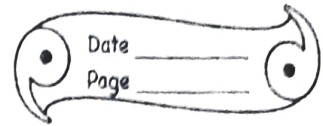


Hw
31/7/2021

Home Assignment

Numericals



- i) The density of water is 1.0 g cm^{-3} .
The density of iron is 7.8 g cm^{-3} .
The density of mercury is 13.6 g cm^{-3} .

Answer the following:

- a) Will a piece of iron float or sink in water?

Density of water 1.0 g cm^{-3}

Density of piece of iron $= 7.8 \times 10^{-3} \text{ g cm}^{-3}$

$$7.8 \times 10^{-3} = \frac{7.8}{1000} = 0.0078 \text{ g cm}^{-3} < 1.0 \text{ g cm}^{-3}$$

∴ Density of piece of iron is LESS than density of water.

Hence, piece of iron will FLOAT in water.

- b) Will a piece of iron float or sink in mercury?

Density of piece of iron $= 7.8 \times 10^{-3}$

Density of mercury is $13.6 \times 10^{-3} \text{ g cm}^{-3}$

Since $7.8 \times 10^{-3} < 13.6 \times 10^{-3}$

∴ Density of piece of iron is LESS than density of mercury

∴ Piece of iron will FLOAT in mercury.

2) The diagram given below shows a body floating in three different liquids A, B, C at different levels.

a) In which liquid does the body experience the greatest buoyant force?

Ans- Buoyant force is same in each case as the weight of body is same in each case and Buoyant force is equal to the weight of liquid displaced by the immersed part of body which balances the weight of body.

b) Which liquid has the least density?

Ans- The liquid A has the least density as body immerses the maximum.

c) Which liquid has the highest density?

Ans- Liquid C has the highest density as the body immerses the least.