

May - 2016

Sem IV

Paper II

QP Code : 20178

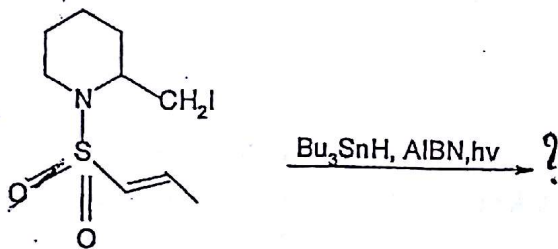
(2 ½ Hours)

[ Total Marks : 60

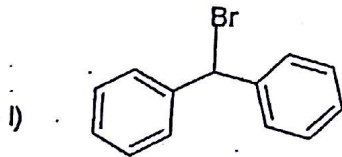
- N.B. : (1) All questions are compulsory.  
(2) Figures to the right indicate full marks.

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

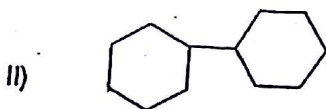
(i) Give the mechanism of the following reaction.



(ii) (a) How will you prepare

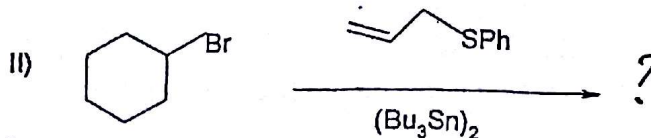
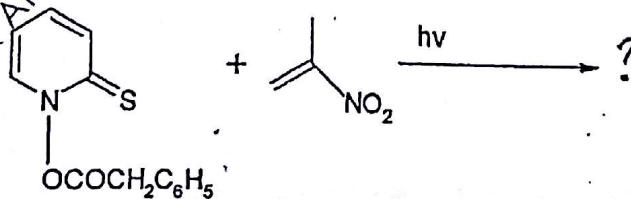


by the Hunsdiecker reaction



by the Kolbe reaction

(b) Give the product of the following reactions :-

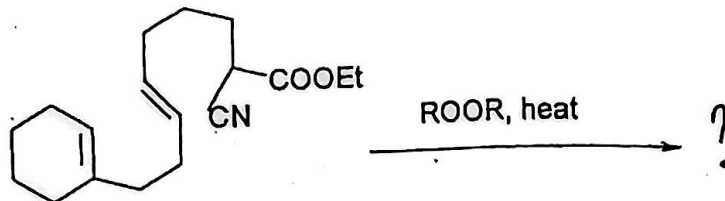


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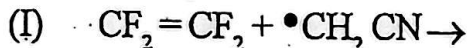
(iii) Give the product and mechanism of the following reactions.



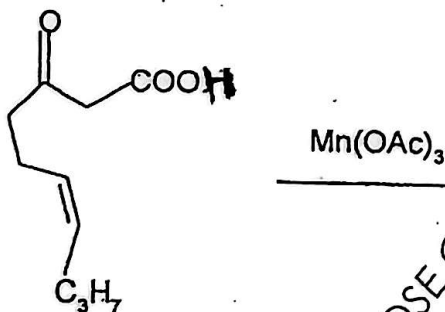
(iv) Discuss with examples radical mediated C-C bond formation in aromatic compounds.

1. (b) Attempt any one of the following

(i) Explain electrophilic and nucleophilic radicals with an example. Which of the following radical reactions will take place readily. Justify your answer.

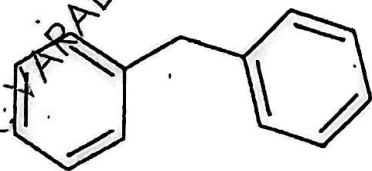


(ii) Give the product and mechanism of the following reaction -

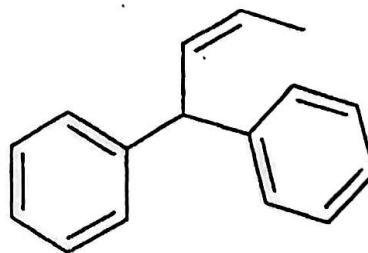


2. (a) Attempt any two of the following :-

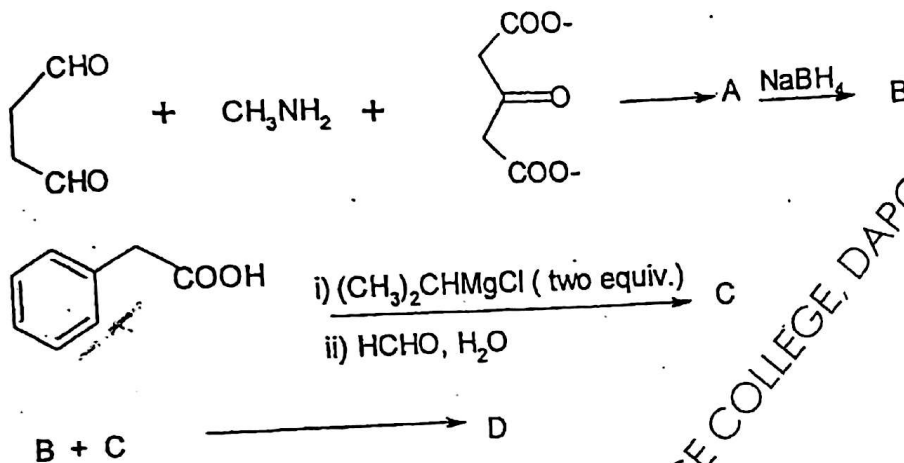
(i) Provide a retrosynthetic analysis for the following transformation and indicate the steps and reagents involved in the synthesis.



into



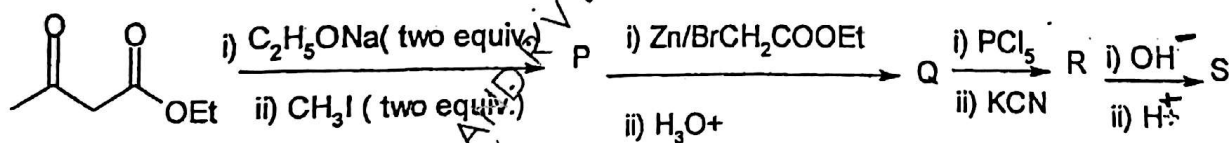
- (ii) Discuss two methods for the formation of six membered rings with suitable examples.
- (iii) (a) Explain the following  
 (I) Target molecule (II) Synthon  
 (b) Identify the synthetic equivalent for the following synthons.  
 (I)  $RCH(OH)CH_2^+$  (II)  $^-CH_2-COOEt$
- (iv) Complete the following synthesis by identifying A-D



2. (b) Attempt any one of the following :-

(i) Suggest a synthesis of p-aminobenzoic acid from toluene.

(ii) Complete the following synthesis by identifying intermediates P-S



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

(i) What are micelles? How are they formed? Write two applications of micelle catalysed organic reactions.

(ii) What are cyclodextrins? Discuss the structure and two applications of cyclodextrins.

(iii) Give an account of polymer supported reagents.

(iv) Discuss principles involved in ultrasound assisted organic reactions by illustrating with suitable examples.

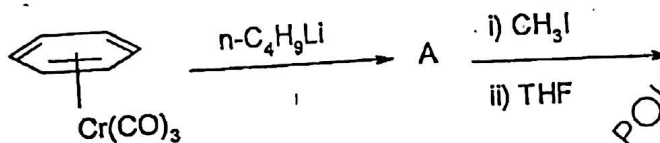
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3. (b) Attempt any one of the following :-

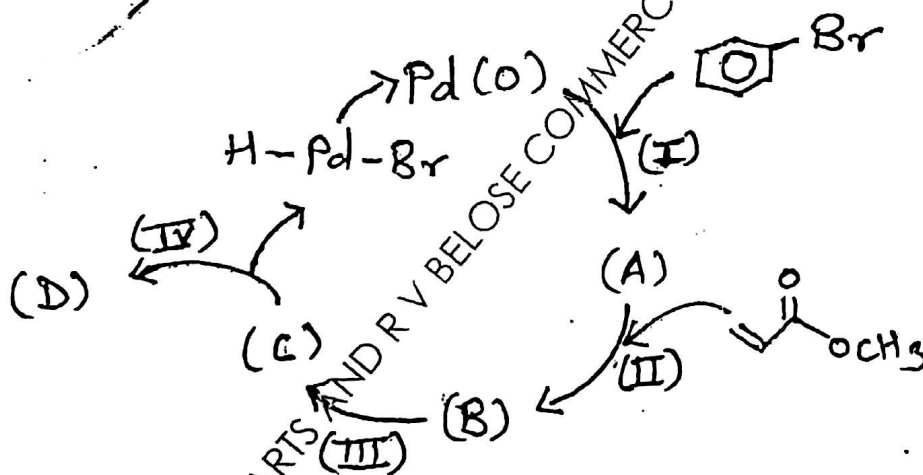
- (i) What are clays? Explain their role as catalysts in organic synthesis giving examples.
- (ii) Discuss advantages of microwave as energy source in organic reactions.

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

- (i) (I) Give conversion of 1, 3 cyclohexadiene to 5- methoxy - 1, 3 - cyclohexadiene via  $\eta^5$  Fe-dienyl cation complex.
- (II) Complete the following reaction :-



- (ii) Identify A, B, C & D in the following reaction path and state the reactions involved in steps I, II, III & IV.

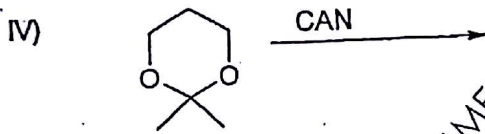
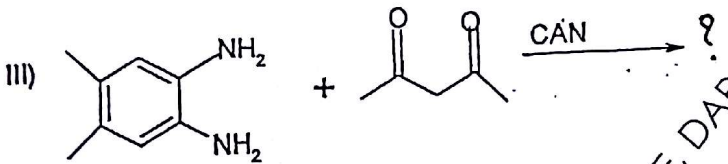
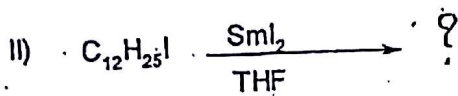
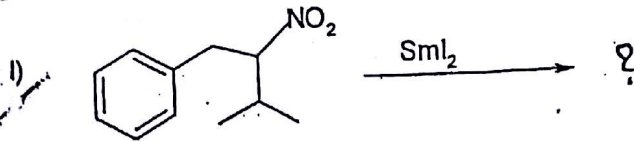


- (iii) Explain the following terms with suitable examples
- (I) Oxidative addition

J.M.S.P. MANDAL'S N.K. VARAKAR ARTS AND R.V. BELOSE COMMERCE COLLEGE, DAPOLI 01/05/2016 10:16:42 AM

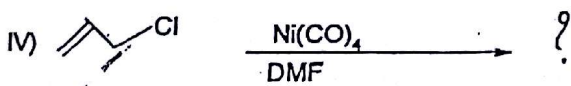
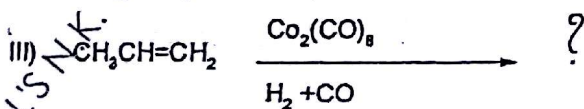
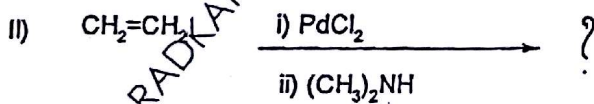
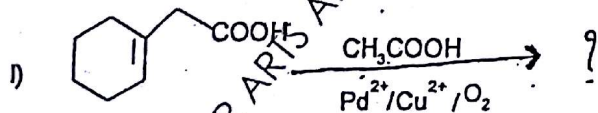
(II) migratory insertion

(iv) Complete the following reactions -



4. (b) Attempt any one of the following

(i) Complete the following reactions :-

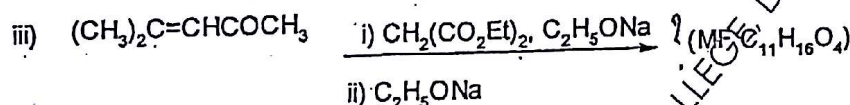
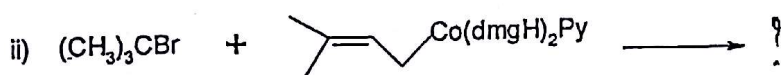
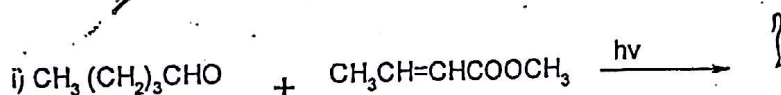


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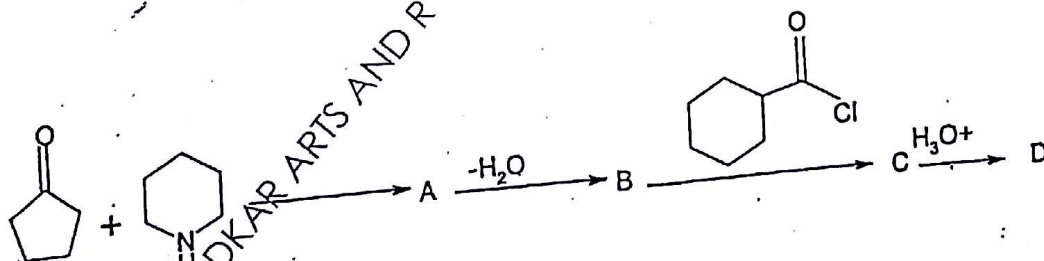
- (ii) Illustrate with examples use of  $\text{Sc}(\text{OTf})_3$  as a water tolerant Lewis acid in -
- (I) aldol condensation
  - (II) Michael reaction
  - (III) Diels Alder reaction
  - (IV) Friedel -Crafts reaction

5. Attempt any four of the following :-

(a) Give the product of the following reactions.



- (b) Explain linear and convergent synthesis.  
 (c) Give an example of  
 (i) auto oxidation  
 (ii) oxidative coupling  
 (iii) dehydro dimerisation  
 (d) Identify A-D in the following synthetic sequence.



- (e) What are crown ethers and cryptands? Give structure of [2.2.2] cryptand.  
 (f) What are organocatalysts? Give their two applications in organic synthesis.  
 (g) What is olefin metathesis? Explain it for 2-pentene.  
 (h) Calculate the value of n using 18 electron rule.  
 $\text{Rh}(\eta^5-\text{C}_5\text{H}_5)(\text{CO})_n$  (Rh: - atomic no = 45)