

## CHAPTER = 6

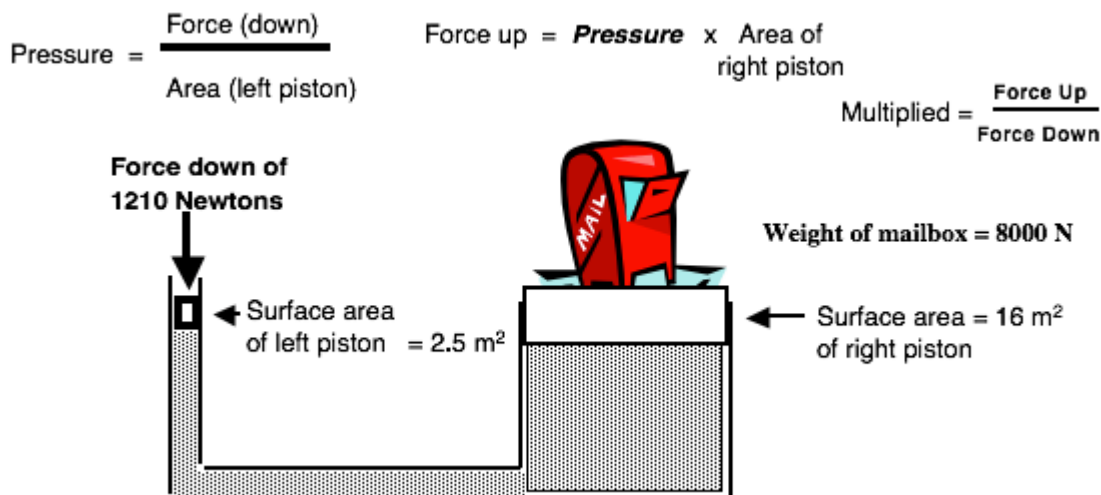
## FLUID STATICS

### MULTIPLE CHOICE QUESTIONS ( BOOK XI)

1. A completely submerged object always displaces its own.....
  - a) weight of fluid
  - b) volume of a fluid**
  - c) density of a fluid
  - d) Area of fluid
2. The pressure exerted on the ground by a man is greatest when:
  - a) he stands with both feet flat on
  - b) he stands flat on one foot
  - c) he stands on the toes of one foot on the ground**
  - d) he lies down on the ground
3. In a stationary homogeneous liquid:
  - a) pressure is the same at all points**
  - b) pressure depends on the direction
  - c) pressure is independent of any atmospheric pressure on the upper surface of the liquid
  - d) pressure is the same at all points at the same level
4. One piston in a hydraulic lift has an area that is twice the area of the other. When the pressure at the smaller piston is increased by  $\Delta p$  the pressure at the larger piston:
  - a) increases by  $2 \Delta p$
  - b) increases by  $\Delta p/2$
  - c) increases by  $\Delta p$**
  - d) increases by  $4 \Delta p$
5. In a vacuum, an object has
  - a) No buoyant force**
  - b) no mass
  - c) no weight
  - d) none of these
6. The pressure at the bottom of a pond does NOT depend on
  - a) Water density
  - b) the depth of the pond
  - c) the surface area of the pond**
  - d) None of these
7. A rock suspended by a weighing scale weighs 5 N out of water and 3 N when submerged in water. What is the buoyant force on the rock?
  - a) 2 N**
  - b) 5 N
  - c) 8N
  - d) 15 N
8. "An object completely submerged in a fluid displaces its own volume of the fluid". This is:
  - a) Pascal's paradox
  - b) Archimedes' principle**
  - c) Pascal's principle
  - d) true, but none of the above
9. Saltwater has a greater density than freshwater. A boat floats in both freshwater and saltwater. The buoyant force on the boat in salt water is ----- that in freshwater.
  - a) equal to
  - b) smaller than
  - c) larger than**
  - d) same as
10. You fill a tall glass with ice and then add water to the level of the glass's rim, so some fraction of the ice floats above the rim. When the ice melts, what happens to the water level?
  - a) the water overflows the rim
  - b) the water level drops below the rim
  - c) the water level stays at the rim**
  - d) it depends on the difference in density between water and ice

**EXAMS PRACTICE MULTIPLE CHOICE QUESTIONS**

- 1 If the fluid is at rest in a container of a narrow mouth at a certain column height and same fluid is at rest at the same column height in a container having a broad mouth, will the pressure be different at a certain depth from fluid surface.  
**a) Pressure will be the same for both.**  
 b) Pressure will be more for narrower mouth  
 c) Pressure will be less for narrower mouth  
 d) None of the mentioned
- 2 Calculate the hydrostatic pressure for water moving with constant velocity at a depth of 5 m from the surface.  
**a) 49 KN/m<sup>2</sup>**  
 b) 98 KN/m<sup>2</sup>  
 c) 128 KN/m<sup>2</sup>  
 d) 24 KN/m<sup>2</sup>
- 3 A hydraulic system is used to lift a 2000 kg vehicle in an auto garage. If the vehicle sits on a piston of an area 0.5 square meters, and a force is applied to a piston of area 0.03 square meters, what is the minimum force that must be applied to lift the vehicle in N?  
 a) 120  
**b) 1176**  
 c) 550  
 d) 1123
- 4 What is the force up on the mailbox?



- a) 12101 N  
**c) 7744 N**  
 b) 8000 N  
 d) 1123 N
- 5 In a hydraulic press, the pump acts as a \_\_\_\_\_  
**a) Piston**  
 b) Motor  
 c) Tubing  
 d) Cylinder
- 6 The cylinder with the smaller diameter Is called \_\_\_\_\_  
**a) Slave cylinder**  
 b) Master cylinder

- c) Working cylinder  
d) Casting Cylinder
- 7 The cylinder having the larger diameter is called \_\_\_\_\_ cylinder.  
a) Slave  
**b) Master**  
c) Cage  
d) Pump
- 8 What is fluid mechanics?  
a) Study of fluid behavior at rest  
b) Study of fluid behavior in motion  
**c) Study of fluid behavior at rest and in motion**  
d) Study of fluid behavior at rest and in motion
- 8 If a person studies about a fluid which is at rest, what will you call his domain of study?  
a) Fluid Dynamics  
b) Fluid Mechanics  
**c) Fluid Statics**  
d) Fluid Kinematics
- 9 When a fluid is subjected to resistance, it undergoes a volumetric change due to \_\_\_\_\_  
a) Cohesion  
b) Strain  
**c) Compressibility**  
d) Adhesion
- 10 Which among the following is the standard symbol for Archimedes number?  
**a)  $A_r$**   
b) A  
c) a  
d) AR
- 11 What is the pressure in Pascals at a depth of 1m below the water surface?  
**a) 110800 Pa**  
b) 98000 Pa  
c) 9800 Pa  
d) 1000 Pa
- 12 15 bar equals to \_\_\_\_\_ Pascals.  
a)  $10^5$  Pa  
**b)  $1.5 \times 10^6$  Pa**  
c) 100 Pa  
d) 1000 Pa

- 13 A hydraulic system consists of two connected cylinders, Cylinder A and Cylinder B. Cylinder A has a piston with a radius of 5 cm and Cylinder B has a piston with a radius of 10 cm. A force of 200 N is applied to Cylinder A. The force exerted by Cylinder B is:



- a) 10800 N
  - b) 98000 N
  - c) 800 N**
  - d) 8000 N
- 14 What volume  $V$  of helium is needed if a balloon is to lift a load of 185 kg? ( the density of helium is  $0.179 \text{ kg/m}^3$ , density of air is  $1.29 \text{ kg/m}^3$ )
- a)  $166.5 \text{ m}^3$
  - b)  $980 \text{ m}^3$
  - c)  $800 \text{ m}^3$**
  - d)  $80 \text{ m}^3$
- 15 If there is a bucket full of oil and a bucket full of water and you are asked to lift them, which one of the two will require more effort given that the volume of buckets remains the same?
- a) Oil bucket
  - b) Water bucket**
  - c) Equal effort will be required to lift both of them
  - d) None of the mentioned
- 16 An compressible fluid's specific gravity was measured on earth, on a planet having acceleration due to gravity 5.5 times that of earth, and in space at STP. Where will it be having highest value?
- a) on the earth
  - b) on the planet
  - c) in the space
  - d) it will be constant everywhere**
- 17 The specific weight of water in the SI system is equal to:
- a)  $981 \text{ KN/ m}^3$
  - b)  $9.81 \text{ N/m}^3$
  - c)  $9.81 \text{ KN/m}^3$**
  - d)  $981 \text{ N/m}^3$

- 18 In a typical hydraulic press, a force of 20N is exerted on the small piston of an area of  $0.050 \text{ m}^2$ . The force exerted by the large piston on the load if it has an area of  $0.50 \text{ m}^2$  will be
- (a) **200 N**
  - (b) 100 N
  - (c) 50 N
  - (d) 10 N
- 19 Which of the following is true about the Hydrostatic law...
- A. Pressure varies constantly with depth
  - B. Pressure varies linearly with depth**
  - C. Pressure varies exponentially with depth
  - D. None of the above
- 20 The gauge pressure at the bottom of 50 m deep in fresh water lake is..... kPa
- A. 490.5**
  - B. 460.5
  - C. 500
  - D. 590.5