Physics (New Book) - 9th Class Physics Chapter 7 Long Question Preparation

Q1. What is density? explain

Ans 1: Density; density of a substance is defined as its mass per unit volume
Unit: its S.I unit is kilogram per cubic meter (kgm^{-3})

Ans 2: Explanation; if we take equal volume of iron and wood, then we can easily declare that iron is heavier than wood. it means that density of iron is heavier than wood

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Q2. Define atmospheric pressure . explain it

Ans 1: Atmospheric pressure ; the earth is surrounded by a covered of air called atmosphere. It extends to a few hundred kilometer above sea level. Air is mixture of gases. The density o air in the atmosphere is not uniform. It decrease s continuously as we go up. It acts in all directions

Ans 2: Experiment; take an empty tin can with a lid. Open its cap and put some water in it. Place it over flame. Wait till water begins to boil and the steam expels the air out of the can. Remove it form the flame. Close the can firmly by its cap. Now place the can under tap water. The can will squeeze due to atmospheric pressure.
When the can is cooled by tap water, the steam is it condenses. As the steam changes into water, it leaves an empty space behind it. This lower the pressure inside the can as compared to the atmospheric pressure outside the can. This will cause the can to collapse from all directions. This experiment shows hat atmosphere exerts pressure in all directions. The fact can also be demonstrated by collapsing of an empty plastic bottle when air is sucked out of it.

Q3. Explain how submarine moves up the water surface down into water

Ans 1: Submarines: a submarine can travel over as well as under water. it also work on the principle of floatation. I t floats over water when the weight of water is equal to its volume is greater than its weight. Under this condition , it is similar to a ship and remains partially above water level. It has a system of tanks which can be filed with and emptied from seawater. When these tanks are filed with seawater, the weight of the submarine increases. As son as its weight becomes greater than the upthrust, it dives into water and remains under water . To com up on the surface, the tanks are emptied from sea water.

Q4. How we can find the density of an object

Ans 1: Density of an object: Archimededs principle is also helpful to determine the density of an object. The ration in the weight of a body wiht an equal volume of liquid is the same as in theri densitites.
Density of object = D
Density of liquid= p
Weight of object = w1
Weight of equal volume of liquid = w= w1-w2
here w2 is the weight of the solid in liquid. According to archimedes principle, w2 is less than its actual weight w1 by an amount w.

Q5. What are the features of kinetic molecular model of matter? explain the types of matter

Ans 1: Kinetic molecular model: the features of kinetic molecular model of matter is following

1. Matter is made up of particles called molecules
2. The molecules remain in continuous motion
3. Molecules attract each other

Ans 2: Types of matter: the types of matter are following
Solid: solid are very hard . They have fixed shapes and volume. Their molecules are held close together by strong forces of attraction. The vibrate about their mean positions but don not move from place to place.
Example: their examples are stone, metal spoon , pencil etc.

Ans 3: Liquids; the distances between the molecules of a liquid are more than in solids. Thus, attraction forces between them are weaker. They have fixed volume and boiling point. Viscosity and fluidity present in liquids. Their shapes change w.r.t container.
Example: their examples are water, milk , drinks etc

Ans 4: Gases; gases have no fixed shaped and volume. They can be filled in any container of any shape. Their molecules have random motion and high velocities. In gases, molecules are much farther apart than solids or liquids. Gases are lighter than solids and liquids.
Example: their examples are hydrogen, helium, neon, nitrogen etc.

Ans 5: Plasma: when heat is provided to any matter their kinetic energy of molecules increases. They collide to each other , by this collision thy lose their electrons and become positive ions. The mixture of ions, atoms and molecules is called plasma. It is the fourth state of matter. positive ions an electrons get separated in the presence of electric and magnetic fields . It is highly conduction state of matter. it allows electric current to pass through it.
Origin and uses; the most part of the universe is made of plasma. Sun is made of plasma. It exists in neo and fluorescent tubes when they glow.

Q6. Explain breaking system in vehicles

Ans 1: Breaking system in vehicles: the braking system of cars, buses , etc. also work on Pascals law. The hydraulic breaks allow equal pressure to be transmitted throughout the liquid. When break pedal is pushed, it exerts a force on the master cylinder, which increases the liquid pressure in it. The liquid pressure is transmitted equally through the liquid in the metal pipes to all the pistons of other cylinder s. Due to the increase in liquid pressure, the piston in the cylinders move outward pressings the break pads with the brake drums. The force of friction between the brake pads and the brake drums stops the wheels.

Q7. Q no 5 (B) How much would be the volume of ice formed by freezing 1 liter of water.

Ans 1: Data:
Volume of water = V_1= 1 liter Volume of ice on freezing=V_2= ?
Solution:
As we know that Volume of ice/Volume of water =density of water/density of ice
Volume of ice = density of water/density of ice x Volume of water
= 1000/920 x 1
= 109 liters Ans

Q8. Define pressure. explain it with examples

Ans 1: Pressure; the force acting normally per unit area on the surface of a body is called pressure.
unit: its S.I unit is Nm-2 or pascal(Pa). Thus 1 Nm-2 =1Pa
Dependence; it depends upon area and applied force

Ans 2: Examples;

1. press a pencil from its ends between the palms. The palm pressing the tip feels much more pain than the palm pressing its blunt end.
2. we can push a drawing pin into a wooden board by pressing it by out thumb. It is because the force we apply on the drawing pin is confined just at a very small area under its sharp tip. A drawing pin with a blunt tip would be very difficult to push into the board due to the large area of its tip.

Q9. Q no:6 (A) State the Pascal's law. What are its applications in our daily life?

Ans 1: Pascal's Law:
Pressure applied at any point of liquid anclosedin a containeris transmitted without the loss to all other parts of the liquid.
An external force applied on the surface of a liquid increases the liquid pressure at the surface of the liquid. This increase in liquid pressure is transmitted equally to all direction and to the walls of the container in which it is filled.
Applications of Pascal's Law:
Hydraulic press is a machine which works on the principle which works on the principle of Pascal's law. It consists of two cylinders which are fitted with pistons of cross-sectional area a and A. The object is to be compressed is placed over the pistonof large cross-sectional areea A. The force is applied on the piston of cross-sectional area a.
The pressure P produced by small piston is transmitted through the liquid and acts on the large piston and a force F_2 acts on A Which is much larger than F_1.

Q10. State and explain Young's modulus.

Ans 1: Young' modulus; the ratio of stress to tensile strain is called young's modulus.

Ans 2: Explanation; consider a long bar of length l and cross sectional area A. Let an external force F equal to the weight stretches it such that the stretched length become L. According to Hook's law, the ratio of the stress to tensile strain is constant within the elastic limit of the body.
