

HOME ASSIGNMENT

Q1 Find pressure due to water at a depth 2m inside it.
(Given density of water = $1\text{g/cm}^3 = 1000\text{kg/m}^3$)

$$P = \rho \cdot g \cdot h$$

$$= 2 \times 1000 \times \frac{9.8}{10} = 19600 \text{ Pa.}$$

Q2 A circular pillar of area of cross section $6 \times 10^{-3} \text{ m}^2$ supports a weight of 60kg. Calculate the pressure exerted on the pillar.

$$\text{Area} = 6 \times 10^{-3} \text{ m}^2$$

$$\text{Weight (m)} = 60 \text{ kg.}$$

$$P = ?$$

$$F = mg$$

$$= 60 \times 10 = 600 \text{ N.}$$

$$\Rightarrow P = \frac{F}{A}$$

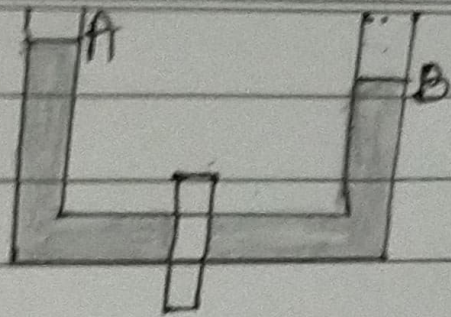
$$\Rightarrow P = \frac{600}{6 \times 10^{-3}}$$

$$\Rightarrow P = \frac{1000}{10} = \frac{1}{10} = 0.1 \text{ Pa.}$$

Q3) The levels of water in the two arms of A & B of a U-tube are shown in the diagram. A valve is put in between the two arms. State the direction of flow of water, when this valve is removed & give reasons for the same.

The water will flow from A to B when this valve is removed.

The reason behind this is water moves from high pressure to low pressure.



6) From which hole water travels the largest distance? why?
Hole D water travels the largest distance because pressure increases with depth.

Q The pressure of the water at the surface of the pond is lower than that at the bottom of the pond.

✓ a) lower than

b) higher than

c) same as

d) either lower or higher than.

Q Which is not the factor affecting the fluid pressure?

a) Height of fluid

b) Density of fluid

✓ c) Color of fluid

d) deceleration due to gravity.

Q Observe the vessels A, B, C, D carefully. Arrange them in the order of decreasing pressure at the bottom of the container.

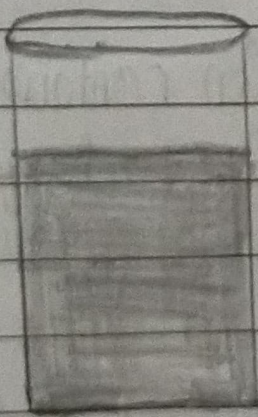
ans



d
[60ml]



b
[50ml]



a
[300ml]



c
[500ml]

Q1 A force of 16 N acts on an area of 50 cm^2 . What is the pressure in pascal?

Ans 3200 Pa

Q2 What force will produce a pressure 50000 Pa on an area of 0.2 m^2 ?

Ans 10000 N

Q3 A force of 300 N, while acting on an area A, produces a pressure of 1500 Pa. What is the magnitude of A in cm^2 ?

Ans 2000 cm^2

Q4 A small piece of impurity (density ρ) is embedded in ice. The ice is floating in water. (density = ρ_w). When ice melts, level of water will -

Ans remain unchanged, if $\rho < \rho_w$.

Q5 Each statement question contains statement - 1 (Assertion) & statement 2 (Reason). Each question has 5 choices (1), (2), (3), (4), (5) out of which only one is correct.

i) statement - 1 is true, statement - 2 is True; statement - 2 is correct explanation for statement - 1.

- i) Statement - 1 is true, Statement - 2 is true; Statement - 2 is not a correct explanation for statement - 1.
- ii) Statement - 1 is true, Statement - 2 is false.
- iii) Statement - 1 is false, Statement - 2 is true.
- iv) Statement - 1 is false, Statement - 2 is false.

Q) Statement 1: A man sitting in a boat which is floating on a pond. If the man drinks some water from the pond the level of the water in the pond decreases.

Statement 2: According to Archimedes principle the weight displaced by body is equal to weight of the body.

Ans) iv) Statement 1 is false, Statement - 2 is true.

Q) Statement - 1: A needle placed carefully on the surface of water may float, whereas a ball of the same material will always sink.

Statement - 2: The buoyancy of an object depends both on the material & shape of the object.

Ans) ii) Statement - 1 is true, Statement - 2 is false.