

BSC. PART - II EXAMINATION - 2016

CHEMISTRY HONOURS INORGANIC

1. Choose the correct answer of the following questions :

(a) Which is not the Lewis acid ?

(i) Ag^+ (ii) Li^+ (iii) BF_3 (iv) N_2H_4

(b) The strongest reducing agent is :

(i) K (ii) Mg (iii) Al (iv) Ag

(c) Which is protogenic non-aqueous solvent ?

(i) HCN (ii) CCl_4 (iii) CHCl_3 (iv) SO_2

(d) Which of the following is paramagnetic ?

(i) $\text{Fe}(\text{CO})_5$ (ii) $\text{Fe}_2(\text{CO})_9$ (iii) $\text{V}(\text{CO})_6$ (iv) $\text{Cr}(\text{CO})_6$

(e) The most common and stable oxidation state of Lanthanides is :

(i) +1 (ii) +2 (iii) +3 (iv) +4

(f) Lanthanides contraction is related with :

(i) Atomic radii only (ii) Ionic radii only

(iii) Both atomic and ionic radii (iv) Oxidation state

(g) Mn_2O_7 dissolves in water to give an acid. The colour of acid is :

(i) Colourless (ii) Green (iii) Violet (iv) Blue

(h) Which one of the following square planar complex will form two geometrical isomers ?

(i) MA_4 (ii) MA_2B_2 (iii) MAB_3 (iv) MA_3B

(i) The trace metal present in Insulin is :

(i) Mn (ii) Fe (iii) Zn (iv) Co

(j) How many ions may be produced from dissociation of $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$ in solution ?

(i) 3 (ii) 4 (iii) 5 (iv) 6

2. (a) Write basic postulates of Werner's coordination theory.

(b) Find hybridization and structure of :

(i) $[\text{Fe}(\text{CN})_6]^{4-}$ (ii) $[\text{Fe}(\text{Cl})_6]^{4-}$

3. Write IUPAC name of the following complexes :

(i) $\text{Li}[\text{AlH}_4]$ (ii) $[\text{Co}(\text{en})_2\text{Cl}_2]\text{Cl}$ (iii) $\text{K}_4[\text{Fe}(\text{CN})_6]$

(iv) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$ (v) $\text{K}_2[\text{Ni}(\text{Cl})_4]$

4. Find EAN, Magnetic moment, Hybridisation and number of ions given on dissociation in aqueous solution of the following complexes :

(a) $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ (b) $[\text{Co}(\text{H}_2\text{O})_6]\text{Cl}_3$ (c) $\text{Ni}(\text{CO})_4$ (d) $\text{K}_2[\text{Ni}(\text{CN})_4]$

(e) $\text{Mg}[\text{Ni}(\text{Cl})_4]$

5. (a) Write general electronic configuration of Valence electron of the following :
(i) Halogen (ii) Alkali metals (iii) Alkaline earth metals (iv) Group. No.-18
(v) Transition elements
- (b) How does following vary along period and group in periodic Table ?
(i) Atomic radii (ii) Ionisation energy (iii) Electronegativity
(iv) Metallic character (v) Reducing power
6. Discuss the characteristics of first row transition elements with reference to :
(a) Electronic configuration (b) Magnetic moment (c) Colour compound formation
(d) Oxidation state (e) Effective nuclear charge
7. Discuss the chemistry XeF_2 with reference to the following :
(a) Method of preparation (b) Shape and structure (c) Reaction with water
(d) Uses
8. Why ammonia is used as solvent in liquid state ? Discuss its important reactions.
All alkali and alkaline earth metal forms only blue color solution in liquid ammonia.
9. Write electronic configuration of V, Cr, Cu, Pd-46 and W-74. Find their Magnetic moment and Spin multiplicity also.

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