

Total No. of Questions :6]

SEAT No. :

P2623

[5023]-42

[Total No. of Pages :5

M.Sc. -II

ORGANIC CHEMISTRY

CH - 352: Organic Stereochemistry

(2008 Pattern) (Semester - III)

Time : 3 Hours]

[Max. Marks :80

Instructions to the candidates:

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

SECTION -I

Q1) Attempt any four of the following:

[16]

- a) Neomenthylchloride undergoes base catalysed elimination about 200 times faster than menthyl chloride. Explain.
- b) Draw the conformations of trans-anti-trans and cis-anti-trans perhydroanthracene. Calculate their energies and state which is more stable?
- c) Describe the concept of I-strain with suitable examples.
- d) "One of the isomers of hexachlorocyclohexane reacts very slowly with a base". Explain.
- e) Cis - 4 - hydroxycyclohexane carboxylic acid can undergo lactonization while trans isomer doesnot. Explain.

P.T.O.

- b) Give the reaction of diazomethane with Enhydrin. How this reaction help to deduce the lactone ring fusion with Enhydrin.
- c) Find the relative configuration at C_5 and C_6 in dihydrocodeine.
- d) How relative configuration in quinine at C_8 and C_9 is deduced by comparison with ephidrine.

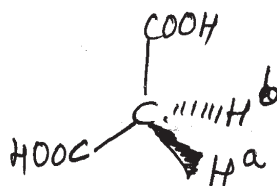
Q5) Answer the following questions (Any Four):

[12]

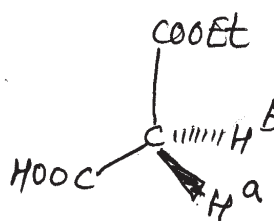
- a) In the structure A, B, C state with reasons, whether the hydrogens marked H^a and H^b are homotopic, enantiotopic or diastereotopic.



(A)

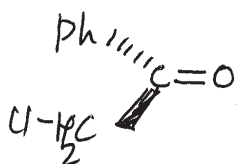


(B)

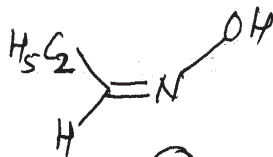


(C)

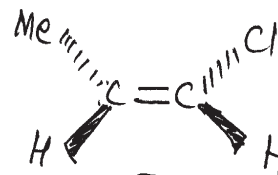
- b) Assign Re/Si configuration to the top face, as drawn of each sp^2 hybridized carbon and nitrogen in compound D, E, F.



(D)

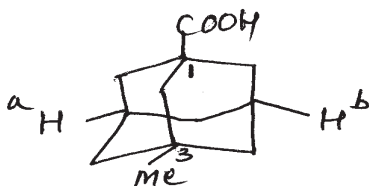


(E)

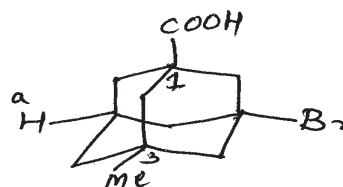


(F)

- c) Would you expect the proton H^a and H^b in following compounds to be enantiotopic. Comment on chirality.

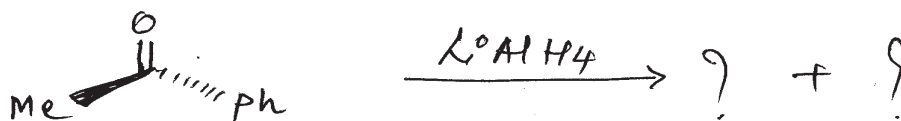


(I)



(II)

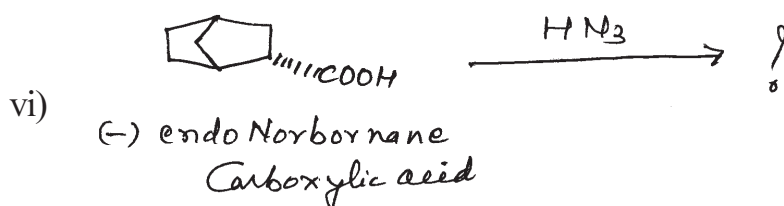
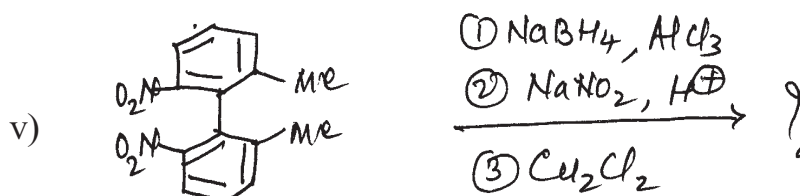
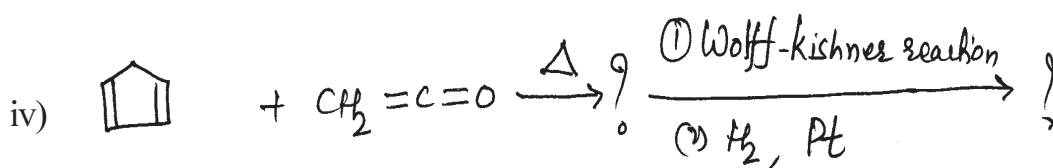
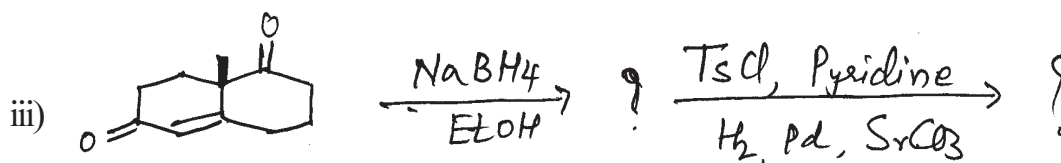
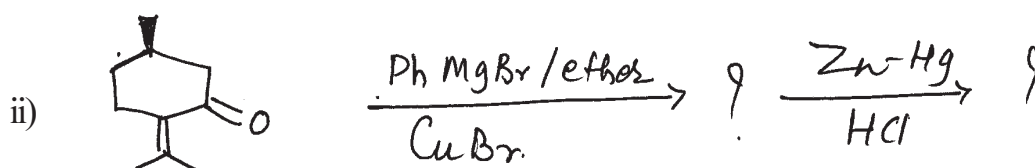
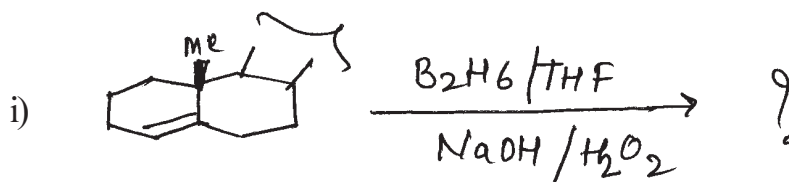
- d) Write the products by reaction with LiAlH_4 from Re and Si faces on following compound comment on optical activity of the products.



- e) Oxidation of maleic acid with OsO_4 gives mesotartaric acid. Where as similar oxidation of fumaric acid gives (\pm) tartaric acid. Explain.

$\text{HOOC}-(\text{CH}=\text{CH})-\text{COOH}$ cis or trans isomer.

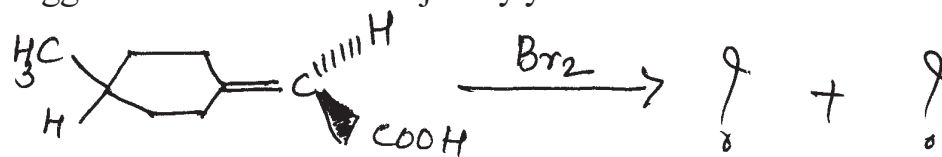
- Q6) a) Predict the product/s in the following reactions. Explain the stereochemical principle and mechanism in details (any five): [10]



b) Solve any two of the following:

[6]

- i) Calculate the ee and specific rotation of a mixture containing 6 gm of (+) 2-butanol and 4 gm of (-) 2-butanol. The specific rotation of enantiomerically pure (+) 2-butanol is +13.5°.
- ii) Explain, how Felkin Ahn model differs from Cram model.
- iii) Active compound 4-methyl cyclohexylideneacetic acid (A) on Bromine addition reaction gives a mixture of two active dibromide suggest the mechanism and justify your answer.



Active compound.

(A)

EEE