

440

1. Depth = 2m, Density of water =  $1000 \text{ kg/m}^3$ .

$$\text{Pressure due to water} = \rho gh = 1000 \times 10 \times 2 = 20000 \text{ Pa}$$

2. Area of cross-section =  $6 \times 10^{-3} \text{ m}^2$ .

$$\text{Weight it supports} = 60 \text{ kg}$$

$$P_{\text{pressure}} = \frac{\text{force}}{\text{Area}}, \Rightarrow \text{Force} = \text{Mass} \times \text{Acceleration}$$

$$\Rightarrow P = \frac{mg}{A} \quad (a = \text{acceleration due to gravity} = g)$$

$$\Rightarrow P = \frac{60 \times 10}{6 \times 10^{-3}} \Rightarrow P = \frac{600}{\frac{6}{1000}} \Rightarrow P = 100 \times 1000 = 100000 \text{ Pa}$$

3/a Water will flow in inward direction from A to B when the valve is removed in order to occupy space that will be remaining after removing the valve and to make the level of A and B equal.

b Water travels the largest distance in the D' hole because the liquid pressure is maximum at the bottom.

4 a Lower than.

5 c colour of fluid.

6 D, B, A, C.

7 a 3200 Pa

8 a 10,000 N

9 b 3000 cm<sup>2</sup>

10 b Remain unchanged if  $p < p_w$

11 d Statement 1 is false; Statement 2 is true.

12 c Statement 1 is true; Statement 2 is false.