

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

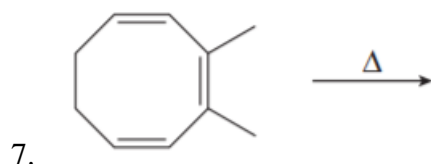
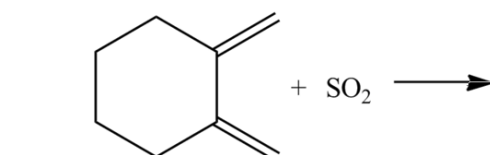
ANSWER ALL THE QUESTIONS

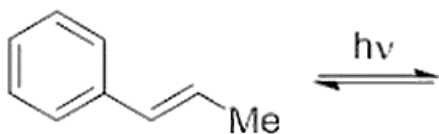
(11 x1 = 11 marks)

I. Choose the correct answer.

- _____ [1, 5] sigmatropic rearrangement is _____ allowed.
a) Antarafacial, thermally b) suprafacial, thermally
c) suprafacial, photochemically d) None of the above
- The Vilsmeier-Haack reaction is an example of _____ substitution.
a) Aromatic electrophilic b) Aromatic nucleophilic
c) Aliphatic electrophilic d) Aliphatic nucleophilic
- Beta cleavage occurs when the _____ bond is weak.
a) C α -C β b) C β -C γ c) C γ -C δ d) C α -C δ
- Toluene can be oxidized to benzaldehyde using _____.
a) Jones reagent b) Collins reagent
c) Etard reagent d) Corey-Suggs reagent
- The formation of an intermediate carbene from a diazoketone is called the _____.
a) Wolff rearrangement b) Skattebol rearrangement
c) Wagner-Meerwein rearrangement d) Wittig rearrangement

II. Fill in the blanks.





8.

III. Answer in a line or two

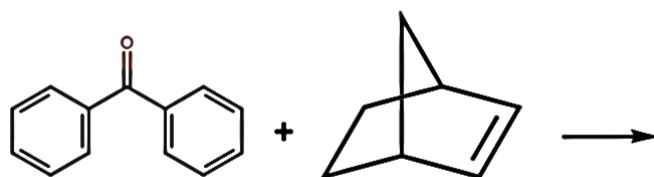
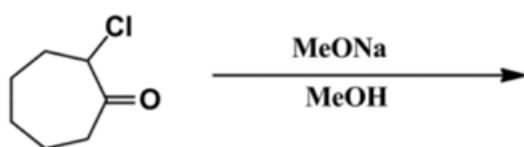
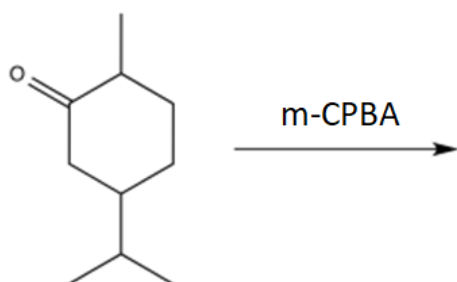
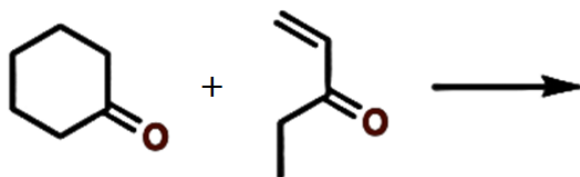
9. Why is zinc amalgam used in the Clemmensen reduction?
10. Name the reducing agent and catalyst used in the McMurry coupling.
11. What is the intermediate formed in Peterson olefination?

SECTION B

ANSWER ANY THREE QUESTIONS

(3 x 8 = 24 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.



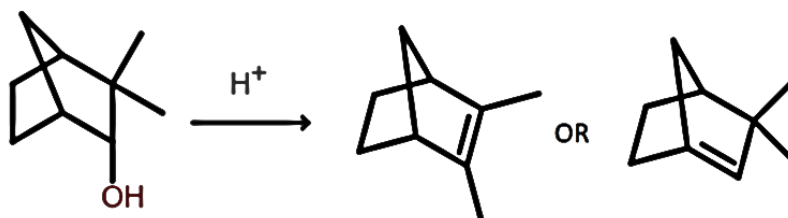
15. Discuss the stereochemistry and mechanism of the Cope rearrangement.

SECTION C

ANSWER ANY ONE QUESTION

(1 x15 = 15marks)

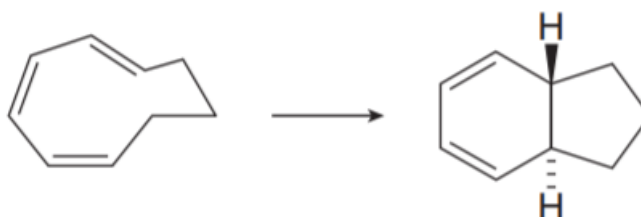
16. a). Predict which of the two products given is formed. Justify your answer with mechanism. (8 marks)



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)

