

**UCH2MC01 – HYDROCARBONS AND STEREOCHEMISTRY**

Date: 25-04-2025

Dept. No. 

Max. : 100 Marks

Time: 09:00 AM - 12:00 PM



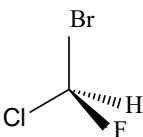
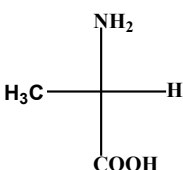
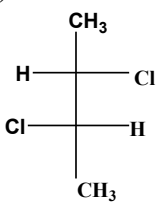
**SECTION A - K1 & K2 (CO1)**

Q.No	Levels	Answer ALL the Questions	(10 x 2 = 20)
1	K1	What is stabilization energy?	
2		Give the reaction mechanism for the following reaction. $\text{CH}_2=\text{CH}_2 + \text{H}_2\text{SO}_4 \rightarrow ?$	
3		How will you prepare 1-propyne by dehydrohalogenation?	
4		What is aromaticity? Give an example.	
5		Define the term conformation.	
6	K2	Define electromeric effect.	
7		What is Wurtz reaction?	
8		Show the reaction of ozonolysis of alkene.	
9		Draw the structure of naphthalene and anthracene.	
10		Define flagpole hydrogen with an example.	

**SECTION B – K3 & K4 (CO2)**

		Answer ALL the Questions	(4 x 10 = 40)
11	K3	What is tautomerism? Explain the mechanism of <i>keto-enol</i> tautomerism and apply it to ethyl acetoacetate as an example. <div style="text-align: center;">[OR]</div>	
12		Describe the stability of primary, secondary and tertiary carbocations based on hyper-conjugation effect.	
13		Describe in detail about Baeyer's strain theory and theory of strain-less rings. <div style="text-align: center;">[OR]</div>	
14		a) Illustrate Markownikoff's rule with suitable example. <span style="float: right;">[5+5]</span> b) Predict the product of the following on reaction with $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2$ . (i) HCl (ii) Br <sub>2</sub> (iii) Hydrogen/Pt	
15	K4	How will you prepare benzene by industrial and laboratory methods? <div style="text-align: center;">[OR]</div>	
16		Discuss the conformational analysis of ethane.	
17		Assign E, Z configuration for the following geometric isomers. (i) 1-Bromo-1-chloropropene (ii) 1-Chloro-1-ethyl-2-methylethene (iii) 1-Bromo-1-chloro-2-iodopropene <div style="text-align: center;">[OR]</div>	
18		a) What do you know about Corey-House synthesis of alkanes and its mechanism? <span style="float: right;">[5+5]</span> b) Explain the following with suitable reasons. (i) Formic acid is a stronger acid than chloroacetic acid. (ii) Fluoroacetic acid is a stronger acid than chloroacetic acid.	

### SECTION C – K5 & K6 (CO3)

	<b>Answer ALL the Questions</b>		<b>(2 x 20 = 40)</b>
19	K5	a) Discuss about the term inductive effect and resonance effect. Mention any three applications of each.	
		b) Describe the mechanism of halogenation of methane and give two evidences in support of mechanism.	(10+10)
		<b>[OR]</b>	
20		a) How are alkenes prepared from alkyl halides, and alcohols? Give mechanisms.	
		b) "Acetylene is a stronger acid than ammonia, but weaker acid than water"-Explain this statement.	
		c) Write a note on "peroxide effect".	(10+5+5)
21	K6	a) Elaborate the mechanism of nitration and sulphonation of benzene.	[10+10]
		b) What is racemization? Describe any two methods of resolving racemic mixture.	
		<b>[OR]</b>	
22		a) Discuss conformational analysis of cyclohexane.	[10+4+6]
		b) Predict the product for the following reactions.	
		(i)  + CH <sub>3</sub> Cl / AlCl <sub>3</sub> → ?	(ii)  + 3Cl <sub>2</sub> → ?
		c) Apply the Cahn-Ingold-Prelog sequence rule and designate R,S-configuration to the following.	
	(i)	(ii)	(iii)
			

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