Alagappa University, Karaikudi

(A state University Accredited with A+ Grade by NAAC (CGPA: 3.64) in the third cycle & Graded as Category – I University by MHRD – UGC: QS India Rank -20, QS BRICS Rank-104)

Directorate of Distance Education

Karaikudi – 630 003, Tamil Nadu

I Year II semester M.Sc. Chemistry

34421 Inorganic Chemistry –II Assignment Question

1. Define geometrical isomerism in square planar and octahedral planar with the help of examples.
2. State and explain the Jahn-Teller theorem. What are its consequences?
3. List out the assumptions of the crystal field theory. Mention its merits and limitations.
4. Discuss the MOT for the Oh complexes with π bonding ligands.
5. Explain the various types of magnetism giving examples.
6. Explain spin cross over phenomena
7. Discuss briefly the spallation and fragmentation nuclear reactions.
8. What are nuclear models? Discuss briefly the liquid drop and shell models.
9. Discuss the basic principle of atom bomb and hydrogen bomb.
10. Give working principle about Charged particle accelerators, Cyclotron and synchrotron
11. Discuss the principle and applications of neutron activation and isotopic dilution analysis.
12. Discuss position of lanthanides in the periodic table
13. Explain Lanthanides and Actinides contraction and Causes of Lanthanides contraction.
14. Discuss detail about spectral and magnetic properties of lanthanides

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I Year II semester M.Sc. Chemistry

34422 Organic Chemistry –II Assignment Question

1. Explain Norrish type I and II Photochemical reaction with two examples.
2. Discuss the following reactions with suitable example.
   (i) Electrocyclic reaction; ii) Diel's – Alder reaction; iii) Sigmatropic rearrangement.
3. Write note on organic reactions proceeding through nitrene mechanism.
4. Explain the effect of electrophile and leaving group in the E1, E2 and E1cB reaction.
5. State and illustrate Hofmann and Saytzeff rules and mechanism.
6. Compare aldol condensation with cannizzaro reaction.
7. Write the mechanisms of distinction of enantiotopic/diastereotopic ligands.
8. Discuss detail about Jablonski diagram
9. Explain briefly the Barton Wagner-Meerwein and Baeyer-Villiger rearrangements.
10. Discuss the mechanism of Wolff-Kishner reduction.
11. Cope and Claisen rearrangements with examples
12. Discuss the structure of carbine
13. Explain fused and bridged bicyclic system with examples
14. Distinguse enantiotopic and diastereotopic system using NMR

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34423 Physical Chemistry –II Assignment Question

1. Write a note on Flash Photolysis.
2. Differentiate fluorescence and phosphorescence
3. What are solution and bulk polymerizations? Discuss their techniques briefly.
4. Write short notes on (i) bio degradable polymers and (ii) fire retardant polymers.
5. Write down the mechanism of free radical, cationic polymerization? Give examples.
6. Account the following 1. Stability and properties of colloids. 2. Photovoltaic cell. 3. Artificial photosynthesis
7. Differentiate physical and chemical adsorption
8. Describe the mechanism of Langmuir- Hinshelwood .
9. Write detail about 1. Freundlich, 2. Langmuir, 3. BET isotherms.
10. Discuss about Gibbs adsorption isotherm.
11. Explain in detail about micelles and detergents.
12. Explain details about Dye sensitized solar cell
13. Discuss about radiolysis of water
14. Write notes on energy transfer mechanism