

Roll No. ....

(12/24)

**5192**

**B.Sc. EXAMINATION**

(For Batch 2011 & Onwards)

(Third Semester)

**CHEMISTRY**

**CH-201**

**Paper-VIII**

**Inorganic Chemistry**

*Time : Three Hours*

*Maximum Marks : 27*

**Note :** Attempt *Five* questions in all, selecting *two* questions from each Section.  
Q. No. 1 is compulsory.

**Compulsory Question**

1. (a)  $\text{Cu}^{+2}$  is more stable than  $\text{Cu}^{+1}$ .  
Explain.

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- (b) Give electronic configuration of W ( $Z = 74$ ) and Mo ( $Z = 42$ ).
- (c) What will be the magnetic moment of  $Mn^{+2}$  ion ?
- (d) Why do tetrahedral complexes not show geometrical isomerism ?
- (e) Name the metals present in Vitamin  $B_{12}$  and Chlorophyll.
- (f) Show amphoteric behavior of zinc amide in liquid ammonia.
- (g) Discuss the structure of  $SO_2$ .  $1 \times 7 = 7$

#### Section A

- 2. (a) Explain, why ? 3
  - (i) Coinage metals and IIB group elements are included in the  $d$ -block elements.

- (ii) All elements of  $d$ -block are metals
- (iii)  $d$ -block elements form complex ion.

- (b) Most of transition metals complexes are coloured but those of zinc, cadmium and mercury are colourless. Why ? 2

- 3. (a) Give the structure, preparation and properties of  $CuCl_2$ . 3

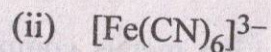
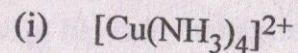
- (b) Give the reaction for the following :

- (i)  $Ni(CO)_4$  reacts with chlorine.
- (ii)  $FeCl_3$  reacts with water 2

- 4. (a) Why is  $[CoF_6]^{3-}$  paramagnetic whereas  $[Co(NH_3)_6]^{3+}$  is diamagnetic ? Explain using valence bond theory. 3



(b) Calculate EAN of the central atom in the following :



2

### Section B

5. (a) Draw all the possible isomer of  $[\text{Cr}(\text{en})_2\text{Cl}_2]^+$

2

(b) Explain giving one example of each of the following :

3

(i) Co-ordinate isomerism

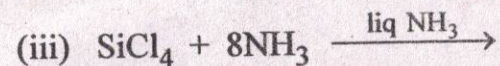
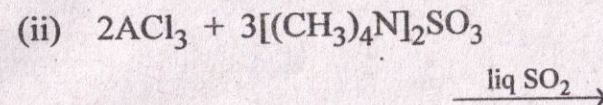
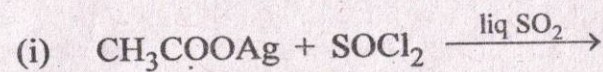
(ii) Linkage isomerism

(iii) Hydrate isomerism

6. (a) Acetic acid acts as a strong acid in liquid ammonia. Explain.

2

(b) Complete the following reactions : 3



7. (a) Compare the properties of liquid ammonia and water. 2

(b) What are non-aqueous solvents ? Discuss their classification. 3