Chemistry (Hons.) Paper-VI

Answer any five questions in which Q.No. 1 is compulsory.

1 Explain the following :

(a) The number of isotopes shown by tin is maximum

(b) Tetrahedral complexes are of high spin type

(c) μ_{eff} of $Ni\,[H_2O]_6^{++}$ exceeds 3 BM

(d) Δ_t is only half as much as Δ_o

2. Discuss the chemistry of vanadium with special reference to the following :

(a) Extraction (b) Colour of the compounds (c) Important oxidation states

(d) Catalytic behaviour (e) Analytical test of vanadates

3. Write short notes on any two of the following :

(a) Orgel diagram (b) Spectrochemical series

(c) Crystal field stabilisation energy

4. Discuss d-orbital splitting in octahedral and tetrahedral field.

5. Explain the formation of the following species by VBT :

(a) $NiCl_4^{-2}$ (b) $CoCl_6^{-3}$ (c) $Co\,F_6^{-3}$ (d) FeF_6^{-3}

6. Discuss the ground state term symbol for d2, d6, d7 and d5 species.

7. Write notes on any two of the following :

(a) Mass defect (b) Packing fraction (c) Magic number

8. Explain the following : (a) Theoretical basis of hardness and softness of acids and bases

(b) Symbiosis

9. Discuss the following : (a) Curie Law and Curie-Weiss Law (b) Bohr Magneton