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**Max Time : 1 hr** **Class = 9th Science Test Max Marks : 25**

**FLOATATION**

[Thrust , Pressure , Density and Relative Density]

1. Write the expression of Relative density with Density of any substance and density of water.

[ 1 ]

1. Define Thrust and write its SI unit. [ 2 ]
2. A force of 100 N is applied on an object of area 2 m2. Calculate the pressure. [ 2 ]
3. Define Density and write its SI unit. [ 2 ]
4. Calculate the mass of a body whose volume is 2 m3 and density 0.52 g/cm3 [ 2 ]
5. A block of wood is kept on a table top. The mass of the wooden block is 5 Kg and its dimensions are 40 cm X 20 cm x 10 cm. Find the pressure exerted by the wooden block on the table top, if it is made to lie on the table with its sides of dimensions : (a) 20 cm x 10 cm (b) 40 cm x 20 cm.

[ 2 ]

1. Calculate the mass of air enclosed in a room of length, breadth and height equal to 5 m , 3 m and 4 m respectively. Density of air = 1.3 kg/m3 [ 2 ]
2. A nail is driven into a wooden board by using a hammer. The impact of the hammer on the head of the nail produces a thrust of 25 N. If the area of the head is 0.5 mm2 and of the tip 0.1 mm2, find the pressure on the head and the tip of the nail. [ 2 ]
3. A car weighs 1200 kg. This weight is evenly distributed on 4 wheels . If the pressure in each tyre is 15 kg wf/cm2, what is the area of each tyre in contact. [ 2 ]
4. A weather forecasting plastic balloon of volume 15 m3 contains hydrogen of density 0.09 kg/m3. The mass of the empty balloon is 7.15 kg. Calculate : (a) The mass of hydrogen in the balloon

(b) The mass of the balloon filled with the hydrogen. [ 2 ]

1. Find the pressure exerted on skin of balloon with a force of 2.1 N using: (a) Your finger (b) a needle. Assume the area of your finger tip is 1 x 10 – 4 m2, and the area of needle tip is 2.5 x 10 – 7 m2. (c) Find the maximum force necessary to burst the balloon with the needle, given that the balloon bursts with a pressure of 3 x 10 5 N/m2. [ 3 ]
2. The mass of a density bottle is 25 g when empty. 50 g when filled completely with water and 365 g when filled completely with mercury. Find the density of mercury. [ 3 ]