Exam. Code : 103204
Subject Code : 1292

B.A./B.Sc. 4th Semester

CHEMISTRY

(Inorganic Chemistry—III)

Time Allowed—2 Hours] [Maximum Marks—35

Note :— There are ***eight*** questions of equal marks. Candidates are required to attempt any ***four*** questions.

1. (a) Draw the isomers of $PtCl_2(NH_3)_2$. How can they be distinguished by Dipole moment measurement ?

   (b) Draw briefly EAN rule. Which of the following complex follow EAN rule ?

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

   (ii) $[PtCl_4]^{-4}$

   (iii) $[Ni(NH_3)_6]^{+2}$

   (iv) $[Co(NO_2)_6]^{-3}$

2. (a) Draw all possible isomers of complex ion $[Co(en)_2Cl_2]^+$.

   (b) Explain with the help of VBT. Why $[Fe(CN)_6]^{-4}$ is diamagnetic while $[Fe(CN)_6]^{-3}$ is paramagnetic in nature ?

3. (a) What are the disadvantages and advantages of liquid SO_2 as a solvent ?

   (b) Discuss chemistry of liquid SO_2 as non aqueous solvent in complex formation reaction.

4. (a) Draw frost diagram for manganese in acidic solution. What do you observe from diagram ?

   (b) Write short notes on :

   (i) Hydrometallurgy

   (ii) Electroreforms.

5. Give general electronic configuration of Lanthanoids. Explain :

   (i) The felling of 4f subshell in lanthanoid series.

   (ii) The anomalous oxidation state of +2 and +4 shown by some elements in series.

6. (a) The f-f transitions of Lanthanoids are well defined while f-f transitions of actinoids are not well defined. Explain.

   (b) Give points of similarities between lanthanoids and actinoids.

7. (a) What are essential and trace elements ? Give two examples of each.

   (b) Iron(II) salts undergo easy oxidation in air but it is not so in haemoglobin and myoglobin. Explain.

8. (a) CO is known to powerful π acceptor compared to O_2 yet it does not instantaneously bind strongly to haemoglobin.

   (b) Discuss important features of $Na^+ - k^+$ pump.