

D.K.M.COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1**SEMESTER EXAMINATIONS****NOVEMBER - 2017****15CPCH1B****INORGANIC CHEMISTRY - I****Time : 3 Hrs****Max.Marks : 75****SECTION-A (5x 6 =30)****Answer ALL the questions.**

1. (a) Describe the chemistry of iso and heteropolyacids of Tungsten.

(Or)

- (b) How is S_4N_4 prepared? Discuss the structure of the polymeric sulphur nitride.

2. (a) What is meant by thermodynamic stability of complexes? Among $[Ni(NH_3)_6]^{2+}$ and $[Ni(en)_3]^{2+}$ Which has higher stability? Why?

(Or)

- (b) How is ORD useful in ascertaining the chirality of a complex?

3. (a) Write notes on Charge transfer spectra.

(Or)

- (b) Draw and explain the Orgel diagram of $[Co(H_2O)_6]^{2+}$.

4. (a) Give an account of substitution reactions in square planar complexes of Platinum.

(Or)

- (b) Write a note on fluxional molecules.

5. (a) Outline the mechanism of Wacker's process of converting an alkene into an aldehyde.

(Or)

- (b) Discuss olefin polymerization by Ziegler-Natta Catalyst.

SECTION-B (3x15 =45)**Answer any THREE of the following questions.**

6. (a) What are isopoly and heteropoly acids? How are isopoly molybdates prepared? Mention any two industrial applications of poly acids. (8)

- (b) What are silicates? Discuss the structure, properties and applications of silicates. (7)

7. (a) What is eighteen electron rule? How is it useful in ascertaining the structure of metal cluster of transition metal clusters? (8)

- (b) Give an example of chiral six coordinate complex. Indicate the possible isomers. Discuss how the isomers can be distinguished. (7)

8. (a) State Jahn-Teller theorem. Explain the d-orbital splitting due to elongation and compression along the z-axis in the octahedral complexes. Give one evidence for such a distorted structure. (6)

- (b) Describe in detail about the crystal field splitting in octahedral, tetragonal and square planar complexes. (9)

9. (a) Discuss the bonding in π -metal olefin and metal carbonyl complexes. (10)

- (b) With suitable example explain the oxidative addition reaction of an organometallic compound. (5)

10. Describe the following.

i) Oxo process using cobalt catalyst

ii) Hydrogenation of olefins using Wilkinson's catalyst.

(8 + 7)

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