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**P. P. SAVANI UNIVERSITY**  
First Semester of M.Sc. Examination  
February-2022

**SSCH7010-Advances in Inorganic Chemistry-I**

07.2.2022, Monday Time: 12:00 PM to 2:30PM      Maximum Marks: 60

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**Instructions:**

1. The question paper comprises of two sections.
2. Make suitable assumptions and draw neat figures wherever required.
3. Use of scientific calculator is allowed.

**Section-I**

**Q.1 Very Short Questions (Attempt any five) [10]**

- 1.1 What is Nucleophilic Substitution in VESPR theory.
- 1.2 Write Advantages of LFT.
- 1.3 Give the Comparison of  $\text{CH}_4$ ,  $\text{NH}_3$ ,  $\text{H}_2\text{O}$  and  $\text{H}_3\text{O}^+$ .
- 1.4 Give the Full form of LCAO.
- 1.5 Give the full form of VESPR theory?
- 1.6 Give the BENT RULE statement.

**Q.2 Write Short Notes (Attempt any two) [06]**

- 2.1 Application of Gillespie Laws
- 2.2 Formation of  $\sigma$ -molecular Orbital
- 2.3 Square Planar Complexes

**Q.3 Detail questions (Attempt any two) [14]**

- 3.1 Comparison of  $\text{PF}_5$ ,  $\text{SF}_4$ ,  $\text{ClF}_3$  and  $[\text{ICl}_2]^-$
- 3.2  $d\pi-p\pi$  Bonding in Phosphorous Group Elements
- 3.3 Explain Linear Combination of Atomic Orbitals (LCAO)

**Section-II**

**Q.1 Very Short Questions (Attempt any five) [10]**

- 1.1 What is group description of Redox reaction
- 1.2 Write the Born-Oppenheir approximation law.
- 1.3 Write Thermodynamic Stability.
- 1.4 Write all parameter in the given equation in  $\Delta G = \Delta H - T \Delta S$ .
- 1.5 Write about Basicity of the ligands.
- 1.6 What is Steric factor?

**Q.2 Write Short Notes (Attempt any two) [06]**

- 2.1 Aquation
- 2.2 Mole Ratio Method
- 2.3 Factors Affecting the Liability of Complex.

**Q.3 Detail questions (Attempt any two) [14]**

- 3.1 Thermodynamic Importance of Stability Constants
- 3.2 Explain Spectrophotometric (a) Job's Method (b) Raghav Rao's Method
- 3.3 Explain MARCUS THEORY