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Total No. of Pages : 03

Total No. of Questions : 11

B.Sc. (Honours) Chemistry (Sem.-1)

**ORGANIC CHEMISTRY-I**

Subject Code : BHCL-102-19

M.Code : 77224

Date of Examination : 14-01-23

Time : 3 Hrs.

Max. Marks : 60

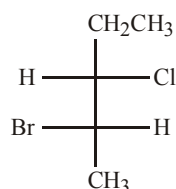
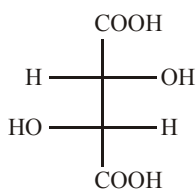
**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of EIGHT questions carrying TWO marks each.
2. SECTION-B contains EIGHT questions carrying FOUR marks each and students have to attempt any SIX questions.
3. SECTION-C will comprise of two compulsory questions with internal choice in both these questions. Each question carries TEN marks.

**SECTION-A**

**1. Write briefly :**

- a) How can you explain the effect of hybridization on bond length and bond strength?
- b) What are meso compounds?
- c) Assign R and S configuration to the following:



- d) What is Baeyer's strain theory?
- e) Give the hydroxylation reaction of alkene with cold alkaline  $\text{KMnO}_4$ .
- f) What is Diels-Alder reaction?

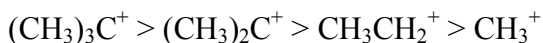
- g) What is the Kekulé structure of benzene? Draw the molecular orbital structure of benzene.
- h) Give the Friedel-Crafts alkylation reaction of benzene.

### SECTION-B

2. Draw an orbital picture of allene,  $\text{CH}_2 = \text{C} = \text{CH}_2$ . What hybridization must the central carbon atom have to form two double bonds? What shape does allene have?
3. Differentiate between Enantiomerism and Diastereomerism by taking suitable examples.
4. What is Corey-House reaction? How does the Corey-House reaction overcome the limitations of Wurtz reaction?
5. Give any two methods of preparation of cycloalkanes.
6. Explain the mechanism of Oxymercuration-demercuration reaction of alkene for the formation of alcohol.
7. “The acetylenic hydrogen in terminal alkynes ( $-\text{C}\equiv\text{C}-\text{H}$ ) is acidic in nature.” Explain.
8. What is aromaticity? Explain the Huckel’s rule in order to predict the aromatic character in monocyclic compounds.
9. Differentiate between unimolecular nucleophilic substitution reaction ( $\text{S}_{\text{N}}1$ ) and bimolecular nucleophilic substitution reaction ( $\text{S}_{\text{N}}2$ ).

### SECTION-C

10. Explain the stability of following carbocation in terms of inductive effect and hyperconjugation.



OR

Draw the Newman projection for different possible conformations of n-butane. Give the conformational analysis of n-butane.

11. a) What is Saytzeffs rule? Explain the mechanism of saytzeffs elimination in dehydrohalogenation of haloalkanes.
- b) Explain the mechanism of electrophilic addition of bromine to alkene.

**OR**

- a) Explain the mechanism of chlorination of benzene.
- b) How does the nature of substituent affect the reactivity of aromatic ring system towards electrophilic substitution reactions?

**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**