Roll No. .....

(01/22-II)

5192

B. Sc. EXAMINATION

(Third Semester)

CHEMISTRY

CH-201

Inorganic Chemistry

Time : Three Hours *Maximum Marks : 27*

Note : Question No. 1 is compulsory. Attempt *four* more questions from Section A and Section B, selecting *two* questions from each Section.

(Compulsory Question)

1. (a) Which of the following are Protonic Solvents ?

(i) CH_3CN

(ii) H_2SO_4

(iii) NH_3

(iv) HF.

(b) Why does NH_3 readily from complexes whereas NH_4^+ ion does not ?

(c) Why the salts of Zn, Cd and Hg are generally white ?

(d) Write the electronic configuration of Pd ($z = 46$) and Pt ($z = 78$).

(e) Why do transition metals form alloys ?

(f) Name the element of first transition series which shows the highest oxidation state ?

(g) What is chief ore of Chromium ? $1 \times 7 = 7$

Section A

2. (a) What is Coordination Number ? How does Coordination Number determine the geometry of the molecule ? 2

(b) Why do transition metals exhibit different oxidation states ? Why electronic configuration of Chromium and Copper are different from the other elements conventional ? 3

3. (a) Why does Manganese (II) show highest Paramagnetic behaviour among the bivalent ions of first transition series ? 2

(b) Describe the Periodic trends observed in the melting and boiling points of *d*-block elements. 3

4. (a) Technitium resembles more with rhenium than with manganese. Justify your answer. 2

(b) What happens when $ZrCl_4$ is hydrolysed ? 2

(c) What is Wilkinson catalyst ? 1

Section B

5. (a) Why $Ku[Fe(CN)_6]$ is not toxic whereas KCN is highly toxic ? 2

(b) How will you explain the paramagnetic behaviour of $[COF_6]^{-3}$ ion ? 2

(c) Explain the diamagnetic nature $[Co(NH_3)_6]^{+3}$ ion according to V. B. theory ? 1

6. (a) What are cationic and anionic coordination complexes ? Support your answer with suitable examples. 2

(b) Discuss giving one example of each :

(i) Ionisation isomerism

(ii) Coordination isomerism

(iii) Linkage isomerism. 3

7. How do the following Properties characterize non-aqueous solvent ?

(i) Dipole Moment

(ii) Dielectric Constant

(iii) Heat of fusion and Heat of Vaporization

(iv) Melting point and Boiling point. 5