MIDTERM ONE 2019

PHYSICS SENIOR THREE

PAPER TWO

2HRS

INSTRUCTIONS

Attempt all questions

1. (a) state;
   (i) Archimedes' principle
   (ii) The law of floatation

   (b) A block of wood of volume 300cm^3 floats with $\frac{3}{4}$ of its volume immersed.

   Find the; (i) mass of the wood

   (ii) Fraction of the block that sinks when it is placed in oil of density 0.842gcm^{-3}

   (c) Describe an experiment to demonstrate the existence of surface tension

2. (a)State the laws of reflection of light
   (b) Describe an experiment to demonstrate the principle of reversibility of light.
   (c) An object is released from a height of 20m above a plane mirror. What distance must it drop through in order to be 10m away from its image?
   (d) What is meant by focal length of a lens?
   (e) Calculate the power of a concave lens of focal length 20cm.
3. (a) (i) Define pressure and state its SI unit.

   (ii)Explain why the balloon in a room bursts when the temperature of the room increases.

   (b)

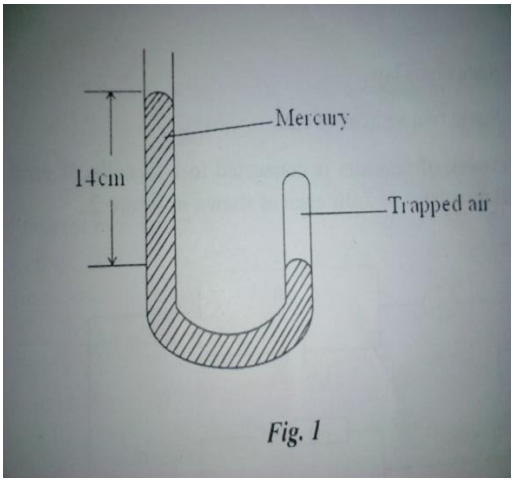

Fig. 1

A gas is trapped by mercury in a J- tube at atmospheric pressure 760mmHg as shown in fig 1 above. Calculate the pressure exerted by the trapped gas in Nm^{-2}.

(c) Describe with aid of a labeled diagram, how a force pump works.

(d) (i) State the law of conversation of energy.

(ii) A stone of mass 0.2kg is thrown vertically upwards and attains a maximum potential energy of 16J. Calculate its initial velocity.

4. (a) (i) What is a machine

(iii) With aid of relevant examples, give the three classes of levers.

(b) A lifting tackle has 2 pulleys in each block. An effort of 40N lifts a load of 120N. Calculate the;

(i) Mechanical advantage

(ii) Efficiency of the machine

(c) (i) State Hooke's law

(ii) Describe an experiment to verify Hooke's law.

END

PHY DEPT WISHES YOU SUCCESS