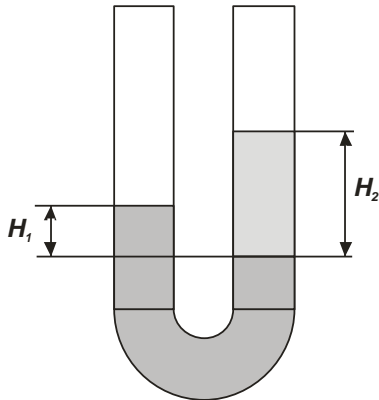


Question#18920

A U-tube contain liquid of unknown density. An oil of density 778 kg/m^3 is poured into one arm of the tube until the oil column is 10 cm high. The oil air interface is then 7 cm above the liquid level in the other arm of U tube. Find the density of the liquid.

Solution:



Let:

$$\rho_2 = 778 \text{ kg/m}^3$$

$$H_2 = 10 \text{ cm}$$

$$H_1 = 10 - 7 = 3 \text{ cm}$$

$$\rho_1 = ?$$

According to the law of communicating vessels:

$$\frac{\rho_1}{\rho_2} = \frac{H_2}{H_1}$$

$$\rho_1 = \frac{\rho_2 H_2}{H_1} = \frac{778 \times 10}{3} = 2593.33 \text{ kg/m}^3$$

Answer: 2593.33 kg/m^3