MASTER OF SCIENCE (CHEMISTRY) (CBCS - 2018 COURSE)
M.Sc. (Chemistry) Sem-III OC : WINTER- 2022
SUBJECT : ADVANCED STEREOCHEMISTRY

Day : Saturday | Time : 02:00 PM-05:00 PM

Date : 31-12-2022 | **W-20152-2022** | Max. Marks : 60

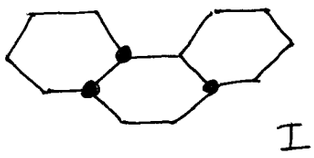
N.B.:

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Answer to both the section should be written in **SAME** answer book.
4) Draw neat labelled diagrams **WHEREVER** necessary.

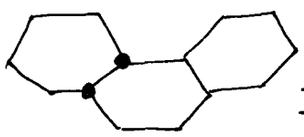
SECTION – I

Q.1 Answer **ANY THREE** of the following: **[15]**

a) Draw configurational structures of the compounds I & II. Give their nomenclature and discuss the stability and optical activity.



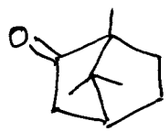
I



II

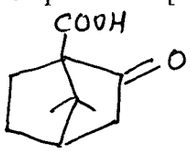
b) Draw the stereostructure of morphine and mention chiral centers.

c) The camphor derivative III has two asymmetric carbon atoms, yet there is only dl pair. Explain.



III

d) Decarboxylation in ketopinic acid [IV] is a severe problem.

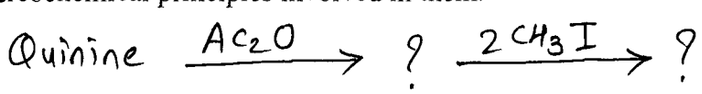


IV

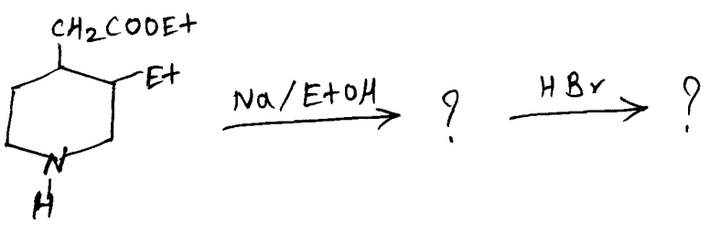
e) Cyclopentane rings are stable in puckered shape than planar form. Explain.

Q.2 Predict the product/s in **ANY THREE** of the following and discuss the stereochemical principles involved in them. **[15]**

a)

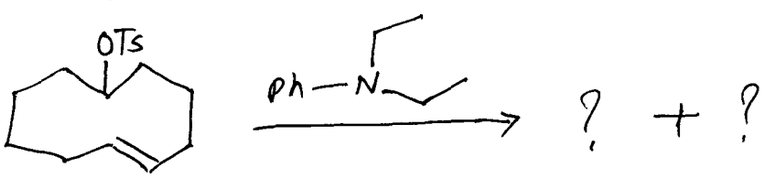


b)

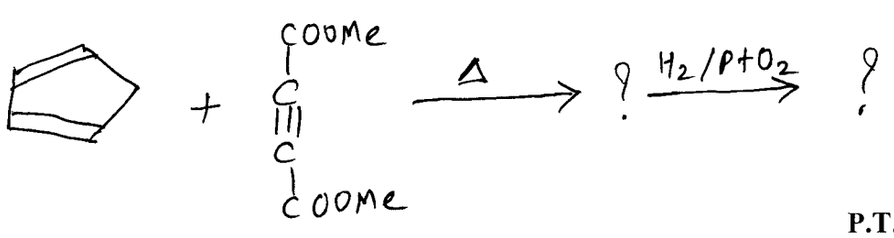


c)

d)



e)



P.T.O.

SECTION – II

Q.3 Solve **ANY THREE** of the following: **[15]**

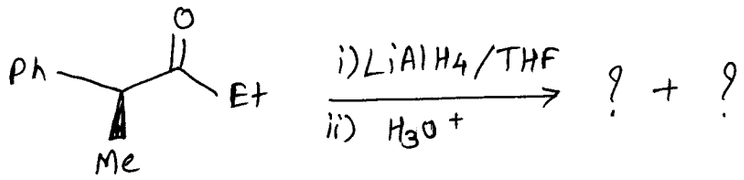
a) Explain the following with suitable examples.
i) Regioselective Reactions ii) Regiospecific Reactions.

b) Explain the concept of I– Strain.

c) Draw stereostructure of morphine and show all chiral centers in it.

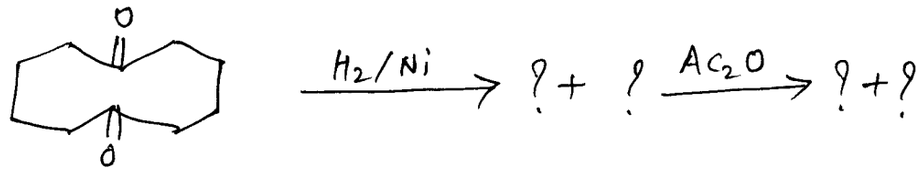
d) Draw preferred conformation of trans-cis-trans perhydrophenathrene.

e) Using Felkin's rule, rationalize the following reaction. Write major and minor products.



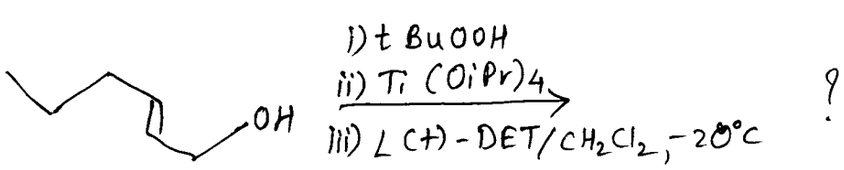
Q.4 Predict the product/s in **ANY THREE** of the following. Draw the stereostructure of products. Justify your answer. **[15]**

a)

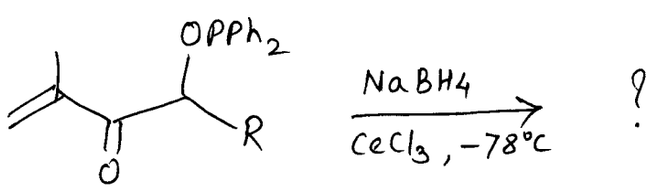


b) The medium size ring ketones have lower lower IR frequency at 1690cm^{-1}.

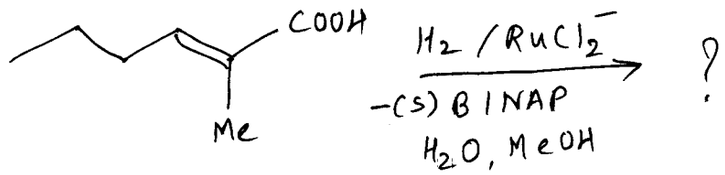
c)



d)



e)



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