**MID TERM EXAM**

**FORM 2 PHYSICS**

**TIME: 1 ½ HOURS**

**NAME………………………..………………………..……..ADM………………...CLASS…………….**

1. Differentiate fundamental quantities from derived quantities.(2mks)
2. a) What is surface tension?(1mk)

 b) The diagram below shows a wire loop with two threads tied across it. The loop is dipped into a soap solution such that the soap film covers it as shown.

**C**

**B**

**A**

Region B is punctured such that the soap film in that section is broken. On the space alongside the diagram sketch the resulting shape of the wire loop. Give a reason for the shape.(2mks).

1. The figures (a) and (b) below shows capillary tubes inserted in water and mercury respectively.

 **Tube**

 **Water**

 **Mercury**

 **Tube**

***(a)***

***(b)***

**Beakers**

It is observed that in water the meniscus in the capillary tube is higher than the meniscus in the beaker, while in mercury the meniscus in the capillary tube is lower than the meniscus in the beaker. Explain these observations.(2mk)

1. a) Define pressure and state its SI units(2mks)

 b) A block measuring 20cm by 10cm by 4cm rests on a flat surface. The block has a weight of 6N. Determine:

 i) The minimum pressure it exerts on the surface. (2mks)

 ii) The density of the block in kg/m3 (3mks)

c) Water dams are built with thicker walls at the bottom than at the top. Explain why. (2mks)

d) The barometric height of a certain town is 65cmHg. Given that the standard atmospheric pressure is 76cmHg and the density of mercury is 13600kg/m3 , determine the altitude of the town. (Take density of air = 1.25kg/m3 (3mks)

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

**Microscope**

**Smoke particles**

**Smoke cell**

**Strong**

**Beam of light**

1. State and explain what was observed (2mk)
2. Explain what would be happen if the temperature was raised(1mk)
3. a) State the law of electrostatic charge.(1mk)
4. Explain why a dressing table mirror may become dusty if wiped with a cloth on a warm day. (1mk)
5. State and explain two defects of simple cells. (2mks)
6. a) state the basic law of magnetism (1mk)

 b) Give a reason why attraction in magnetism is not regarded as a reliable method of testing for polarity (1mk)

 c) i. A soft iron ring is placed between two magnets. Draw the magnetic field pattern between the two magnets. (2mks)

**N**

**S**

**Soft iron ring**

ii. State one way of magnetizing a magnet (1mk)

1. a) What is the micrometer screw gauge reading shown in the diagram below? (2mks)

**15**

**10**

 **0**

b) A small drop of oil has a volume of 6 x 10-5 cm3. When it is put on the surface of some clean water, it forms a circular film of 2 x 104 cm2 in area; What is the size of a molecule of oil?.

 i) State the assumptions made in the above experiment (2mks)

ii) Calculate the thickness of the oil patch (2mks)

1. a) Define the term moment of a force.(1mk)

 b) State the principle of moments.(1mk)

 c) A uniform meter rule pivoted at its centre is balanced by a force of 100N at 20cm and another force of F at the 75cm mark.

 **50cm**

**100N**

**F**

 **75cm**

 **20cm**

**0**

**100cm**

1. Calculate the force F. (3mks)
2. What is the reaction at the pivot?(2mks)
3. Name two activities which produce a turning effect (2mks)
4. Why is it very difficult to open a door from a point too close to hinges?(1mk)
5. State three differences between mass and weight. (3mks)