

**STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86**  
**(For candidates admitted from the academic year 2025 – 2026)**

**B. Sc DEGREE EXAMINATION, APRIL 2026**  
**BRANCH IV - CHEMISTRY**  
**SECOND SEMESTER**

**COURSE** : **CORE**  
**PAPER** : **ORGANIC CHEMISTRY-I**  
**SUBJECT CODE** : **25CH/MC/OC25**  
**TIME** : **3 HOURS**

**MAX. MARKS: 100**

Q.No.	SECTION - A Answer the questions: (5 x 2 = 10 Marks)	CO	KL
1.	Define S <sub>N</sub> i mechanism.	CO1	K1
2.	What is an electrophile? Give one example.	CO1	K1
3.	What is the action of periodic acid (HIO <sub>4</sub> ) on vicinal diols?	CO1	K1
4.	What is Williamson ether synthesis?	CO1	K1
5.	Write the rate law for E2 reaction.	CO1	K1
Q.No.	SECTION - B Answer the questions: (5 x 2 = 10 Marks)	CO	KL
6.	Define leaving group with one example.	CO2	K2
7.	What is meant by ortho/para ratio?	CO2	K2
8.	Define Racemic mixture.	CO2	K2
9.	Identify the products formed in Kolbe's reaction.	CO2	K2
10.	Write the reagent used for sulphonation of benzene.	CO2	K2
Q.No.	SECTION - C Answer any FOUR questions: (4 x 8 = 32 Marks)	CO	KL
11.	Discuss Friedel–Crafts alkylation and acylation reactions in detail, including mechanism and limitations.	CO3	K3
12.	a) Explain the conformational analysis of n-butane. (4) b) Compare the acidity of 4-methylphenol and 4-hydroxy benzaldehyde. (4)	CO3	K3
13.	a) Analyse and identify the products formed when R-CH <sub>2</sub> -CH=CH <sub>2</sub> reacts with (i) HX (ii) H <sub>2</sub> SO <sub>4</sub> (iii) HOCl (3 x 2 =4) b) Assign E/Z for the following compounds: (2 x 1 = 2)  <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>(i)</p> </div> <div style="text-align: center;"> <p>(ii)</p> </div> </div>	CO3	K3
14.	Discuss S <sub>N</sub> <sup>1</sup> and S <sub>N</sub> <sup>2</sup> reaction with mechanism and discuss the nature of substrate, leaving group and solvent affecting the reaction.	CO3	K3

15.	<p>a) Distinguish between Markownikoff and anti-Markownikoff reaction mechanisms. (4)</p> <p>b) Interconvert the given Fischer projection into Sawhorse, Newman and Wedge projection (4)</p>		
		CO3	K3
<b>SECTION -D</b>			
<b>Q.No.</b>	<b>Answer any FOUR questions: (4 x 6 = 24 Marks)</b>	<b>CO</b>	<b>KL</b>
16.	<p>Apply Cahn-Ingold-Prelog rules and assign R/S configuration for the following molecules: (3 x 2 = 6 Marks)</p>		
		CO4	K4
17.	Draw the Newman projections of ethane in its staggered and eclipsed conformations and explain the differences between them.	CO4	K4
18.	Analyse hydroboration–oxidation of propene and propyne with mechanism and orientation of products.	CO4	K4
19.	Discuss the mechanism of the following reactions: (3 + 3 = 6) a) Epoxidation    b) Ozonolysis	CO4	K4
20.	Distinguish Hofmann's and Saytzeff's elimination with suitable examples.	CO4	K4
<b>SECTION -E</b>			
<b>Q.No.</b>	<b>Answer any TWO questions: (2 x 12 = 24 Marks)</b>	<b>CO</b>	<b>KL</b>
21.	Discuss with evidence the aromatic nucleophilic substitution reaction with benzyne intermediate formation	CO5	K5
22.	Evaluate the conformational analysis of cyclohexane using a potential energy diagram, and identify its most stable conformers	CO5	K5
23.	<p>a) Analyze the following conversions with a suitable mechanism. (4+3 = 7)            (i) Phenol to Salicylaldehyde    (ii) Phenol to p-hydroxyazobenzene</p> <p>b) Discuss the erythro and threo representations with suitable example. (3)</p>	CO5	K5