STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI – 86 (For candidates admitted during the academic year 2019-20& thereafter) SUBJECT CODE: 19CH/PC/OC24

M.Sc. DEGREE EXAMINATION, APRIL 2021 BRANCH IV- CHEMISTRY SECOND SEMESTER

COURSE: CORE

PAPER: ORGANIC CHEMISTRY-II MAXIMUM MARKS: 50

TIME: 90 MINUTES

SECTION A

ANSWER ALL THE QUESTIONS

(11 x1 = 11 marks)

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1.	しけいいろせ ほ	15	COLLECT	allswel

1	[1, 5] sigmatropic	allowed			
1.	a) Antarafacial, thermally	_	uno wea.		
	c) suprafacial, photochemically				
2.	. The Vilsmeier-Haack reaction is an example of substitutio				
	a) Aromatic electrophilic	b) Aromatic nucleophilic			
	c) Aliphatic electrophilic	d) Aliphatic nucleophilic			
3.	Beta cleavage occurs when the	bond is weak.			
	a) Cα-Cβb) Cβ-Cγ	c) Cγ-Cδ	d) Cα-Cδ		
4.	Toluene can be oxidized to benzaldehyde using				
	a) Jones reagent b) Collins rea	gent			
	c) Etard reagent d) Corey-Sug	gs reagent			
5.	The formation of an intermediate carbene from a diazoketone is called the				
	a) Wolff rearrangement	b) Skattebol rearran	b) Skattebol rearrangement		
	c) Wagner-Meerwein rearrangement	t d) Wittig rearranger	d) Wittig rearrangement		

II. Fill in the blanks.

7.

8.

III. Answer in a line or two

- 9. Why is zinc amalgam used in the Clemmensen reduction?
- 10. Name the reducing agent and catalyst used in the McMurry coupling.
- 11. What is the intermediate formed in Peterson olefination?

SECTION B

ANSWER ANY THREE QUESTIONS

 $(3 \times 8 = 24 \text{ marks})$

- 12. Explain the formylation of N,N-dimethylaniline using dimethyl formamide and phosphorus oxychloride with mechanism. Name the reaction.
- 13. Draw the correlation diagram of the suprafacial [2 + 2] cycloaddition of ethylene to form cyclobutane. Predict whether the reaction is allowed thermally or photochemically.
- 14. Predict the products of the following reactions.

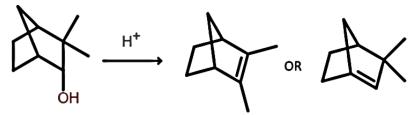
15. Discuss the stereochemistry and mechanism of the Cope rearrangement.

SECTION C

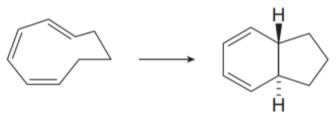
ANSWER ANY ONE QUESTION

(1 x15 = 15 marks)

16. a). Predict which of the two products given is formed. Justify your answer with mechanism. (8 marks)



- b) Discuss the fate of excited molecules using the Jablonski diagram. (7 marks)
- 17. a) Discuss whether steric factors or product stability factors control the sodium borohydride reduction of t-butyl cyclohexanone. Predict the major product. (5 marks)
 - b) Predict whether the following reaction takes place by a disrotatory or conrotatory process under thermal or photochemical conditions. (5 marks)



c) Consider the following reaction and write the possible product formed if the two reactants were to undergo (i) [2 + 2] cycloaddition (ii) [4 + 2] cycloaddition and (iii) [6 + 2] cycloaddition. (5 marks)
