



THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

PGC 4421

ORGANIC CHEMISTRY-I

Time: 3 Hours

Max Marks: 75

Answer any FIVE Questions:

(5 X 15 = 75)

1. Explain the terms aromaticity, antiaromaticity and homoaromaticity giving appropriate examples.
2. a) Describe the significance and applications of Hammett substituent and reaction constant in predicting the reaction mechanism. What variations are to be considered when reaction center is in direct resonance with the substituent? (10)
b) Illustrate Curtin-Hammett principle and explain with appropriate examples. (5)
3. Discuss any three methods of carbene generation. Give examples for the addition, insertion and rearrangement reactions involving carbenes.
4. a) What is NGP? Explain the role of C=C, S and halogen as NGP with suitable examples. (10)
b) Explain $A_{AC}2$ mechanism with a suitable example. (5)
5. a) Explain the acetolysis reactions of i) exo-2-norbornyl brosylate and ii) endo-2-norbornyl brosylate. (4)
b) What are ambident nucleophiles? Explain their role in the nucleophilic substitution reaction. (4)
c) Write a note on phase transfer catalysis in aliphatic nucleophilic substitution reaction. (4)
d) Explain Von Richter reaction. (3)
6. Explain the following:
 - a) ortho / para ratio in aromatic electrophilic substitution (4)
 - b) Vilsmeier – Haack reaction (4)
 - c) Ipso attack in aromatic electrophilic substitution (3)
 - d) E_1CB mechanisms. (4)
7. Complete the following reaction sequence with plausible mechanism. (5x3)

