

# B.Sc. (Part-II) Examination-2017

## Chemistry First Paper (Inorganic Chemistry)

**Note :-** Attempt questions from all sections as per instructions.

### Section-A (Very Short Answer Type Questions)

Attempt all parts of this question. Give answer of each part in about 50 words.

1x10=10

- (i) What are polydentate ligands ?  
(ii) Find Effective atomic number (EAN) of central metal ion in  $[\text{FeF}_6]^{3-}$   
(iii) What are Lewis acids?  
(iv) Calculate the value of spin magnetic moment for  $\text{Mn}^{2+}$  ion.  
(v) Explain why  $\text{PCl}_3$  can act both as Lewis acid and Lewis base.  
(vi) Explain why  $\text{Zn}^{2+}$  salts are white but  $\text{Cu}^{2+}$  salts are blue in colour.  
(vii) Write oxidation number and Co-ordination number of Cr-atom in  $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]$ .  
(viii) Which out the two,  $\text{La}(\text{OH})_3$  and  $\text{Lu}(\text{OH})_3$  is more basic and why?  
(ix) Why do actinides show higher oxidation states than Lanthanides?  
(x) What are Protonic and non-Protonic Solvents?

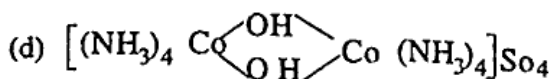
### Section-B (Short Answer Type Questions)

Attempt all questions. Give answer of each question in about 200 words.

5x5=25

- Discuss the trends and variations in oxidation states of transition metals. ( )  
Explain why  $[\text{FeF}_6]^{3-}$  is less paramagnetic than  $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ .
- Explain Valence Bond Theory (VBT) of Transition Metal Complexes. ( )  
Write the IUPAC name of following complexes.

- $[\text{PtCl}(\text{NO}_2)(\text{NH}_3)_4]^{2+}$
- $[\text{Co}(\text{CN})_2(\text{NO}_2)_2(\text{NH}_3)_2]^-$
- $[\text{HgI}_4]^{2-}$



- $[\text{Cr}(\text{en})_2][\text{PtCl}_4]_3$

- Explain 'Lanthanide Contraction'. ( )  
Discuss the properties of Actinide elements in respect of  
(a) Electronic configuration (b) Magnetic Properties
- What is Electrochemical Series ? Describe its uses in explaining Chemical reactions.  
Or

Explain the difference between Calcinations and roasting with example.

- Explain the terms conjugate acids and conjugate bases with the help of suitable

examples.

Explain Lux-flood acids and bases.

Or

**Section-C ( Long Answer type Questions )**

Attempt any two questions. Give answer of each question in about 500 words.

7<sup>th</sup> × 2 = 15

8. Discuss the tendency of transition metal's to form complex compounds with examples.
9. Explain various types of Isomerism exhibited by co-ordination compounds? Write in detail giving example.
9. Explain about Lanthanides on the basis of their  
(a) Electronic Configuration (b) Oxidation states (c) Complex Formation
10. What are the advantages of Non-aqueous solvents? Discuss the following reactions Occuring in liquid SO<sub>2</sub> medium  
(a) Acid-base reactions (b) Precipitation reactions.
11. Write short notes on the following:  
(a) Preparation and uses of CeriC ammonium sulphate  
(b) Chelates  
(c) Werner's theory of co-ordination.

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