

QP CODE: 25804499



Reg No :

Name :

INTEGRATED M.Sc DEGREE EXAMINATION, OCTOBER 2025

Ninth Semester

INTEGRATED M.Sc BASIC SCIENCE-CHEMISTRY

CORE - ICH9CR02 - ADVANCED ORGANIC CHEMISTRY-III

2020 ADMISSION ONWARDS

14A58D42

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. What is complementarity in supramolecular chemistry?
2. Give a brief account on molecular recognition.
3. What are the functions of mRNA and tRNA in protein synthesis?
4. How will you biosynthesise phenylalanine.
5. Explain the terms biogenesis, biosynthesis, and biomimetic synthesis.
6. Give the structure of papaverine and camphor.
7. Explain the primary structure of proteins.
8. What is the purpose of the Akabori method in peptide sequencing? How does it work?
9. What are the heterocyclic bases present in DNA? Give their structures.
10. What are the important strategies of functional group transposition?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. How do the choice of bridge and functional groups in cyclophanes influence their anion-binding properties and selectivity?
12. Write short notes on molecular tweezers.
13. Describe the common protecting groups used for the N-terminal amino group in peptide synthesis. Compare the properties and deprotection methods of groups such as Fmoc, Boc, and Z-group protecting groups.





14. What is the role of protecting groups in solid phase peptide synthesis?
15. Outline the total synthesis of beta carotene.
16. Write a note on a) human genome project b) DNA profiling.
17. a) Write a brief note on important strategies of retrosynthetic analysis b) Discuss the retrosynthetic approach to the synthesis of aromatic compounds.
18. Explain the term C-C disconnection and C-X disconnection in retrosynthetic analysis with examples.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Explain in detail the structure, functions and applications of any five molecular receptors.
20. Discuss the role of cyclodextrins and coordination polymers as hosts for neutral guests in supramolecular chemistry. What are their structural features and how do they bind guests?
21. Explain the need of functional group protection during organic synthesis. Describe appropriate protection - deprotection strategies and reagents for amino, hydroxyl, and carboxyl groups during synthesis.
22. Give the important retrosynthetic steps involved in the synthesis of (a) Juvabione, (b) Aphidicolin, (c) Taxol.

(2×5=10 weightage)

