CHEMISTRY

NCERT - NCERT CHEMISTRY(TAMIL ENGLISH)

FLUIDS

Problem

1. A man whose mass is 90 kg stands on his feet on a floor. The total area of contact of his

two feet with the floor is $0.036 m^2$. (Take, $g = 10 ms^{-2}$). How much is the pressure exerted by him on the floor?

2. Calculate the pressure exerted by a column of water of height 0.85 m (density of water, $\rho_w = 1000 kgm^{-3}$) and kerosene of same height (density of kerosene, $\rho_w = 800 kgm^{-3}$)

3. A mercury barometer in a physics laboratory shows a 732 mm vertical column of mercury. Calculate the atmospheric pressure in pascal. [Given density of mercury $\rho = 1.36 \times 10^4 kgm^{-3}$, $g = 9.8ms^{-2}$]

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4. A hydraulic system is used to lift a 2000 kg vehicle in an auto garage. If the vehicle sits on a piston of area $0.5m^2$, and a force is applied to a piston of area $0.03m^2$, what is the

minimum force that must be applied to lift the vehicle?

Given: Area covered by the vehicle on the piston $A_1 = 0.5m^2$. Weight of the vehicle,

$$F_1 = 2000kg \times 9.8ms^{-2}$$

Area on which force F_2 is applied, $A_2 = 0.03m^2$

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5. You have a block of a mystery material, 12 cm long, 11 cm wide and 3.5 cm thick. Its mass is

1155 grams.

What is its density?

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6. You have a block of a mystery material, 12 cm long, 11 cm wide and 3.5 cm thick. Its mass is 1155 grams.

Will it float in a tank of water, or sink?

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