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Human anatomy

Number 4 solution

Similarities and difference group 5,6 and 7 in the periodic table

1a. Both group 5,6 and 7 have high melting points b. group 5 are reactive metal with with a high melting point Why group 6 and 7 are nonreactive metal with high melting points (1907 °C, 2477 °C,)..

2a. Both 5,6 and. 7 form compound during oxidation state

b. group 5 forms inorganic compounds generally in the oxidation state of +5 why group 6 and 7 form volatile compounds with an oxidation of (-2)

3a. Both group 5,6 and 7 has electro negativity

b. group 5 and 6 belongs to a class of transition metals why group 7 belong to the halogen class

2b. Covalent Hydrides

Covalent hydrides refer to hydrogen centers that react as hydrides, or those that are nucleophilic. In these substances, the hydride bond, formally, is a covalent bond much like the bond that is made by a proton in a weak acid. This category includes hydrides that exist as discrete molecules, polymers, oligomers, or

1. Diamond is hard due to strong covalent bonds present in it. In a Graphite, carbon atoms are bounded together in a flat layers by an strong covalent bonds in a regular haxagon. These layers are held together by much wealer van der Wall's forces, therefore the crystals of graphite soft and slippery.

2.a Ionic Hydrides

Ionic, or saline, hydride is a hydrogen atom bound to an extremely electropositive metal, generally an alkali metal or an alkaline earth metal (for example, potassium hydride or KH

2c. Interstitial or Metallic Hydrides

Interstitial hydrides most commonly exist within metals or alloys. Their bonding is generally considered metallic. Such bulk transition metals form interstitial binary hydrides when exposed to hydrogen. These systems are usually non-stoichiometric, with variable amounts of hydrogen atoms in the lattice.

Types of Crystals

1. Ionic Crystals: These are formed by a combination of highly electropositive ions (cations) and highly electronegative ions (anions). Thus strong electrostatic force of attraction acts within the ionic crystals. Therefore, a large amount of energy is required to separate ions from one another. The type of the crystal lattice depends upon (i). The size of the ion (ii). The necessity for the preservation of electrical neutrality. Therefore alternate cations and anions in equivalent amount are arranged in the ionic crystal eg. NaCl, KF, CsCl, etc.

2. Covalent Crystals: These are formed by sharing of valence electrons between two atoms resulting in the formation of a covalent bond. The covalent bonds extend in two or three dimensions forming a giant interlocking structure called network. Diamond, silicon, quartz and graphite are good examples of this type.

3. Molecular Crystals: In these crystals, molecules occupy the lattice points of the unit cells, except in solidified noble gases in which the units are atoms, where the binding is due to van der Waals’ forces and dipole-dipole forces. Since van der Waals’ forces are non-directional, hence structure of the crystal is determined by geometric consideration only. Solids like sugar, are well known examples of such crystals in which van der Waals forces are acting. Ice is the common example in which dipole-dipole forces of attraction (hydrogen bonding) are active. Many organic and inorganic crystals involve hydrogen bonds. Although these are comparatively weaker but they play a very important role in determining the structure of substances e. g. polynucleoides, proteins etc.

4. Metallic Crystals: These are formed by a combination of atoms of electropositive elements. These atoms are bound by metallic bonds. It may be defined as:

The force that binds a metal ion to a number of electrons within its sphere of influence is known as metallic bond.

OR

A bond which is formed between electropositive elements.

OR

The attractive force which holds the atoms of two or more metals together in a metal crystal or in an alloy. We know that the force of attraction between metal ions and valency electrons is very strong. This force of attraction is responsible for a compact solid structure of metal

5. Acidic oxide:

Non-metals react with oxygen to form acidic compounds of oxides which are held together by covalent bonds. These compounds can also be called as acid anhydrides.Examples: NO, CO2

SO3 + H2O → H2SO4

B2O3 + H2O → 2H3BO3

Amphoteric oxide:

Amphoteric oxides are compounds of oxygen which exhibits both acidic as well as basic characteristics. Example: aluminium oxide

Acidic characteristics:

AL2O3 + 6HCl → 2Al3+ + 6Cl– + 3H2O

Basic characteristics:

Al2O3 +2OH– + 3H2O → 2[Al (OH)4]–

Basic oxide:

Metals react with oxygen to give basic compounds of oxygen. These compounds are usually ionic in nature. Group 1, 2 and lanthanides form basic compounds of oxygen when they react with dioxygen Examples: M2O3, MO2, ThO2

Na2O + H2O → 2NaOH

Neutral Oxides:

Some compounds react with oxygen to form oxides which do not exhibit acidic nor basic characteristics. Such compounds are called as neutral compounds of oxygen.

Example: NO, CO.