

Total No. of Questions : 6]

SEAT No. :

P1966

[4923]-42

[Total No. of Pages : 5

M.Sc.

**ORGANIC CHEMISTRY**

**CH - 352 : Organic Stereochemistry  
(2008 Pattern) (Semester - III) (Old)**

Time : 3 Hours]

[Max. Marks : 80

Instructions to the candidates:

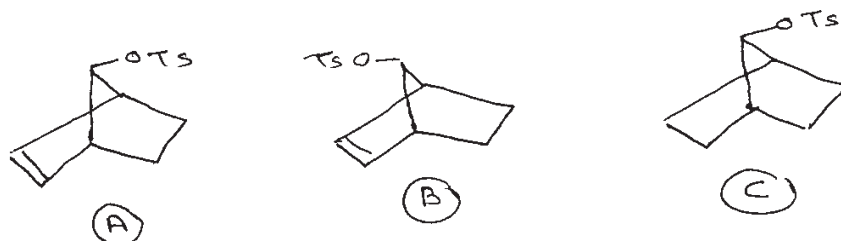
- 1) All questions are compulsory.
- 2) Figures to the right indicate Full marks.
- 3) Answers to the two sections should be written in separate answer book.

**SECTION - I**

Q1) Explain in detail (any Four):

[16]

- a) Difference in two ionisation constants for Cis - cyclohexane -1, 2-dicarboxylic acid is 2.42 pK units whereas for trans - cyclohexane 1, 2 - dicarboxylic acid it is 1.75. Explain.
- b) What is the difference between racemic mixture and racemic compounds? Give one example each.
- c) Why anti-7-nor bornenyl-p-toluene sulphonate (A) reacts faster than synisomer (B) which reacts faster than its saturated isomer (C)?



- d) Explain the stereochemistry at ring junction for compounds (I) and (II).

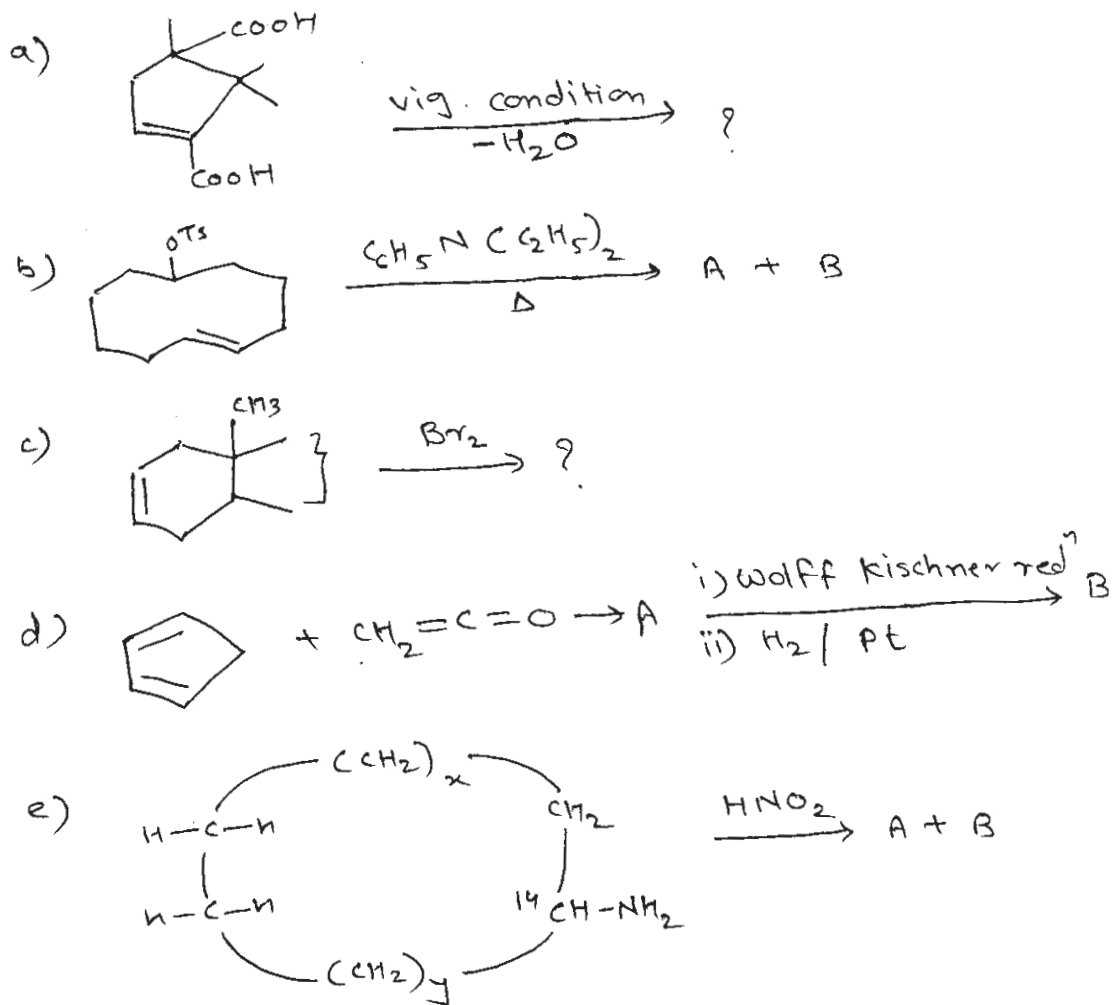


- e) One of the isomers of benzene hexachloride undergoes dehydrohalogenation more slowly, by several powers of 10, than the remaining isomers. Explain.

P.T.O.

Q2) Predict the product/s giving mechanism (Any Four):

[12]



Q3) Attempt the following [Any three]:

[12]

- Write short note on I-strain.
- Draw both the stable conformations of cis-anti-cis perhydrophenanthrene. Calculate their energy and comment on their optical activity.
- Write notes on:
  - 2-alkyl ketone effect
  - 3-alkyl ketone effect
- Give conditions for good resolving agent.

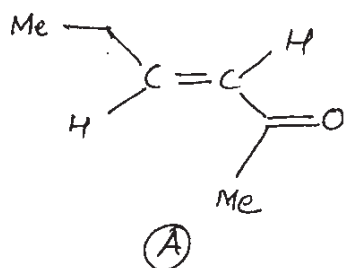
## SECTION - II

**Q4)** Answer any three of the following: **[12]**

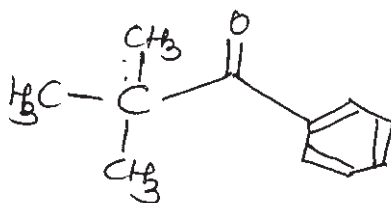
- a) On the basis of coupling constant explain the stereochemistry of lactone fusion into enhydrin.
- b) Give the evidence that Cinchonine and Cinchodine have different configuration at C<sub>8</sub>.
- c) How the configuration at C<sub>9</sub> in quinine is deduced?
- d) Prove that in codeine C<sub>6</sub> – OH and C<sub>13</sub> – C<sub>15</sub> bond are trans to each other.

**Q5)** Answer any three of the following: **[12]**

- a) With reasons state whether the faces of the carbonyl groups in the following compounds are homotopic, enantiotopic or diastereotopic.

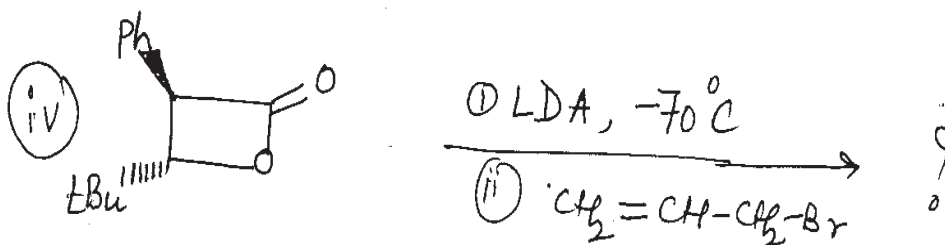
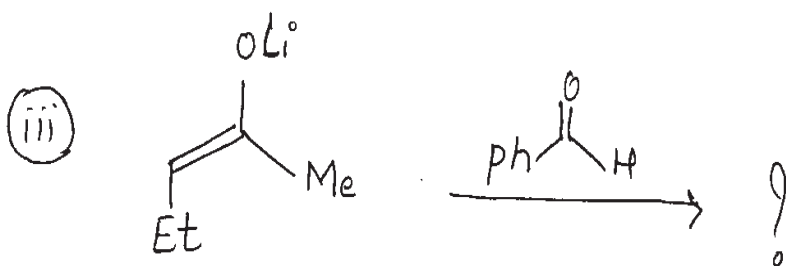
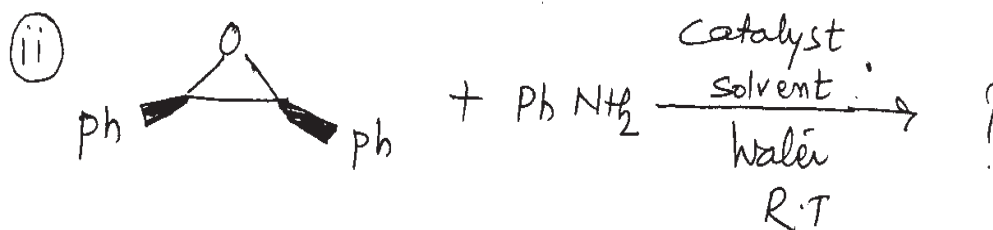
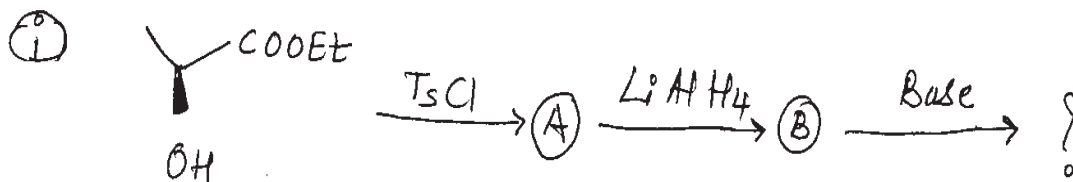


- b) Calculate the ee and the specific rotation of a mixture containing 6gm of (+)2 butanol and 4gm of (-) 2 butanol. The specific rotation of enantiomerically pure (+) 2 butanol is +13.5°.
- c) Write the products obtained by hydride addition from Re and Si faces on following compound.



- d) Explain the terms:
  - i) Chiral auxillary.
  - ii) Topicity

Q6) a) Predict the product/s. Explain the stereochemistry and mechanism in any four of the following reaction: [8]



b) Suggest the reagent/s and stereochemistry of the following reactions.  
(any two): [8]

