

M. SC. (ORGANIC CHEMISTRY) SEM-III (CHOICE BASED
CREDIT & GRADE SYSTEM) : WINTER - 2017

SUBJECT : ADVANCED STEREOCHEMISTRY

Day : Wednesday

Time 03.00 PM TO 06.00 PM

Date : 08/11/2017

W-2017-0780

Max. Marks : 60

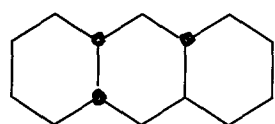
N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to the two sections should be written in **SEPARATE** answer books.

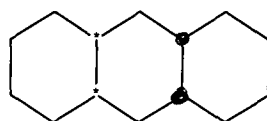
SECTION - I

Q.1 Attempt any **Three** of the following: (15)

- a) Draw conformational structures of the compounds (I) and (II). Give their nomenclature and discuss the stability, optical activity.

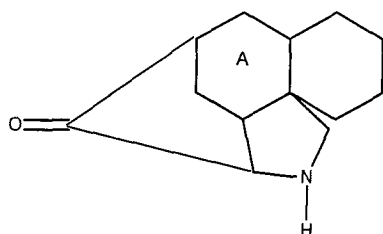


(I)



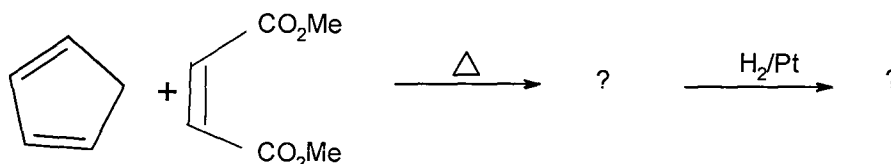
(II)

- b) Assuming ring A is a chair, deduce the stereochemistry of the compound shown below. Draw its stereostructure.



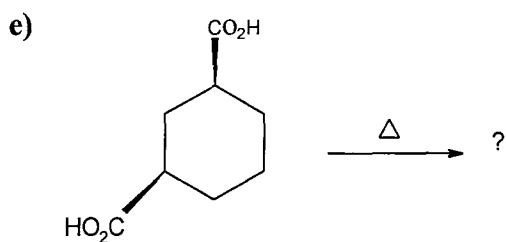
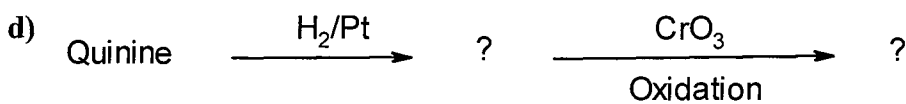
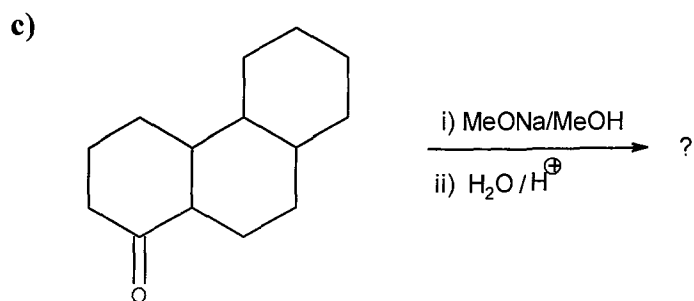
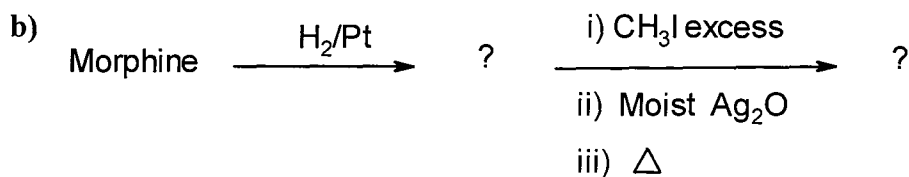
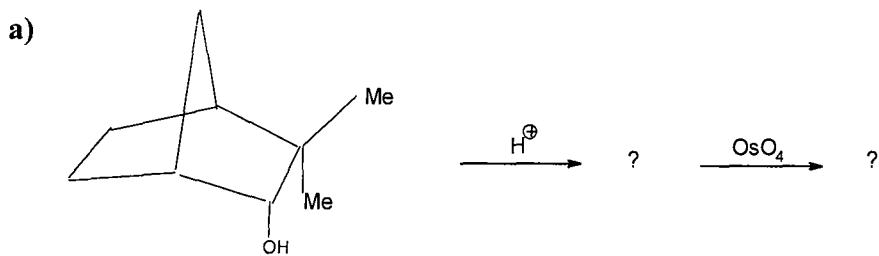
- c) Bicyclo [2, 2, 2] octane -2, 6-dione does not show the acidic properties. Explain?

- d) Write down the products in the following reaction. Justify your answer by drawing stereostructures of products.



- e) Draw conformational structures of trans-decalin and cis-decalin. Discuss the stability and optical activity.

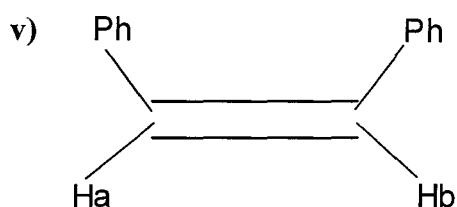
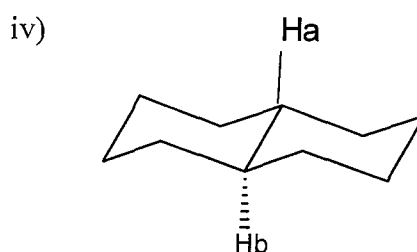
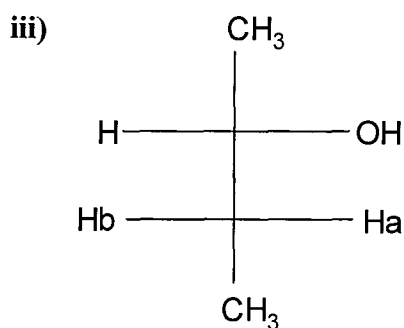
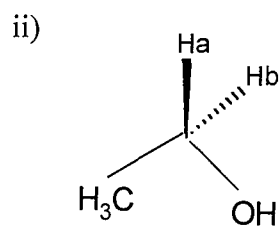
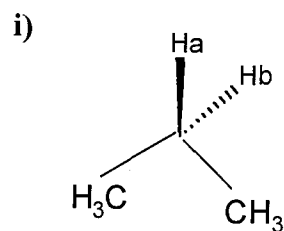
Q.2 Predict the product/s in any **THREE** of the following and discuss the **(15)** stereochemical principles involved in them.



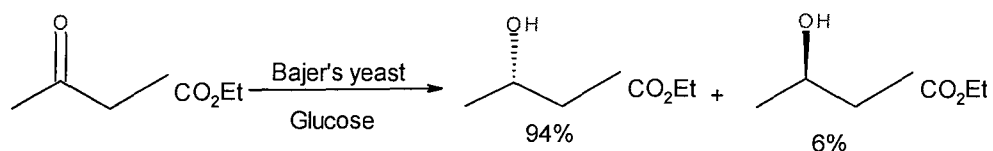
SECTION – II

Q.3 Attempt any **THREE** of the following: (15)

a) Indicate whether the hydrogens marked Ha and Hb in each of the following compounds are homotopic, enantiotopic or diastereotopic. Give replacement test in each case.



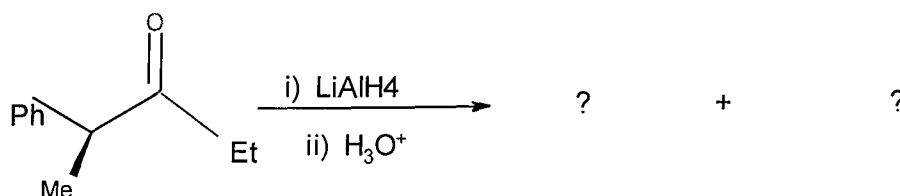
b) Calculate enantiomeric excess (ee) in the following reaction.



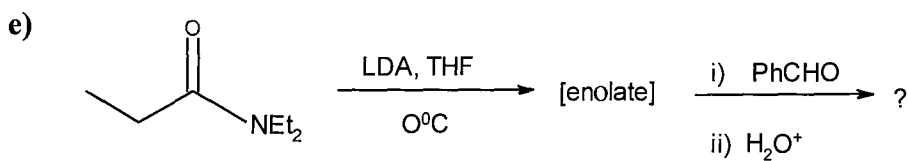
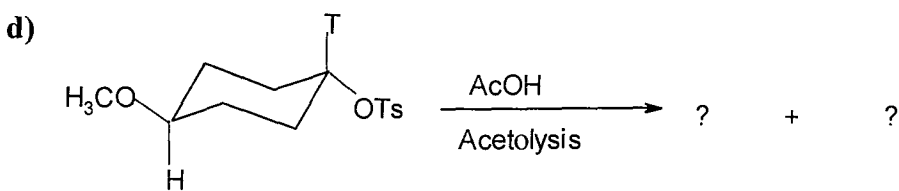
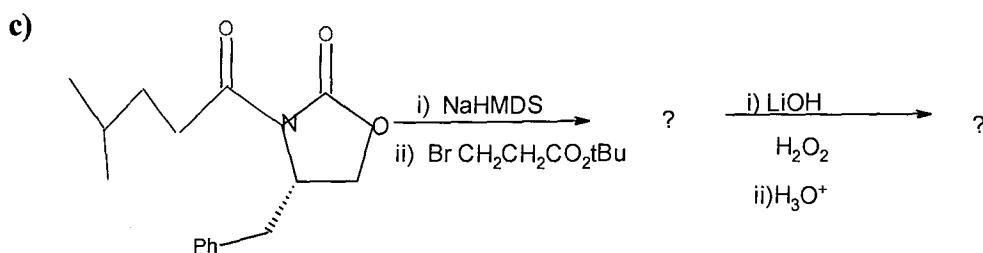
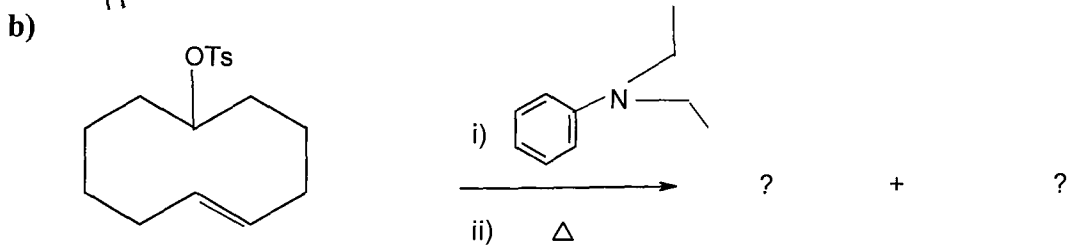
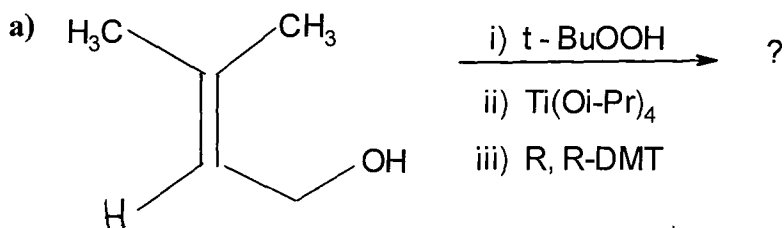
c) What are chiral auxiliary? Give characteristic properties of good chiral auxiliary.

d) Explain the concept “Transannular reactions” with suitable examples.

e) Using either Cram’s rule or Felkin’s rule, rationalize the following reaction. Write major and minor product



Q.4 Predict the product/s in any **THREE** of the following. Draw the stereostructure of products. Justify your answer. (15)



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