2024

M.Sc.

Fourth Semester

DISCIPLINE SPECIFIC ELECTIVE – 03

CHEMISTRY

Course Code: MCHD 4.11(B)

(Applied Organic Chemistry)

Total Mark: 70 *Pass Mark: 28*

Time: 3 hours

Answer five *questions, taking* one *from each unit.*

UNIT–I

1. (a) Write a case study on Bhopal gas tragedy to illustrate the importance of understanding and managing chemical hazards. 6
   (b) Briefly explain the biochemical effect of mercury. 4
   (c) Write a note on municipal waste treatment. 4

2. (a) Discuss the challenges and strategies in solid waste management, highlighting the environmental, social, and economic implications. 6
   (b) Explain the importance of water quality analysis in ensuring safe drinking water supply. Discuss the key parameters and methods used for water quality assessment. 5
   (c) Discuss the biochemical processes involved in the degradation of pesticides pollutants in the environment. 3

UNIT–II

3. (a) Discuss the concept of atom economy in the context of chemical synthesis and its significance in promoting environmentally benign processes. 5
   (b) Discuss the role of green catalyst in sustainable chemistry, highlighting their advantages over conventional catalyst. 5
   (c) Write the importance of real-time analysis techniques in pollution prevention strategies. 4

4. (a) Write the twelve principles of green chemistry proposed by Anastas and Warner. 4
   (b) Discuss the principles of design for energy efficiency in chemical processes and industries. 5
   (c) Explain the key principles and methodologies involved in the design of green synthesis routes for chemical manufacturing. 5

UNIT–III

5. (a) Write the mechanism for anionic and free radical polymerization reaction. 3+3=6
   (b) Explain stereochemistry of polymers. 4
   (c) Explain coordination polymerization with mechanism of the reaction. 4

6. (a) Write the factors affecting the properties of polymer composite. 8
   (b) Write the future trends for polymer chemistry. 3
   (c) Explain the injection moulding of polymers process. 3

UNIT–IV

7. (a) Explain drug metabolism and mechanism of drug action. 6+6=12
   (b) Write a short note on drug elimination from the body. 2

8. (a) Explain the functions of prodrugs and soft drugs. 5+4=9
   (b) Explain structure activity relationship (SAR) of drugs. 5

UNIT–V

9. Write the biosynthesis of adenine base with suitable steps. 14

10. (a) Explain the primary, secondary, and tertiary structure of DNA. 8
    (b) Write the structure of purine and pyrimidine. 2
    (c) Write the structure of ATP and guanosine. 4

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