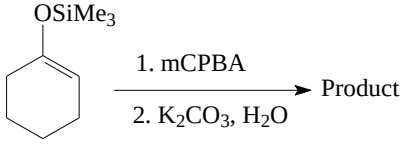
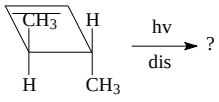
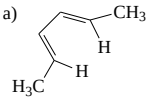
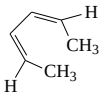
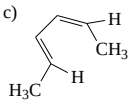
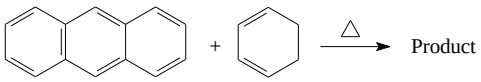
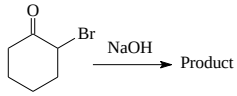
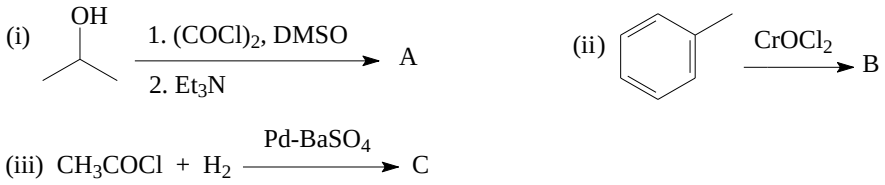
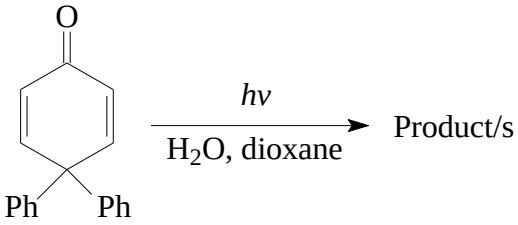
STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted from the academic year 2023-24 & thereafter)

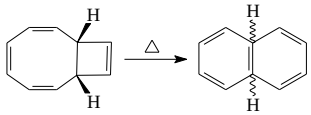
M. Sc. DEGREE EXAMINATION, APRIL 2026
BRANCH IV- CHEMISTRY
SECOND SEMESTER

COURSE : CORE
PAPER : ORGANIC CHEMISTRY – II
SUBJECT CODE : 23CH/PC/OC24
TIME : 3 HOURS **MAX. MARKS: 100**

Q. No.	SECTION A **Choose the correct answer. (10 x 1 = 10 marks)**	CO	KL
1.	Predict the product for the reaction of 3-methylbut-1-ene with HBr. a) 2-methyl-2-bromobutane b) 2-bromo-3-methylbutane c) 1-bromobutane d) 1-bromopentane	1	1
2.	Intermediate in Wittig reaction is_____ a) ylide b) carbene c) nitrene d) free radical	1	1
3.	Grignard addition of 2 mole of MeMgBr with 1 mole of ethylacetate and further work up forms_____. a) t-butyl alcohol b) isopropyl alcohol c) ethanol d) acetone	1	1
4.	The addition of a nucleophile with α,β-unsaturated carbonyl compound follows_____sequence. a) Michael reaction b) Simon-Smith reaction c) Woodward reaction d) Prevost reaction	1	1
5.	Which among the following named reaction will yield an enantioselective product? a) Birch reduction b) Bouveault-Blanc reduction c) Rosenmund reduction d) Corey-Bakshi-Shibata reduction	1	1
6.	Predict the product for the following.  a) 2-hydroxycyclohexanone b) 3-hydroxycyclohexanone c) 4-hydroxycyclohexanone d) cyclohexanone	1	1
7.	The electronic transition observed for the saturated aldehydes and ketones in the UV-vis spectroscopy around 270 -300 nm is due to_____. a) σ → σ* b) n → π * c) π → π* d) both b & c	1	1
8.	The reaction between cyclopentadiene and ethene forms _____. a) cyclohexene b) 1,3-cyclohexadiene c) cyclobutene d) norbornene	1	1

9.	Oxy-Cope reaction is an example of _____ reaction. a) Sigmatropic b) electrocyclic c) cycloaddition d) both (a) & (b)	1	1
10.	The stable product formed in the following reaction is _____.  a)  b)  c)  d) both (b) & (c)	1	1
Q. No.	**SECTION B** **Answer ALL the questions. (10 x 1 = 10 marks)**	**CO**	**KL**
	Fill in the blanks.		
11.	In Hofmann rearrangement the intermediate is _____.	2	2
12.	A base-catalyzed C-C bond-forming reaction between nitroalkanes and aldehydes or ketones is known as _____ reaction.	2	2
13.	Mention the role of $BaSO_4$ in Rosenmund reduction.	2	2
14.	Predict the product in the following reaction.  	2	2
15.	What is photo quenching?	2	2
	Answer in a line or two.		
16.	Arrange the following in their increasing order of acidity. $(C_6H_5)_3CH$, $(C_6H_5)_2CH_2$, $C_6H_5CH_3$, CH_4	2	2
17.	Give the product for the reaction of CH_3COCl with 2 moles of CH_2N_2 and further workup with Ag_2O and H_2O.	2	2
18.	Mention is the use of co-solvent in oxidation reactions?	2	2
19.	Define phosphorescence.	2	2
20.	Illustrate cheletropic reaction.	2	2
Q. No.	**SECTION C** **Answer any FOUR questions. (4 x 6 = 24 marks)**	**CO**	**KL**
21.	Explain Hoffman rearrangement reaction with suitable example.	3	3
22.	Write the mechanism of Sommelet-Hauser rearrangements.	3	3
23.	Explain the use of the following reagents with suitable examples. (i) PCC (ii) $NaBH_4$-$CeCl_3(H_2O)_7$	3	3
24.	Discuss the Paterno Buchi reaction with suitable example.	3	3
25.	Draw correlation diagram for the electrocyclization of 1,3-butadiene by con rotation. Predict whether the reaction is thermally or photochemically allowed. (5)	3	3

Q. No.	SECTION D **Answer any FOUR questions. (4 x 8 = 32 marks)**	CO	KL
26.	Predict the product and justify your answer with suitable mechanism.  	4	4
27.	Explain the following with suitable example. (i) Dieckmann condensation (ii) Stork enamine reactions	4	4
28.	Predict the products (A & B) identify the name of the reaction. (4 + 4)  	4	4
29.	Discuss the following with suitable example. (i) di-pi methane rearrangement (ii) McLafferty rearrangement	4	4
30.	Explain the following with suitable examples. (i) Cope rearrangement (ii) Claisen rearrangement	4	4
Q. No.	**SECTION E** **Answer the following questions. (2 x 12 = 24 marks)**	**CO**	**KL**
31.	(a) Explain acyloin condensation reaction with suitable example. (6) (b) Discuss the mechanism of Mukaiyama-Aldol condensation rection with suitable example. (6) **(OR)**	5	5
32.	(a) Predict the products (A, B, & C) and identify the name of the reaction. (3x2)  (b) Explain Baylis-Hillman reaction with suitable example. (6)		
33.	a) Predict the product and discuss the photochemistry of the following reaction. (8)  b) What is Norrish type-I reaction? Give an example. (4) **(OR)**	3	3

34.	(a) Explain the mechanism of the following reaction and predict the stereochemistry of the mentioned H atoms in the product. (6)  (b) Draw the correlation diagram for the cycloaddition of 1,3-butadiene and ethylene. Predict whether the reaction is feasible thermally or photochemically. (6)	3	3

****