

**M. SC. (ORGANIC CHEMISTRY) SEM-III (CHOICE BASED  
CREDIT & GRADE SYSTEM) : SUMMER - 2018  
SUBJECT : ADVANCED STEREOCHEMISTRY**

Day : Wednesday  
Date : 25/04/2018

**S-2018-0880**

Time : 03.00 PM TO 06.00 PM  
Max. Marks : 60

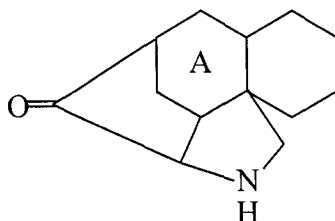
**N.B.**

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

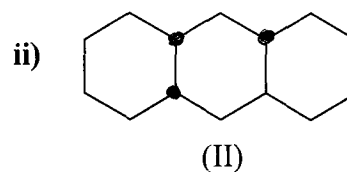
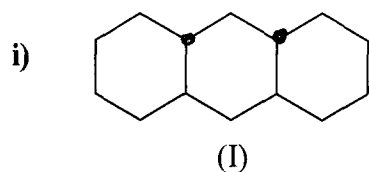
**SECTION - I**

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

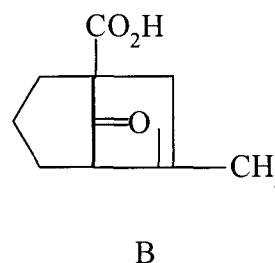
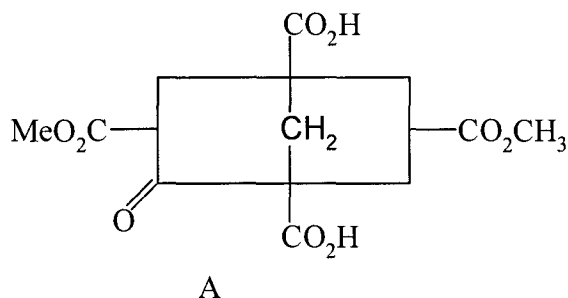
- a) Assuming ring A is a chair deduce the stereochemistry of the compound shown below. Draw its stereostructure.



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

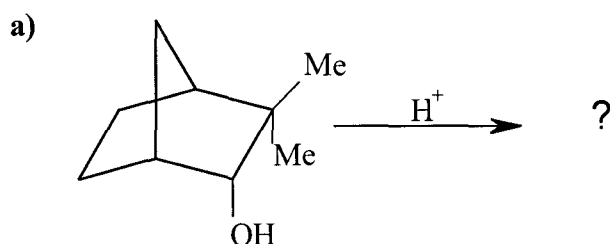


- c) Compound A can be decarboxylated by heating, on the other hand compound B cannot be decarboxylated by heating. Explain.

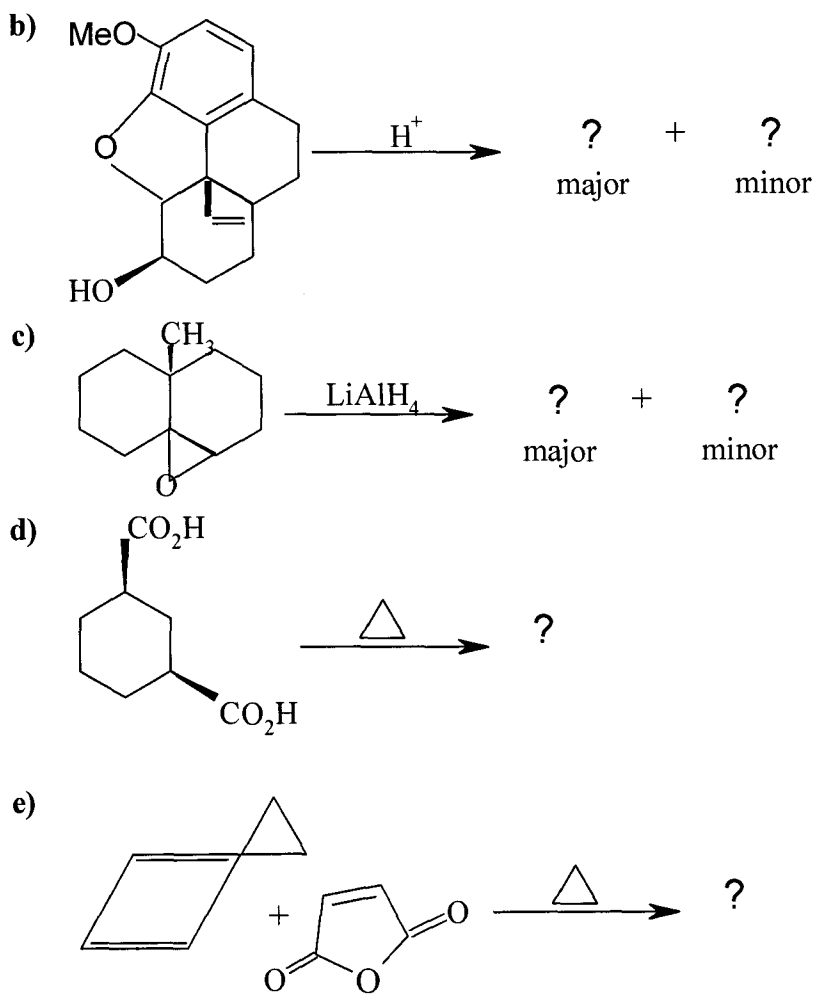


- d) Draw conformational structures of trans-decalin and cis-decalin. Discuss the stability and optical activity.
- e) How relative configurations in quinine at C<sub>8</sub> and C<sub>9</sub> is deduced by comparison with ephedrine.

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



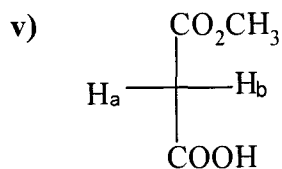
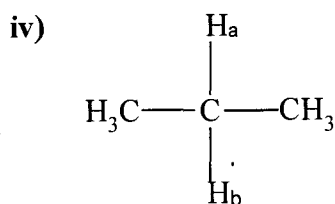
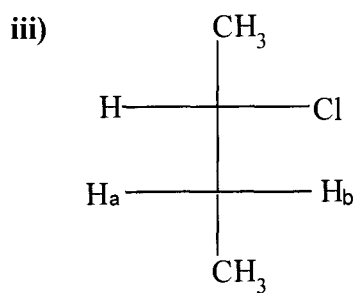
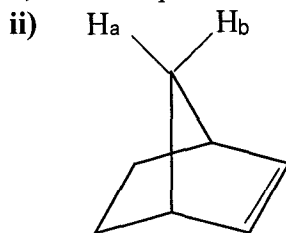
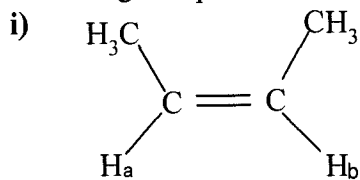
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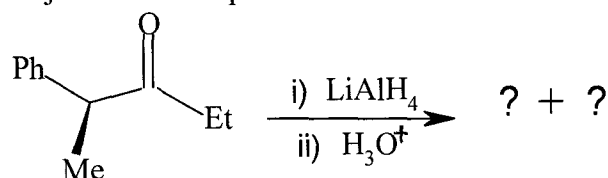
SECTION - II

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

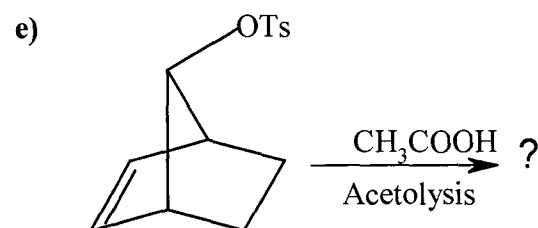
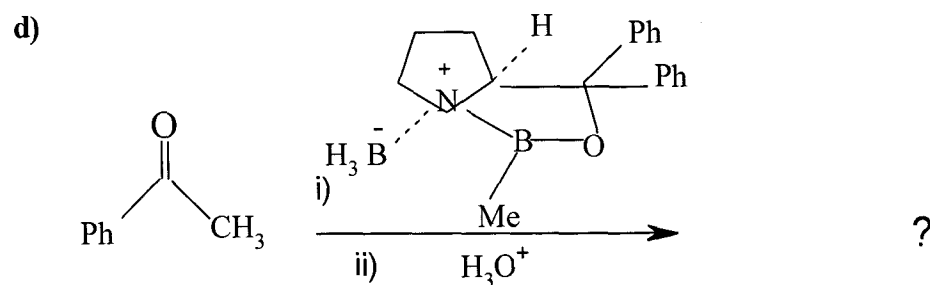
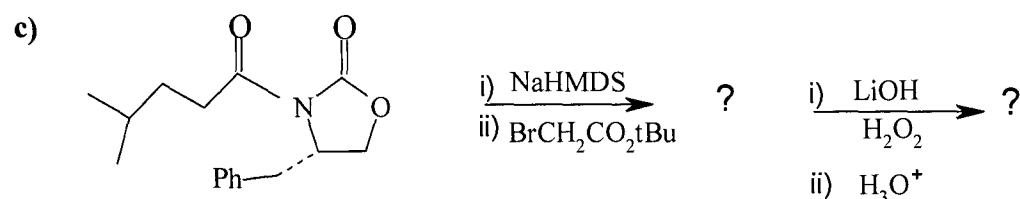
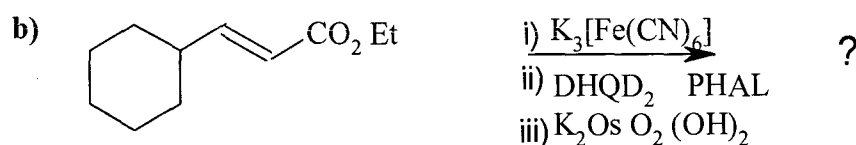
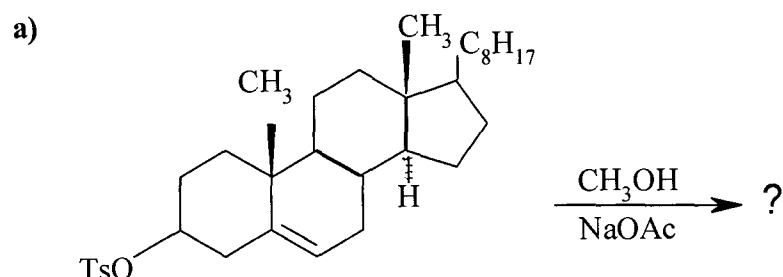
a) Indicate whether the hydrogens marked  $H_a$  and  $H_b$  in each of the following compounds are homotopic, enantiotopic or diastereotopic.



- b) An optically pure sample of (R)-(-)-2-butanol shows a specific rotation of  $13.6^\circ$ . What relative molar proportion of (S)-(+)-2-butanol and (R)-(-)-butanol would give a specific rotation of  $+6.8^\circ$ .
- c) What are chiral auxiliary? Give characteristic properties of good chiral auxiliary.
- d) Explain the concept of I-strain with suitable examples.
- e) By using Felkin-Anh model, 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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