EDUCATOR SERIES
PHYSICS EXAM
FORM 2

TIME: 2HRS.
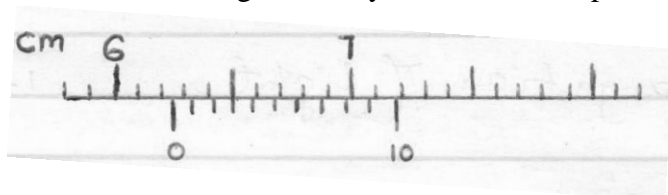
NAME……………………………………………………………….ADM NO………………….

INSTRUCTIONS TO CANDIDATES
o   Write your name and your index number in the spaces provided above.
o   Answer **all** questions in section in the space provided

1. Electricity and Magnetism is one of the branches of physics. What does it deal with? (1mks)

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2. What is the reading shown by the Vernier calipers below?   (2mks)

3. a)If an oil drop of diameter 0.5mm spreads on the surface of water to form an oil patch of diameter 0.2m, estimate the thickness of the oil molecule.   (3mks)

b) State any two assumptions made in the experiment of estimating the diameter of the molecule of oil.   (2mks)
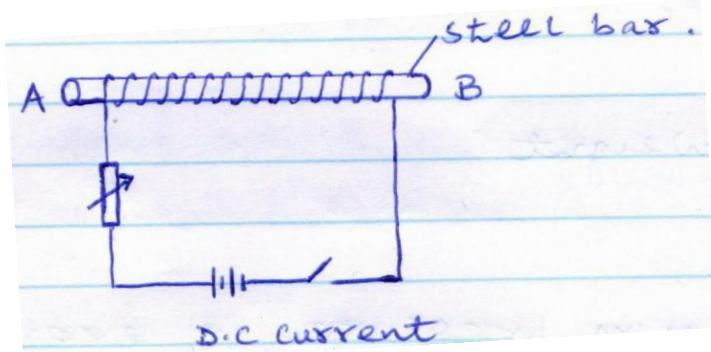
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4. a) Explain why brass cannot be charged by rubbing.   (2mks)

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b) State the SI unit of charges. (1mk)

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c) When a charged rod is brought near the cap of a positively charged electroscope, its leaf fell. Identify the kind of charges on the rod. (1mk)

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5. a) The diagram below shows how a steel bar can by magnetized by electrical method.

b) Identify the polarities of end A and B of the magnet formed when the switched is closed. (2mks)

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c) Sketch the magnetic field patterns for the arrangement below. (2mks)
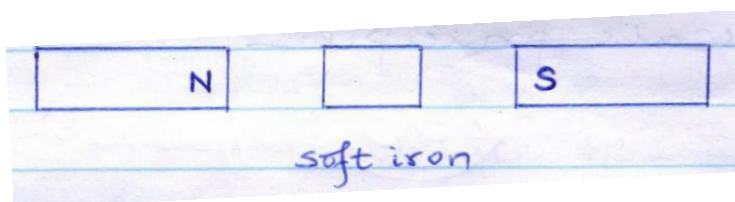
d) Use domain theory to explain the difference between magnetic and non- magnetic materials. (2mks)

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6. a) The density of mercury is 13.6g/cm3. What does this mean. (1mk)

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b) A glass block of density 2.5g/cm3 has its dimensions 2cm by 4cm 5cm. determine.
i) its volume (1mk)

ii) Its mass in kg (1mk)

iii) Its weight (1mk)

iv) Maximum pressure it exerts on a flat surface (2mks)

c) Describe an experiment to demonstrate existence of atmospheric pressure. (3mks)

d) State two factors that affect pressure in liquids. (2mks)

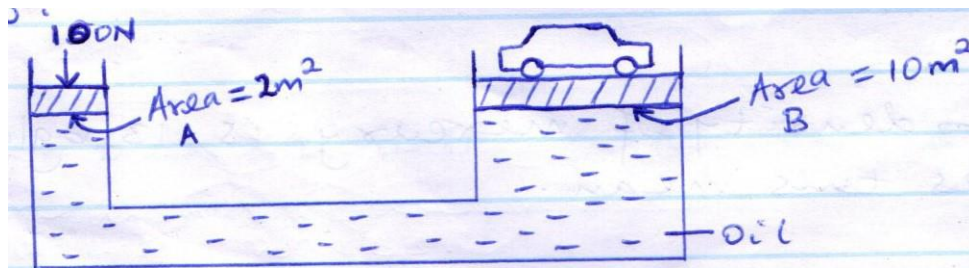……

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e) State Pascal's principle. (1mk)

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f) The diagram below show a hydraulic lift that is used to lift vehicles in garage. Study it and answer the questions that follow.

i)   Calculate the pressure generated at A. (2mks)

ii)   Determine the pressure transmitted at B by the oil. (1mk)

iii)   Force generated at B for lifting the vehicle. (2mks)

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7. Define spring constant and state its S.I unit. (2mks)

8. a) State two non-contact forces. (2mks)

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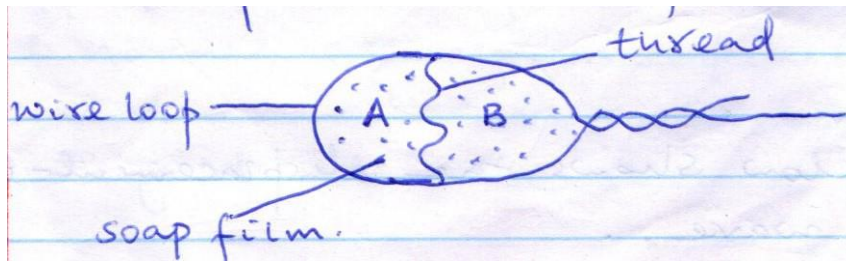……
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b) Draw a narrow glass tube in mercury in a beaker that is partially filled. (2mks)

c) water wets glass surface but not oiled glass surface. Explain. (2mks)

d) State two ways of decreasing surface tension of a liquid. (2mks)

e) The diagram below shows a wire loop with a loosely tied thread filled with soap film.

i)   Draw another diagram to show the observation made when the film is touched at A. (1mk)

ii)   Explain this observation in the diagram above.   (2mks)

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f) The diagram below shows two forces 10N and 6N acting on a body.

6N ←————————O————————→ 10N
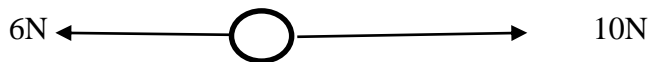
Show by drawing the resultant force acting on the body.   (2mks)

9. a) If a light paper is held in front of the mouth and air blown horizontally over the paper, it will be observed that the paper gets lifted up. Explain.   (2mks)

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b) Name two states of matter occupied by fluids.   (2mks)

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10. a) Distinguish between transverse and longitudinal waves.   (2mks)

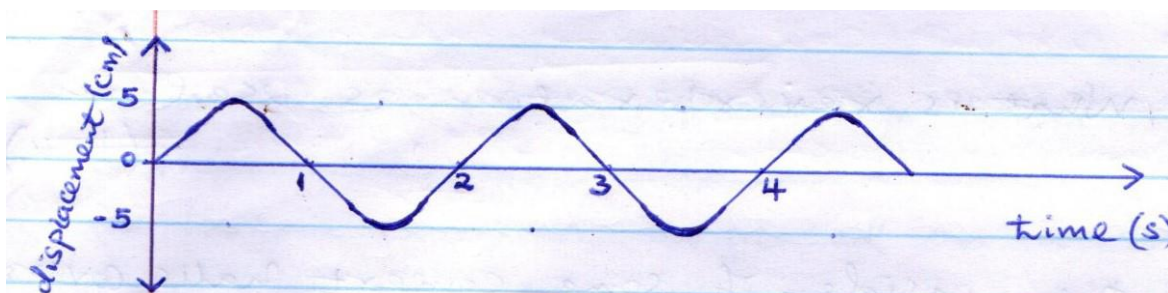………

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b) The figure below shows the displacement time graph for a wave.

i)What is the amplitude of the wave.   (1mk)

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ii) Determine the period of the wave.   (1mk)

iii)Determine the frequency of the wave.   (2mks)

11. a) What is expansivity?   (1mk)

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b) Concrete beams are reinforced by steel. Explain.   (2mks)

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c) What is anomalous expansion of water.   (1mk)

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d) Plot a graph of volume (cm^3) against temperature (^0c) of an ice that is heated from -10^0C to 20^0C.   (2mks)

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e) A faulty mercury thermometer reads 100c when dipped into melting ice and 90^0c when on steam at normal atmospheric pressure what would this thermometer read when dipped into liquid at 20^0c.   (3mks)

12. a) What is reverberation as used in sound.   (1mk)

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b) Why is the inside of some concert hall covered with soft material?   (2mks)

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13. a) State the principle of moments.   (1mk)

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b) A uniform metal bar, 100cm long, balance at 20cm mark when a mass of 1.5g is attached at 0cm mark as shown below.
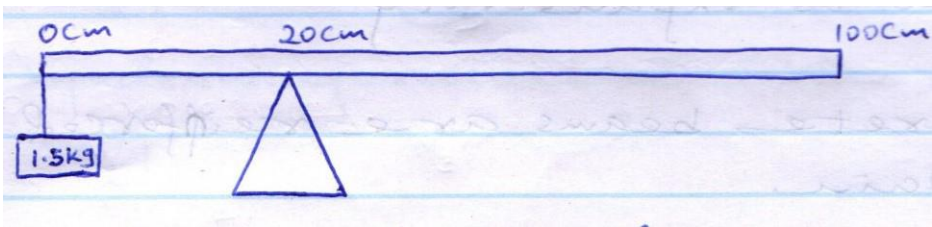
Calculate the weight of the bar.   (3mks)

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14. Describe the type of equilibrium in :
    i)   A marble at the bottom of a watch glass   (1mk)

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    ii)   A tight rope walker.   (1mk)

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15. A concave mirror is used to form an image of an object pin. Where must the object pin be placed to obtain;
    i)   An upright, magnified image.   (1mk)
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    ii)   An inverted, diminished image.   (1mk)

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    iii)   An image the same size as the object.   (1mk)
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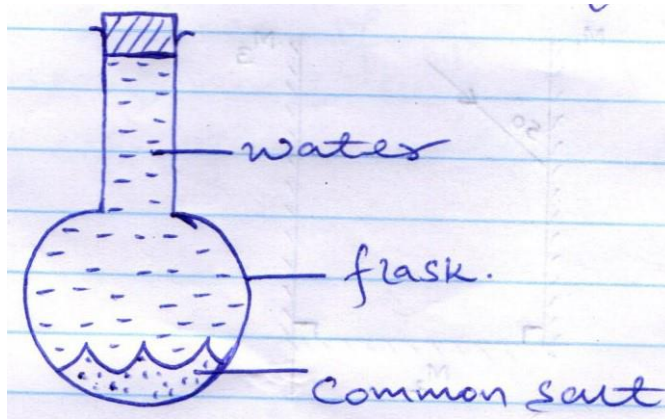...

16. When a compass is placed on a wire, its needle deflects when the current flow on the wire. Explain.   (2mks)

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b) The diagram below shows a flask containing undissolved common salt filled with water. Study it and answer questions that follow.

i)   What is the purpose of shaking flask? (3mks)

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ii)   State and explain the observation made after the flask is shaken several times. (3mks)

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17. a) Why is it dangerous to light a cigarette near a charging car battery.   (1mk)

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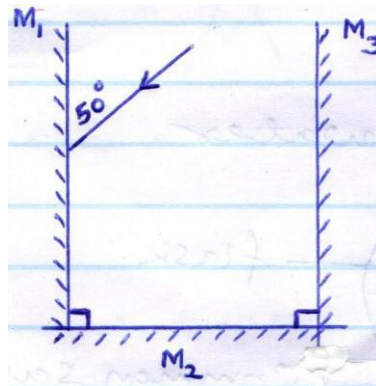……

b) Draw a circuit containing the following electrical devices, a battery, a bulb, a voltmeter and a variable resistor.(4mks)

c) State two defects in a simple primary cell.   (2mks)

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18. The diagram below shows three mirrors M^1, M^2 and M^3 inclined at angle of 900 to each other. A ray of light strike mirror M^1 at an angle of 500 as below.

Trace the path of light by drawing ray diagram until the ray emerge from mirror M3(include angle).   (3mks)