

5192

B. Sc. EXAMINATION

(Third Semester)

✓CHEMISTRY

CH-201

Inorganic Chemistry

Time : Three Hours

Maximum Marks : 27

Note : Attempt *Five* questions in all, selecting at least *two* questions from each Section.

Section A

1. (a) Which of the following ions are coloured and why ? 2½

Fe^{2+} , Zn^{2+} , Co^{3+}

- (b) Explain the structure of Titanium dioxide and Nickel tetra carbonyl. 3

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P.T.O.

2. (a) Explain why the complexes of first transition series are high spin while those of second and third transition series are of low spin ? $2\frac{1}{2}$

(b) How is VOCl_2 prepared ? Give its important reactions. 3

3. (a) Write down the electronic configuration of the following atoms : 2

(i) $\text{Mu}(Z = 25)$

(ii) $\text{Cd}(Z = 48)$

(iii) $\text{Ag}(Z = 47)$

(iv) $\text{Co}(Z = 27)$

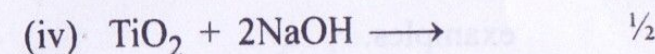
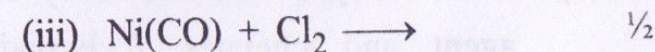
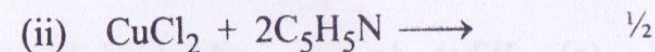
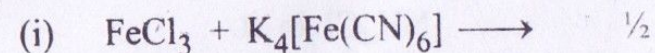
(b) What are transition elements ? Which of the d-block elements are not regarded as transition elements ? $3\frac{1}{2}$

4. (a) Discuss the following properties of transition metals : $3\frac{1}{2}$

(i) The tendency to form coordination compounds

(ii) Ionization energies.

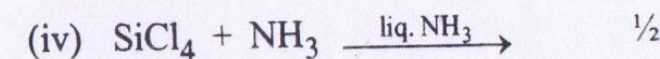
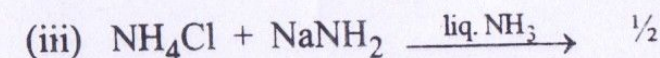
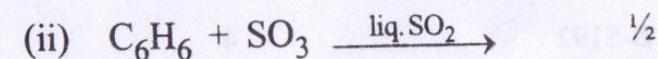
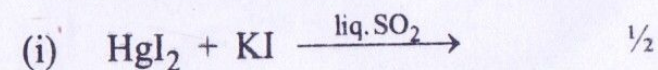
(b) Complete the following reactions :



Section B

5. (a) On account of valence bond theory, explain why $[\text{Co}(\text{NH}_3)_6]^{3+}$ is diamagnetic whereas $[\text{CoF}_6]^{3-}$ is paramagnetic ? $3\frac{1}{2}$

(b) Complete the following reactions :

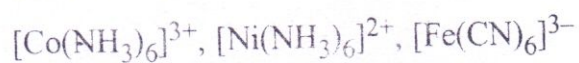


6. (a) Write a short note on optical isomerism in coordination compounds. 3

(b) Discuss the classification of non-aqueous solvents. $2\frac{1}{2}$

EAN rule :

3½



(b) Explain the following :

(i) Complex formation reactions in liquid SO_2 1

(ii) The electrical conductance of ammonia increases on addition of NH_4Cl in it. 1

8. (a) What do you understand by chelating agent and chelates ? Explain with examples. 3½

(b) Explain the role of the following physical properties of non-aqueous solvent in chemical reaction :

(i) Dipole moment 1

(ii) Melting and boiling point. 1