



# 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 1421

ORGANIC & PHYSICAL CHEMISTRY-I

Marks: 75

Answer ANY FIVE question

5 x 15 = 75

- Explain sacrificial and isovalent hyperconjugation with examples. (7)
  - Explain the term eluent, elution in column chromatography. Explain how the separation of a mixture of two components is affected by column chromatography. (8)
- Differentiate enantiomers and diastereomers with suitable examples. (5)
  - Draw the different conformations for cyclohexane and arrange them in increasing order of stability. (5)
  - Why the substituent prefers to occupy an equatorial position in monosubstituted cyclohexanes? (5)
- Discuss Baeyer's strain theory with limitations. (10)
  - Explain the following with equations. (5)  
Corey-House synthesis  
Kolbe's electrolytic method
- What is meant by electrophoresis and electro-osmosis? Discuss these phenomena.
- What is Joule-Thomson effect? Show that Joule-Thomson coefficient is zero for an ideal gas (8)
  - Explain the terms molar heat capacity at constant volume ( $C_v$ ) and at constant pressure ( $C_p$ ). Show that for one mole of an ideal gas  $C_p - C_v = R$ . (7)
- Discuss in detail Maxwell's distribution of molecular velocity and energy.
- What do you mean by octane number and cetane number? (7)
  - How enthalpy of combustion is measured using bomb calorimeter? (8)