LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

SECOND SEMESTER – **APRIL 2025**

16/17/18UCH2MC01 – CHEMISTRY OF HYDROCARBONS

Date: 25-04-2025 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 PM

SECTION A

Answer ANY FOUR of the following **(4 x 10 = 40)**

1. a) Arrange the primary, secondary and tertiary carbocations based on their stability and justify your answer.
   b) What are homolytic and heterolytic cleavage reactions? (6+4)
2. Explain *keto-enol* and *nitro-aci* tautomerisms with one example for each type.
3. Discuss the important postulates of Baeyer's strain theory and mention its limitations.
4. Describe the sulphonation and nitration reactions of alkanes.
5. What are dienes? Discuss the stability of various types of dienes.
6. Write the mechanism for the reaction of CH≡CH with
   (i) one water molecule and (ii) two molecules of hydrogen halides.
7. a) Describe Haworth's method for the synthesis of naphthalene
   b) Explain the conditions required for a molecule to exhibit aromaticity. (6+4)
8. Discuss the mechanism of Friedel Craft alkylation and acylation of benzene.

SECTION B

Answer ANY THREE of the following **(3 x 20 = 60)**

9. a) Tabulate the differences between inductive and electromeric effects.
   b) Describe in detail the classification of organic compounds.
   c) Write a note on steric effect. (8+8+4)
10. a) Explain the free radical mechanism for the halogenation of methane.
    b) What are conformers? Describe the conformational analysis of cyclohexane. (10+10)
11. a) How will you synthesis cyclopropane by Freund's method? Write any three of its ring opening reactions.
    b) Discuss the synthesis of anthracene by any two methods. (10+10)
12. Illustrate the mechanism for ozonolysis and Ziegler Natta polymerization of alkenes.
13. Describe any two preparation and any four chemical properties of conjugated alkenes.
14. a) Describe the orientation and reactivity of di substitution reactions of aromatic compounds.
    b) Explain the ozonolysis and hydroboration-oxidation reactions of acetylene. (10+10)
