H/w
13/09/21

Date
Page

Numericals

(1) find pressure due to water at a depth 2m inside it.

Sol) pressure = $\frac{10^3 kg}{m^3} \times 10\ m/s^2 \times 2$

= 20,000 Pa

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

Ans) area of cross section = $6 \times 10^3\ m^2$

weight = 60kg = $60 \times 10 = 600 N$

$g = 10\ m/s^2$

pressure = $F/A = \frac{600 N}{6 \times 10^3\ m^2}$

$= 10^2 / 10^3$

$= 10^5\ N m^2$.

(3) The pressure of the water at the surface of pond is: _____ than bottom of pond

(a) lower than
(b) higher than
(c) same as
(d) Either lower or higher than

(Q2) which is not the factor affecting fluid pressure.

(a) height of fluid
(b) density of fluid
(c) color of fluid
(d) Acceleration due to gravity

(Q3) Observe the vessels A, B, C, D carefully. Arrange them in the order of decreasing pressure at the bottom of container.

Arrangement → D > B > A > C.

As the pressure at the base of each vessel is given by ρgh where ρ is density of water, g is acceleration due to gravity and h is height of water column.

So ⇒ pressure at bottom is $\propto$ to height of water level.

Q1) A force of 16 N acts on area of 50 cm². What is the pressure in pascal?

(a) 3200 Pa
(b) 4200 Pa
(c) 5200 Pa
(d) 2200 Pa.

Q2) What force will produce a pressure of 50,000 Pa on an area of 0.2 m².

(a) 10000 N
(b) 5000 N
(c) 15000 N
(d) 20,000 N

Q3) A force of 3000 N while acting on an area A produces a pressure of 1500 Pa. What is the magnitude of A in cm².

(a) 1000 cm² (b) 3000 cm² (c) 40000 cm²
(d) 50000 cm².

Q1) Some piece of impurity (density = P) is embedded in ice. The ice is floating in water (density = ρ_w) when ice melts, level of water will ____

(ii) fall if $p > p_w$ (iii) remains unchanged if $p < p_w$

(iii) fall if $p < p_w$ (iv) rise if $p > p_w$

(Q 2) (i) statement 1 -
A man sitting in a boat which is floating on a pond. If the man drinks some water from pond the level of water in the pond decrease.

statement - 2 - According to Archimede's principle the weight displaced by body is equal to weight of the body.

Ans) statement - 1 is incorrect (false) and statement - 2 is True.

(ii) statement - 1 - A needle placed carefully on a surface of water may float whereas a ball of the same material will always sink.

statement - 2 - The buoyancy of an object depends on both material and shape of object.

(3) statement - (1) is true statement (2) is false.