

2022
M.Sc.
Third Semester
 DISCIPLINE SPECIFIC ELECTIVE – 02
CHEMISTRY
Course Code: MCHD 3.21
 (Natural Products & Bioorganic Chemistry)

Total Mark: 70

Pass Mark: 28

Time: 3 hours

Answer five questions, taking one from each unit.

UNIT-I

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|----|---|---|
| 1. | (a) Discuss general classification of natural products. | 6 |
| | (b) Discuss general characteristics of natural products. | 4 |
| | (c) What do you mean by biogenesis? Discuss the biogenesis and synthesis of methyl jasmonate. | 4 |
| 2. | (a) Discuss the process of isolation of natural products included with flow sheet diagram. | 5 |
| | (b) Give total synthesis of muscon and exaltone. | 4 |
| | (c) Discuss the biosynthesis of fats. | 5 |

UNIT-II

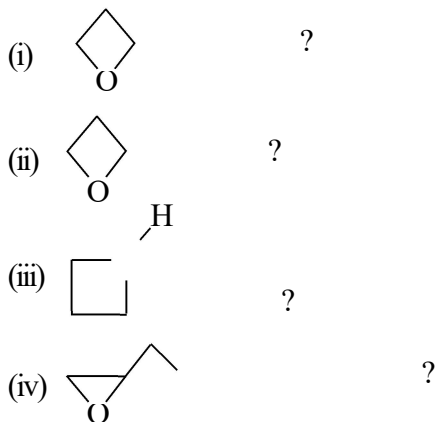
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|----|--|---------------|
| 3. | (a) Discuss Koshland's reduced fit mechanism of enzyme action. | 3 |
| | (b) Discuss mechanism of enzyme action stepwise by taking an example of chymotrypsin enzyme. | 8 |
| | (c) Define the following terms: | 1×3=3 |
| | (i) Cofactor | (ii) Coenzyme |
| | (iii) Holoenzyme | |
| 4. | (a) Give the structure and function of the following: | 5×2=10 |
| | (i) NADH | (ii) FAD |
| | (b) Discuss the structure and function of the following: | 2×2=4 |
| | (i) ADP | (ii) ATP |

UNIT-III

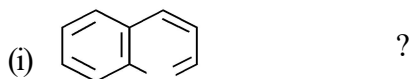
5. (a) Explain Emde method of degradation of alkaloids. 3
(b) Establish the structure of nicotine. Give its synthesis. 8
(c) Write the biosynthesis of nicotine. 3
6. (a) Establish the structure of strychnine and its synthesis. 8
(b) Write the biosynthesis of strychnine. 4
(c) Write the method for determination of -OMe group in alkaloid. 2

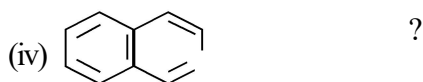
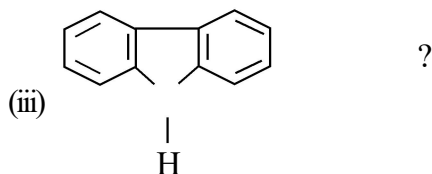
UNIT-IV

7. (a) Suggest a method for conversion of an oxirane into thiirane. 3
(b) Write a method for extraction of the following: $2\frac{1}{2} \times 2 = 5$
(i) Nitrogen atom from agiranes
(ii) Oxygen atom from oxiranes
(c) Complete the following reactions: $1\frac{1}{2} \times 4 = 6$



8. (a) Write Reissert synthesis of indole. 4
(b) Write the reactions involved in Bischler-Napieralski synthesis of isoquinoline. 4
(c) Complete the following reactions: $1\frac{1}{2} \times 4 = 6$





UNIT-V

9. (a) What are terpenes and terpenoids? Differentiate between them. 4
 (b) What are isoprene rule and special isoprene rule? 2
 (c) Give the introduction and a method of synthesis of the following terpenoids: 4×2=8
 (i) α -Vetivone
 (ii) Hirsutene
10. (a) Give the classification of terpenoids. 4
 (b) Give the introduction and Marshall's approach to synthesis of β -eudesmol from decalone synthesis. 6
 (c) What is caryophyllene? Give its laboratory synthesis. 4