M.Sc. sem. III repeater...

April 2016

Paper II

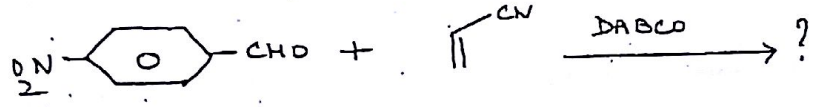
QP Code : 19496

(2½ Hours) [Total Marks :60

N.B. : (1) All questions are **compulsory.**
(2) **Figures** to the **right** indicate **full** marks.

1. (a) Attempt any **two** of the following:- 8

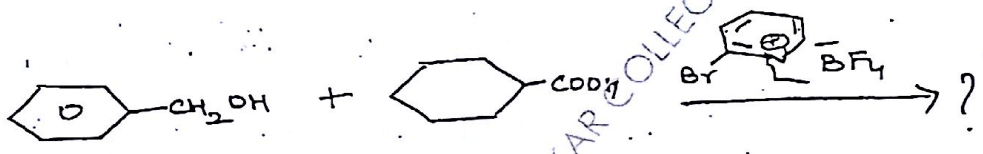
(i) Give the product, name and mechanism of the following reaction

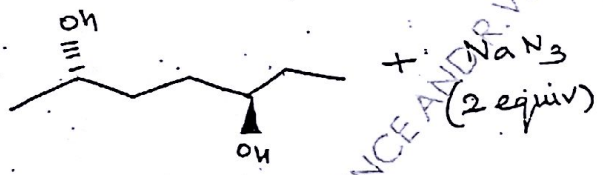


(ii) What are cascade reactions? Discuss with examples.

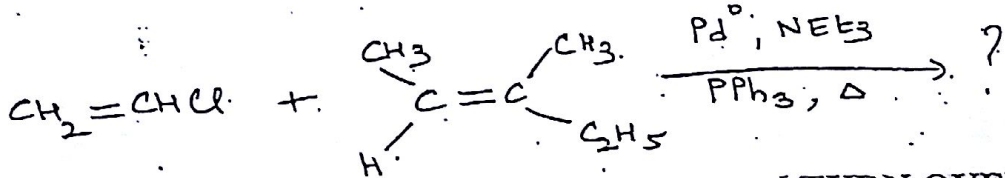
(iii) Discuss the mechanism and one application of Sonogoshira reaction.

(iv) Give the product of the following reactions with correct stereochemistry wherever applicable.

I)


II)


III)


IV)


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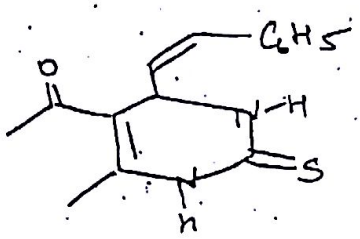
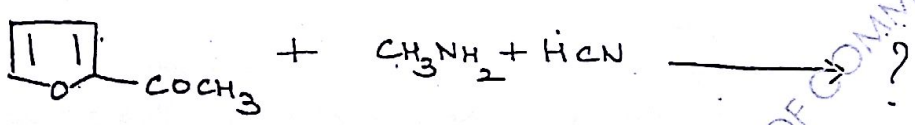
OR-Con. 994-16.

(b) Attempt any one of the following:- 4

(i) What are multicomponent reactions? How will you prepare the following by the Biginelli reaction.



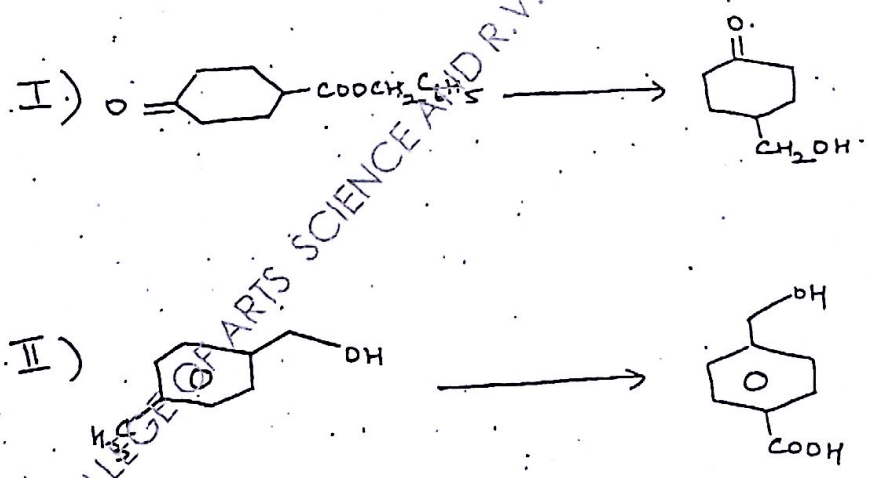
(ii) Give the product, name and mechanism of the following reaction.



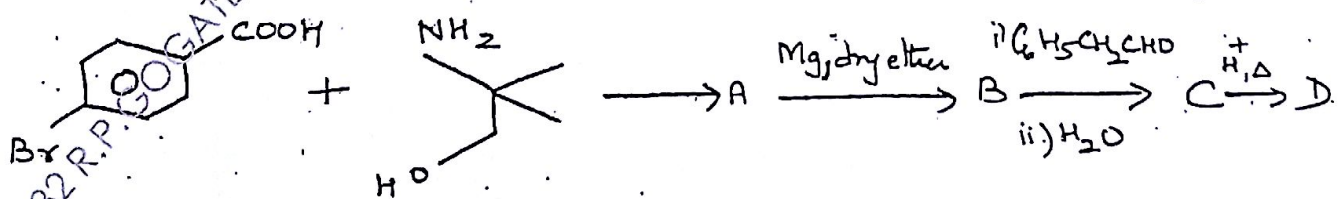
2. (a) Attempt any two of the following:- 8

(i) What is umpolung? Using the umpolung concept how will you convert HCHO to $C_2H_5COCOC_6H_5$

(ii) Complete the following transformation using the protection/deprotection protocol.



(iii) Identify A, B, C and D in the following synthetic transformation.



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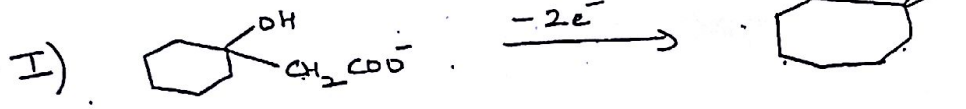
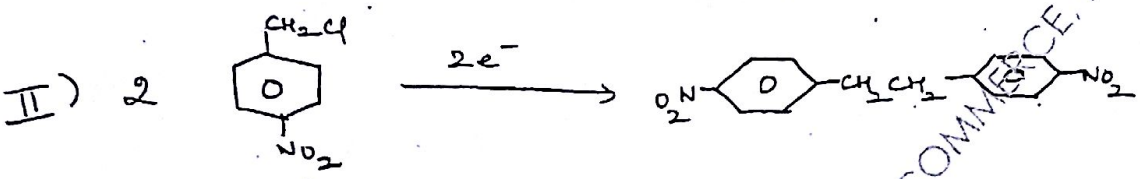
(iv) What are acyl anion equivalents? Discuss with examples their generation via nitro compounds.

(b) Attempt any one of the following:- 4

(i) Give the mechanism of the following reactions.

I) 

II) 

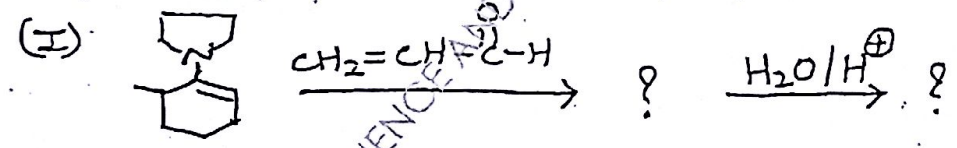
(ii) Give the product, name and mechanism of the following reaction

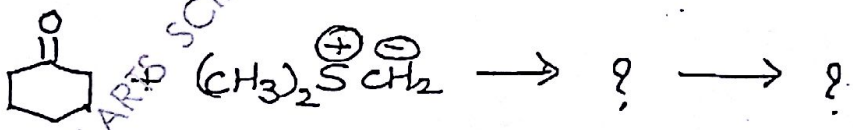
$$(CH_3)_2CHCH_2COO^- + C_6H_5COO^- \xrightarrow[-2e^-]{\text{electrolysis}} ?$$

3. (a) Attempt any two of the following:- 8

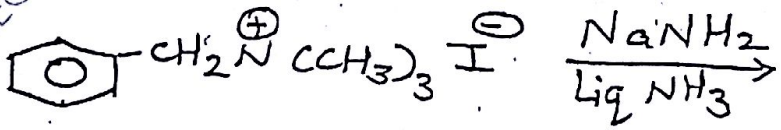
(i) Discuss briefly-Julia olefination

(ii) Complete the following reactoins

(I) 

(II) 

(iii) Predict the product, name the reaction and discuss the mechanism involved



(iv) Discuss Wittig reaction with mechanism and stereochemistry.

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(b) Attempt any one of the following:- 4

(i) Write a note on Stevens rearrangement.

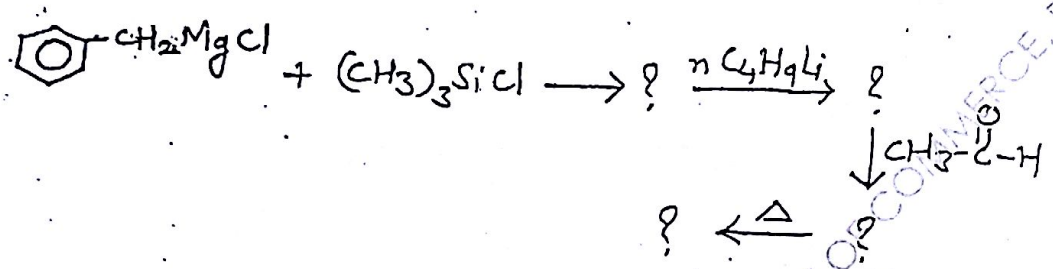
(ii) Give reactions for the following conversions via enamines.

(I) Cyclopentanone to α - methylcyclopentanone.

(II) Cyclohexanone to 2 - formyl cyclohexanone.

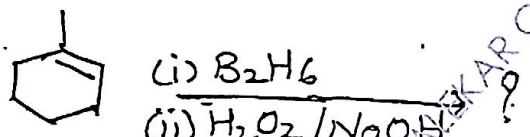
4. (a) Attempt any two of the following:- 8

(i) Complete the following sequence of reactions:-

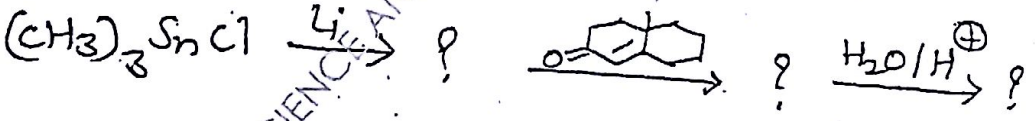


(ii) Give two methods of preparation and two reactions of alkenyl silanes.

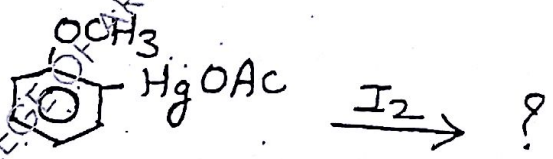
(iii) Complete the following reaction, explain its mechanism and sterochemistry



(iv) (I) Complete the following sequence of reactions:-

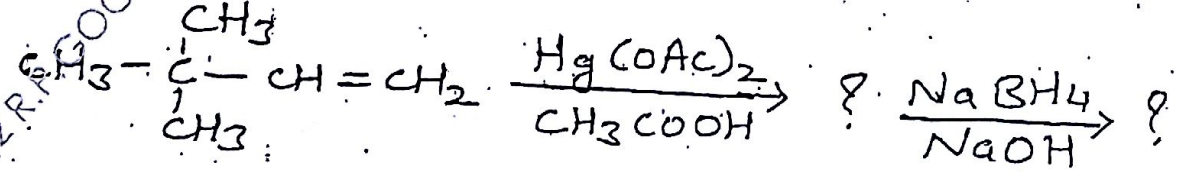


(II) Predict the product:-

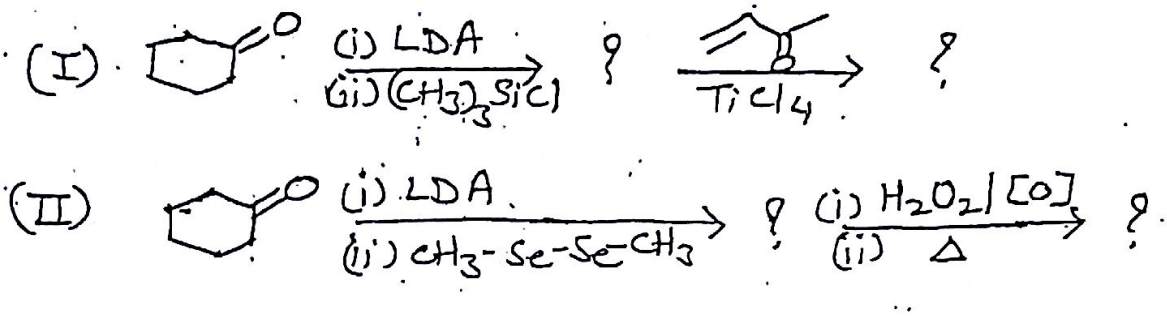


(b) Attempt any one of the following:- 4

(i) Complete the following reaction, explain its mechanism and stereochemistry:-



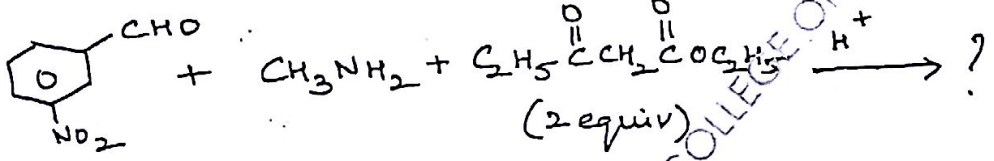
(ii) Complete the following reaction sequences-



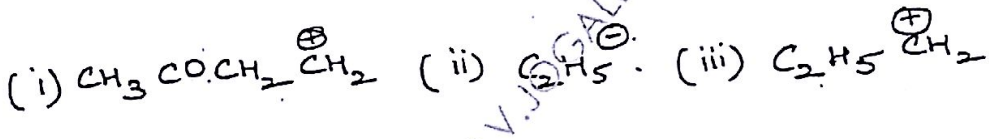
5. Attempt any **four** of the following:- 12

(a) Discuss the mechanism and one application of Passerini three component reaction.

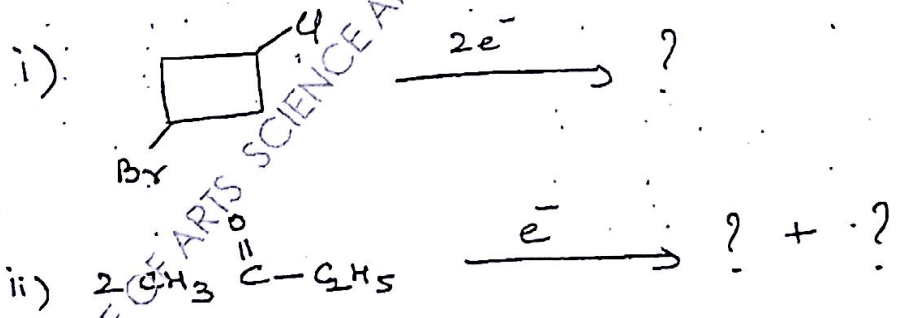
(b) Give the product and name of the following reaction.



(c) Give the synthetic equivalent for



(d) Complete the following reactions.



(e) Explain with mechanism, formation of enamine by condensation of secondary amine and aldehyde.

(f) Discuss with examples C - C bond formation using nitro compounds and phosphonates.

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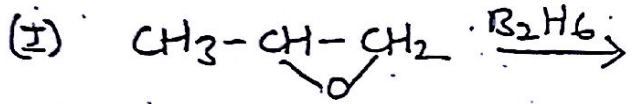
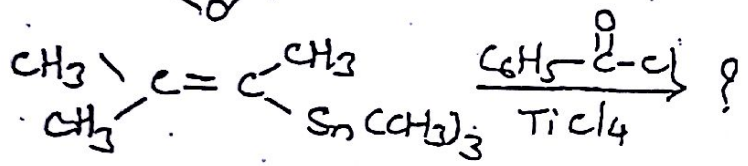
(g) Complete the following reactions:-

(I) 

(II) 

(III) $(CH_3)_3SnH + CH_3-C\equiv C-CH_3 \xrightarrow{LDA} ?$

(h) Complete the following sequence of reactions:-