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CHEMISTRY

PHARMACY

1a. Diamond is a very stable allotrope of carbon that is composed of sp3 hybridized carbon atom while graphite is an allotrope of carbon that is composed of sp2 hybridized carbon atoms.

b. hardest mineral found on earth is diamond while graphite is a soft mineral.

c. diamond has four covalent bonds around one carbon atom while graphite has three covalent bonds around one carbon atom

d. Diamond has a face-centred cubic crystal structure while graphite has a planar structure.

E. Diamond is transparent while graphite is opaque.

2a. Ionic Hydrides: ionic hydrides or saline hydrides is a hydrogen bond to an extremely electropositive metal, generally an alkali metal or alkaline earth metal. Insoluble in conventional solvents, reflecting their non-molecular structures. They are often used as heterogeneous bases and reducing agents in organic synthesis

b. Covalent hydrides: covalent hydrides refer to hydrogen centres that react as hydrides, or those that are nucleophilic. In these substances, the hydrogen hydride bond formally as a covalent bond.

c. Metallic hydrides: commonly exist between metals or alloys. Their bonding is generally considered metallic. Such bulk transition metals from interstitial binary hydrides when exposed to hydrogen.

3.

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| --- | --- | --- | --- | --- |
| Properties | Covalent crystals | Ionic Crystals | Metallic crystals | Molecular crystals |
| Bonding | Covalent bond | electrostatic | Electrostatic | Hydrogen |
| conductivity | poor | Good when in liquid state | Good | Low |
| Melting points | high | high | Depends on metal used | Low |
| Examples | diamond | Table salts | Gold nuggets | Crystalline Sugar |

4.Similarities and Differences Between group 5,6 and 7 in the periodic table

1a. both group 5,6 and 7 have high melting points

b. Group 5 are active reactive metal with a high melting point why group 6 and 7 are nonreactive metal with high melting points.

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

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

3a. Both group 5,6 and 7 has electronegativity

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

5.Neutral Oxides: Some compounds react with oxygen to form oxides which do no not exhibit acidic or basic characteristics. E.g. NO

Amphoteric oxides: amphoteric Oxides are compounds of oxygen which exhibits both acidic as well as basic characteristics. E.g. aluminium oxide

Acidic characters: AL2O3 +6HCL’n 2AL3 + 6CL + 3H20

Basic Oxides: 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 dioxygen. Examples M2O3, MO2, ThO2

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