

13~~th~~. 9. 2021

Homework

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

Ans solⁿ - $P = h \rho g$

$$\Rightarrow P = 2 \times 1000 \times 10 = 20000 \text{ Pa}$$

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.

sol^o $m = \text{mass} = 60 \text{ kg}$

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

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

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

$$\Rightarrow P = \frac{600}{6} \times 1000 \Rightarrow P = 100000 \text{ Pa}$$

Q3(a) The levels - - - - - same.

sol^o (a). Water will flow from arm A to arm B because in a U-tube, the height of water is same in the two arms.

It is also because, the pressure of water in arm A is more than the pressure of water in arm B ^{as the depth of arm A is more than the depth of arm B.} ~~due to variations in~~ depth. As water moves from a region of high pressure to low pressure, it moves from arm A to arm B ~~it~~ till it reaches the same height.

(b) From - - - - - why?

Ans: Water travels the largest distance from ~~the~~ hole D. This is due to the phenomenon that as depth increases, pressure of liquid ~~a~~ increases.

84. The pressure of the water at the surface of the pond is _____ that at the bottom of the pond.

Ans: (a) Lower than

85. Which is not the factor affecting the fluid pressure?

Ans: (c) Color of fluid

86. Observe - - - - - container.

Sol: $D > B > A > C$

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

Ans sol: $F = 16 \text{ N}$

$$A = 50 \text{ cm}^2 = \frac{50}{10000} \text{ m}^2$$

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

$$\Rightarrow P = 16 \times \frac{200}{50} = 3200 \text{ Pa} \quad (a)$$

Q8. What force will produce a pressure of 50000 Pa on an area of 0.2 m²?

solⁿ $50000 = \frac{F}{0.2}$

$$\Rightarrow F = 50,000 \times \frac{2}{10} = 10000 \text{ N} \quad (a)$$

Q9. A force of 300 N, while acting on an area A, produces a pressure of 1500 Pa. What is the magnitude of A in cm²?

solⁿ $1500 = \frac{300}{A}$

$$\Rightarrow A = \frac{300}{1500} = \frac{1}{5} \text{ m}^2$$

$$\Rightarrow A = \frac{1}{5} \times 100^2 \times 100 \Rightarrow A = 2000 \text{ cm}^2$$

Q10. Some piece - - - - - will -

solⁿ (1) fall if $P > P_w$

(2) remain unchanged, if $P < P_w$

Q11. (1) Statement 1: A man ----- decreases.
Statement 2: According ----- body.

Sol: (1) Statement 1 is true, Statement 2 is true; it statement 2 is a correct explanation for statement 1.

(2) Statement 1: A needle ----- sink.
Statement 2: The buoyancy ----- object.

Sol: (2) Statement 1 is True; Statement 2 is False.