SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
M.Sc.Chemistry - END SEMESTER EXAMINATIONS - NOV' 2024
SEMESTER - II

22PCHCT2005 - Coordination Chemistry: Bonding, reaction and spectra

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. With any one complex, compare VBT and CFT.
2. Explain substitution reactions in octahedral complexes with suitable example.
3. Briefly outline the biological importance of coordination compounds.
4. List the differences between d-d transition and charge-transfer transition.
5. Elucidate the structure of water molecule.
6. Write all the geometrical isomers of [Pt(NH_3)(Br)(Cl)(py)] and how many of these will exhibit optical isomerism?
7. Calculate the total number of microstates for p^2 and d^2 configurations.
8. Draw and explain the MO diagram of [$Cr(CO)_6$]

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. (a) Define CFSE. Calculate its value for the following systems
   i) d^5 low spin octahedral ii) d^5 high spin octahedral
   (b) Briefly outline the postulates of Werner's coordination theory.
10. What are electron transfer reactions? Explain inner sphere and outer sphere mechanism with an example each.
11. Draw and discuss the generalized Orgel diagram for d^2 and d^8 electronic configurations
12. Discuss the use of group vibrations in the structural elucidation of cyanide complexes

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. Explain stability of constants complexes and the factors influencing it.

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