Exercise

Fluid Mechanics

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Exercise 1

Find the volume and weight of 400 g alcohol. Given the density of alcohol is 790 kg/m^3.

$Ans: (1) 5.06 \times 10^{-4}\ \text{m}^3, 3.92\ \text{N}$

Exercise 2

Determine the volume of water that has an equal mass of 100 cm^3 of lead. Then, find the weight density of lead.

$Ans: 1.13\times10^{-3}\ m^3, 1.1\times10^{5}\ N/m^3$

Exercise 3

A Golf shoe has 10 cleats, each having an area of 6.5 $\times 10^{-6}$ m^2 in contact with the floor. Assume that in walking, there is one instant when all 10 cleats support the entire weight of an 80 kg person. Calculate the pressure on the floor by the cleats?

$Ans: 1.206 \times 10^{7}\ \mathrm{N/m^2}$

Exercise 4

The water pressure in a certain house is 1.1×10^6 N/m^2. How high must be the water level be above the point to of release in the house.

Ans :112.24 m