

[Time: - 2½ Hours]

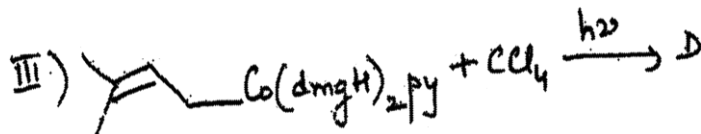
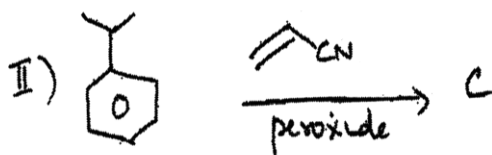
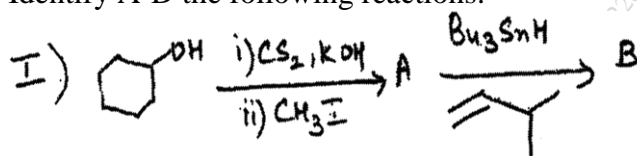
[ Marks: 60]

Please check whether you have got the right question paper.

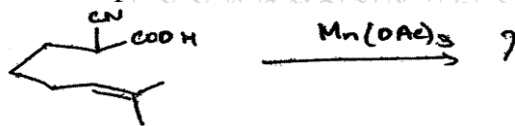
- N.B: 1. All questions are compulsory.  
2. Figures to the right indicate full marks.

1. a) Attempt ANY TWO of the following:  
i) Identify A-D the following reactions.

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



- iii) Discuss with example the generation of radicals by C-Sn bond cleavage?

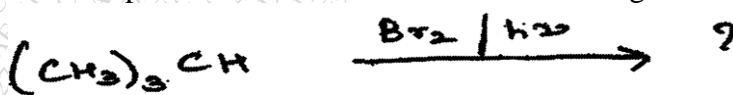
- iv) What are electrophilic and nucleophile radicals? Which of the following radical additions are possible? Justify your answer?



1. b) Attempt ANY ONE of the following

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- i) Give the product and mechanism of the following reaction.

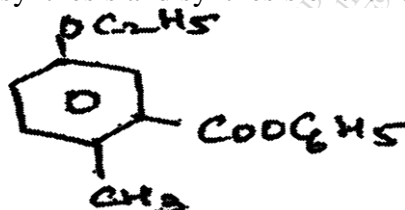


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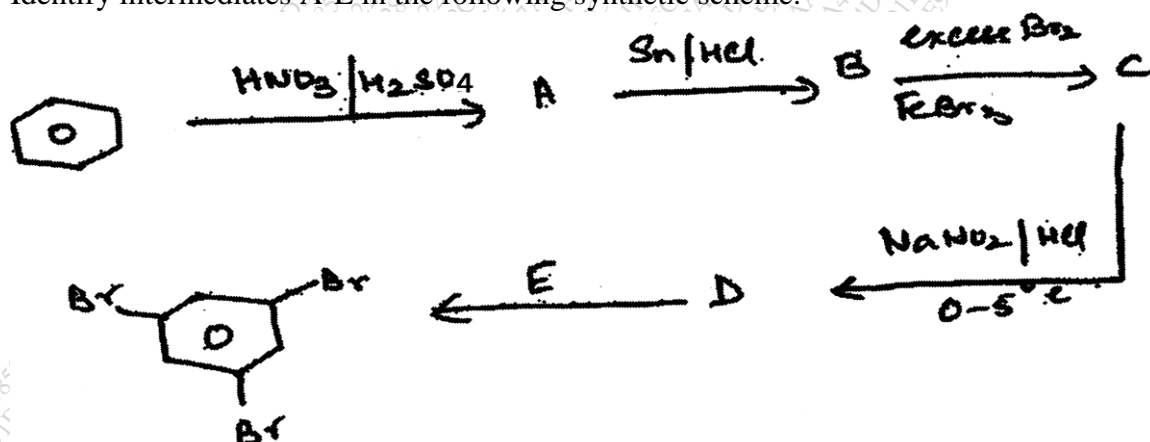
- ii) Give an example of
- Auto oxidation
  - Hundsdeicker reaction
  - Dehydrodimerisation
  - Oxidative coupling

2. a) Attempt ANY TWO of the following

- Give the synthesis of atropine from  $C_6H_5COCH_3$
- Explain convergent and divergent synthesis. Which is preferred and why?
- Provide a retrosynthesis and synthesis of the following compound.

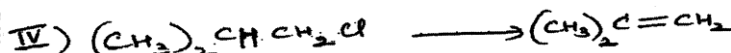
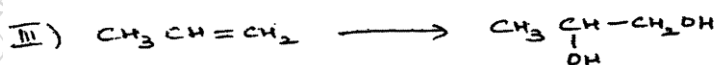
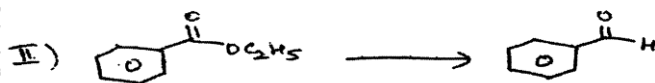
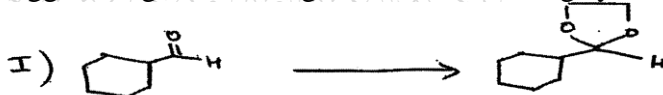


iv) Identify intermediates A-E in the following synthetic scheme.



2. b) Attempt ANY ONE of the following:

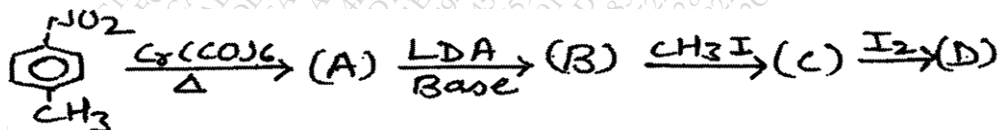
i) Suggest reagents to bring about the following synthetic transformations.



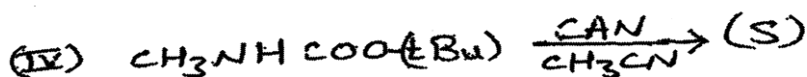
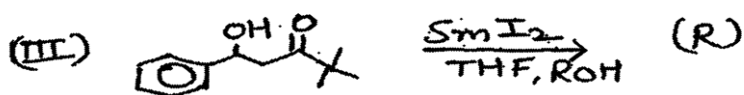
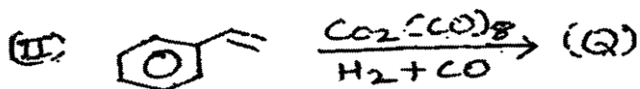
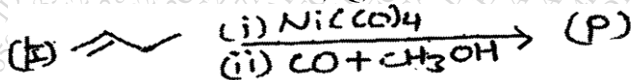
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- ii) Discuss two methods of generation of five membered rings with suitable examples.
3. a) Attempt **ANY TWO** of the following:- 08
- i) Discuss the principle involved in ultrasound as an energy source in organic reactions. Give examples of ultrasound assisted reactions
- ii) What are polymer supported reagents? Give their advantages and applications in organic synthesis.
- iii) What are cationic and anionic micelles? Illustrate how micelles enhance the rate of reactions.
- iv) Give structure of  $\alpha$ -cyclodextrin. Discuss its role in selective chlorination of anisole using HOCl.
- b) Attempt **ANY ONE** of the following: 04
- i) What are the advantages offered by zeolites? Discuss their application in organic synthesis.
- ii) What are crown ethers? Discuss their role as phase transfer catalyst in organic reactions.
4. a) Attempt **ANY TWO** of the following:- 08
- i) Explain the following terms with suitable examples.
- I. Migratory insertion  
II. Reductive elimination
- ii) Complete the following reaction sequence identifying A, B, C and D.



- iii) Give the structures for P, Q, R and S in the following reactions.



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iv) Give the product and mechanism of the following reaction.



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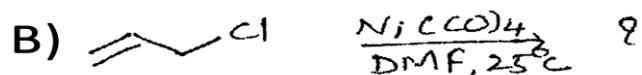
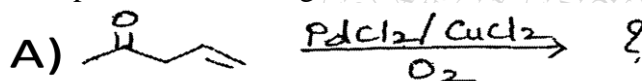
4. b) Attempt ANY ONE of the following:-

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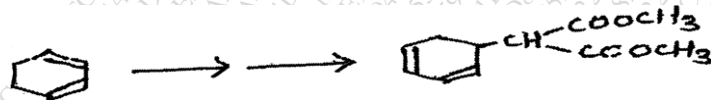
i) Illustrate with examples role of  $\text{Yb}(\text{OTf})_3$  as a water tolerant catalyst in the following reactions.

- I. Friedel Crafts reaction
- II. Michael reaction
- III. Aldol condensation
- IV. Diels Alder reaction

ii) I) Complete the following reactions



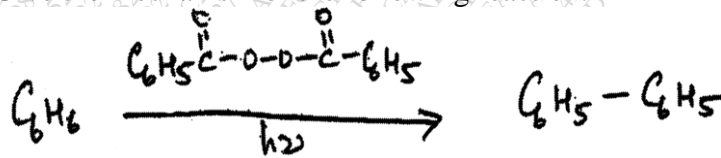
II) How can the following conversion be achieved via iron complex? Give the reagents and intermediates.



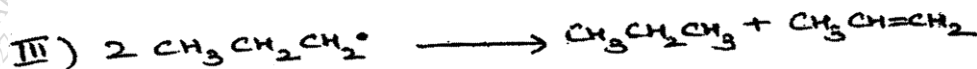
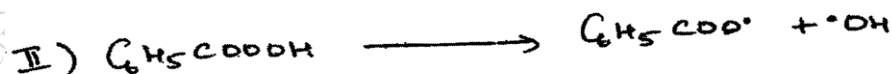
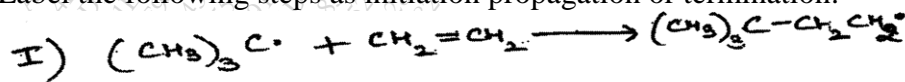
5. a) Attempt any FOUR of the following:

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a) Give the mechanism of the following reaction.

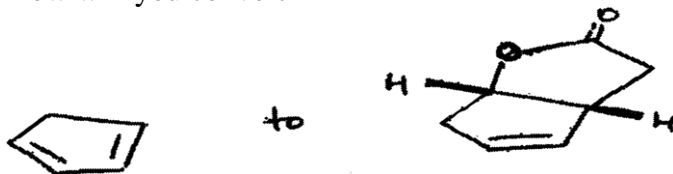


b) Label the following steps as initiation propagation or termination.



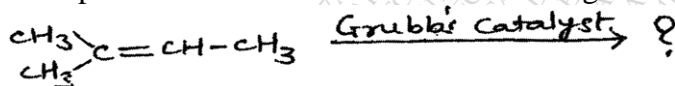
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- c) How will you convert



- d) Explain with an example  
 I. Synthron  
 II. Synthetic equivalent

- e) Give three examples of clay catalysed organic reactions.  
 f) Discuss the mechanism of reaction of benzoyl chloride with NaCN in the presence of a quaternary ammonium salt.  
 g) Give the product and mechanism of the following reaction.



- h) Explain 18 electron rule. Using this rule determine the value of n for  $\text{Na}[\text{HFe}(\text{CO})_n]$ . (atomic number of Fe=26)