

ORGANIC CHEMISTRY

(Common with B.Sc. & B.Sc. Biotechnology)
Semester-I

Time Allowed : 3 Hours]

[Maximum Marks : 26

Note : The candidates are required to attempt *two* questions each from Section A and B carrying 4 marks each and the entire Section C consisting of 5 short answer type questions carrying 2 marks each.

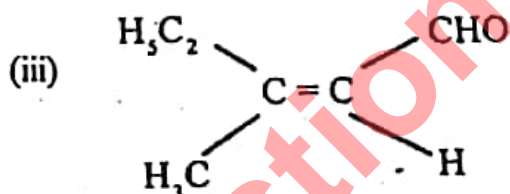
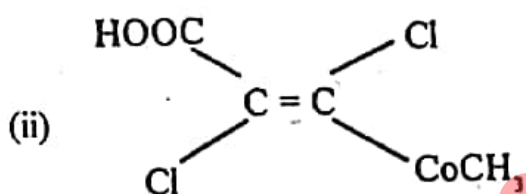
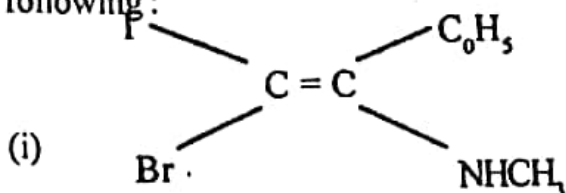
Section - A

- Explain inductive effect. Why dichloroacetic acid is stronger than acetic acid ? 2,2
 - What are localised and delocalised chemical bonds ? Discuss with examples. 2,2
- Discuss the structure of Carbene and Carbanion. 2,2
 - What is isotopic labelling ? How is it useful to determine mechanism of a reaction ? 2,2
- What is meant by elimination and rearrangement reactions ? Explain. 2,2
 - Allyl free radical is more stable than alkyl free radical. Why ? 2,2
- How will you prepare alkanes by :

- (i) Corey house synthesis
 (ii) Wurtz reaction ?
 (b) Write a note on selectivity and reactivity of alkanes in halogenation reaction. 2,2

Section - B

5. (a) What happens when :
 (i) Cyclopropane reacts with chlorine in the presence of light
 (ii) Cyclopropane is heated with Conc. H_2SO_4 ?
 6. (b) Explain Baeyer Strain Theory and give evidences in favour of it. 2,2
 (a) What do you understand by geometrical isomers ? Assign E or Z configurations to the following:



- (b) Explain the necessary conditions for a compound to be optically active with examples. 2½, 1½
 7. (a) Give the differences between enantiomers and diastereomers.
 (b) Draw various conformations of n-butane and explain their relative order of stability. 2,2
 8. (a) What is racemisation ? Describe base catalysed racemisation with an example.
 (b) What do you mean by 1,3 diaxial interactions ? Explain clearly. 2½, 1½

Section - C

9. (a) Give the state of hybridisation of each carbon in the following compound.
 $(\text{CH}_3)_2 - \text{CH} - \text{CH} = \text{C} = \text{CH}_2$
 (b) Classify the following species as electrophiles and nucleophiles
 $\text{SO}_3, \text{NO}_2^+, \text{BF}_3, \text{H}_2\text{O}, \text{RNH}_2,$
 (c) What is resonance ? Give two conditions for resonance.
 (d) What are threo and erythro isomers ?
 (e) Out of n-pentane and isopentane – Which has higher boiling point ? Why ? 2 × 5 = 10