



Reg. No. : .....

Name : .....

**First Semester M.Sc. Degree Examination, February 2019**  
**Branch : Chemistry/Polymer Chemistry**  
**CH/CL/CM/CA/ PC 212 : ORGANIC CHEMISTRY – I**  
**Common for Chemistry CH/CL/CA/CM (2016 Admission Onwards) and**  
**Polymer Chemistry (2018 Admission)**

Time : 3 Hours

Max. Marks : 75

## SECTION – A

Answer **any two** sub-questions among **a-c** from each question. **Each** sub-question carries **2** marks.

1. a) Draw the structures of i) Ibuprofen ii) Thalidomide. Comment on their chirality.  
b) What is *trans*-cyclooctene ? How it exhibits optical activity ?  
c) Draw the structures of  
i) 1, 3, 5-triazine  
ii) 1, 2, 4-triazole.
2. a) Arrange the following carbocations in decrease in order of stability. Give reasons.  
 $(\text{Ph})_3\text{C}^+$ ,  $\text{CH}_3^+$ ,  $(\text{CH}_3)_3\text{C}^+$ ,  $\text{CH}_3\text{-CH}_2^+$   
b) Give any two methods of generation of free radicals.  
c) What makes carbocation more stable ?
3. a) What are benzyne ? Give an example involving benzyne.  
b) Explain the term neighbouring group participation with an example.  
c) Describe the effect of leaving group on the rate of  $\text{S}_{\text{N}}1$  reactions.
4. a) Outline the mechanism of normal aldol condensation reaction.  
b) What is Hoffmann elimination ? Explain.  
c) Outline the mechanism of Wittig reaction.





5. a) What is Swern oxidation ? Give mechanism.  
b) What are Lindlar catalysts ? Explain its significance.  
c) Explain the importance of silver carbonate in organic chemistry.

(10×2=20 Marks)

### SECTION – B


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

6. a) What are atropisomers ? Give any two examples. Explain the designation of Configuration of atropisomers.  
b) Explain the terms  
i) ORD  
ii) Circular dichroism.
7. a) Distinguish between transition state and intermediates.  
b) What are carbanions ? Discuss the formation and structure of carbanions.
8. a) Outline the  $S_N2$  mechanism. What is Walden inversion ?  
b) Discuss the influence of solvent and leaving group on the rate of  $S_N2$  reaction.
9. a) Describe the following :  
i) Cram's rule  
ii) *Cis* eliminations.  
b) What is E2 elimination ? Explain the formation of C = C bond by E2 mechanism.
10. a) Write briefly on  
i) Allylic oxidations  
ii) Oxidations using Cr(vi) reagents.  
b) Discuss the importance of the following in organic chemistry.  
i) diimide  
ii) Al-t-butoxide.

(5×5=25 Marks)

### SECTION – C

Answer **any three** questions. **Each** question carries **10** marks.

11. Discuss the stereochemical nomenclature of chiral compounds by R, S, Z & E systems.
12. i) Describe the formation, structure and chemical reactions of carben   
ii) Explain the influence of structural features on the acidity of organic compounds.



13. Describe the different mechanisms of esterification/ ester hydrolysis.
14. Comment on the stereochemistry of additions of HX, H<sub>2</sub>O and X<sub>2</sub> to C = C systems.
15. Describe the applications of the following reagents in organic synthesis.
  - i) DIBAL
  - ii) Na CNBH<sub>3</sub>
  - iii) Lithium trialkyl borohydrides
  - iv) Hindered borane.

**(3×10=30 Marks)**

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