rises to B.



Determine the diameter of the spherical ball (2 marks)

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6. Explain why trucks which carry heavy loads have many wheels. (2 marks)

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7. The area of a piece of land on which a certain school in Kisumu West District stands is given $0.0025Km^2$. Express this area in SI unit. (1 mark)

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8 a) Define surface tension (1 mark)

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b) State two ways of improving surface tension (2 marks)

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9. A uniform mixture consists of $30cm^3$ of water and $40cm^3$ of ethanol. If the densities of water and ethanol are **1 g/cm³** and **0.85 g/cm³** respectively. Calculate the density of the mixture (3mks).

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10. The water level in a burette is 35cm³. If 20 drops of water are added, what is the new level if each drop has a volume of 0.15cm³? (2 marks)

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11. The figure below shows a manometer closed at one end and the other end connected to gas cylinder.

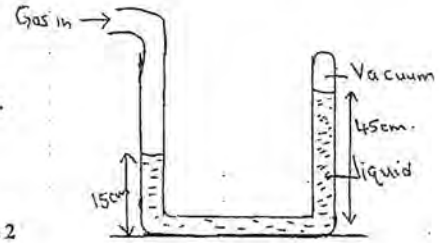

Figure 2

The liquid has a density of 1.2g/cm³.Calculate the pressure due to the gas. (3marks)

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SECTION B: (55 marks)

12. a. State the kinetic theory of matter (1 mark)

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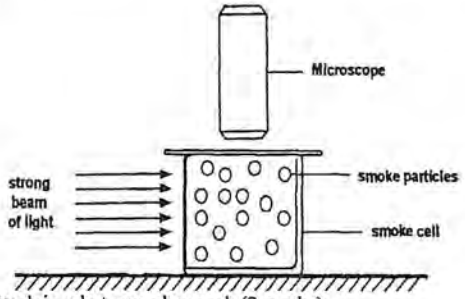
b. The figure below shows apparatus used to observe the behavior of smoke particles in a smoke cell.



i. State and explain what was observed (2 marks)

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ii. State and explain what happens if the temperature was raised (2 marks)

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(c) Explain the role of the following in the smoke cell experiment

(i) Smoke particles (2 marks)

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(ii) Microscope (1 mark)

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(iii) Converging lens (1 mark)

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(d) Define the term diffusion (1 mark)

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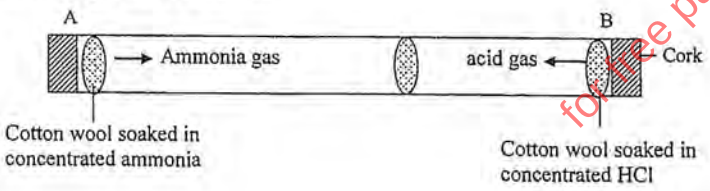
In the figure below, ammonia gas and an acid gas diffuse and react to form a white deposit on the walls of a long glass tube as shown.



(i) State giving reason the gas which diffuses faster (2 marks)

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(ii) The experiment is performed at a lower temperature. Explain how the time taken to form the white deposit would be affected. (2marks)

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(iii) Name the white deposit formed on the wall of the long tube (1 mark)

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13. (a) State Pascal's Principle.(1 mark)

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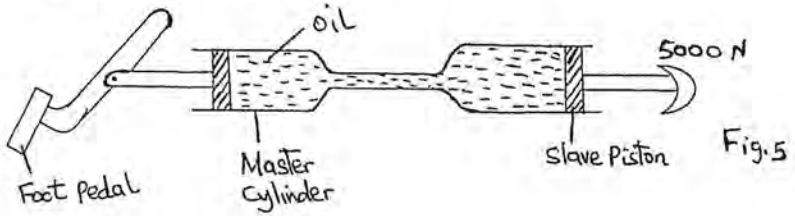
(b) The diagram in figure 5 below shows hydraulic brake system.



A force of 20N is applied on the foot pedal to a piston of area $50cm^2$ and this causes a stopping Force of 5000N.

Determine;

(i) Pressure in the master cylinder. (3mks)

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(ii) Area of the slave piston. (3mks)

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(iii) State any two properties of the fluid used in the hydraulic brake system (2 marks)

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c) The height of mercury column in a barometer at a place is 64cm. Determine the height of a column Of paraffin in barometer at the same place. (Density of mercury and paraffin are $13600kg/m^3$ and $800kg/m^3$) (3 marks)

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d. State ***two*** advantages of a force pump over lift pump. (2 marks)

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14. The mass of a density bottle of capacity $50cm^3$ is 12.3g when empty. Copper turnings are poured in to the bottle and total mass is 101.3g. Water is then added into the bottle until the bottle is full. The total mass of the bottle and its contents is 141.3g. Determine:

(i) The mass of copper turnings (2 marks)

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(ii) The mass of the water added (2 marks)

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(iii) Volume of the water added (1 mark)

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(iv) Volume of the copper turnings (2 marks)

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v) Density of the copper in SI unit. (3 marks)

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15 a. Name all the forces acting on the following bodies (3 marks)

(i) A moving car negotiating a bend

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(ii) Water rising a narrow tube

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(iii) Causing tides in the seas (oceans)

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b. By stating the two examples in each case differentiate between scalar and vector Quantities (4 marks)

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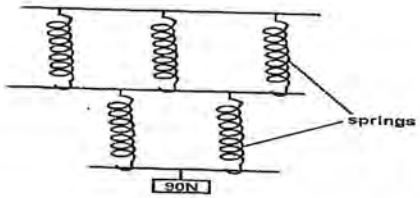
c. Five identical spring were arranged as shown below and the single spring extends by 9cm When supporting a load of 45N



Determine the total extension of the system (take the weight of the cross bars to be negligible) (3 marks)

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16 a.Explain how the following cases of injuries should be handled in the laboratory

(i) Cuts (2 marks)

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(ii) Burns (1 mark)

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(iii) Electric shock (1 mark)

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c) Explain how physics is related to religion as a subject. (2 marks)

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