OUR LADY OF GOOD COUNSEL S.S.S, GAYAZA

SENIOR TWO PHYSICS

HOLIDAY WORK TERM 1, 2020.

ATTEMPT ALL QUESTIONS.

1. $1800cm^3$ of fresh water of density $1000kgm^{-3}$ is mixed with $2200cm^3$ of sea water of density $1025kgm^{-3}$. Calculate the density of the mixture in gcm^{-3}

2. An astronaut weighs 900N on earth. On the moon, he weighs 150N. Calculate the moon's gravitational force.

3. Two forces concurrently on a point P. One force is 60N due east and the second force is 80N due north. Find the resultant force acting on point P.

4. (a) What is surface tension?
   (b) Describe an experiment to show the existence of surface tension.
   (c) List down the factors that affect surface tension.
   (d) List down two applications of surface tension.

5. (a) Explain the following observations with the aid of diagrams:
      (i) Water rises up a narrow tube.
      (ii) Mercury falls in a narrow tube.

   (b) In an oil drop experiment, the diameter of the oil film formed on the water surface is 5cm and the volume of the oil drop used is $0.005cm^3$. Find the thickness of the oil molecule.

7. (a) Define pressure and state its S.I unit

   (b) (i) State Pascal's principle of transmission of pressure in fluids.

   (ii) Give three instances where Pascal's principle is applied.

   (iii) A concrete block of mass 10,000 g that measures $10cm \times 20cm \times 40cm.$

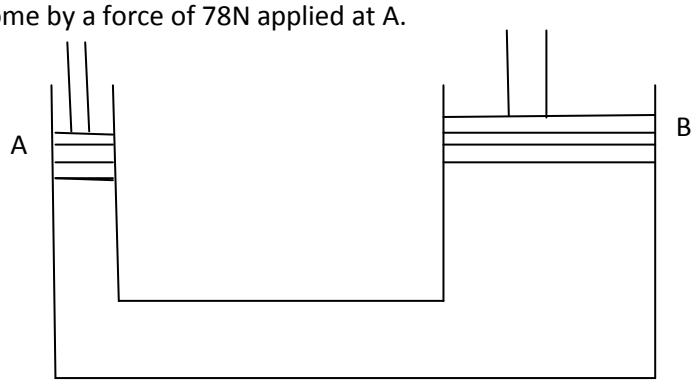
   Find (i) minimum pressure it exerts

   (ii) maximum pressure it exerts

   (c) (i) State two factors that affect pressure exerted by a solid on a surface

   (ii) Calculate the pressure at a depth of 20.0cm in a liquid of density 13600 kgm^{-3}

(iii) The figure below shows a hydraulic press. A and B are cylindrical pistons of radii 2 cm and 4 cm respectively. Calculate the maximum force at B that can be overcome by a force of 78N applied at A.



(d) (i) Describe with the aid of a diagram, how a force pump works.

(ii) Describe an experiment to show that pressure in a liquid increases with depth.

(iii) Describe a simple experiment to show that air in the atmosphere exerts pressure.

END