**Name: ……..Adm. No……..**

**School ……Candidate's sign: .....**

**Date……..……..**

**PHYSICS(THEORY)**
**TIME: 2½ HOURS**

**INSTRUCTIONS TO CANDIDATES:**

- *Write **your name**, **admission number**, **date** of examinationand the **name** of your school in the spaces provided above.*
- ***Sign** and **write** the **date** of examination in the spaces provided above.*
- *This paper consists of sections: **A** and **B**.*
- *Answer **all** the questions in section **A** and **B** in the spaces provided.*
- *All working **must** be clearly shown in the spaces provided.*
- *Mathematical tables and electronic calculators may be used.*

**For Examiner's Use Only**

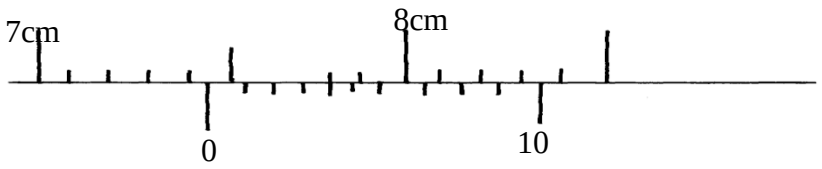
| SECTION | QUESTION | MAXIMUM SCORE | CANDIDATE'S SCORE |
|---|---|---|---|
| A | 1 – 12 | 25 | |
| B | 13 | 13 | |
| | 14 | 12 | |
| | 15 | 16 | |
| | 16 | 14 | |
| TOTAL SCORE | | 80 | |

*This paper consists of 6 printed pages. Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing*

**SECTION A (25MARKS)**

***Answer <u>all</u> question this section***

1. Distinguish between mass and weight of a body stating the S.I units for each. (2mks)
2. The figure below shows part of scale of vernier calipers.




What is the reading indicated on the scale …….. (1mk)

3. $180cm^3$ of fresh water of density $100kg/m^3$ is mixed with $2200cm^3$ of sea water of density $1025kg/m^3$. Calculate the density of the mixture (4mks)

4. Explain why fish can survive under water when the surface is already frozen (2mks)
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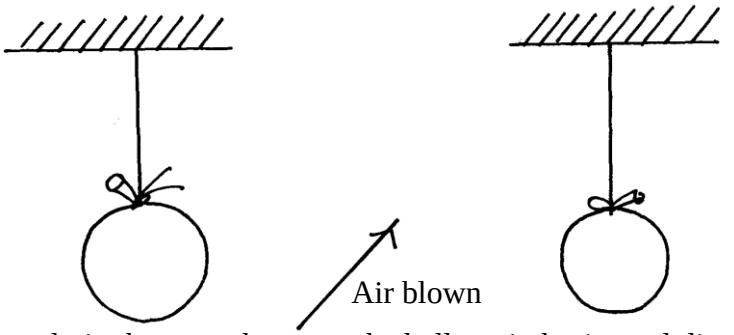
5. Two inflated balloons are at the same level while suspended from threads a short distance apart as shown below;




Some air is blown gently in the space between the balloon in horizontal direction. Explain what happens to the balloons. (2mks)
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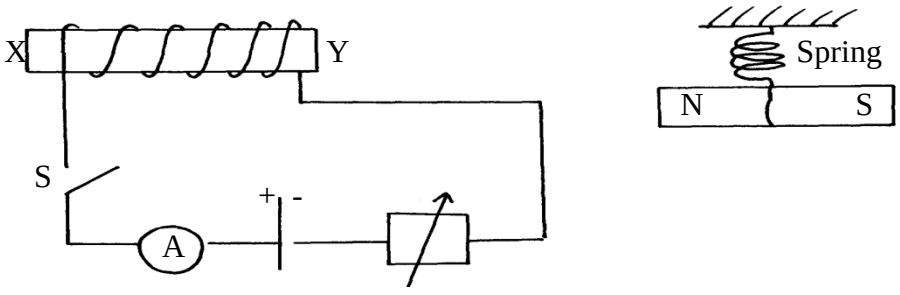
……..
6. State **one** advantage of an alkaline battery over a lead acid battery. (1mk)
……..
7. The diagram below shows a permanent magnet suspended by a spring. State with reason the behaviour of the magnet when the switch is closed. (2mks)

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8. Convection and diffusion both involve motion of fluids. Distinguish between the two. (2mks)

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9. A negatively, charged rod is brought close to (but not touching ) an uncharged sphere. If the sphere is momentarily earthed and then the rod is removed, briefly explain what happens. (2mks)
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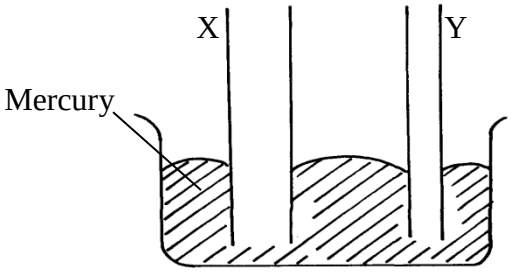
10. Indicate on the diagram below, the level of mercury in the tubes **X** and **Y** (2mks)




11. An object weighs 1200N on a certain planet. What is the gravitational field strength of this planet if the object is 60kg? (3mks)

12. State **two** properties of a thermometric liquid. (2mks)
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……..

**SECTION B (55MARKS)**

***Answer <u>all</u> question this section***

13.

a) Define **pressure** and give its S.I nits. (2mks)
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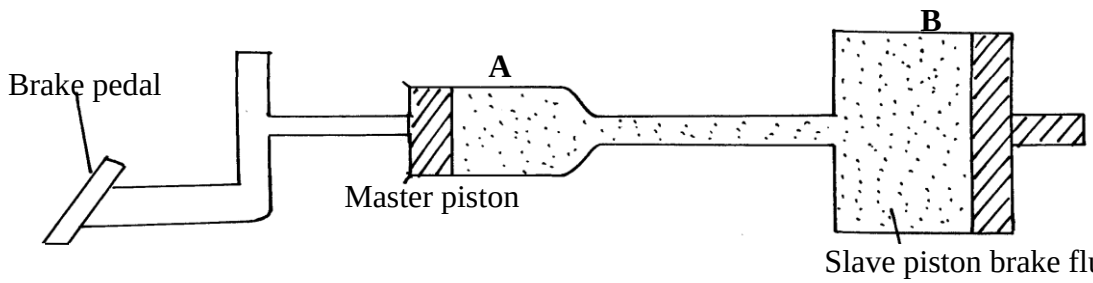
b) The diagram below represents a motor car hydraulic braking system;




i. State **two** properties of the liquid used as a brake fluid (2mks)
……..
……..

ii. Given that in the diagram **(b)** above the master piston has an area of $15cm^2$ and the slave piston has an area of $50cm^2$ a force of 100N is applied on the master piston. Find the force used to stop the car. (3mks)

c) Compare the values of pressure in the two pistons above and give a reason for your answer. (2mks)

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d) Give a reason why gas is not suitable for use in place of the brake fluid. (1mk)

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e) X$cm^3$ of substance A which has density of 800$kg/m^3$ is mixed with 100$cm^3$ of water with a density of 1000$kg/m^3$. The density of the mixture is 960$kg/m^3$. Determine the value of X (3mks)

14.

a) Give reasons why it is necessary to leave the caps of the cells open when charging an accumulator ( 1mk)

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…...……...

b) Define current and state its SI unit ( 2mks)

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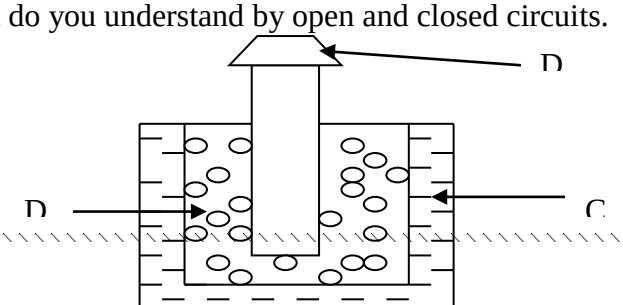
c) A charge of 120 coulombs flow through a 1 am every minute. Calculate the current flowing through the lamp. ( 3mks)

d) What do you understand by open and closed circuits. ( 2mks)



i. State the polarities of A and B. (2 mks)

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ii. Name the chemical substances in the parts labeled C and D ( 2mks)

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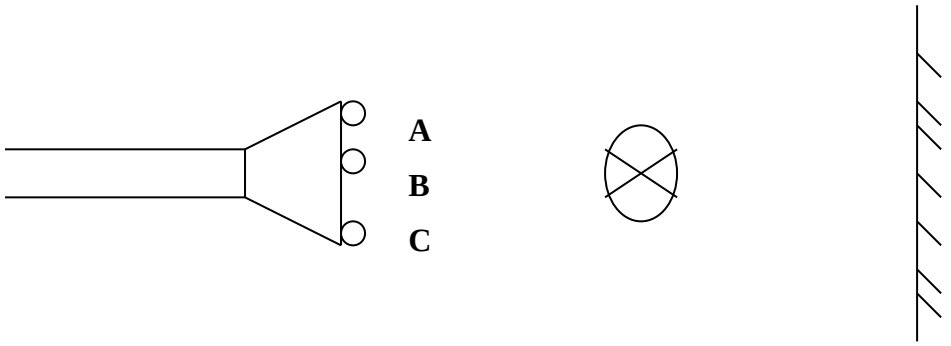
……..

15.

a) The figure shows an arrangement of source of light, an opaque object and a screen. Using A, B and C as point sources, sketch on the same diagram labeled a ray diagram to show what is observed on the screen. (3mks)




b) In a certain pinhole camera, the screen is 10cm from the pinhole. When the pinhole is placed 6cm away from a tree, a sharp image of a tree 16cm high is formed on the screen. Find the height of the tree. ( 3mks)

c) Distinguish between Lunar and Solar eclipse by stating the events that lead to the formation of each (4mks)

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d) A girl stands 4 m in front of a plane mirror

i. What is the distance between the girl and the mirror (3mks)

ii. Explain how you would use an electroscope to distinguish between a conductor and an insulator (3mks)

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16.

a) Fill in the table of charges appropriately ( 5mks)

| **Charge on Electroscope** | **Charge brought near cap** | **Effects on leaf divergence** |
|---|---|---|
| +<br>- | +<br>- | |
| + or - | Uncharged body | |

b) What is the name given to the method of charging an electroscope where it requires an opposite charge to the one of the charging materials? (1mk)

……..……
……..……

c) Distinguish between a basic physical quantity and a derived physical quantity giving an example of each. (3mks)

| **Physical quantity** | **Derived physical quantity** |
|---|---|
| | |
| | |
| | |

d) State any **two** ways by which frictional force between two surfaces can be reduced. (1mk)

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e) Explain why large mercury drops form oral ball on a glass slide (2mks)

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f) Explain why a man using a parachute falls through air slowly while a stone falls through air very fast. (2mks)

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