Apush chapter 14 study guide

Intermolecular forces of intermolecular forces are forces of attraction and repulsion between interacting particles have constant dipole moments. This interaction is stronger than that of the London forces, but weaker than the ion-ion interactions, because it is only a partial charge. Attractive forces decrease as the distance between the dipoles increases. The energy of the interaction is proportional to 1/r6, where the distance between polar molecules is located. Ion-dipole interaction: This is the force of attraction that exists between ions (cations or anions) and polar molecules. Ion is attracted to the opposite-charged end of dipole molecules. The force of gravity depends on the charge and size of the ion and the dipole moment and the size of the polar molecule. For example: Soluble of regular salt (NaCl) in water. The ion dipole interaction in this type of interaction of the constant dipole of the polar molecule induces the dipole on an electrically neutral molecule that deforms its electronic cloud. The energy of the interaction is proportional to 1/r6, where the distance between the two molecules is located. London forces or the forces of variance As we know that in non-polar molecules, there is no dipole moment because of their electronic . The charge cloud is distributed symmetrically. But, it is believed that at any given time, the electronic cloud molecule can be distorted so that an instant dipole or instant dipole is produced, in which one part of the molecule is a little more negative than the other part. This momentary dipole causes dipoles in neighboring molecules. Thus, the force of attraction exists between them and exactly the same as between permanent dipoles. This force of attraction is known as The London Forces or The Forces of Variance. These forces are always attractive, and the energy of interaction is inversely proportional to the sixth distance force between the two interacting particles (i.e. 1/r6, where the distance between the two particles is located). This can be shown by figs. Here's the following. Hydrogen bond: When a hydrogen atom attaches to a highly electronegate element by a covalent bond, the electrons shift towards a more electronegate atom. Thus, a partially positive charge develops on the hydrogen atom. Now a positively charged hydrogen atom of a single molecule can attract a negatively charged atom of some other molecule, and two molecules can be connected to each other through a weak force of attraction. Thermal energy: The energy that arises from the molecular movement of the body is known as thermal energy. Because the movement of molecules is directly related to kinetic energy, and kinetic energy is directly proportional to temperature. - The gas-sized state physical properties of a gas-sized state (i) have no specific volume and do not have a certain shape, (ii) Gazas are mixed evenly and completely in all proportions any mechanical help. (iii) Their density is much lower than that of solids and liquids. : iv) They are very compressed and exert pressure equally in all directions. Boyle's law (pressure and volume ratio) At a constant temperature, the volume of this gas mass is inversely proportional to its pressure. Charles's law: Under constant pressure, the volume of this mass of gas is directly proportional to its absolute temperature. The Law of Gay Lussak (Pressure-Temperature Relations) With a constant amount of pressure of this mass of gas directly proportional to the temperature. Avogadro 'Volume-Volume Relationship' law states that equal volumes of all gases under the same temperature and pressure conditions contain an equal number of molecules. V α n Where n the number of moles gas. Avogadro Constant: The number of molecules in a single mole of gas 6,022 x 1023 The ideal gas: the gas that follows Boyle's law, Charles's law and Avogadro's law is strictly called ideal gas. Real gases follow these laws only under certain specific conditions. When the forces of interaction are almost negligible. The ideal gas equation is a combined gas equation of three laws and is known as the ideal gas equation. Dalton's partial pressure law When two or more non-reactive gases are enclosed in a vessel, the total pressure exerted by the gas mixture is equal to the amount of partial pressure of individual gases. Let P1,P2 and P3 be pressured by three non-reactive gases A, B and C. In a separate room in the same volume and in the same condition. PTotal - P1 P2 - P3 Where, PTotal - is the total pressure exerted by a mixture of gases. - Aqueous Tension Pressure non-responsive gases tend to gather over water and therefore are moist. Dry gas pressure can be calculated by subcontracting water vapor pressure from the total pressure of wet gas. P2Dry Gas - PTotal - Aqueous Tension - Partial pressure from the point of view of the Mol Fraction Let at temperature T, three gass, enclosed in volume V, exert partial pressure P1 , P2 and P3 respectively, then - Kinetic molecular theory of gases (i) Of Gaza consist of a large number of very small identical particles (atoms or molecules), (ii) The actual volume occupied by the gas molecules This means that they have no force of attraction between their particles. (iv) Gas particles are always in constant random motion. (v) When gas particles are in random motion, gas exerts pressure due to particle collisions with the walls of the container. (vi) The collision of gas molecules is completely elastic. This means that there is no loss of energy after the collision. Between collision can only be the exchange of energy (vii) At a certain temperature, the distribution of velocity between the gas particles remains constant. (viii) The average kinetic energy of the molecule's gas is directly proportional to the absolute temperature. A deviation from the ideal gas behavior of Real Gas: a gas that does not follow the ideal behavior of gas at all temperature and pressure conditions is called real gas. Pressure deviation can be studied by constructing a Pressure volume curve at a given temperature. (Boyle's Law) Compression Ratio (c): Deviation from ideal behavior can be measured in terms of compression factor, the S. van der Waals Equation Where V is permanent for molecular attraction while 'V is permanent for molecular volume. (a) There is no force of attraction between gas molecules. (b) The volume of gas is insignificant compared to the total volume of gas. Above the two assumptions of kinetic gas theory was found to be wrong at very high pressure and low temperature. Liquifaction gas liquifaction gases can be achieved either by lowering the temperature or increasing the pressure of the gas simultaneously. Thomas Andrews conceived C02 isothermas at various temperatures shown in the picture. Critical Temperature (Tc): Defined as a temperature above which the gas cannot be merged, however high pressure can be applied to the gas. Tc No 8a/27bR (Where and b are van der Waals constants) Critical pressure (PC): This is the pressure needed to liquify the gas at critical temperature. PC a/27b2 Volume occupied by a single mole of gas at a critical temperature and critical pressure is called critical volume (Vc). For example. For C02 for Liquify. Tk 30.98 degrees Celsius and 73.9 pm. Vc 95-6 cm3/mole All three are collectively called critical constants. The characteristics of the liquid state of the liquid state (i) In liquid, intermolecular force are strong compared to gas. (ii) They have a certain volume, but irregular forms or we can say that they can take the form of a container. (iii) Fluid molecules are combined by attractive intermolecular forces. Steam pressure: The pressure exerted by the vapor of the liquid at a certain temperature in a state of dynamic equilibrium is called the vapor pressure of this liquid at this temperature. Steam pressure depends on two factors: (i) Nature fluid (ii) Temperature - Surface tension is defined as a force acting on a unit of length perpendicular to the line drawn on the surface of the liquid. S.I. unit of surface tension and surface tension Nm-1 decreases with the increase in temperature, as the force acting at the length of the unit, decreases due to the increase in kinetic energy of molecules. Viscosity is defined as internal resistance to a fluid-obsessed stream. Those liquids that flow slowly have very internal resilience, resilience, because of strong intermolecular forces and therefore, as they say, more viscous. When the liquid flows, the layer directly below it tries to slow down its flow, while the above tries to accelerate. Thus, force is necessary to maintain the flow of layers. Temp effect, on viscosity: Viscosity of liquids decreases as temperature rises because at high temperature, molecules have high kinetic energy and can overcome intermolecular forces to slip behind each other. Boyle's law: It states that under isothermal conditions, the pressure of this mass of gas is inversely proportional to its volume. The weakest intermolecular forces are known as the forces of variance or the forces of London. It is a temporary attractive force that occurs when two adjacent electrons of bonded atoms form a temporary dipole, occupying positions. It is also called induced dipoleo-dipole-dipole attraction, as mentioned in class 11 states of matter. What is analytical chemistry? Dipole-dipole forces This kind of attractive intermolecular force arises from the positive end of one molecule, reacting with the negative end of the other reactive molecule. These attractive forces are only valid if the molecules are very close together. They are weaker than covalent or ion bonds. However, they are stronger than the London forces. Induced dipole forces there are two different types of induced dipole forces, such as ion-induced and dipole forces. Ion-induced forces are weaker, and the forces induced by dipole are stronger, as in the states of matter. As a result, the force of an ion-induced dipole with an atom or is a proton disaranence in a non-polar molecule. Similarly, dipole-induced forces cause the dipole to be induced by a polar molecule in an atom or a split electron in a non-polar molecule. The Laws of Motion Class 11 Marks Hydrogen Bond The next theme in class 11 State of Matter is the hydrogen bond, a dipole-dipole interaction between a hydrogen atom with an electronegate F, N and O atoms in the form of F-H, N-H or O-H bonds known as hydrogen bonds. Chlorine (Cl) can also participate in a hydrogen bond along with the F, N and O. Hydrogen bonding is vital when it comes to studying the different characteristics of the state of matter. There is a coulombic interaction between a hydrogen atom of one molecule with electrons-singles of another electronatetive atom of a reactive molecule. Examples of chemistry in the daily life of the state of matter: Gaseous state and its laws of gasious state is that of a state of matter in which there are large intermolecular spaces that exist between particles. This is the simplest state of matter, as outlined in the chapter of the chemical chapter of Class 11. Elements such as H, N, O, F, Cl, He, Ne, Ar, Kr, Xe and exist as gases. This is important for human survival because it exists in the form of an atmosphere. Atmosphere. The laws governing the gaseous state are as follows: Boyle's Law (Pressure-Volume Ratio) stated Robert Boyes, the law explains that the pressure of a fixed amount of gas is directly proportional to the volume of this gas, provided that the temperature is constant. Charles's Law (temperature and volume ratio) Under this law, the absolute temperature and volume of gas are inversely proportional when the gas pressure remains constant. Charles Lowe is required to study the gas flow according to the chapter on the state of matter. The Law of Gay-Lusaka (Pressure-Temperature Ratio) Pressure and absolute gas temperature at constant volume and quantity are inversely proportional to each other. The ratio of pressure to temperature is constant. The Avogadro Act (volume and volume ratio) of the Avogadro Act is one of the most important laws mentioned in the 11th grade. The number of atoms or molecules in a certain volume of gas does not depend on the mass or size of the gas. The ideal gas equation, further to the next topic in our class of 11 states of matter, the ideal equation for gas explains that the equation for the gasious state can be obtained from the cooperation of all these aforementioned gas laws. The ideal gas equation explains the forces of gases and is known as the state equation. This does not apply to Bose-Einstein condensate. According to the Ideal Gas Equation, PV and nRT, where, P - PressureV - Volumen - Number of molecules R - Gas constantT - Temperature states of matter: Liquid state Intermolecular forces are stronger in liquid state than in gasious state. They are denser than gases and have fewer intercoorcular spaces in between. The different properties of the liquid state of matter, as discussed in class 11 chemistry chapter states of matter are as follows: Vapour Pressure The vapour of a liquid exerts pressure known as vapour pressure. At a certain temperature, a dynamic equilibrium state is achieved, which determines the pressure of a vapor of liquid at a certain temperature. Surface tension of the surface is a force that acts perpendicular to the length of the unit on the surface of the liquid. Surface tension is inversely proportional to the temperature, as the forces per unit molecule usually decrease with the increase in the kinetic energy of the molecule. The viscosity measurement of resistance offered by the liquid during the current is known as viscosity. The viscosity is directly proportional to the intermolecular forces of attraction, while it is inversely proportional to the temperature. Those liquids that flow more slowly have higher internal resistance, and on the other hand, the liquid, which does not resist the flow, has lower internal resistance. So we hope that through this in-depth blog will help you understand the key pointers and resumes of class 11 states of matter. confident in what kind of way to follow after the 12th? Contact our experts at Leverage Edu and we will help you understand your choices and interests and find the right course and university to embark on this gradual step of your academic journey! Sign up for an e-mail meeting right now! Nwo! apush chapter 14 study guide quizlet. chapter 14 apush study guide answers