(i) Printed Pages : 3 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 2 4 7

Exam. Code : 0 0 3

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

1125

CHEMISTRY (Same for B.Sc. Microbial & Food Technology)

Paper : IX : Inorganic Chemistry–A

Time Allowed : Three Hours] **[Maximum Marks : 22**

Note :– Attempt **five** questions in all. **One** question from each Unit. Question number IX is compulsory.

UNIT–I

I. (a) Why do the transition metal compounds are coloured ? Account for the colourless nature of Zn and Cd compounds. 2

(b) How will you prepare $KMnO_4$? 1

(c) What is the use of V_2O_5 ? 1

II. (a) How does $Cr_2O_7^{2-}$ ion react with SO_2 ? 1

(b) Discuss the factors due to which transition elements have great tendency to form complexes ? 2

(c) Calculate the magnetic moment (spin only) of Fe^{2+} ion. 1

UNIT–II

III. (a) Why is $ZrCl_4$ the most stable chloride of Zirconium, while for Palladium it is $PdCl_2$? 2

(b) What are hetero polyanions ? Give one example. 1

(c) Write the electronic configuration of Pt (Z = 78). 1

IV. (a) What happens when AgCl is dissolved in NH_3 ? 1

(b) Draw the structures of :

(i) Nb_2Cl_{10}

(ii) $[Re_2 Cl_8]^{2-}$ 2

(c) What is Wilkinson's Catalyst ? 1

UNIT–III

V. (a) Discuss the factors affecting the stability of Chelates. 2

(b) Briefly explain geometrical isomerism in Octahedral complexes. 1

(c) Write IUPAC names of the following :

(i) $[Cr\ (PPL_3)\ (CO)_5]$

(ii) $Hg\ [CO(NCS)_4]$ 1

VI. (a) Explain giving one example of each kind of the following isomerism :

(i) Co ordinate isomerism

(ii) Linkage isomerism. 2

(b) Why oxalic acid is used to remove rust stains ? 1

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

(i) $[Fe\ (H_2O)_6]^{2+}$

(ii) $[Mn\ (CN)_6]^{4-}$ 1

UNIT–IV

VII (a) On the basis of Valence Bond Theory, explain the diamagnetic behaviour of $[CO(CN)_6]^{3-}$ 2

(b) What are the limitations of valence bond theory ? 2

VIII. (a) How will you account for the fact that nickel forms the tetrahedral complex with carbon monoxide ? 2

(b) What are the applications of coordinate compounds in Chemistry ? 2

UNIT–V

IX. (i) Write electronic configuration of inner transition elements. 1

(ii) What is the geometry of the complex $[Cn(NH_3)_4]^{2+}$? 1

(iii) Write IUPAC name of the anti cancer drug cis-platin. 1

(iv) Draw the structure of $[CO(EDTA)]^-$ ion. 1

(v) What is so unique about osmium other than its highest oxidation state ? 1

(vi) Why do transition metals exhibit various oxidation states ? 1