Department of chemistry

Inorganic chemistry – IV

PCH1014S

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II M.Sc., CHEMISTRY

UNIT-I **3 Marks**

1. What is energy profile diagram with example.
2. Draw energy profile diagram for a reaction.
3. Draw energy profile diagram for exothermic and endothermic reaction.
4. What is labile complex with example.
5. What is inert complex with example.
6. d^1 to d^{10} system what are labile and inert complex.
7. What is substitution reaction of octahedral complex.
8. What is acid hydrolysis with example.
9. What is anation reaction with example.
10. What is base hydrolysis with example.

UNIT – II

1. Discuss the substitution reaction in the square planar complexes
2. What is trans effect
3. Define trans directing ligand
4. Name the theories of trans effect
5. How does the entering ligand influence the trans effect?
6. Write about the reactivity of trans effect.
7. What is photo substitution reaction? Give an example
8. What is photo-redox reaction? Give an example
9. What is two electron transfer reaction? Give an example.
10. What are complementary and non-complementary reactions. Give examples.

UNIT-III

1. What is electron transfer reactions.
2. What is atom transfer reactions.
3. Write about precursor complex with example.

4. Write about successor complex with example.

5. Write the Marcus theory.

6. Difference between Inner sphere and outer sphere mechanism.

7. What are the requirement for outer sphere mechanism.

8. What are the requirement for inner sphere mechanism.

9. Draw energy profile diagram for outer sphere mechanism.

10. Write the synthesis of platinum complex.

UNIT – IV

1. What is meant by intrinsic defects in solids?
2. What is meant by extrinsic defects in solids?
3. What is meant by point defects?
4. What is meant by line defects?
5. What is meant by plane defects?
6. What are colour centres?
7. What is called non-stoichiomertic defects? Mention its types.

UNIT-V

1. Write about the Band theory.

2. Draw Band structure of the metals.

3. Draw Band structure of the Insulators.

4. Draw Band structure of the semiconductors.

5. Explain Intrinstic semiconductors.

6. Explain extrinstic semiconductors.

7. Write about super conductors.

8. What is doping semiconductors.

9. What is photo conduction.

10. What are the magnetic properties of metals.

11. What is magnetic domains.

12. What is optical refrlectance.

UNIT-I 5 Marks

1. Explain SN^1 mechanism of octaherdral complex with example.

2. Explain SN^2 mechanism of octahedral complex with example.

3. Explain the mechanism of acid hydrolysis.

4. Explain the mechanism of base hydrolysis.

5. Explain the mechanism of conjugate base mechanism.

6. Preparation of cobalt complexes by subsitation reactions.

UNIT - II

1. Explain the mechanism of substitution reaction in square planar complex.
2. Explain the pi-bond theory for trans effect.
3. Explain the Fajon's theory for trans effect.
4. Explain the trans effect with examples.
5. Write the applications of metal complexes in solar energy conversion.

UNIT-III

1. Explain the outer sphere mechanism with example.

2. Explain the Inner sphere mechanism with example.

3. Explain Marcus theory with example.

UNIT – IV

1. Explain Frenkel defects
2. Explain Schotky defects.
3. What is metal excess defects? Explain its types with examples.
4. What is metal deficiency defects? Explain its types with examples.
5. Explain the thermodynamics of Schotky and Frenkel defects

UNIT-V

1. Explain the Band theory with structure.

2. Explain the magnetic properties of para, dia, terro, ferri, antiferro magnetism.

3. Explain intrinstic and Extrinsic semiconductors with example.