FORM 3 TERM 1 OPENER

PHYSICS

NAME…… ADM NO…….

CLASS…… SIGN……

DATE……

TIME:
INSTRUCTIONS.
Answer all the questions in the spaces provided.

1. Define the term fluid. (1mk)

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2. Distinguish between streamline flow and turbulent flow. (2mks)

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3. In deriving the equation of continuity, there are some assumption made. State the three assumption that the fluid must have. (3mks)

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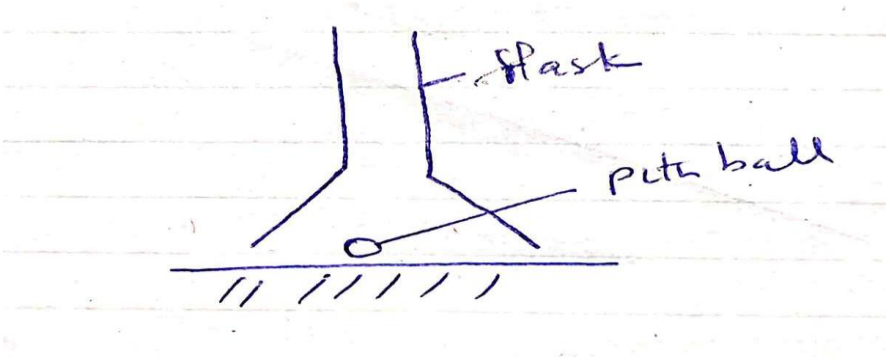
4. The figure below shows a pithball placed in a flask. When a jet of air is blown over the month of the flask as shown, the pithball is observed to rise from the bottom. (2mks)



5. Water with negligible viscosity flows steadily through a horizontal pipe of various cross-section area. At a point A of cross-section area $10cm^2$ the velocity is 0.2m/s. calculate:
   a) The velocity at a point B, of cross-section area $2.5cm^2$. (3mks)

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   b) State two hazards of Bernoullis effect. (2mks)

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6. State and explain three factors affecting velocity of sound in air. (3mks)

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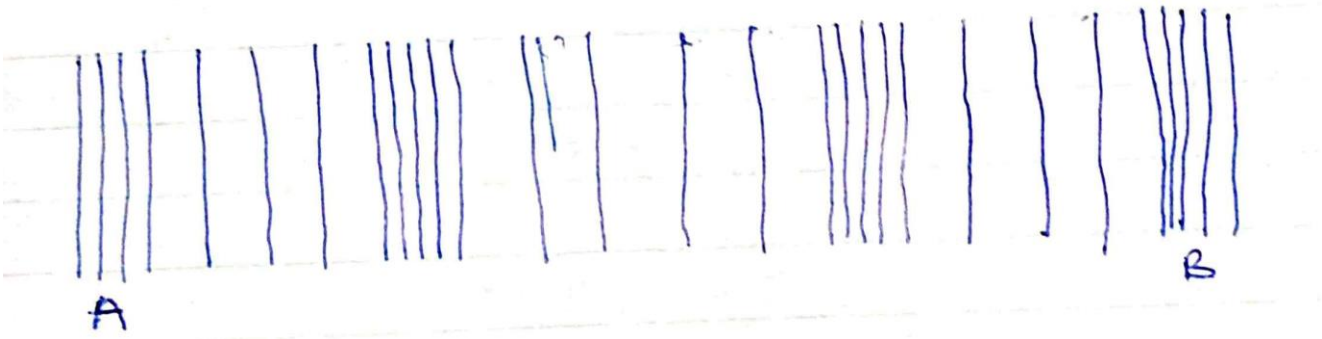
7. The diagram below shows sound waves passing through air. Study it and answer the questions that follow.



Label the following:

i. Compression (1mk)
ii. Rarefaction (1mk)
iii. Wavelength (1mk)

8. Define moment of a force. (2mks)

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b. State two factors affecting moment of force. (2mks)

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c. A uniform metre rule pivoted at its centre is balanced by a force of 4.8N at 20cm mark and some other two forces, F and 2.0N on the 66cm and 90cm marks respectively. Calculate the force F. (2mks)

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9. Define magnetic field. (1mk)

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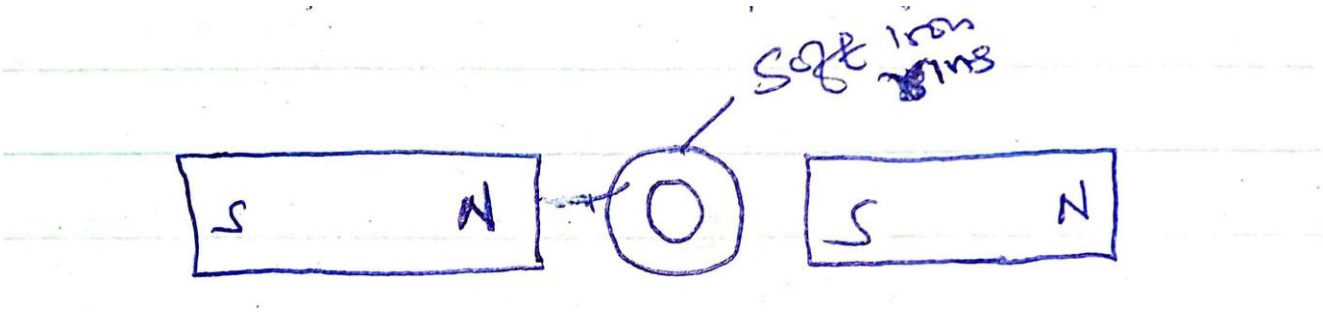
b. Draw the field pattern in following. (2mks)



c. State three uses of magnets. (3mks)

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10. The air pressure at the base of a mountain is 75.0cm of mercury while at the top it is 60.0cm of mercury. Given that the average density of air is 1.25kg/m^3 and the density of mercury is 13600kg/m^3, calculate the height of the mountain. (3mks)

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11. a. Differentiate between a transverse wave and a longitudinal wave. (2mks)

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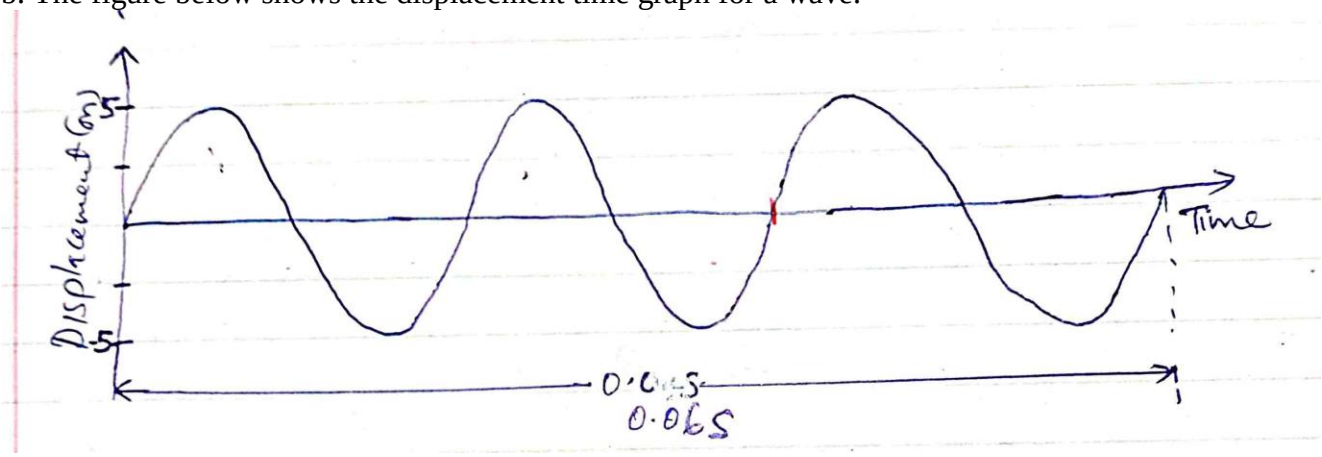
b. The figure below shows the displacement time graph for a wave.



With reference to this wave motion, determine the:

i. Period (1mk)

ii. Frequency (2mks)

iii. If the wave travel at a speed of 340m/s, calculate the wavelength. (3mks)

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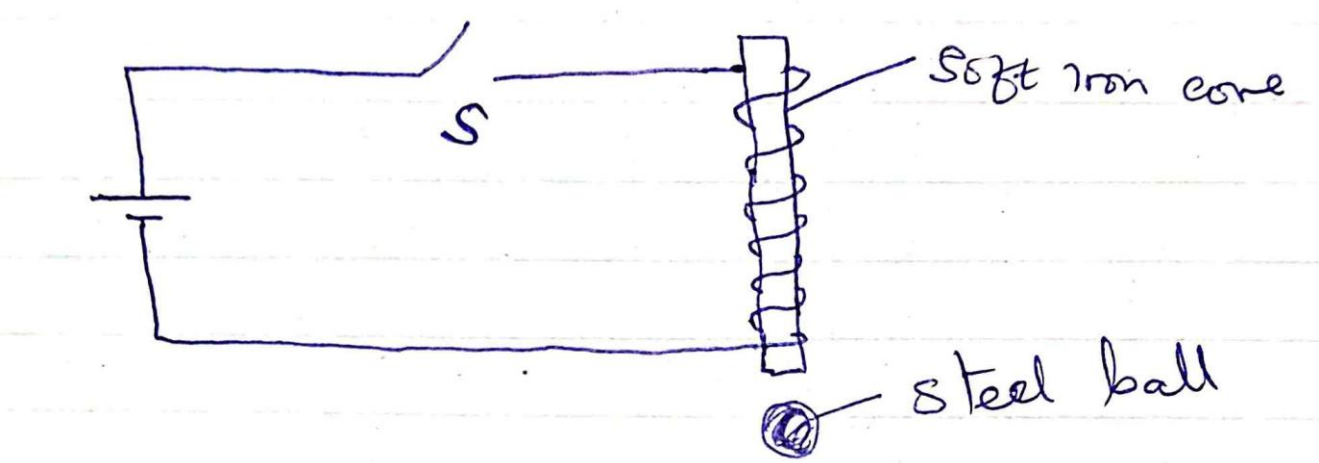
12. A small electromagnet used for lifting and then releasing a small steel ball is made in the laboratory as shown below;



a) Explain why soft iron is a better material than steel to use for the core. (1mk)

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b) In order to lift a slightly larger ball, it is necessary to make a stronger electromagnet. State two ways and explain the electromagnet could be made more powerful. (4mks)

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13. In an experiment to estimate the size of a molecule of olive oil, a drop oil of volume $0.12mm^3$ was placed on a clean water surface. The oil spread into a patch of areas $6.0x10^4mm^2$. Estimate the size of a molecule of olive oil. (3mks)

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b. Give two assumption made when calculating the thickness of the oil drop. (2mks)

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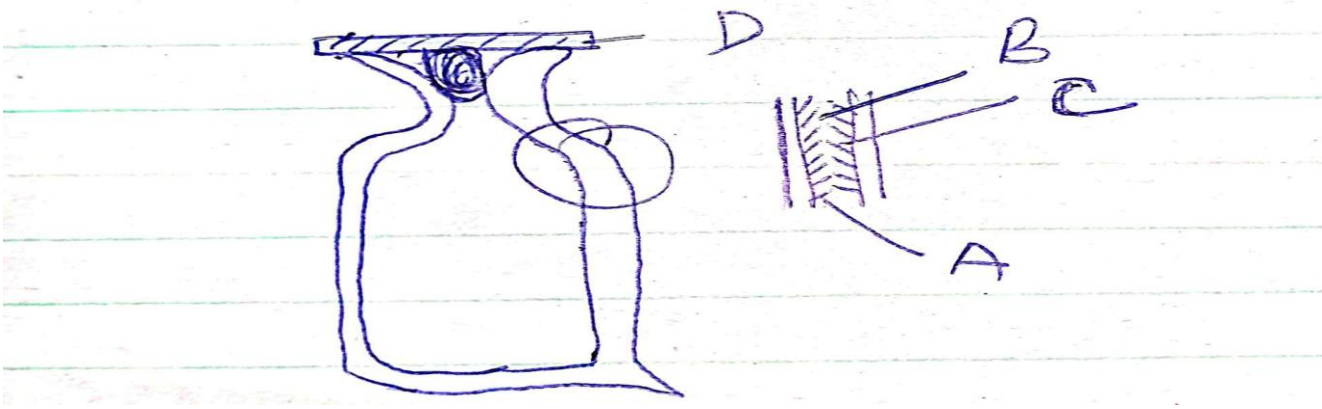
14. The diagram below shows a vacuum flask with an enlarged view of the part in the circle.



a) What materials are items A and C made of? (1mk)

b) What types of heat energy are reduced by or prevented by the parts marked B,C and D. (3mks)

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c) Explain how A is effective in reducing heat transfer. (1mk)

15. An object is placed 10cm in front of a:

a) Convex mirror of a focal length 20cm. determine the position of the image.(2mks)

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b) Nature of the image. (1mk)

c) Define the following terms as used in curved surface. (2mks)

Pole:

Radius of curvature:

16. Sketch the field in each of the following. (4mks)

I. Current in the same direction.

II. Current in opposite direction.