

2.5 hours

[Total Marks: 60]

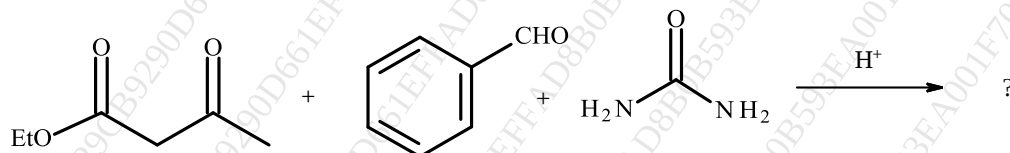
N.B. 1) All questions are **compulsory**.

2) **Figures** to the **right** indicate **full marks**.

1. A Attempt **any two** of the following:

8

i) Complete the following reaction



ii) Name the reaction and explain its mechanism.

Give one example each of the following

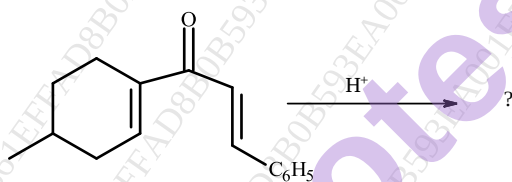
Mitsunobu reaction

Pictet-Spengler synthesis

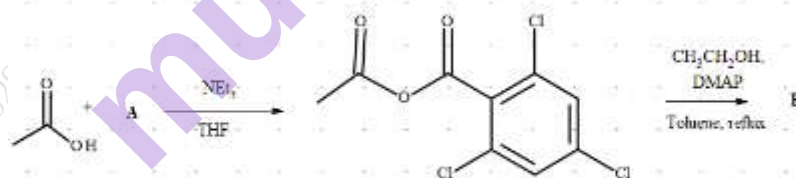
Mukaiyama reaction

Ritter reaction

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



iv) Complete the following reactions. Give the name of each of the reactions.



B Attempt **any one** of the following:

4

i) What are the components of the Darzen's glycidic ester condensation? Write a suitable example of this reaction and explain its mechanism.

ii) What are the characteristics of a click reaction? Give an example of the Huisgen 1,3-dipolar reaction.

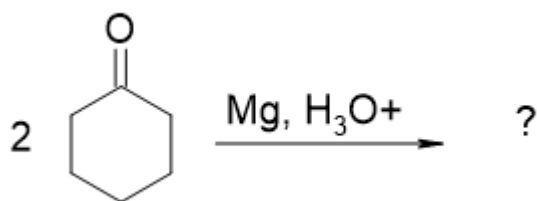
2. A Attempt **any two** of the following:

8

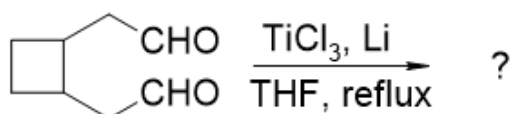
i) Discuss with suitable example, intramolecular C-C bond formation using tributyltin-hydride.

ii) Define radicals and discuss the characteristics of radicals.

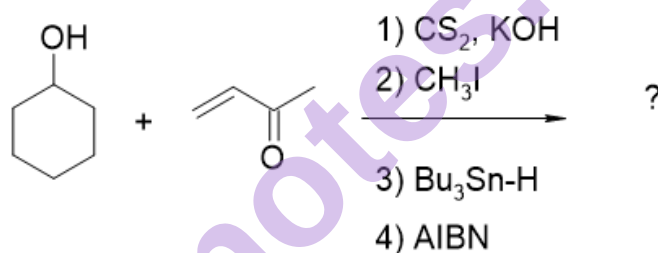
- iii) Predict the product, name the reaction and suggest the mechanism.



- iv) Predict the product, name the reaction and suggest the mechanism.

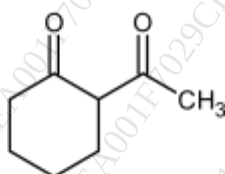


- B Attempt **any one** of the following: 4
- i) Predict the product and suggest the mechanism

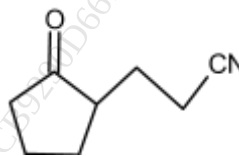


- ii) Discuss with example, intramolecular C-C bond formation using N-hydroxy pyridine -2 thione.

3. A Attempt **any two** of the following: 8
- i) How are the following compounds prepared via enamine?



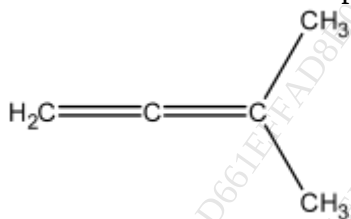
and



- ii) What are S-ylides? How are they prepared? Give two applications of S-ylides in organic synthesis.
- iii) How are alkenes prepared by coupling reaction between diazo compounds and ketones? Name the reaction involved.
- iv) Explain the generation of carbanions in nitro compounds and phosphonates and give one application of each in C-C bond formation.

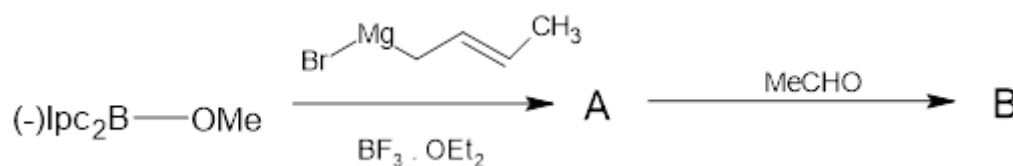
B Attempt **any one** of the following: 4

- What is Steven's rearrangement? Illustrate with the mechanism and one application.
- Using phosphorus ylide, suggest synthesis of the following compound. Name the reaction involved and provide a mechanism for the same.

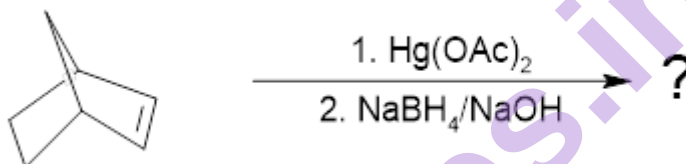


4. A Attempt **any two** of the following: 8

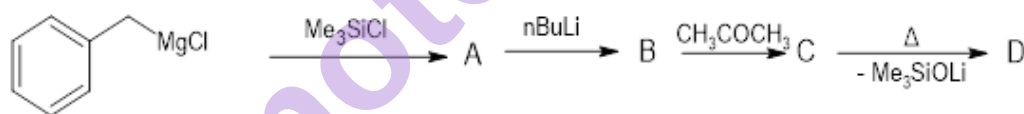
- Complete the following reaction with correct stereochemistry and predict the mechanism.



- Complete the following reaction. Give the name and mechanism of the reaction.



- Complete the following reaction by identifying A, B, C, and D.

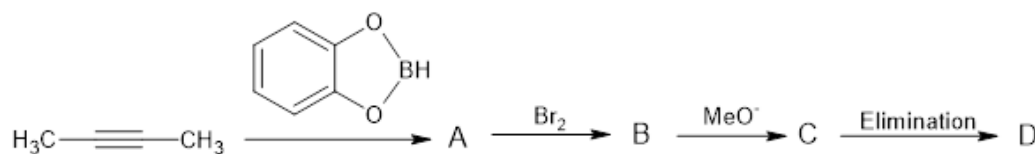


- Give the following conversion via selenoxide.

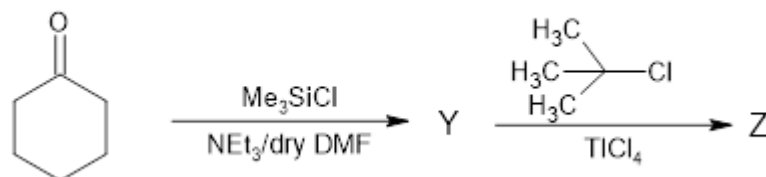
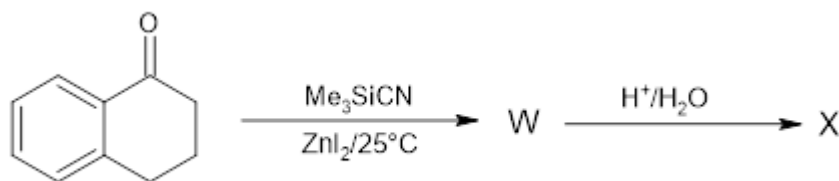


B Attempt **any one** of the following: 4

- Complete the following reaction and identify A, B, C and D.



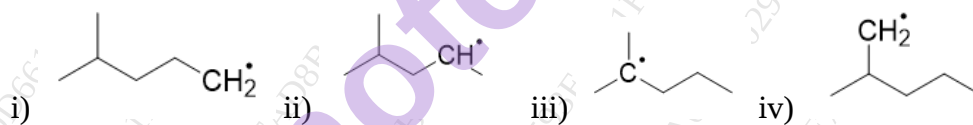
- ii) Complete the following reaction by identifying W, X, Y and Z.



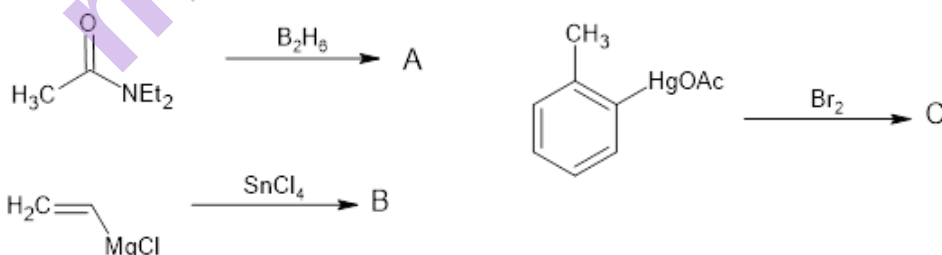
5. Answer **any four** of the following:

12

- Which multicomponent reaction is useful in the synthesis of dihydropyridines? What are the components in this reaction? Write the equation for a suitable example.
- With a suitable example explain the mechanism for the Strecker reaction.
- Write the examples of persistent radical, electrophilic and nucleophilic radical.
- Discuss the stability of following radicals and arrange it in increasing order of stability.



- Compare the reactivity of enamines and enolates.
- Write a brief note on Bestman Ohira reagent
- Complete the following reactions by identifying A, B and C.



- Complete the following reaction by identifying A, B and C.

