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| **Name:**<br>**Enrolment No:** | |

# UPES

## End Semester Examination, December 2024

**Programme Name : B.Sc. (H) Chemistry** **Semester : V**
**Course Name : Organic Chemistry IV** **Time : 03 hrs**
**Course Code : CHEM 3014** **Max. Marks: 100**
**Nos. of page(s) : 2**

**Instructions: 1. Write your Enrollment number on the question paper.**
**2. Internal choices are given in question numbers 8 and 11.**
**3. Attempt all parts of a question at one place only.**

**SECTION A**
**(5Qx4M=20Marks)**

| S. No. | | Marks | CO |
|---|---|---|---|
| Q 1 | Define the nitrogenous base present in the nucleic structure. | **4** | **CO1** |
| Q 2 | What is the general structure of amino acids? Why are they considered ampholytes? | **4** | **CO1** |
| Q 3 | Discuss the specificity of the enzyme in terms of geometric and electronic complimentary. | **4** | **CO1** |
| Q 4 | Calculate the number of carbon-to-carbon double bonds in linolenic acid ($C_{18}H_{30}O_2$). Given that 7.7g of $I_2$ reacts with 2.8g of linolenic acid. | **4** | **CO2** |
| Q 5 | Give the reaction for the synthesis of Adenine. | **4** | **CO1** |
| | **SECTION B**<br>**(4Qx10M= 40 Marks)** | | |
| Q 6 | Elaborate the various factors affecting the enzymatic activity with the proper graphical explanation. | **10** | **CO2** |
| Q 7 | Define the Edman degradation method for the determination of the primary structure of peptide. | **10** | **CO2** |
| Q 8 | i) Deduce the synthesis of ibuprofen.<br>ii) Discuss the medicinal value of Azadirachtin.<br>**OR**<br>Explain the various forms and medicinal value of Vitamin C. | **6+4**<br><br>**10** | **CO3** |
| Q 9 | What is acid value? Explain the method of its determination with the significance. | **10** | **CO2** |

| SECTION-C<br>(2Qx20M=40 Marks) | | | | |
|---|---|---|---|---|
| Q 10 | i)<br><br><br>ii) | Define the significance and methods for the protection of N-terminus, C-terminus, and side chain terminus groups during peptide synthesis.<br>Deduce the Gabriel and Strecker's synthesis for the formation of amino acids | **10+10** | **CO1** |
| Q 11 | i)<br><br><br>ii)<br><br>i)<br>ii) | Elaborate the features of DNA double helical structure and hydron bonding base pair structure of adenine to thymine and Guanine to cytosine.<br>Deduce the whole mechanism for the conversion of NAD+ to NADH.<br>**OR**<br>Elucidate the types of RNA and their functions in detail.<br>Discuss the calorific value of food and how it is measured. | **10+10** | **CO2** |