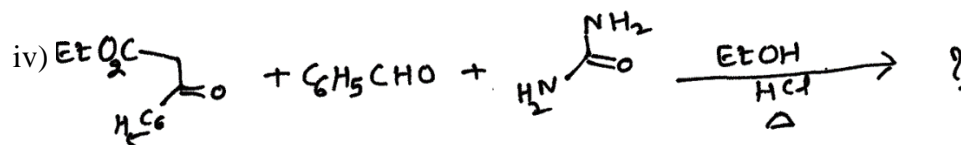
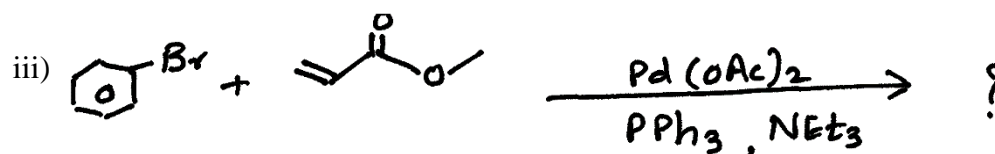
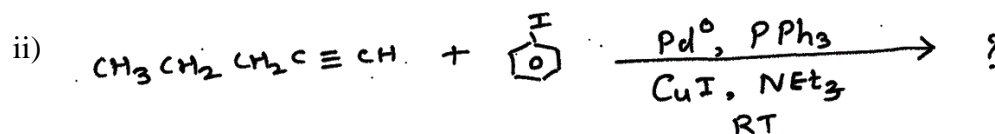
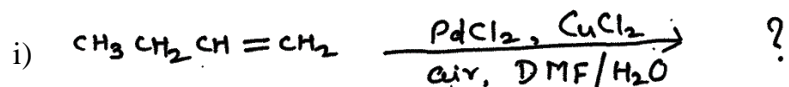


[Time: 2½ Hours]

[ Marks: 60]

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

1. a) Give the product, name and mechanism of the following reactions: 08  
(Attempt any two)

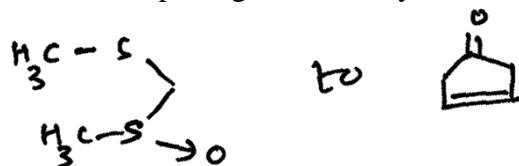


- b) Attempt any **one** of the following: 04

- i) Explain Domino cascade reaction with a suitable example.  
ii) Give the mechanism and one application of Suzuki coupling reaction.

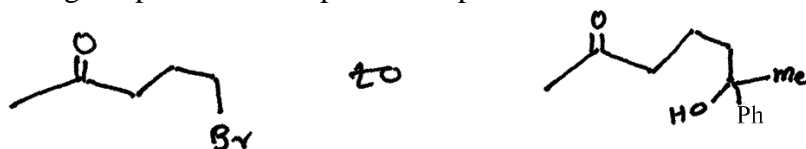
2. a) Attempt any **two** of the following: 08

- i) Give equations for the protection and deprotection of  
A)  $-\text{NH}_2$  as carbobenzyloxy (Cbz) group  
B)  $-\text{OH}$  as tetrahydropyranyl (THP) group  
ii) What is Umpolung? How will you convert



- iii) Discuss the generation of acyl anion equivalent via cyanide ions with suitable examples.

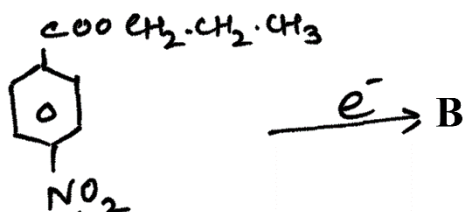
iv) Using the protection / deprotection protocol convert



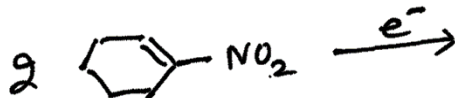
b) Attempt any **one** of the following:

04

i) Give the products A & B and explain the mechanism of the following reactions.



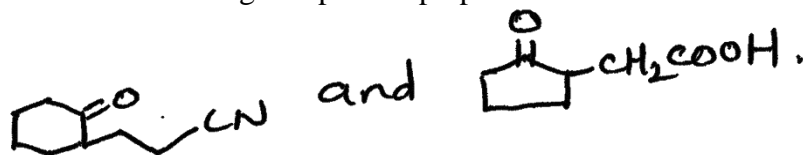
ii) Give the Product and mechanism of the following reaction.



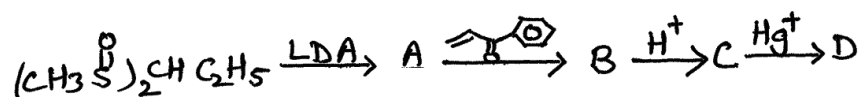
3. a) Attempt any **two** of the following:-

08

- i) Give synthesis of 2-methylbut-1-ene using phosphorus ylide. Explain the mechanism involved and name the reaction.
- ii) Write a note on Barton-Kellogg olefination.
- iii) How are the following compounds prepared via enamine?



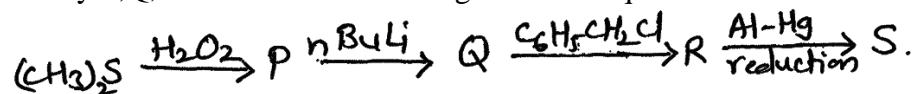
iv) Complete the following reaction sequence identifying A, B, C and D.



3

b) Attempt **any one** of the following: 04

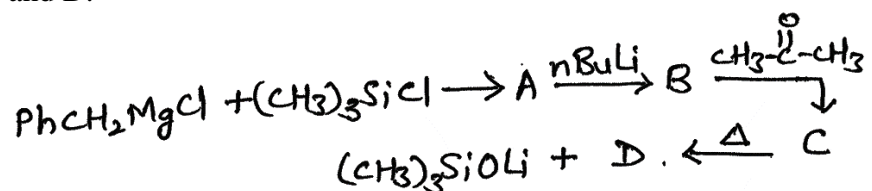
i) Identify P,Q,R and S in the following reaction sequence.



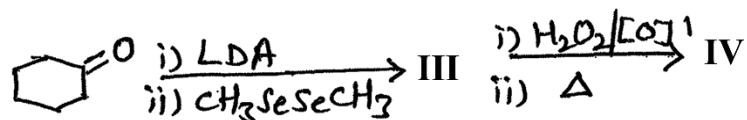
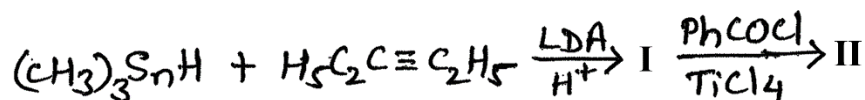
ii) Discuss with mechanism Steven's rearrangement.

4. a) Attempt **any two** of the following: 08

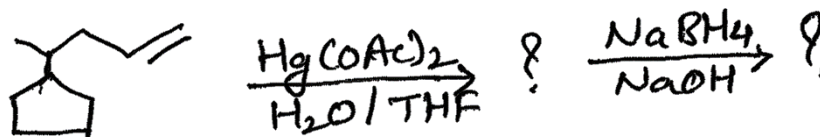
i) Complete the following reaction sequence giving structures for A, B, C and D.



ii) Predict the products I, II, III &amp; IV :



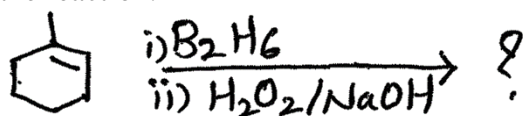
iii) Give the products and explain the mechanism &amp; stereochemistry involved in the following:



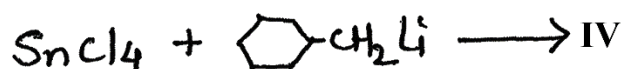
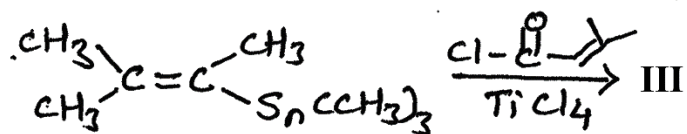
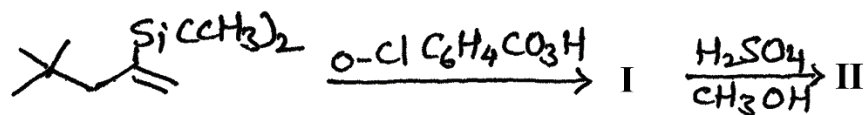
iv) Illustrate four example for silylenol ethers as enolate precursor.

b) Attempt **any one** of the following:- 04

i) Predict the product and explain the mechanism and stereochemistry of the reaction.



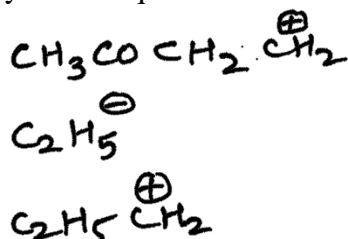
ii) Complete the following reactions and identify I, II, III & IV.



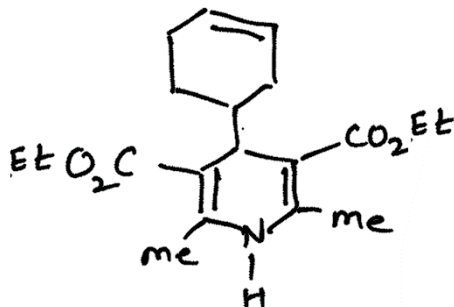
5. Attempt **any four** of the following:

12

- Explain Ugi-4-component synthesis with a suitable example.
- Discuss any two basic parameters required for electrochemical synthesis.
- Write synthetic equivalents for the following :

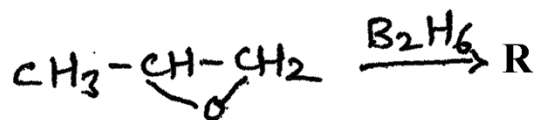
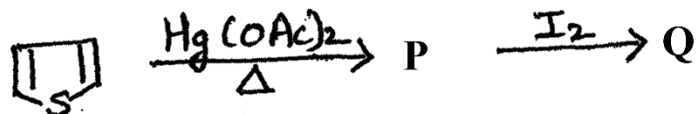


d) Using Hantzsch dihydropyridine synthesis, how will you prepare.

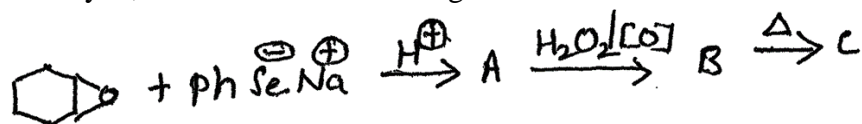


- Give structures of phosphorus ylide and nitrogen ylide. Explain - phosphorous ylides are more stable than nitrogen ylides.
- Explain with mechanism the formation of enamine from 3-hexyne and dimethyl amine.

g) Predict the products in the following reactions and identify P, Q and R :



h) Identify A, B and C in the following.



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