

**ORGANIC CHEMISTRY – I**  
(Common with B.Sc., B.Sc. Biotech.) Part-I, Paper-II  
(Re-appear April-2013)

**Time Allowed : Three Hours]**

**[Maximum Marks : 75**

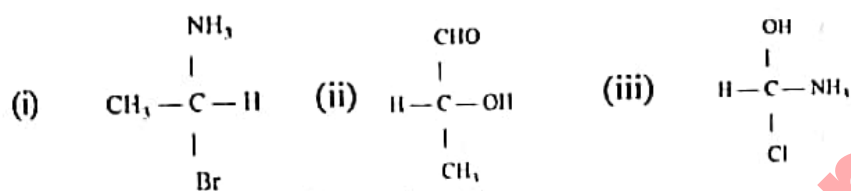
**Note :** The candidates are required to attempt *four* questions from Sections A, B and C carrying 15 marks each, choosing at least *one* question from each of these Sections; and the entire Section D consisting of 8 short answer type questions carrying 15 marks in all.

**Section : A**

1. Write short notes on :  
(i) Resonance      (ii) Hyperconjugation      (iii) H-bond. 15
2. What are Carbocations? How are these formed? Give their structure and account for their relative stability with suitable examples. 15
3. (a) How will you prepare alkanes? Give the mechanism of each preparation. 7  
(b) Explain Bayer's strain theory and its limitations. Also discuss the banana bonds. 8

**Section : B**

4. (a) Assign the R or S configuration :



5. (b) Explain the conformations of cyclohexane. 9  
 (a) Define aromaticity. How is Huckel No. useful in assigning aromaticity to various anions and cations? 6  
 Give suitable examples. 10
6. (b) Outline the mechanism of nitration and sulphuration of benzene. 5  
 Explain in detail:  
 (a) Markownikoff's Rule      (b) Hydroboration-Oxidation      (c) Ozonolysis 15
- Section : C**
7. (a) Give the preparation, structure of butadienes accounting for this stability. 5  
 (b) Explain the chemical reactions of butadiene involving 1,2- and 1,4 additions. 5  
 (c) Write note on Diels-Alder Reaction. 5
8. (a) Account for the relative reactivity of alkyl halides and aryl halides. 7  
 (b) Explain SN<sup>2</sup> and SN<sup>1</sup> mechanism of alkyl halides. 8
- Section : D**
9. Do all the parts in short : 2  
 (i) Why vinyl halides are less reactive ? 2  
 (ii) Give reaction of SOCl<sub>2</sub> with ROH. 2  
 (iii) Why terminal alkynes are acidic ? 2  
 (iv) Write the product of H<sub>2</sub>O and acetylene in presence of HgSO<sub>4</sub>/H<sup>+</sup>. 2  
 (v) What are allenes? Give one example. 2  
 (vi) Give two industrial applications of ethylene. 2  
 (vii) What are σ and π-complexes ? 2  
 (viii) Define Inversion. 1