**Name**: **………………………………………………… Adm. No………………Class………**

**232**

**FORM TWO**

**PHYSICS EXAM**

*2 hours*

**FORM TWO**

**INSTRUCTIONS TO CANDIDATES**

* *This paper consists of* ***18*** *questions.*
* *Answer* ***ALL*** *the questions in the spaces provided.*
* ***ALL*** *working* ***MUST*** *be clearly shown.*
* ***ALL*** *numerical answers* ***MUST*** *be expressed in decimal forms.*

**For Examiners use only**

|  |  |  |
| --- | --- | --- |
| Question | MaximumScore | Candidate’sScore |
| **1 –18** |  **80** |  |

**The paper consists of 11 printed pages.**

***Candidates should check the question paper to ensure that all the pages are printed as indicated and no questions are missing*.**

***Answer ALL the questions in this paper in the spaces provided***

1. The figure below shows the scale of a verniercallipers which was being used to measure the internal diameter of a tin. The verniercallipers has a zero error of 0.22 cm.

6 7 8

1. Record the actual diameter of the tin. **(3 marks)**

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1. State one advantage of the above measuring instrument over a micrometer screw gauge. **(1 mark)**

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1. State the Pascal’s Principle of transmission of pressure in fluids. **(2 marks)**

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1. The figure below shows an iron bar being magnetized with a magnet.

Magnet

Y

X

**N**

N

S

1. Identify the magnetization method being used. **(1 mark)**

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1. Name the polarities X and Y of the resulting magnet. **(2 marks)**

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1. The diagram below shows a steel rod **AB** inside a solenoid.

Switch

Dry cell

B

A

steel rod

1. What is the name of the above method of magnetization? **(1 mark)**

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1. Give the polarities of ends A and B when the switch is put on. **(2 marks)**

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1. An object of mass 120g, when half immersed in water displaced a volume of 20cm3, calculate the density of the object? **(3 marks)**

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1. An umbrella is made of cloth but it will not allow rain to pass through it. Explain? **(1 mark)**

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1. (a) A battery is rated 70AH, giving a practical example, explain the meaning of the rating?

**(1 mark)**

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(b) A certain battery drives a current of 2A in a circuit for 1 hour. Calculate the quantity of charge in the circuit? **(2 marks)**

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1. The mass of an empty density bottle is **23.2 g**. When full of water its mass is **73.2 g**. Some sand is poured into the empty density bottle and the total mass is **55.2 g**. Water is then added onto the sand in the density bottle until the bottle is full. If the total mass of the bottle and its contents is now found to be **85.2 g**, calculate the density of sand. (Take density of water = **1.0 g/cm3**) **(5 marks)**

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1. On a cold day, the metal handlebars of a bicycle feel colder than the rubber grips. Give a reason for this? **(1 mark)**

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1. Give three ways of increasing the sensitivity of a liquid-in-glass thermometer. **(3 marks)**

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1. The U-tube shown below contains mercury of density **13600 kg/cm3** and is connected to a laboratory gas supply.

15 cm

Gas

Mercury

 If the atmospheric pressure is **750 mmHg**, what is the pressure of the gas in:

1. mmHg **(2 marks)**

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1. Pascal. (Take g = **10N/kg**) **(3 marks)**

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1. A uniform 90cm rod AB is balanced at its center of gravity, weight Y, 1N and 2N are hung 20cm, 65cm and 85cm respectively from A. Calculate the force Y? **(3 marks)**

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1. A pinhole camera which is 1.5m long forms an image of the sun which is 7mm in radius, assuming that the sun is 1.5 × 108Km away, estimate the diameter of the sun. **(3 marks)**

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1. The diagram below shows a simple Voltaic cell. The flow of current is represented by $i.$ Identify:

A

B

1. The Zinc rod **(1 mark)**

…………………………………………………………………………………………………

1. The Copper rod **(1mark)**

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1. In the diagram below the metre rule is uniform and has a mass of 100g

20g

140g

 20cm 10cm

1. If the rule is perfectly balanced, determine the mark on the metre rule at which the string is tied. **(4 marks)**

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1. What upward force in does the string exert on the rule? **(3 marks)**

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1. Using a ray diagram, locate the images formed in the figure below. **(4 marks)**

Object

1. The magnetic field between the poles of two permanent bar magnets is shown below. The neutral point is marked X



1. Explain what is meant by a neutral point? **(1 mark)**

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1. Identify the poles marked A, B, C and D. **(2 marks)**

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1. Which is the stronger pole? B or C. **(1 mark)**

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1. Give a reason to your answer in (c) above. **(1 mark)**

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1. The two magnets were prepared by a student in a college. Suggest two different methods by which she could have prepared the two magnets. **(2 marks)**

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1. Draw the magnetic domains in magnet AB showing clearly the north and south poles.

 **(2 marks)**

**A B**

1. (i) State one difference between the magnetic properties of steel and iron. **(2 marks)**

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1. Given the two materials state which you would use to make: **(2 marks)**
2. An electromagnet

…………………………………………………………………………………………

1. A compass needle.

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1. In an experiment to determine the size of an oil molecule, clean water was placed in a large basin and then left over several minutes without any disturbance. Lycopodium powder was carefully spread on the water surface. A drop of oil was then taken from a container using a fine wire. Its diameter was measured using a millimeter scale with the aid of a hand lens and was found to be 0.35mm. The oil drop was carefully transferred onto the water surface where it spread to form a circular patch of diameter 14cm.
2. Explain briefly why:
3. It was important to use clean water for this experiment. **(1 marks)**

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1. The water was held in a large basin. **(1 mark)**

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1. The water was left undisturbed for several minutes. **(1 mark)**

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1. Lycopodium powder was spread over the surface of the water. **(1 marks)**

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1. Use the measurements obtained to determine:
2. The volume of oil. **(3 marks)**

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1. The area of the oil patch. **(3 marks)**

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1. The approximate diameter of an oil molecule. **(3 marks)**

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1. The approximate volume of an oil molecule in mm3 (correct to 3 significant figures) **(3 marks)**

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1. The number of oil molecules in the oil drop. (correct to 3 significant figures)

*Take* $π= ^{22}/\_{7}$ **(3 marks)**

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