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**Worksheet**

1. Which of the following contains both covalent and ionic bonds ?

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| a) CCl4 | b) CaCl2 | c) NH4Cl | d) H2O |

1. In which of the following the central atom does not use sp3- hybrid orbitals in its bonding.

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| a) | b) | c) | d) NH3 |

1. The type of hybrid orbitals used by chlorine atom in is

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| a) sp3 | b) sp2 | c) sp | d) none of these |

1. Which contain both polar and non-polar bonds ?

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| --- | --- | --- | --- |
| a) NH4Cl | b) HCN | c) H2O2 | d) CH4 |

1. Which of the following remains unchanged on descending a group in the periodic table

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| a) Valence electrons | b) Atomic size | c) Density | d) Metallic character |

1. Point out the wrong statement, in a given period of the periodic table, the s-block elements has, in general, a lower value of

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| --- | --- | --- | --- |
| a) Electronegativity | b) atomic radius | c) Ionization energy | d) Electron affinity |

1. Which of the following are isoelectronic and isostructural ? , , , SO3

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| a) , | b) SO3 , | c) , | d) , SO3 |

1. Shape of O2F2 is similar to that of

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| a) C2F2 | b) H2O2 | c) H2F2 | d) C2H2 |

1. Valence electron in the element A are 3 and that in element B are 6. Most probable compound formed from A to B is

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| a) A2B | b) AB2 | c) A6B3 | d) A2B3 |

1. The correct order of radii is

|  |  |  |  |
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| a) N < Be < B | b) F – < O2- < N3- | c) Na < Li < K | d) Fe3+ < Fe2+ < Fe4+ |

1. The correct order of Ist ionization potential among the following elements Be , B , C , N , O is

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| a) B < Be < C < O < N | b) B < Be < C < N < O | c) Be < B < C < N < O | d) Be < B < C < O < N |

1. Which of the following has highest value of ionic radius ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Li+ | b) B3+ | c) O2- | d) F – |

1. Draw diagrams showing the formation of a double bond and a triple bond between carbon atoms in C2H4 and C2H2 molecules.
2. What is the total number of sigma and pi bonds in the following molecules ?

(a) C2H2 (b) C2H4

1. Distinguish between a sigma and a pi bond.
2. Explain the formation of H2 molecule on the basis of valence bond theory
3. Compare the relative stability of the following species and indicate their magnetic properties :

O2 , , (superoxide) , (peroxide)

1. What is meant by the term bond order ? Calculate the bond order of : N2 , O2 , and .
2. For each of the following pairs, predict which one has lower first ionization enthalpy?

a) N or O b) Na or Na+ c) Be+ or Mg2+ d) I or I -

1. From each set, choose the atom which has the largest ionization enthalpy ?

a) F, O, N b) Mg, P, Ar c) B, Al, Ga

1. Which of the following elements has the most negative electron gain enthalpy? (More – ve value first)

a) [Ne] 3s2 3p3 b) [Ne] 3s2 3p4 c) [Ne] 3s2 3p5

1. Which of the following pairs of elements would have more negative electron gain enthalpy? (More – ve value first)

a) N or O b) F or Cl c) S or O d) C or Si

1. Arrange the following in order of increasing radii?

a) I, I+, I- b) C, N, Si, P c) O2-, N3-, S2-, F -

1. Select from each group, the species which has the smallest radius starting appropriate reason.

a) O, O -, O2- b) K+, Ca2+, Ar c) Si, P, Cl

1. Arrange the following in order of increasing radii?

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1. Why NaCl is a bad conductor of electricity in solid state?
2. Define Bond length.
3. Define Lattice energy. How is it related to the stability of an ionic compound?
4. Out of Sigma and Pia bonds, which one is stronger and why?
5. Define Lewis acid and Lewis base with example
6. Draw the shape of the following and also find Hybridization.

(a) XeO3F2 (b) XeF4 (c) SF4 (d) (e)