Kandi Raj College

B.Sc. 6th Semester Hons. Internal Assessment Examination 2022

Subject: Advanced Physical Chemistry [CHEMHTDSE3]

F.M. 10

Answer any five:

2 x 5=10

1. What is phase space? Define μ-space and Γ-space.

2. Discuss drawbacks of Weiss Indices.

3. Using Boltzmann hypothesis, establish the relation between entropy and thermodynamic weight.

4. Al (Density 2.69) crystallizes with FCC lattice. What is the distance of closest approach of Al atoms in this crystal?

5. How can you determine the transition temperature of S for its transition from α to β form using Nernst Heat Theorem?

6. Show how degree of polymerization is related to polymer functionality and extent of reaction.

Kandi Raj College

Department of Chemistry

Internal Assessment-2022

B.Sc. (Hons) Sem-VI

Paper-CHEMHT-13(Inorganic)

Answer any five of the following question
2x5=10

a) What are fluxional molecules? Give one example.

b) Draw the electronic configuration and bond order of the complex $[Re_2Cl_4(PMe_2Ph)_4]$.

c) Draw the structure of the complex $[Fe_4(CO)_{12}(\mu_3\text{-}CO)]^{2-}$

d) Ni $(CO)_4$ is monomer but analogues cobalt compound is dimer-Explain.

e) What is the function of Globin chain in Hemoglobin?

f) How is ferrocene prepared?

g) Write the point group of NH_3

h) What are the disadvantages of the catalyst involved in hydroformylation reaction?

KANDI RAJ COLLEGE

CHEMISTRY DEPARTMENT

INTERNAL ASSESSMENT

U.G. 6th Semester Honours Examination -2022

PAPER-CHEMHT-14

Full Marks-10 **Time-1.5 hrs hours**

2×5 =10

1. **Any five from the following questions:**

a) **Write the Bogert-Cook Synthesis of Phenanthrene Nucleus.**

b) **Write down the Fischer-Indole synthesis with proper mechanism.**

c) **How will you prepare 4-nitroderivative of pyridine from pyridine molecule?**

d) **Draw the following π-M.O.s showing nodes: i) HOMO for 1,3-butadiene; ii) LUMO for allyl cation.**

e) **Give the preferred conformation of *cis*-cylohexan-1,3-diol and explain.**

f) **Convert D-glucose to D-arabinose.**

g) **Why D-fructose give a positive Tollen's test.**

h) **Briefly Discuss the Strecker Synthesis of amino acid.**

i) **What is Isoelectric point of an amino acid?**

j) **G-C base pairing is stronger than A-T base pairing in double stranded DNA. Why?**