



Q1: Choose the right answer for the following.

- 1-The most stable oxidation state of Bi element is (+1, +3, +5).
- 2-The structure of NH_3 molecule is (tetrahedral, octahedral, square planar, trigonal pyramid and the hybridization of nitrogen atom is (SP^2 , SP^3d^2 , SP^3).
- 3-The inversion center is found in (H_2O , SF_6 , CO).
- 4- $^1\text{S}_0$ is the term symbol for Ni^{2+} , Co^{2+} , Cu^{2+} , Zn^{2+} in the ground state.
- 5-The hybridization of the Cobalt ion in $\text{K}_3[\text{Co}(\text{CN})_6]$ is (SP^3d^2 , dSP^2 , d^2SP^3).
- 6- NH_3 , NO_3^- , ClO_4^- are (soft acids, hard bases, soft bases, hard acids).
- 7-The metal with inert $n\text{S}^2$ electron is (Sn, Ge, P, Bi).
- 8- D_{3h} is a point group of (C_2H_6 staggered, CH_4 , PCl_5).
- 9-The point group of H_2S molecule is (C_{3v} , C_{2h} , C_{2v}).
- 10-The electronic configuration of $_{78}\text{Pt}$ is ($[\text{Xe}]4\text{f}^{14}5\text{d}^86\text{S}^2$, $[\text{Xe}]4\text{f}^{14}5\text{d}^96\text{S}^1$, $[\text{Xe}]4\text{f}^{14}5\text{d}^{10}6\text{S}^0$

Q2: Answer by "True" or "False".

- 1-The four quantum numbers of the valance electron of Cu element are $n=4$ $l=1$ $ml=0$ $ms=+1/2$
- 2-The hybridization of I_3^- ion is SP^3d .
- 3-There are two π -bonds in the structure of H_3PO_4 molecule.
- 4- $[\text{PtCl}_4]^{2-}$ is a square planar species.
- 5- The value of Z_{eff} of the valance electron for ($_{23}\text{V}$) element is equal to 3.3.

Q3: Arrange the following according to specified orders.

- 1- SiO_2 , PbO_2 , SnO_2 , GeO_2 , CO_2 (increased basic properties).
- 2- AsCl_3 , NCl_3 , PCl_3 , BiCl_3 (increased ionic character).
- 3-N, Cs, F, Sr, P (increased electronegativity).
- 4- NO_3^- , NO_2^+ , NO_2^- (increased bond angle).
- 5- $[\text{Co}(\text{NH}_3)_6]^{3+}$, $[\text{Ir}(\text{NH}_3)_6]^{3+}$, $[\text{Ni}(\text{NH}_3)_6]^{2+}$ (increased absorption energy).