

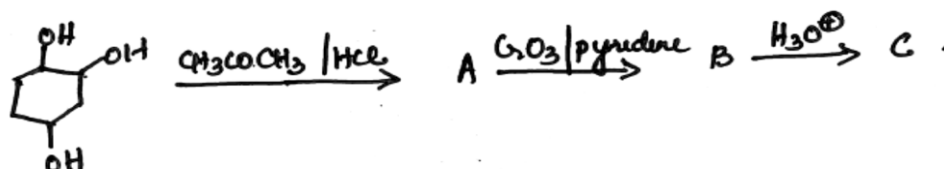
[Time: 2:30 Hours]

[Marks:60]

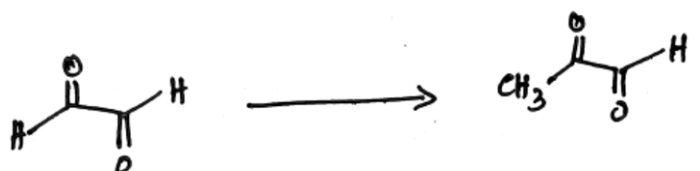
Please check whether you have got the right question paper.

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

1. a) Attempt **any two** of the following. (08)
- i) Give any one method for the protection of an aldehyde group. Complete the following reaction by drawing structures A - C.



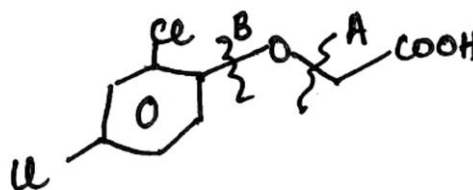
- ii) What is umpolung? Using this strategy, show the conversion of



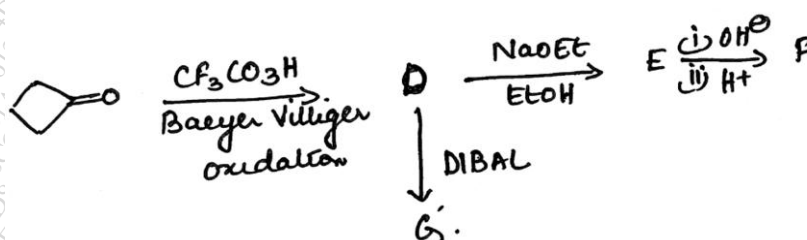
- iii) Explain the terms linear and convergent synthesis using one example each.
- iv) Using the disconnection shown for the following molecule, plan a retrosynthetic analysis. Write a complete synthesis showing reagents and conditions.



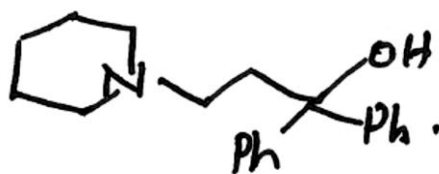
- b) Attempt **any one** of the following. (04)
- i) For the following molecule two disconnections are shown (A & B). Write the synthons in both cases as well as the corresponding synthetic equivalent, if any. Predict which is a good disconnection and why?



- ii) Complete the following synthesis by drawing structures D - G.

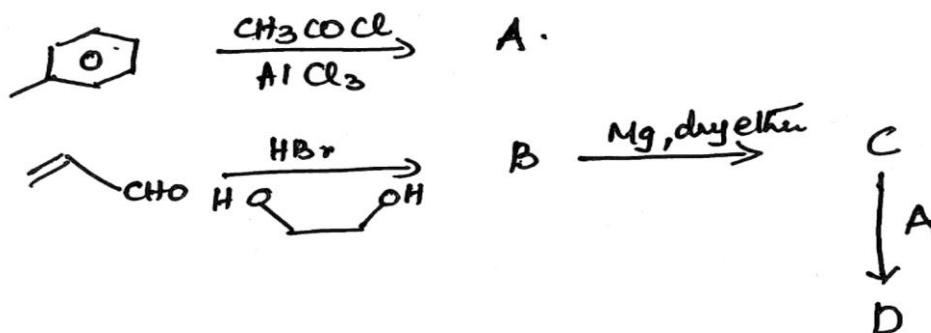


- Q.2 a) Attempt **any two** of the following.
i) The following alcohol is a muscle relaxant. (08)

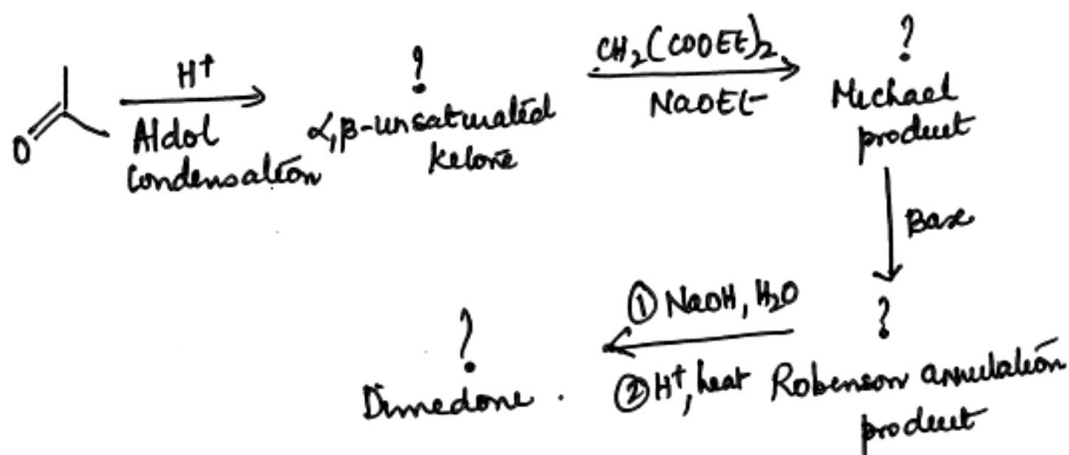


Show the retrosynthetic analysis such that piperidine is one of the starting compounds. Write the synthesis of this molecule.

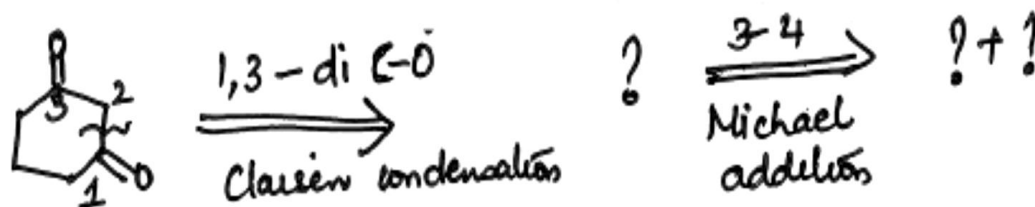
- ii) Complete the following synthesis by drawing structures.



- iii) Complete the following synthesis of dimedone.



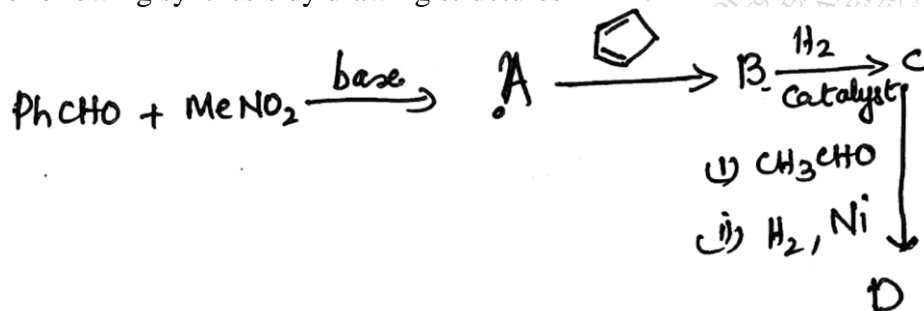
- iv) Complete the following retrosynthetic analysis.



Using the above retrosynthetic pathway write a synthesis for the target molecule.

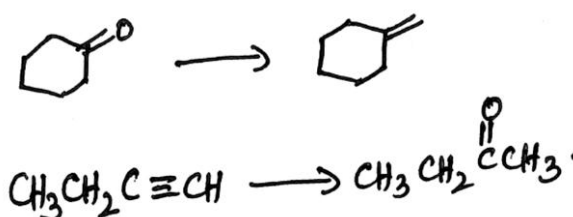
- b) Attempt **any one** of the following.
 i) Complete the following synthesis by drawing structures A - D.

(04)



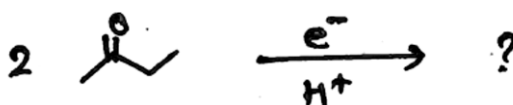
What is the name of the reaction that converts A \rightarrow B ?

- ii) How will you convert?

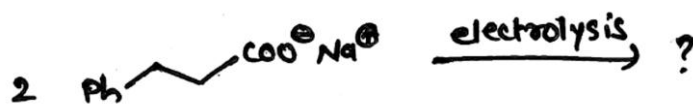


- Q.3 a) Attempt **any two** of the following.
 i) Give product and mechanism of the following reaction

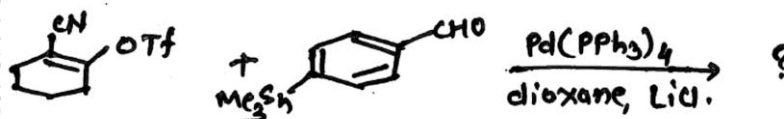
(08)



- ii) Predict product, name and mechanism of the following reaction.



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

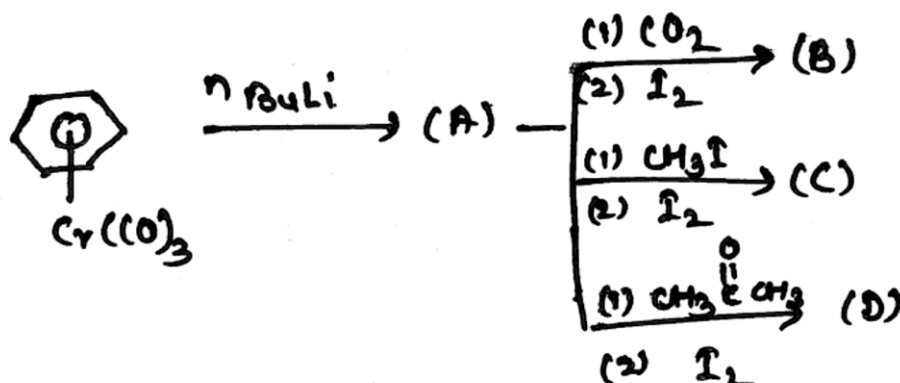


- iv) What are micelles? How are they formed? Explain their role in organic synthesis giving suitable examples.

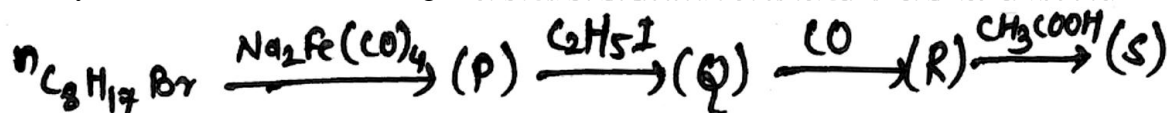
- b) Attempt **any one** of the following.
 i) What are organocatalysts? Explain the use of imidazolidinone in organic synthesis.
 ii) Illustrate with one example each, use of Yb(OTf)_3 as water tolerant Lewis acid catalyst in-
 Michael addition
 Friedel-Craft reaction
 Diels-Alder reaction
 Aldol condensation

(04)

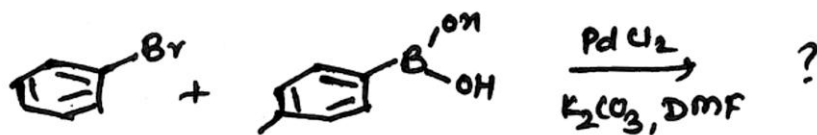
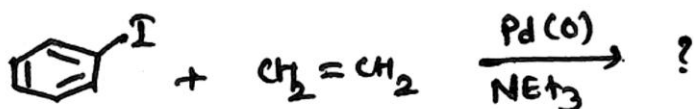
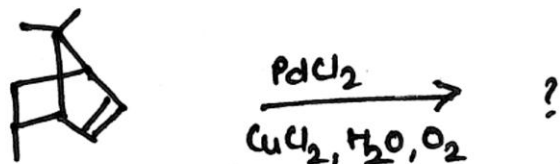
- Q.4 a) Attempt **any two** of the following. (08)
- Explain with suitable examples-
18-electron rule and reductive elimination.
 - Identity A, B, C and D in following reactions.



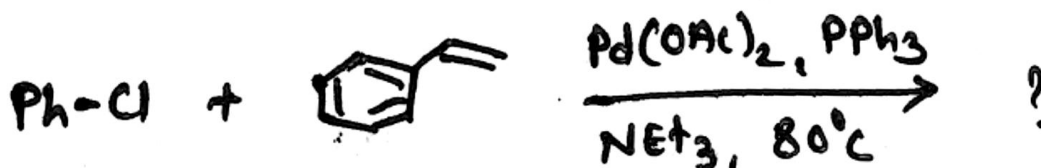
- iii) Identity P, Q, R and S in following reaction.



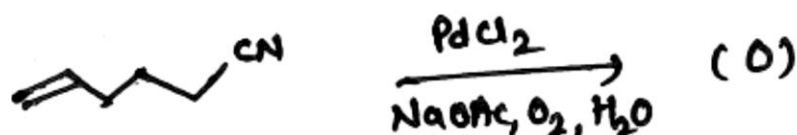
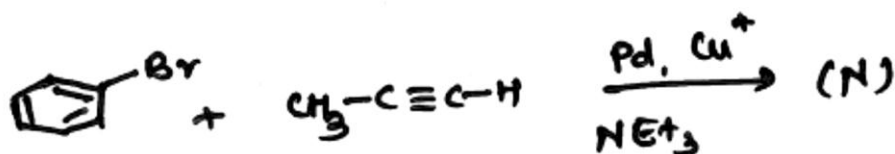
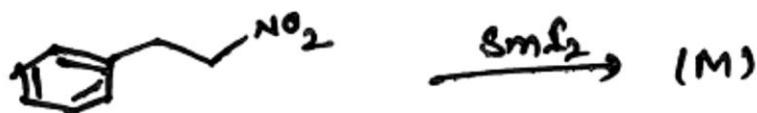
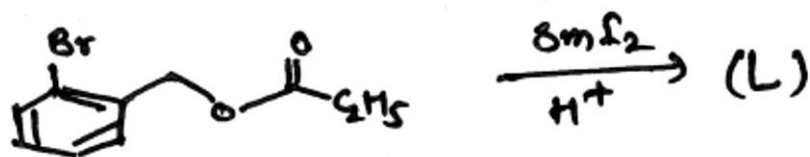
- iv) Complete the following reactions.



- b) Attempt **any two** of the following (04)
- Give product, name and mechanism of the following reaction.

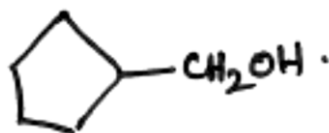


ii) Predict the products L, M, N and O in following reactions.

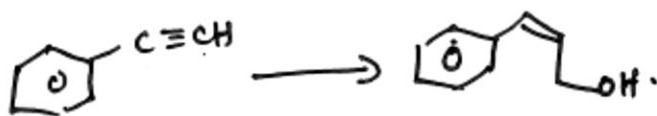


Q.5 a) Attempt **any four** of the following.

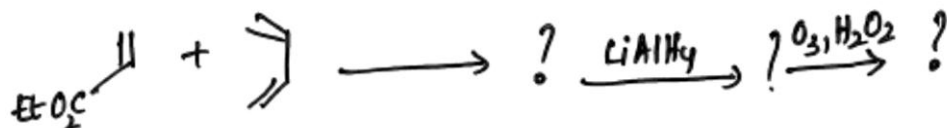
i) Suggest a retrosynthesis for



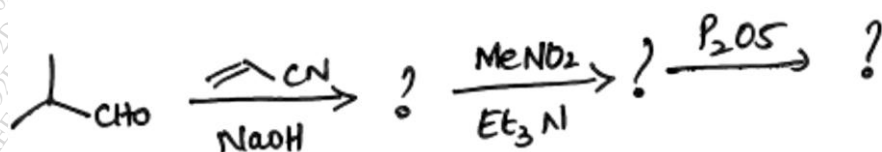
ii) How will you convert?



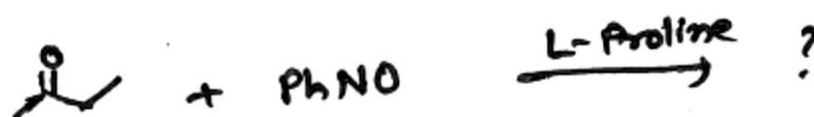
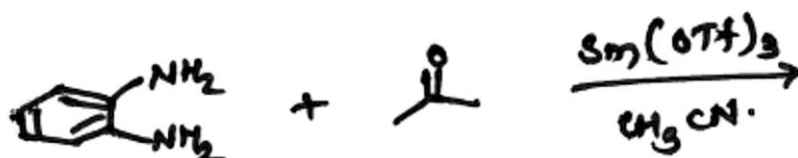
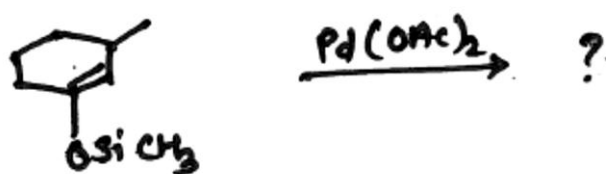
iii) Complete the following synthesis.



iv) Complete the following synthesis.

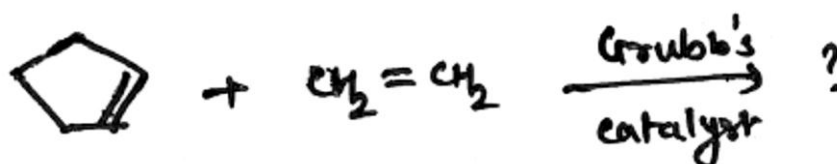


v) Predict the product in following reactions.



vi) Discuss the use of crown ethers in organic synthesis.

vii) Give product and mechanism of following reaction.



viii) Give applications of cerium (IV) compounds –

- In synthesis of quinoxaline derivatives.
- As deprotecting agent.
