**FORM 2 PHYSICS TERM ONE 2023**

**TIME:** 1H 30 MIN

NAME…………………………………………….CLASS……………….ADM NO……………

1. Differentiate fundamental quantities from derived quantities and give an example of each.(4mks)
2. State what the following branches of physics deals with:(6mks)
   * 1. Mechanics
     2. Electricity and magnetism

(iii) Thermodynamics

1. a) Define volume and give its SI units.(2mks)

b) The mass of an empty density bottle is 20g. When the bottle is full of paraffin it weighs 60g and when full of water weighs 70g. Calculate the density of paraffin in SI units.(4mks)

1. a) Define force (1mk)
2. The diagram below shows drop of liquids X and Y carefully put on a clean flat glass slab

**Glass slab**

**X**

**Y**

Explain the shapes of the drops (2mks)

C) State three differences between mass and weight. (3mks)

1. a) Two samples of bromine vapor are allowed to diffuse separately under different conditions, one in a vacuum and the other in air. State with reasons the conditions in which bromine will diffuse faster (2mks

b) In an experiment to demonstrate Brownian motion, smoke was placed in air cell and observed under a microscope. Smoke particles were observed to move randomly in the cell.

1. Explain the observation(2mks)
2. What would be the most likely observation if the temperature in the smoke cell was raised?(1mk)
3. Give a reason why gases are more compressible than liquids (2mks)
4. a) Distinguish between heat and temperature (2mks)

b) In a ball and ring experiment, the ball goes through the rings at room temperature. When it is heated it does not go through the ring, but when left on the ring for some time, it goes through. Explain this observation (2mks)

1. State the reason why electricity transmission cables are left sagging between the posts.(1mk)
2. Give a reason why a concrete beam reinforced with steel does not crack when subjected to changes in temperature.(1mk)
3. i) Explain why in cold weather the metal blade of a knife feels colder that the wooden handle. (2mks)
4. The Figure below shows a copper rod of uniform thickness being heated. The ends of the rod are dipped In water and mercury with wax at the bottom.

**Copper rod**

**Water**

**Wax**

**Mercury**

**Wax**

**Asbestos shields**

1. State the use of asbestos shields.(1mk)
2. State two observations made in this experiment. (2mk)
3. What conclusion can be made from the experiment above.(1mk)
4. a) Define pressure and state its SI units(2mks)
5. What is the reason why a trailer carrying heavy loads has many wheels?(2mks)
6. Name two factors that affect pressure in fluids. (2 marks)

d) A submarine is 40m below sea water of density 1020 kg/m3. If the atmospheric pressure at the place is 103,000Pa, calculate the total pressure acting on the submarine. (4 marks)