Bachelor of Science (B.Sc. I) (CBCS Pattern) First Semester

USCHT02 - Chemistry : Paper-II (Organic chemistry)

P. Pages : 2 **GUG/W/18/11545**

Time : Three Hours * 3 6 2 0 * Max. Marks : 50

Notes : 1. All **five** questions are compulsory & carry equal marks.
2. Write chemical equation & draw diagrams wherever necessary.

1. a) Define Hybridisation. Explain the formation of ethylene molecule on the basis of SP^2-Hybridisation. **5**

b) Write brief note on – **5**
i) Inductive effect with suitable example.
ii) Substitution reaction with suitable example.

OR

c) What is bond fission? Explain with suitable example. **2½**

d) Write note on free Radicals. **2½**

e) What are attacking reagents? Explain nucleophiles and electrophiles with suitable examples. **2½**

f) Discuss rearrangement reaction with suitable example. **2½**

2. a) What is isomerism? Discuss classification with example. **5**

b) Discuss optical isomerism in Tartaric acid. **5**

OR

c) Discuss CIP rules with suitable examples. **2½**

d) What is meant by 'Threo' and 'Erythro'? **2½**

e) Explain resolution of enantiomers with its different methods. **2½**

f) Write note on Inversion of configuration. **2½**

3. a) What are alkanes? **5**
Explain –
i) Wurtz reaction ii) Kolbe's reaction.

b) Write note on – **5**
i) Dickmann's synthesis for cycloalkane. ii) Anti-peroxide effect.

OR

c) What are dienes? Discuss their classification with suitable examples. **2½**

d) Write note on Baeyer's strain theory. **2½**

e) How will you prepare acetylene from vicinal dihalide (1, 2-dibromo ethane). **2½**

f) Explain Diel's – Alder reaction with example. **2½**

4. a) Define electrophilic substitution reaction. **5**
Explain reaction and mechanism of Nitration.

b) What are activating and deactivating groups? Explain the influence of hydroxyl group in phenol. **5**

OR

c) Discuss molecular orbital structure of benzene. **2½**

d) What is meta-directing effect? Explain it in nitrobenzene. **2½**

e) Write note on 'Huckel's rule' of Aromaticity. **2½**

f) Write note on 'Friedel-Craft alkylation'. **2½**

5. Attempt **any ten.** **1x10**

1) Define bond length with suitable example.

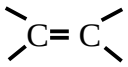
2) Mention salient features of Electrometric effect.

3) What are bond length in following acetylene molecule –

A = ------ Aº
B = ------ Aº

4) Write two possible functional isomer from molecular formula - C_3H_6O .

5) Draw E and Z form by using H-atom & methyl group around



6) Define – Asymmetric carbon atom.

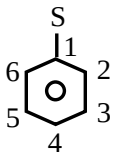
7) What is CNG? Mention its two applications.

8) Complete following synthesis of acetylene & write in formula –

$$\text{Calcium Carbide} + \text{Water} \xrightarrow[\text{dropwise addition}]{\text{heat}} A + B$$

9) What is peroxide effect?

10) Identify ortho, meta & para position with respect to first substituent –



11) Identify ortho-para & meta directing group from $-CH_3$ & $-NO_2$.

12) Draw two possible Kekule structure for benzene.

****