

This question paper contains 4+2 printed pages]

AI—113—2017

FACULTY OF SCIENCE

M.Sc. (First Year) (Second Semester) EXAMINATION

OCTOBER/NOVEMBER, 2017

(CBCS Pattern)

CHEMISTRY

(Paper CH-422)

(Organic Chemistry-II)

(Tuesday, 14-11-2017)

Time : 10.00 a.m. to 1.00 p.m.

Time— Three Hours

Maximum Marks—75

- N.B. :—*
- (i) Attempt *All* questions.
 - (ii) Figures to the right indicate full marks.
 - (iii) Use of logarithmic table and calculator is allowed.
 - (iv) Multiple Choice Questions (MCQ) should be attempted only once on page No. **3** of answer-book with complete answer.

1. Attempt any *three* of the following : 15

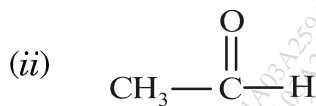
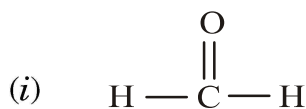
- (a) Explain the term suprafacial and antarafacial overlapping. $(4 + 2)\pi$ system is thermally allowed process.
- (b) Discuss the stereochemistry of Allene and Biphenyl.
- (c) Explain the stereo selective and stereospecific reaction with Mechanism.
- (d) Explain the following :
 - (i) E' CB-Mechanism.
 - (ii) Mannich reaction.
- (e) What are sigmatropic shift ? Explain the Claisen rearrangement with mechanism.

P.T.O.

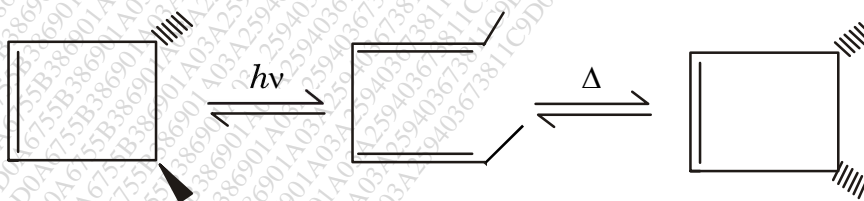
2. Attempt any *three* of the following :

15

- (a) Define the conformational analysis. Explain the conformational analysis of 1, 4 dimethyl cyclohexane.
- (b) Explain the action of Grignard Reagent on the following compounds with mechanism.



- (c) Interconversion of 1, 3, 5 Hexatriene \rightleftharpoons 1, 3 cyclohexadiene under thermal and photo chemical condition explain by FMO method.
- (d) What is hydroboration reaction ? Explain with suitable example.
- (e) Justify the following interconversion under thermal and photo chemical conditions by FMO and PMO method.



3. (A) Explain the 1, 3-dipolar cyclo-additions and chelotropic reaction with mechanism.

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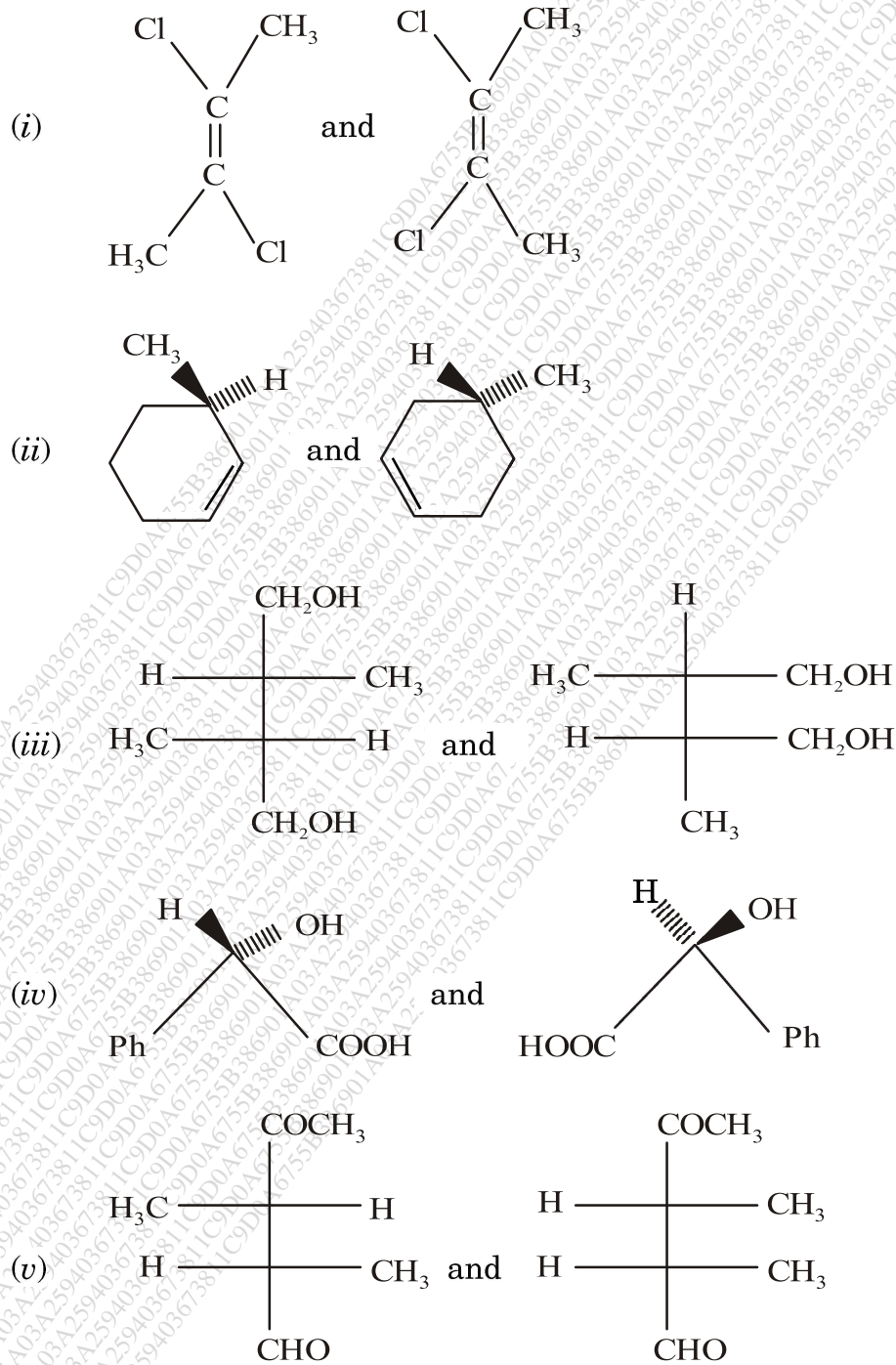
Or

Explain witting and stobbe reaction with suitable example.

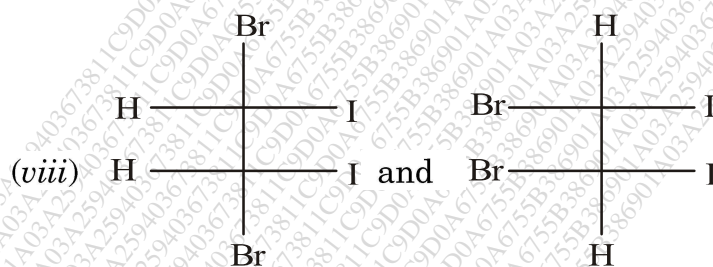
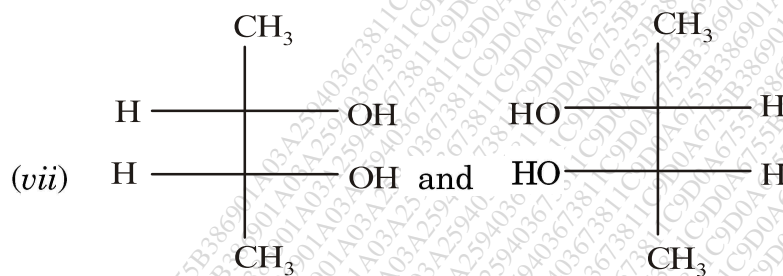
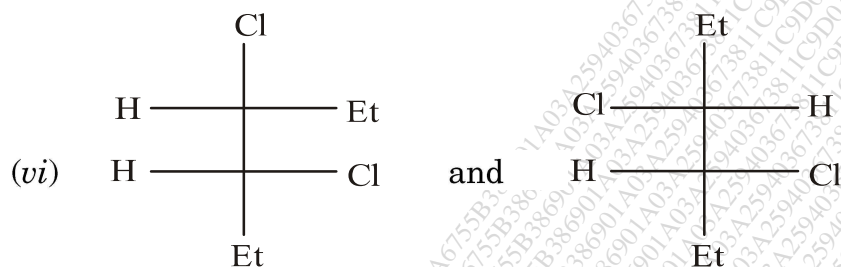
- (B) Indicate whether the relationship in each pair of compound below is identical enantiomer or distereomeric by assigning R, S and E, Z

nomenclature.

8



P.T.O.



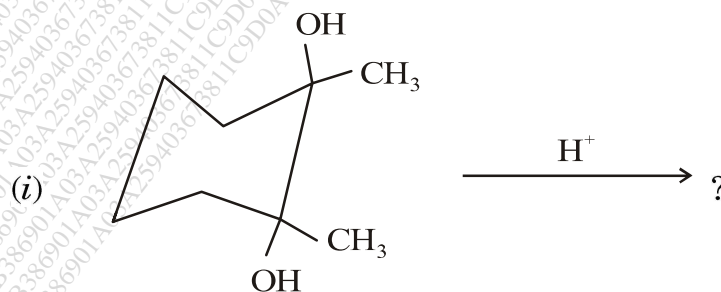
4. (A) Explain the order of stability of the following by Gauche interaction.
 $\text{cis ee} > \text{trans ea} = \text{trans ae} > \text{cis aa}$ Justify the statement giving proper explanations.

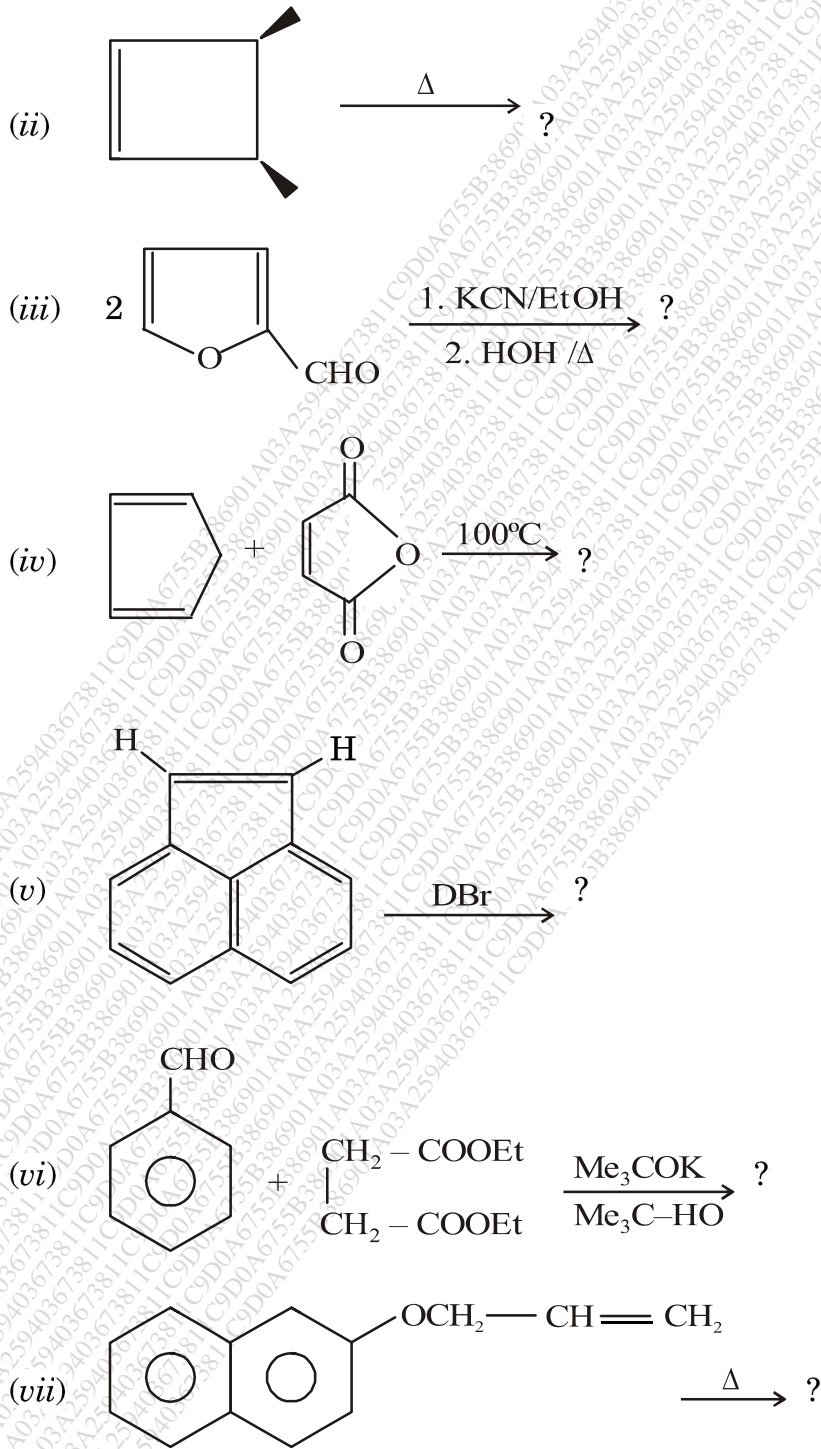
Or

What are organo lithium compounds ? Compare its reaction with carbonyl and unsaturated carbonyl compound with mechanism.

- (B) Predict the product(s) with appropriate mechanism of the following (any four) :

8





P.T.O.

5. (A) Select the *correct* answer from the given options for each of the following :

5

(i) Eschenmoser salt in Mannich reaction isin character.

- (a) Electrophilic (b) Nucleophilic
(c) Radical (d) None of these

(ii) Which one of the following alkene will give optically active products with Br_2/CCl_4 .

- (a) 1-Butene (b) Cis-2-Butene
(c) Trans-2-Butene (d) Propene

(iii) Cycloaddition reaction between two ethylene molecules is symmetrically allowed reaction under

- (a) Thermal condition
(b) Photo chemical condition
(c) in presence of polar solvent
(d) In presence of non-polar solvent.

(iv) The reaction of Grignard's reagent with ketone followed by hydrolysis gives :

- (a) Primary alcohol (b) Secondary alcohol
(c) Tertiary alcohol (d) All of these

(B) Write notes on any *two* of the following :

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- (i) E' CB mechanism
(ii) Pyrolytic elimination
(iii) Claisen rearrangement.