## 1. Answer the following questions.

### i. What is density? Write down its SI unit.

**Ans:** The density of a substance is the ratio of its mass to its volume.

$$Density = \frac{Mass}{Volume}$$

SI unit of density is kilogram per cubic meter ($kgm^{-3}$).

### ii. What do you know about floating and sinking?

**Ans:** An object floats if its weight is equal or less than the upthrust acting on it.

An object sinks if its weight is greater than the upthrust acting on it.

### iii. Define the following terms.

- **Liquid pressure**
- **Gas pressure**
- **Atmospheric pressure**

**Ans:**

- **Liquid pressure**

The pressure exerted by liquid is called liquid pressure.

- **Gas pressure**

Gas pressure is the force exerted by the gas on the container boundaries.

- **Atmospheric pressure**

Atmospheric pressure is the force that is exerted on the ground by the air above it.

### iv. What do you know about hydraulics?

**Ans:** The use of a liquid to transmit pressure from one location to the other is called hydraulics.

**Examples:** Hydraulic brakes, hydraulic lift.

**v. Differentiate between balanced and unbalanced forces.**

**Ans:**

| Balanced Forces | Unbalanced Forces |
|---|---|
| Balanced forces are those that are opposite in direction and equal in size. | Unbalanced forces means that the force applied in one direction is greater than the force applied in the opposite direction. |

**1. Long answer questions.**

**i. Explain the floating or sinking of objects.**

**Ans.** Upthrust is the force experienced by objects when they are placed into a fluid. An object will float on a liquid if the upthrust force equals the weight of the water it displaces. An object will sink in a liquid if the upthrust force is less than the weight of the water it displaces. Another name for the upthrust force is buoyant force.

**ii. How can be measure pressure?**

**Ans.** The pressure can be find out by using the following formula:

$$Pressure = \frac{Force}{Area} = \frac{F}{A}$$

Pressure is measured in newtons per square meters (**N/m$^2$**). This unit is also called a pascal (**Pa**).

If a force of 1 newton is spread over an area of 1 m$^2$, then it exerts a pressure of 1 pascal (1 Pa).

**iii. What could a furniture maker do to reduce the pressure of the feet of a chair on the carpet?**

**Ans.** To reduce the pressure of the feet of a chair on a carpet, a furniture maker have to increase the size of the chair's footpads or feet. Larger surface areas will distribute the weight more evenly and reduce the pressure on the carpet.

**iv. Why do a needle used for sewing have a sharp point?**

**Ans.** The tip of a sewing needle is sharp so that due to its sharp tip, the needle may put the force on a very small area of the cloth, producing a pressure sufficient enough to pierce the cloth being stitched.

**v. Why are dams built with the thicker wall at the bottom and thinner walls at the top?**

**Ans.** The pressure applied to walls of the dam will be a function of the amount of water that is over that particular point on the wall. So water pressure is very large at the bottom due to its large depth. That's why dams are constructed thicker at their bottoms and thinner at their tops.

## 2. Tick the right option.

**1. SI unit of pressure is:**

I. Pascal II. Watt III. Joules IV. Newton

**2. The instrument used to measure atmospheric pressure is:**

I. Hydrometer II. Barometer III. Stopwatch IV. Ammeter

**3. The atmosphere extends _____ miles into space.**

I. 3200 II. 4200 III. 5200 IV. 6200

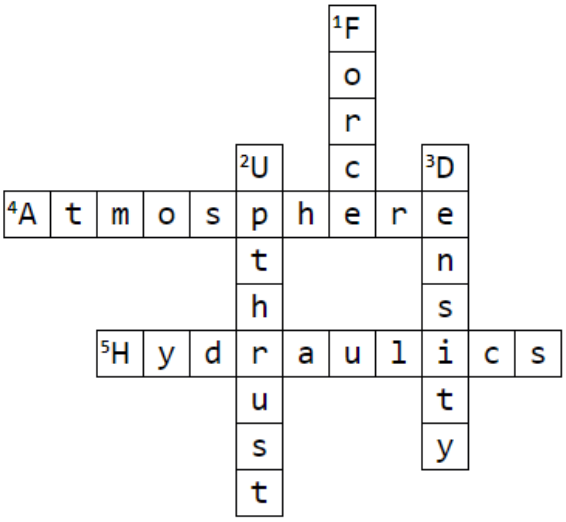
**4. The ratio of mass and volume is called:**

I. Force II. Pressure III. Density IV. None

**5. The density of water is:**

I. 1000 II. 1.3 III. 920 IV. 7900

## 3. Crosswords




**Across**

**4.** Ocean of air

**5.** Transmit forces in liquid

**Down**

**1.** Push or pull

**2.** Upward force

**3.** Mass by volume

## 4. Words Search

Find the following word in the words search.

| Volume | Density | Liquid | Pressure | Float |
|---|---|---|---|---|

| S | F | A | T | S | A | F | S | O | A |
|---|---|---|---|---|---|---|---|---|---|
| M | L | I | Q | U | I | D | P | N | L |
| V | N | P | Y | E | W | E | E | V | H |
| O | I | T | T | G | E | N | E | R | G |
| L | A | P | R | E | S | S | U | R | E |
| U | M | I | R | E | E | I | A | Z | T |
| M | V | F | L | O | A | T | N | P | U |
| E | G | S | L | I | Y | Y | W | D | S |
| G | F | O | R | C | E | B | R | L | Q |

## 5. Jumbled Words

i. INKS SINK

ii. MOSPHEREAT ATMOSPHERE

iii. UPRUSTHT UPTHRUST

iv. LPASAC PASCAL

v. FRECO FORCE

## 6. Columns

**Match substances with their densities.**

| Substances | | Densities ($kgm^{-3}$) |
|---|---|---|
| Iron | | 920 |
| Glass | | 7900 |
| Ice | | 2500 |
| Air | | 1000 |
| Water | | 1.3 |

## 7. Fill in the blanks using the given words.

| | | | | |
|---|---|---|---|---|
| increases | greater | ocean | 920 | pressure |

i. We live in the **ocean** of air.

ii. Liquid pressure **increases** with depth.

iii. Density of ice is **920.**

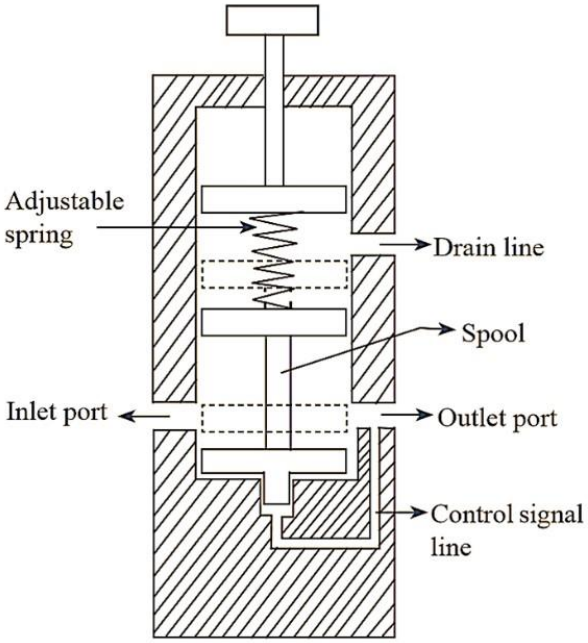
iv. Force acting on unit area is **pressure**.

v. An object sinks if its weight is **greater** than the upthrust.

## 8. Write "T" for the true and "F" for the false statement.

| | |
|---|---|
| i. Another name for upthrust is buoyant force. | **T** |
| ii. Pressure at any depth in the liquid is different. | **F** |
| iii. The gas molecules are in constant motion. | **T** |
| iv. The unit of density is pascal. | **F** |
| v. Pressure is inversely proportional to area. | **T** |

## 9. Label the diagram.




## 10. Drag and Drop

Look at the pictures and write the names in the relevant column.

| | | | | |
|---|---|---|---|---|
|  |  |   |  |   |
| **Mercury barometer** | **Aneroid barometer** | **Jackhammer** | **Hydraulic lift** | **Altimeter** |

## 11. Comprehension

Answer the following questions after reading the paragraph.

The pressure exerted by liquid is called liquid pressure. The liquid pressure at a point is due to weight of the liquid above it. The liquid at lower depth has to bear the entire weight of the water above it. Pressure at any depth in a liquid is the same. Liquid pressure increases with depth. Liquid pressure acts in all directions. The upward force acting on an object when placed in the fluid is known as Upthrust. It is also known as buoyant force. Upthrust is always equal to the weight of the fluid displaced by the object.

**i. What is buoyant force?**

Ans: The upward force acting on an object when placed in the fluid is known as Upthrust. It is also known as buoyant force.

**ii. What are the important factors of liquid pressure?**

Ans: Pressure at any depth in a liquid is the same. Liquid pressure increases with depth. Liquid pressure acts in all directions.

**iii. What is the reason of liquid pressure?**

Ans: The liquid pressure at a point is due to weight of the liquid above it. The liquid at lower depth has to bear the entire weight of the water above it.