

**2023**  
**M.Sc.**  
**Fourth Semester**  
DISCIPLINE SPECIFIC ELECTIVE – 03  
**CHEMISTRY**  
*Course Code: MCHD 4.11(B)*  
(Applied Organic Chemistry)

*Total Mark: 70*  
*Time: 3 hours*

*Pass Mark: 28*

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

**UNIT-I**

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|--|---|
| 1. (a) Discuss the biochemical effect of arsenic metal.                    | 5 |
| (b) Discuss the biological removal of iron from water.                     | 4 |
| (c) Give some common nomenclature and forms involved in environment.       | 5 |
| 2. (a) Discuss about the structure of atmosphere.                          | 6 |
| (b) What is photochemical smog? Give chemical reactions of smog formation. | 6 |
| (c) How is fluoride removed from drinking water.                           | 2 |

**UNIT-II**

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|--|--------|
| 3. (a) What is green chemistry?  | 2      |
| (b) Discuss about design for safer chemicals: The 4 <sup>th</sup> principle of green chemistry.      | 6      |
| (c) What do you mean by use of renewable feed stocks: The 7 <sup>th</sup> green chemistry principle? | 6      |
| 4. (a) Discuss the role of supercritical fluids and ionic liquids in green chemistry.                | 5+5=10 |
| (b) Describe in brief about innovative technology puts an end to the hazardous vehicle emissions.    | 4      |

### UNIT-III

5. (a) What is step growth polymerisation? Explain with an example. 4  
(b) Write a note on polymer processing. 8  
(c) What is copolymer? Give an example. 2
6. (a) Discuss about degradation and future trends of polymers. 4  
(b) Explain the following terms with one example:  $3 \times 2 = 6$   
(i) Polymer composites  
(ii) Ring opening polymerisation  
(c) Give the mechanism of cationic polymerisation. 4

### UNIT-IV

7. (a) Discuss in brief about the history of medicinal chemistry. 8  
(b) Describe various approaches to drug design. 6
8. (a) What do you mean by the term QSAR? Explain. 5  
(b) Discuss about the factors affecting modes of  $3 \times 2 = 6$   
(i) Drug administration  
(ii) Drug absorption  
(c) What do you mean by the term receptor and its site? 3

### UNIT-V

9. (a) Draw the structure of the following:  $1 \times 5 = 5$   
(i) Adenosine (ii) Guanosine  
(iii) Uridine (iv) Cytidine  
(v) Thymidine  
(b) How is uracil biosynthesised from L-glutamine, carbon dioxide, water, and ATP? Give the reactions stepwise. 9
10. (a) Discuss about DNA-replication and heredity. 6  
(b) Define the following terms:  $4 \times 2 = 8$   
(i) Gene (ii) Genetic code  
(iii) Codon and anticodon (iv) Mutagenesis