



# THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)

Re-accredited (2<sup>nd</sup> Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

## Backlog Arrear Examination, March 2021

CHE 1522/CHS 1512

Organic Chemistry – I

Time: 3 Hrs

Marks: 75

Answer any five

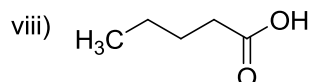
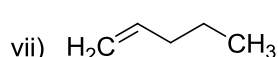
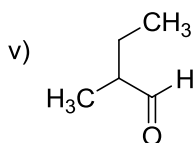
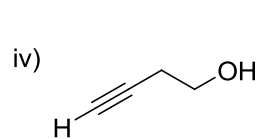
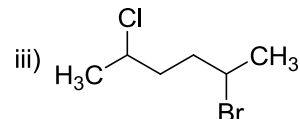
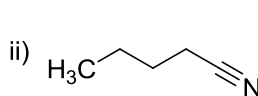
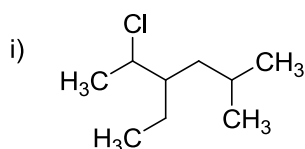
5 × 15 = 75

1. A. Write the structural formula of the following compounds (7)

i) 4-Hydroxypentanal    ii) 4-Cyano-3-methoxybutanoic acid    iii) Pentan-2-one

iv) 1,4-pentadiene    v) 2-methyl-2-propanol    vi) 2-Butenoic acid    vii) 3,5-Octadiene

B. Write the IUPAC nomenclature for the following compounds. (8)



2. A. What are carbanion, carbocation and carbenes? How are they generated? Explain their structure with relative stability. (7)

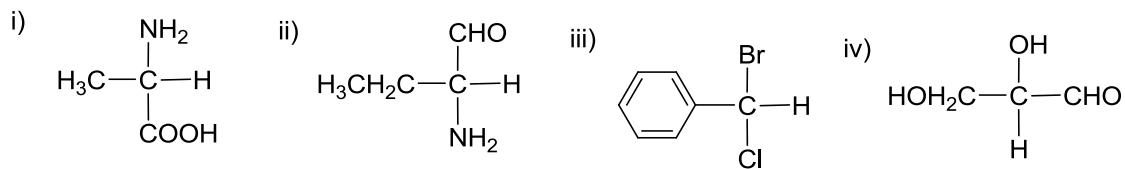
B. In detail explain the various types of reactions in organic chemistry using suitable examples. (8)

3. Explain the various types of chromatographic methods utilized for purification of organic compounds. (15)

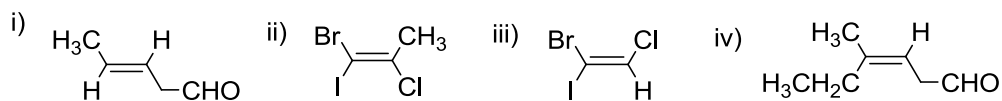
4. A. Write short notes on

i) Walden inversion    ii) Specific and observed rotations    iii) Optical activity (7)

B. Classify the following molecules on the basis of sequence rules in R and S configuration. (8)



5. A. Assign E and Z nomenclature for the following compounds (8)



B. In detail explain the free radical halogenation of alkenes with suitable mechanism. (7)

6. A. Write a short note on Bayer's strain theory along with Sachse and Mohr's theory of strainless rings. (7)

B. With suitable mechanism explain the following reactions. (8)

i) Synthesis of cycloalkanes using Dieckmann's method.

ii) Synthesis of cycloalkanes by Thorpe-Ziegler reaction.

iii) Decarboxylation of 2-carboxycyclopentanone to cyclopentanone.

7. A. State Markovnikov's rule and explain the mechanism of addition of HBr to propene in the presence of peroxide. (5)

B. On the basis of MO theory explain the stability of conjugated dienes. (5)

C. Explain stereoselective reduction of alkynes using suitable examples. (5)