

MSc II - Sem. IV - Oct 2016

Organic Chemistry - Paper II

QP Code : 76605

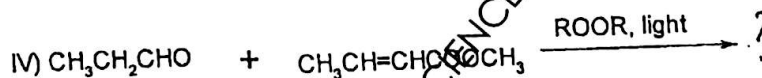
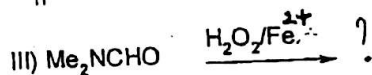
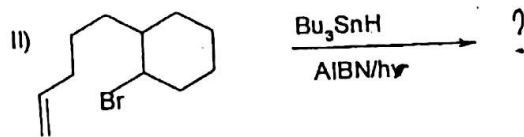
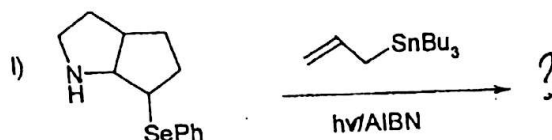
(2 ½ Hours)

[Total Marks : 60

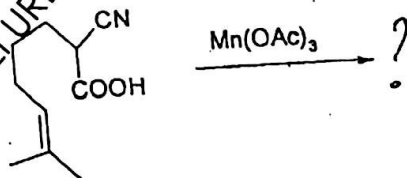
- N.B. : (1) All questions are compulsory.
(2) Figures to the right indicate full marks.

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

- (i) Discuss with examples the generation of radicals by C-Co bond cleavage.
(ii) Complete the following reactions :-



- (iii) Discuss with suitable examples the reaction of electrophilic and nucleophilic radicals on hetero aromatic compounds.
(iv) Give the product and mechanism of the following reaction



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

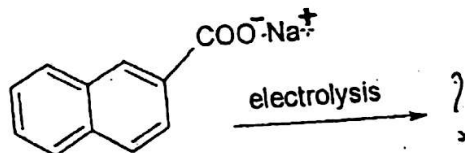
- (i) Discuss with suitable examples C-C bond formation using thio donor (Barton reaction).

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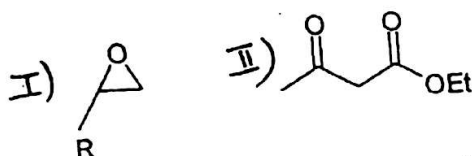
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(ii) Give the product, name and mechanism of the following reaction.

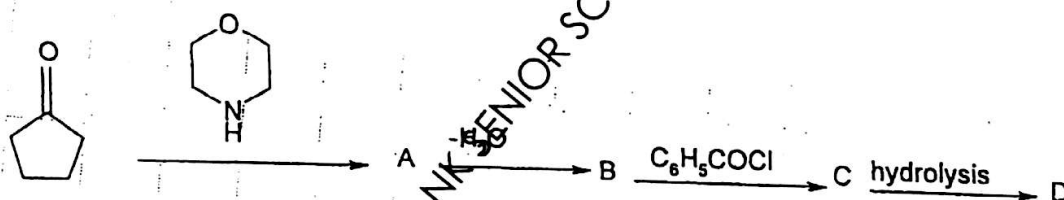


2. (a) Attempt any two of the following :-

- (i) Discuss two methods of formation of four membered rings with suitable examples.
- (ii) Provide a synthesis of (+) camphoric acid from ethylacetoacetate.
- (iii) Explain the terms synthon and synthetic equivalent. Identify the synthons corresponding to the following synthetic equivalents :-

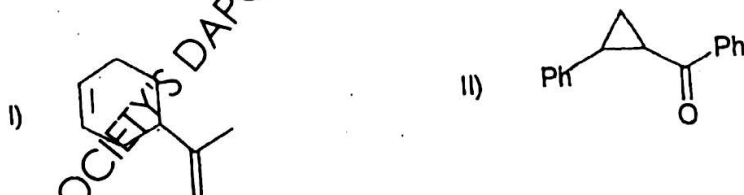


(iv) Complete the following reaction by identifying the intermediate products A-D.



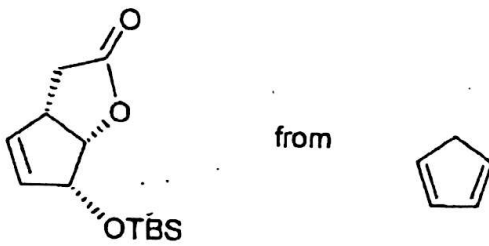
2. (b) Attempt any one of the following :-

- (i) Provide a retrosynthetic analysis for



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(ii) Suggest a synthesis for the following.



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

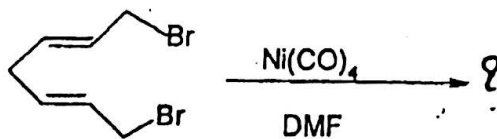
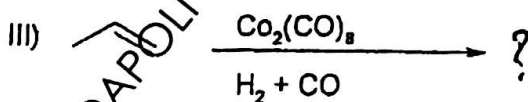
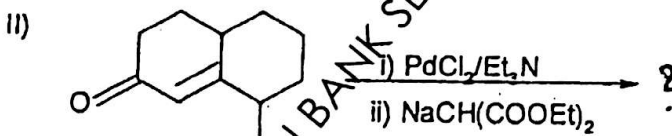
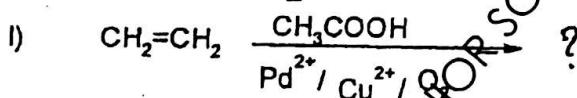
- (i) Discuss the use of crown ethers as phase transfer catalyst in organic synthesis. 8
- (ii) What are clays? Discuss clay catalysed organic reactions.
- (iii) Explain the advantages of polymer supported reagents with suitable examples.
- (iv) Discuss principle and application of microwaves in organic synthesis.

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

- (i) What are cyclodextrins? Explain role of cyclodextrin in selective chlorination of anisole. 4
- (ii) Give an account of ultrasound as an energy source in organic synthesis.

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

(i) Complete the following reactions -



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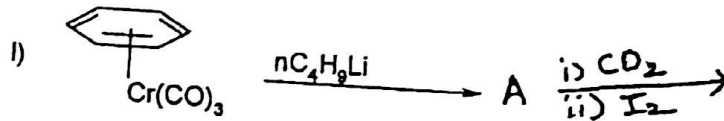
(ii) Explain the following terms -

- (I) migratory insertion
- (II) reductive elimination

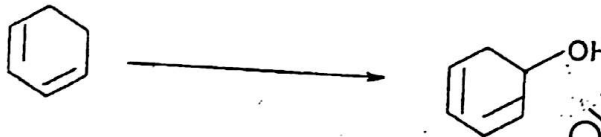
(iii) Give examples for use of $\text{Sc}(\text{OTf})_3$ as a water tolerant Lewis acid in

- (I) Michael reaction
- (II) Friedel Crafts reaction
- (III) Diels Alder reaction
- (IV) aldol reaction

(iv) Complete the following reactions -

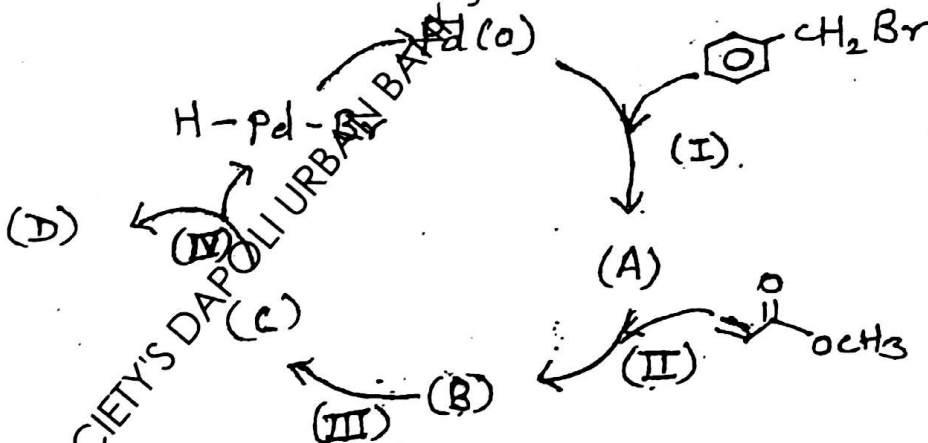


(II) Give the following conversion via η^5 Fe-dienyl cation complex



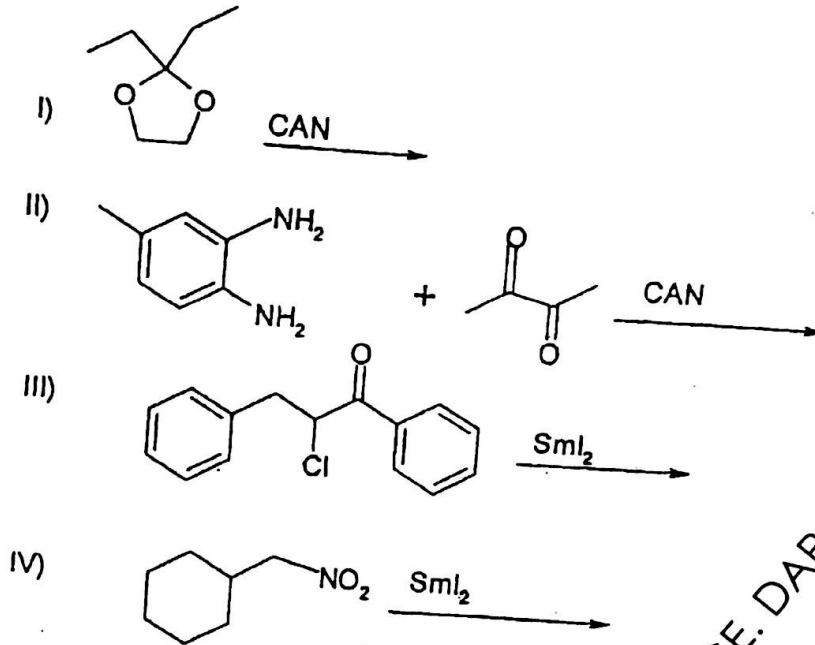
4. (b) Attempt any one of the following :-

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



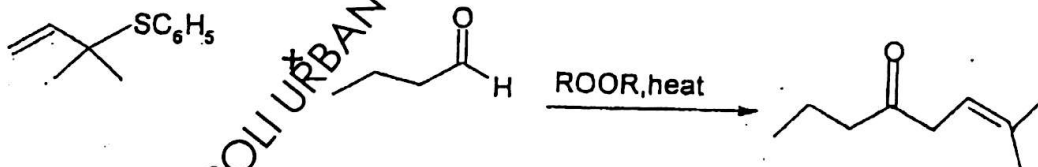
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(ii) Complete the following reactions :-



5. Attempt any four of the following :-

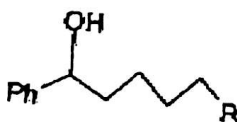
- Give an example of
 - Hunsdiecker reaction
 - reductive coupling
 - Autooxidation
- Provide a mechanism for the following reaction



(c) Identify the reagents to bring about the following transformations.



(d) Provide a retrosynthetic analysis for



- (e) What are organocatalysts? Give two applications of organocatalysts.
 (f) Discuss the mechanism of reaction when benzyl chloride is treated with NaCN in presence of quaternary ammonium salt.
 (g) Explain olefin metathesis of 2-methyl but -1- ene
 (h) What is 18 electron rule? Applying this rule determine the value of n in the following complex :-

