



# 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

**II Year III semester M.Sc. Chemistry**

**34431 Advanced Inorganic Chemistry Assignment Question**



1. Explain chelate effect
2. What is stability constant? How is it determined by pH metric and spectrophotometric methods?
3. What are inner sphere and outer sphere complexes? Explain them with suitable mechanisms.
4. What are anation reactions? Give the mechanism.
5. What are complementary and non-complementary electron transfer reactions?
6. What are labile and inert complexes? Give one example each.
7. Explain term symbol
8. Construct the Orgel diagram for a  $d^9$  configuration and explain
9. Give the significance of Racah parameters.
10. Define cluster?
11. What is spinel?
12. Describe the mechanism of Ziegler-Natta polymerisation.
13. Discuss briefly on metal-olefin complexes.
14. Discuss the bonding in acetylene complexes with suitable examples.
15. Describe the mechanism of hydroformylation reactions?
16. Explain the reactivity of ferrocene.
17. Discuss in detail about Non-heme iron proteins
18. Discuss briefly the working of sodium ion pump.
19. Discuss briefly the structure and functions of hemoglobin and myoglobin.
20. Describe structure and function of chlorophyll



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1. What is the importance of sharpless asymmetric epoxidation?
2. Write hydroboration oxidation
3. How will you run Corey-Bakshi-Shibata reaction?
4. What is the terminology used in retrosynthesis?
5. Why need for protection compound?
6. Define terpene, terpenoid, isoprene and isoprene unit
7. How can you differ Maltose and cellobiose?
8. What are the main steps are followed in biosynthesis of alkaloids?
9. Draw the structure of any two vitamins
10. Progesterone is which type of hormone and draw the structure?
11. Describe the role of chromium in oxidation of alcohol to carbonyl
12. Compare and contrast metal based and non- metal based oxidations
13. Write a reaction with mechanism of prevost reaction
14. Briefly discuss catalytic hydrogenation
15. How will you protect and deprotect the organic compounds
16. Chemical and physiological action of riboflavin?
17. Write a structural elucidation and stereochemistry of morphine?
18. Discuss the structure compound?
19. Write about RNA transcription and translation
20. What are the classification of vitamin and discuss fat soluble vitamins
21. How the alkene to carbonyls compound based with bond cleavage using osmium and ruthenium oxidizing agent?
22. Discuss the retrosynthetic analysis of one and two group C-X disconnection with an example.
23. Explain the synthesis, structure and reactivity of indole, and oxazole.
24. Explain the biosynthesis of terpenoids
25. What is cholesterol? Explain the structural elucidation of cholesterol



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## **34433 Spectroscopy – Applications in Organic and Inorganic Chemistry Assignment Question**

1. What do you mean by fundamental vibrations? How will you detect the type of hydrogen bonding involved in particular compound by IR spectra?
2. State and explain the selection rules of UV-visible spectroscopy.
3. How will you determine the formation of charge transfer complexes using UV spectra?
4. What is meant by the term chemical shift? What are the various factors which influence the
5. chemical shift value?
6. Explain the following terms in NMR spectroscopy.
  - (i) Nuclear overhauser effect
  - (ii) Spin-spin coupling.
7. Write down the importance of 'g' values in ESR spectroscopy.
8. What is cotton effect? Explain briefly its applications.
9. What are ORD and CD curves?
10. Write short notes on, circular birefringence.
11. What do you understand by meta stable ions? How are these recognised in the mass spectrum? What is its importance?
12. Write down
  - (i) McLafferty rearrangement and
  - (ii) Nitrogen rule.
13. What is turbidimetry? How is it related to calorimetry?
14. What is meant by thermogram? Explain with an example.
15. What is DTA? Explain its principle and applications with suitable examples.
16. What are thermometric titrations? Explain.
17. Discuss the principle and applications of flame photometry.
18. What is nephelometry? Explain its principle and applications. How does it differ from turbidimetry?
19. What are shift reagents? Explain their importance with suitable examples.
20. Explain briefly the applications of  $C^{13}$  NMR with suitable examples.