WORKSHEET 1

CHAPTER 4 – FLOATATION

A. Tick (✓) the correct option.

1. The force acting on an object perpendicular to the surface is called
   a. Buoyancy. b. Pressure. c. Thrust. d. none of these.
2. SI unit of thrust is
   a. Newton. b. kg/m^3. c. Pascal. d. none of these.
3. 1 Pascal is equal to
   a. $10\ N/m^2$. b. $100\ N/m^2$. c. $1000\ N/m^2$. d. $1\ N/m^2$.
4. Pressure exerted by a force of 10 N on an area of $5\ m^2$ is
   a. 2 Pa. b. 4 Pa. c. 10 Pa. d. none of these.
5. The pressure acting on a body and force are
   a. inversely proportional. b. directly proportional. c. constant. d. none of these.

B. Fill in the blanks.

1. Any substance which has no fixed shape and has the ability to flow is called a _____
2. Pressure due to the liquid at a point on the surface of the liquid is _____
3. The tendency of a fluid to exert an upward force on an object placed in it is called _____
4. Buoyant force is _____ proportional to the acceleration due to gravity.
5. SI unit of density is _____

C. State whether the given statements are true or false.

1. If the density of water is more than the density of body, it will float on the surface of water.
2. Buoyant force is inversely proportional to the density of the fluid.
3. Archimedes principle is used in designing submarines.
4. SI unit of density is kg/m^3.
5. Buoyant force decreases as depth increases.

D. Match the following.

1. Thrust	No units
2. Relative density	Pascal
3. Pressure	kg/m^3
4. Density	Newton

Name: ..... Teacher's signature: .....

Class: IX Date: .....

E. Answer the following questions.

Very Short Answer Questions

1. What is relation between pressure and area on which it acts?
2. Define pressure.

Short Answer Questions

1. Find the pressure exerted by a force of 100 N on a surface of area 20 m^2.
2. Give the mathematical expression for pressure exerted by a liquid contained in a vessel at a point inside in it.

Long Answer Questions

1. A body weighs 600 gf in air and when it was completely immersed in water, the apparent loss in weight of the body was 200 gf. Find the weight of body when completely immersed in water.
2. Define relative density and give its SI unit.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

1. c	2. a	3. d	4. a	5. b

B. Fill in the blanks.

1. fluid	2. zero	3. buoyancy	4. directly	5. kg/m^3

C. State whether the given statements are true or false.

1. T	2. F	3. T	4. T	5. F

D. Match the following.

1. Thrust	Newton (N)
2. Relative density	No units
3. Pressure	Pascal (Pa)
4. Density	kg/m^3

E. Answer the following questions.

Very Short Answer Questions

1. Pressure is inversely proportional to the area of contact ($P \propto \frac{1}{A}$).
2. Pressure is defined as the thrust per unit area.

Short Answer Questions

1. Force = 100 N

   Area = 20 m^2

   Pressure = $\frac{\text{Force}}{\text{Area}} = \frac{100}{20}$ = 5 Pa
2. $P = hdg$

Long Answer Questions

1. Weight in air = 600 gf

   Loss in weight when immersed in water = 200 gf

   Loss in weight = Weight in air – Weight in water

   200 gf = 600 gf – Weight in water

   Weight of body in water = 600 gf – 200 gf

   = 400 gf

2. Relative density of a substance is the ratio of the mass of the substance to the mass of an equal volume of water at 4 °C. Relative density in a pure ratio of two similar quantities (masses), it has no unit.