

Chemistry - IV_{sem} Imp Questions

UNIT - I Inorganic Chemistry

1. Explain Crystal field theory?
2. Draw the Crystal field splitting diagram for octahedral, tetrahedral, square planar molecules.
3. Calculate CFSE for octahedral, tetrahedral complexes
4. Calculate magnetic moment spin only formula
5. Write classification of Pearson's
6. What is HSAB Principle
7. Applications of HSAB Principle
8. Write determination of Composition of Complex by Job's and mole ratio method
9. Write applications of Co-ordination compounds
10. Give a note on Essential elements
11. What are toxic metals and explain?
12. Structure and function of hemoglobin
13. Structure and function of Chlorophyll
14. Fixation of CO_2 in photosynthesis
15. What is Z-scheme
16. Write difference between light and dark reactions

UNIT - II Organic Chemistry

1. Structural determination of glucose & fructose.
2. What is mutarotation
3. Haworth, Fisher, Chair structures of glucose & fructose
4. Integ. Conversions
5. Epimers and Epimerisation
6. Anomers
7. preparation methods of Amino Acids
8. physical properties of Amino Acids.
9. Chemical properties of Amino Acids
10. Write a note on proteins
11. Paul-Kuray synthesis
12. Chichibabin Reaction (Nucleophilic substitution)
13. Electrophilic substitution Reactions of Furan, pyrrole, thiophene
14. Basic nature of pyridine
15. Acidic character of pyrrole

UNIT - III Physical Chemistry

1. What is order of reaction? Explain first order reaction and derive first order rate Constant Equation and half life time.
2. Derive second order rate Constant Equation & half life time.
3. Which factors are affecting on rate of reaction.
4. What is pseudo first order reactions and give examples.
5. Examples of 1st & 2nd order reaction with problems.
6. Difference between thermal & photochemical reactions.
7. Laws of photo chemistry (Grothuss Draper, Stark - Einstein's)
8. What is quantum yield, Example of photo chemical reactions with different quantum yield.
9. Photo chemical combinations of $H_2 - Cl_2$ & $H_2 - Br_2$ reactions.
10. Reasons for high & low quantum yield.
11. Jablonski diagram.

UNIT - IV General Chemistry

1. Write the below reactions
 1. Mannich Reactions
 2. Michael Addition
 3. Knoevenagel Condensation
2. Synthesis Applications of Aceto acetic Ester
3. Synthesis Applications of Malonic ester.
4. Valence bond theory.
5. Free electron theory
6. Band Theory
7. Explanation of conductors, semi-conductors (n-type, p-type), Insulators.
8. Preparation & properties of colloids.
9. Hardy - schulze law
10. Gold number
11. Types of emulsions, preparations.
12. Tindal effect.
13. General applications of colloids.
14. Factors influencing absorption.
15. Freundlich absorption Isotherm.
16. Langmuir theory of unilayer absorption Isotherm.
17. Applications of absorption.