

1. Mechanism of Atomic Structure: The atomic structure refers to the structure of an atom comprising a nucleus (centre) in which the protons (positively charged) and neutrons (neutral) are present. The negatively charged particles called electrons revolve around the centre of the nucleus. The study of the structure of an atom gives a great insight into the entire class of chemical reactions, bonds and their physical properties. The first scientific theory of atomic structure was proposed by John Dalton in the 1800s.

2. Function of Bonding: Chemical bonding refers to the formation of a chemical bond between two or more atoms, molecules or ions to give rise to a chemical compound. These chemical bonds are what keep the atoms together in the resulting compound. The force of attraction between the atoms or ions of molecules occur due to sharing of electrons or by transfer of electrons from the atoms to complete octet and attain stability⁹.

3. Different elements in Planer Defeats: I'm sorry, but I couldn't find any information on "Planer Defeats". Could you please provide more context or clarify your question?

4. Temperature dependence of Resistivity: The resistivity of a material is indirectly proportional to the temperature. In other words, as you increase the temperature of materials, their resistivities will decrease. However, this is not true for every material. All materials do not have the same dependence on temperature. The resistivities of metallic conductors within a limited range of temperature are given by the following equation: $\rho_T = \rho_0 [1 + \alpha(T - T_0)]$ Here, ρ_T = resistivity at a temperature T , ρ_0 = resistivity at a reference temperature T_0 , and α = temperature coefficient of resistivity; the dimension of α is (Temperature)⁻¹. According to the above equation, a graph of ρ T plotted against T would be a straight line i.e., the resistivity of a metallic conductor increases with increasing temperature. However, in insulators and semiconductors, ' ρ ' increases with the increasing temperature. Thus, an increase in temperature decreases the ' ρ ' in them⁸⁹ [²⁰].

5. Need of Meissner Effect: The Meissner Effect refers to the ability of a superconductor to expel a magnetic field from its interior when it is cooled below its critical temperature. This expulsion of magnetic flux is a fundamental property of superconductors and sets them apart from normal conductors. This effect of superconductivity is used in magnetic levitation which is the base of modern high-speed bullet trains. In superconducting state (phase), due to expulsion of external magnetic field, the sample of superconducting material levitates above magnet or vice-versa. Modern high-speed bullet trains use the phenomenon of magnetic levitation³.

6. Applications of Low Resistive Materials: Low resistive materials are used in various applications such as electrical wiring, power transmission, and electronic components. They are also used in the construction of superconducting magnets, which are used in MRI machines, particle accelerators, and fusion reactors⁷.

7. Role of Semiconductors: Semiconductors are materials that have electrical conductivity between that of a conductor and an insulator. They are used in the manufacture of electronic devices such as transistors, diodes, and integrated circuits. They are also used in solar cells, light-emitting diodes (LEDs), and sensors.

8. Importance of Magnetic Materials: Magnetic materials are used in various applications such as electric motors, generators, transformers, and magnetic storage devices. They are also used in magnetic resonance imaging (MRI) machines, particle accelerators, and fusion reactors⁵.

9. Framework of Insulator: Insulators are materials that do not conduct electricity. They are used in various applications such as electrical insulation, building insulation, and packaging materials. They are classified into two types: organic and inorganic insulators. Organic insulators include rubber, plastic, and paper, while inorganic insulators include glass, porcelain, and mica.

10. High resistive materials: Some examples of high resistive materials include nichrome, manganin, and constantan⁸.