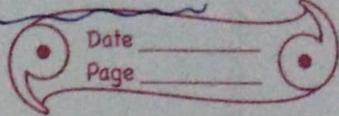


w
12.9.21

Home Assignment



Numericals

1) Depth of water = 2m

Density of water = 1000 kg/m^3

Value of $g = 9.8 \text{ m/s}^2$

Pressure due to water at depth 2m inside

$$it = \rho gh$$

$$= 1000 \times 9.8 \times 2$$

$$= 98 \times 2 \times 100$$

$$= 19600 \text{ P}$$

∴ pressure due to water at depth 2m inside
it is 19600 P.

2) Area of circular pillar = $6 \times 10^{-3} \text{ m}^2$

mass supported by the pillar = 60 kg

Force of the object exerted on pillar =

$$= m \times g$$

$$= 60 \times 9.8 = 98 \times 6 = 588 \text{ N}$$

Pressure exerted on the pillar = $\frac{F}{A}$

$$= \frac{588}{3 \times 10^{-3}} = 196000 \text{ P}$$

A

Therefore the pressure exerted on the pillar
is 196000 P.

3) a) When the valve will be removed the direction of flow of water will be from A to B, where the level of water in arm B will rise.

This happens because in arm A more water is present which will exert more force than the water present in arm B. So water level in arm A will come down and water level in arm B will go up.

6) From hole D water travels the farthest because pressure in a liquid increases with depth because further down we go greater is the weight of liquid column above it. Thus as point D is at the lowest depth, the weight of the liquid column above it is the most. Therefore from point D water travels the farthest.

4) a) Lower than

5) c) Colour of fluid

6) On arranging the orders of decreasing pressure at the bottom of containers, we get

$$D > B > A > C$$

This happens because pressure at a point in liquid is given by ρgh . As height of the liquid column above the base is greatest in D, then B, then A and least in C and for each container value of g and density of water is same, therefore pressure at the base of containers is greatest in D, then B, then A and least in C.

Home Assignment

1) a) 3200 Pa

2) a) 10000 N

3) Answer not in options

Ans) 2000 cm^2

Pressure produced = 1500

Force applied = 300

Area on which the force acts = A

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

$$A = \frac{F}{P} = \frac{300}{1500} = \frac{3}{15} = \frac{1}{5} = 0.2 \text{ m}^2$$

∴ Area in cm^2

$$= 0.2 \times 10000 = 2000 \text{ cm}^2$$

HOME ASSIGNMENT

(I) i) fall if $P > P_w$

2 ii) (1) Statement 1 is true, Statement 2 is False, Statement 2 is correct explanation of Statement 1.

(ii) (II) Statement 1 is true but Statement 2 is false