

2022

M.Sc.

2nd Semester Examination

CHEMISTRY

PAPER—CEM-202

ORGANIC CHEMISTRY-II

Full Marks : 40

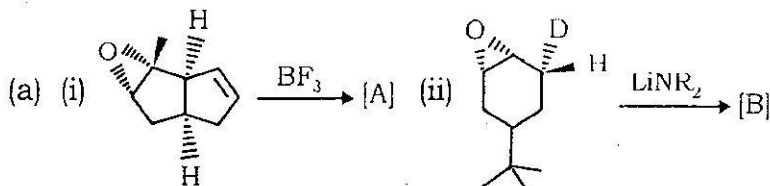
Time : 2 Hours

*The figures in the margin indicate full marks.*

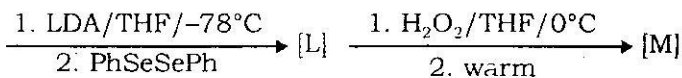
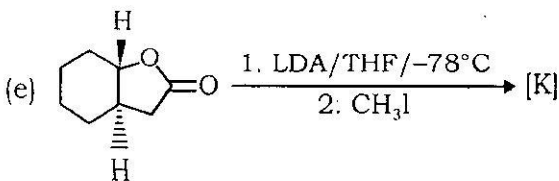
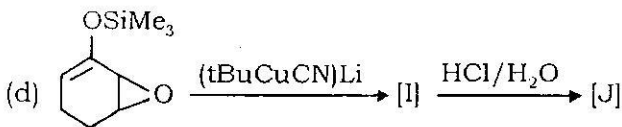
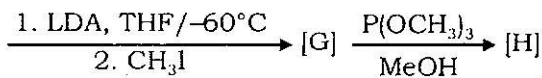
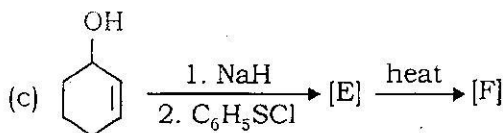
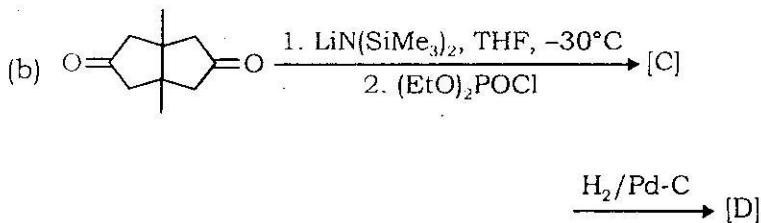
*Candidates are required to give their answers in their own words as far as practicable.*

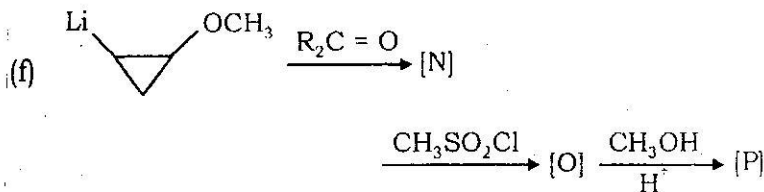
*Illustrate the answers wherever necessary.*

1. Predict the product(s) (any four, with plausible mechanism) : 4×2



(Turn Over)



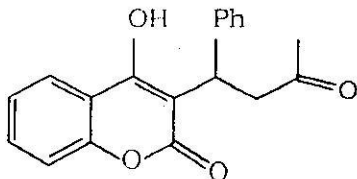


2. Answer any *four* questions :

4×4

- (a) What is Sharpless Asymmetric Epoxidation? Give an example of it and explain with mechanism.
- (b) What are AD-mix- $\alpha$  and AD-mix- $\beta$ ? Show schematically the use of these reagents in organic synthesis. Write the structure of the product on reaction of AD-mix- $\beta$  with Ethyl cinnamate.
- (c) (i) What do you mean by convergent synthesis?  
 (ii) What is chelotropic reaction? Give an example.
- (d) (i) What do you mean by axial chirality? Give an example.  
 (ii) What do you mean by asymmetric induction?
- (e) Examine whether  $[2\pi s + 2\pi s]$  cycloaddition reactions are thermally or photochemically allowed using correlation diagram.

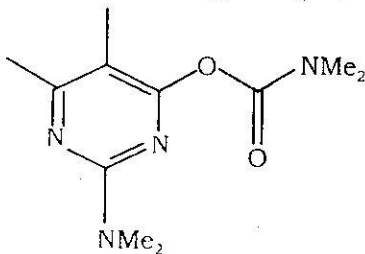
- (f) Give the retrosynthetic analysis as well as the forward synthesis for the following compound :



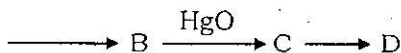
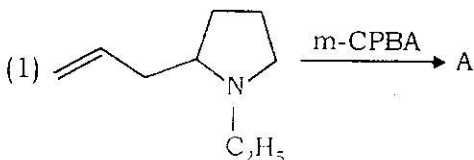
3. Answer any *two* questions :

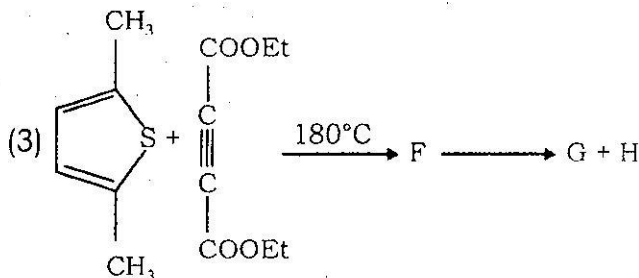
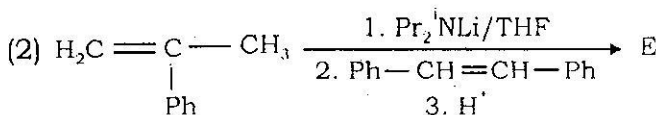
2×8

- (a) (i) Using retrosynthetic approach how will you synthesize the following compound :

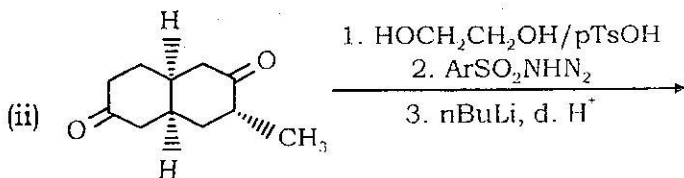
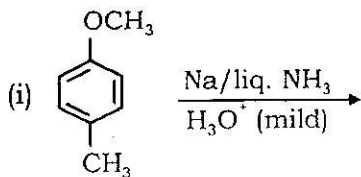


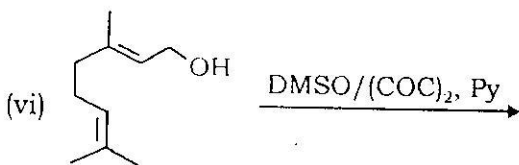
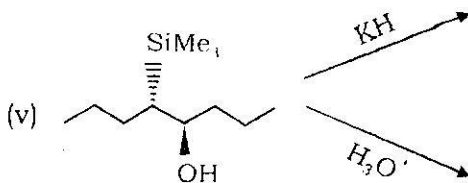
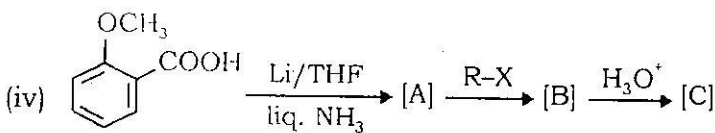
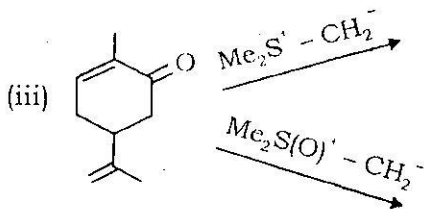
- (ii) Predict the product(s) with plausible mechanism :





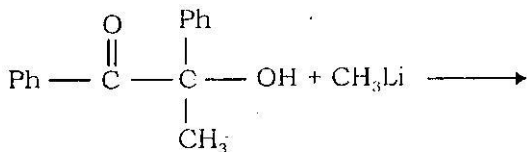
(b) Predict the product(s) (any four, with plausible mechanism) :





- (c) (i) Draw all the diastereoisomers of 1, 2, 3-trimethylcyclohexane and comment on their relative stabilities.
- (ii) What do you mean by 3-alkyl ketone effect? Explain with an example.

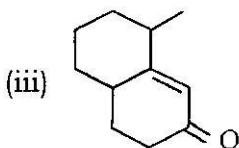
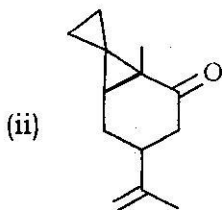
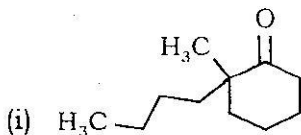
(iii) Predict the product(s) with proper justification :

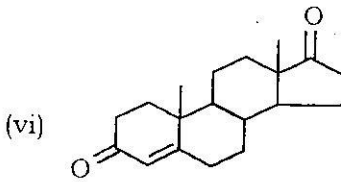
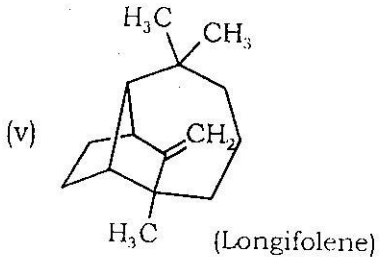
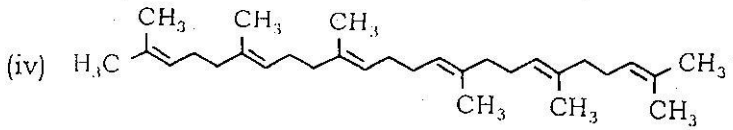


3+3+2

(d) Synthesize the following from suitable starting materials :

(any *two* from i - iv and any *one* from v - vi) :





2×2