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

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

Exam. Code : 0 0 0 3

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

1128

CHEMISTRY

Paper : (IX : Inorganic Chemistry A)

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

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

Note :– (1) Attempt **Five** questions in all, **One** question from each Unit and the compulsory question.

(2) Compulsory question carries 6 marks and remaining all questions carry 4 marks each.

UNIT—I

1. (a) Explain the following properties of transition elements :—

(i) Variable oxidation state

(ii) Alloy formation

(iii) Coloured complexes. 3

(b) Calculate the magnetic moment (spin only) of Fe^{3+}. 1

2. (a) Complete the following equations :—

(i) $K_2Cr_2O + 4HCl + 3H_2SO_4 \longrightarrow$

(ii) $V_2O_5 + 3H_2 \xrightarrow{\text{High temperature}}$ 2

(b) How will you prepare bis (dimethyl glyoximato) nickel II complex ? Draw its structure. 2

UNIT—II

3. (a) Write electronic configuration of W(Z= 74). 1

(b) Draw the structure of $Mo_2Cl_9^{3-}$. 1

(c) Why do Zr and Hf show similar properties ? 2

4. (a) Compare second and third transition series with first series in terms of :—

(i) Spectrochemical properties

(ii) Magnetic properties. 3

(b) The first ionisation energy of 5d elements is higher than those of 3d and 4d elements. Explain. 1

UNIT—III

5. (a) Write IUPAC names of the following :—

(i) $K_2[Os\,Cl_5\,N]$

(ii) $[Pt\,Cl_2(C_5H_5N)(NH_3)]$. 2

(b) Explain Werner's coordination theory. 2

6. (a) Calculate EAN of central atom in the following :—

(i) $[Cr(NH_3)_6]^{3+}$

(ii) $(Cu(CN)_4]^{3-}$. 1

(b) Draw geometrical isomers of dichloro bis(ethylene diamine) Cobalt III ion. Which is optically active and why ? 3

UNIT—IV

7. (a) What is biological importance of coordination compounds ? 1

(b) On the basis of Valence Bond theory, explain the magnetic behaviour of $[Fe(CN)_6]^{3-}$ and $[Fe(CN)_6]^{4-}$. 3

8. (a) What is catalytic importance of coordination compounds ? 1

(b) $[Ni(CN)_4]^{2-}$ is square planar while $[NiCl_4]^{2-}$ is tetrahedral. Explain on the basis of valence bond theory. 3

UNIT—V

(Compulsory Question)

9. (a) Which complex of silver is formed during fixing of photographic plates ?

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

(c) How will you prepare $TiCl_4$?

(d) Which of the two has high magnetic moment– $[Fe(H_2O_6)]^{3+}$ or $[Fe(H_2O)_6]^{2+}$?

(e) Give an example of a tridentate ligand.

(f) What are high spin complexes ? $1 \times 6 = 6$