(i) Printed Pages : 4] Roll No. .....

(ii) Questions : 9] **Sub. Code : 0 2 5 0**

Exam. Code : 0 0 0 3

B.A./B.Sc. (General) 3rd Semester Examination

1127

CHEMISTRY

(Inorganic Chemistry A)

Paper : IX

(Same for B.Sc. Microbial and Food Technology)

Time : 3 Hours] **[Max. Marks : 22**

Note :– Attempt *five* questions in all, *one* question from each Unit. Question number **9** is compulsory.

Unit–I

1. (a) Why transition metal compounds act as catalyst. Illustrate with *two* examples.

   (b) Draw and discuss the structures of VF_5 and copper (II) acetate monohydrate. 2+2

2. (a) Classify the oxides of manganese on the basis of their acidic and basic behaviour.

(b) Discuss the chemistry of mg test used for the estimation of NO_3^-.

(c) Differentiate between Turnbull's Blue and Prussian Blue. 1+1+2

Unit–II

3. (a) Give synthesis and structure of $Mo_2(OOCCH_3)_4$.

(b) Discuss Chemisry of fluorides and chlorides of mobium. 2+2

4. (a) Give the stereochemistry of $[Ag(CN)_2]^-$ and [Ag(SCN)].

(b) Why the physical properties of second and third series of transition elements are similar to each other as compared to the first transition series ? 2+2

Unit–III

5. (a) Draw and discuss the stereoisomers of $[Co(en)_2Cl_2]^+$ on (where en is ethylenediamine).

(b) Calculate the valence electrons in the central metal of $[Ag(NH_3)_2]^+$ and $[Mn(CN)_6]^{4-}$ on the basis of EAN rule. 2+2

6. (a) Differentiate between optical and geometrical isomerism in coordination compounds with the help of $(Rh(en)_2Cl_2]^+$.

(b) Write short note on ionisation isomerism and hydrate isomerism giving examples. 2+2

Unit–IV

7. (a) Explain geometry of $[Fe(CO)_5]$ and $[Ni(NH_3)_6]^{2+}$ on the basis of VBT.

(b) Discuss role of coordination Chemistry for determining quality of water. 2+2

8. (a) Explain magnetic behaviour of $[Co(NH_3)_6]^{2+}$ and $[Co(NH_3)_6]^{3+}$ on the basis of VBT.

(b) Explain with the help of VBT, why $[Ni(CN)_4]^{2-}$ is square planar whereas $[Ni(CO)_4]$ is tetrahedral. 2+2

Unit–V

9. (a) What are inner orbital and outer orbital complexes ?

(b) Give IUPAC names of $NH_4[Cr(NH_3)_2 (NCS)_4]$ and $K_4[Mo(CN)_8]$.

(c) Differentiate between the terms 'Primary Valency' and 'Secondary Valency' of coordination compounds.

(d) Why Zr and Hf show similar properties ?

(e) Why cadmium and mercury salts are white in colour ?

(f) Give examples for manganese having +7 and +5 oxidation states. 1×6