



Reg. No. :

Name :

First Semester M.Sc. Degree Examination, February 2019
Branch : Chemistry
CL/CA/CM/CH 212 : ORGANIC CHEMISTRY – I
(2013 Admission – 2015 Admission)

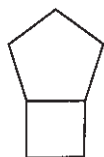
Time : 3 Hours

Max. Marks : 75

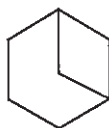
SECTION – A

Answer **any two** among (a), (b) and (c) from **each** question. **Each** sub-question carries **2** marks.

1. a) Give the IUPAC name of the following compounds.



(i)



(ii)

- b) Draw the most stable conformation of ethyl 4-t-butylcyclohexane carboxylate and 2,3-dihydroxybutane.
- c) Draw the chair conformations of cis and trans-decalins.
2. a) Explain the fact that toluene undergoes nuclear chlorination more easily than benzene.
- b) Explain the terms singlet and triplet carbenes.
- c) Compare the base strength of the conjugate bases of the acids CH_3COOH , ClCH_2COOH , Cl_2CHCOOH and Cl_3CCOOH .
3. a) Illustrate the Saytzeff rule of elimination.
- b) Why aniline undergoes electrophilic substitution reactions more easily than benzene ?
- c) What is $\text{S}_{\text{N}}^{\text{i}}$ reaction?






4. a) Give two reagents used for the trans hydroxylation of cycloalkenes.
b) Write the mechanism of benzoin condensation.
c) What kinds of compounds act as Michael acceptors in reaction with carbanions ? Give two examples.
5. a) What is the principle of gel permeation chromatography ?
b) Explain the terms “reverse-phase packing” and “isocratic elution” used in HPLC.
c) Give two general methods for improving the resolution of two substances on a chromatographic column. **(2×10=20 Marks)**

SECTION – B

Answer either **(a)** or **(b)** of **each** question and **each** question carries **5** marks.

6. a) Differentiate the following pairs of terms by giving suitable examples
i) regioselective and stereoselective.
ii) resolution and racemisation.
iii) enantiomeric excess and diastereomeric excess.
iv) conformation and configuration.
b) Discuss the stereochemistry of tri-covalent nitrogen compounds.
7. a) Discuss any two reactions involving aryne mechanism.
b) Give an account of the formation, identification and stability of free radicals.
8. a) What are non-classical carbocations ? Explain their role in neighbouring group participation.
b) Give the mechanism of base induced S_N^2 reaction of alkyl halides. Briefly discuss the effects of substrates structure on S_N^2 reaction.
9. a) Discuss the mechanism and applications of Cannizaro reaction.
b) Write short notes on :
i) Reformatsky reaction and
ii) Perkin reaction.
10. a) Discuss the advantages and limitations of supercritical fluid chromatography.
b) Write short notes on : (i) chiral chromatography and (ii) electrophoresis.  **(5×5=25 Marks)**



SECTION – C

Answer **any three** questions and **each** question carries **10** marks.

11. Write short notes on the following :

- i) Atropisomerism.
- ii) Optical Rotatory Dispersion (ORD).
- iii) Chiral drugs.
- iv) Asymmetric synthesis.

12. Explain any two methods by which a nitrene can be prepared. Give one example each for an insertion reaction, addition to C=C, rearrangement and dimerisation of nitrenes.

13. Discuss the general mechanisms observed for elimination reactions.

14. Explain the mechanisms of acid and base catalysed hydrolysis of esters.

15. Discuss the commonly used detectors in HPLC and their applications.

(10×3=30 Marks)

