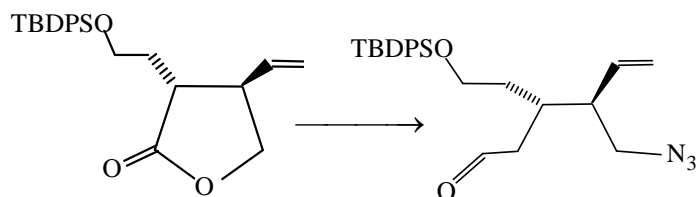
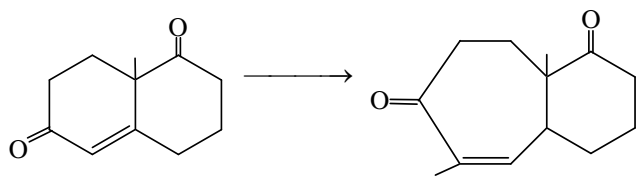


[6]

iv)



v)



Ex/M.Sc/CHEM/4/XIV/O-4141/2018

M. SC. CHEMISTRY EXAMINATION, 2018

(4th Semester)

ORGANIC CHEMISTRY SPECIAL

PAPER - XIV-O

Time : Two hours

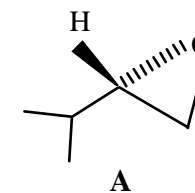
Full Marks : 50

(25 marks for each unit)

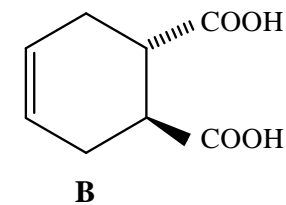
Use a separate answerscript for each unit.

UNIT - O - 4141

1. a) Design the synthesis of the compound **A** starting from a suitable naturally occurring enantiopure chiral compound applying Chiron approach. 3



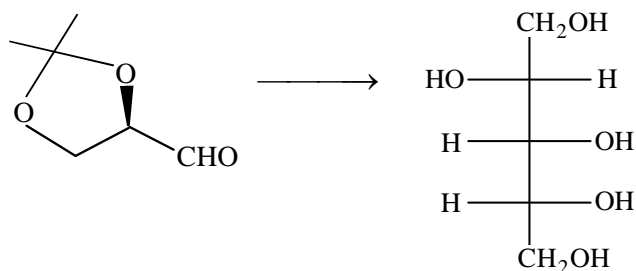
- b) Describe the enantioselective synthesis of the compound **B** using *l*-menthol as the chiral auxiliary and highlight the role of *l*-menthol towards stereoselection. $1\frac{1}{2}+1\frac{1}{2}$



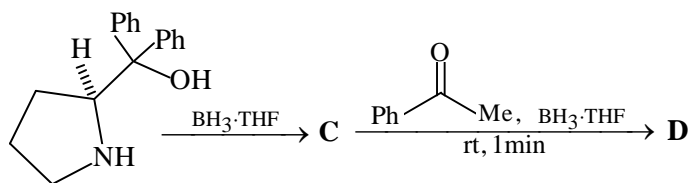
[Turn over

[2]

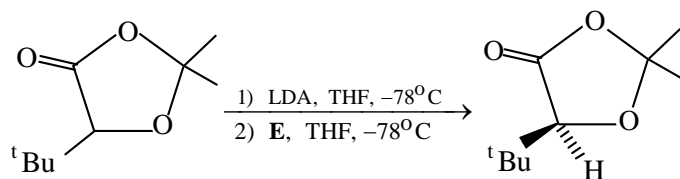
- c) Suggest the steps for the following transformation using Sharpless asymmetric epoxidation in one of the steps (no mechanism is needed) 3



- d) Identify **C** and **D** in the following sequence and rationalise the formation of the major stereoisomeric product **D**. $\frac{1}{2} + \frac{1}{2} + 2$

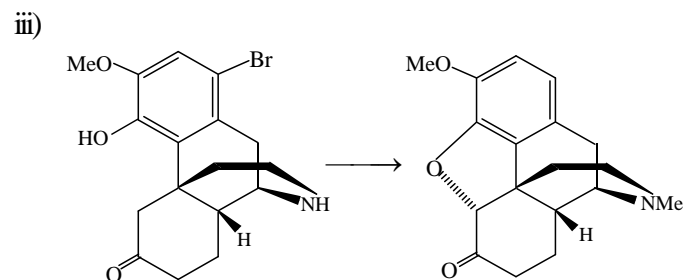
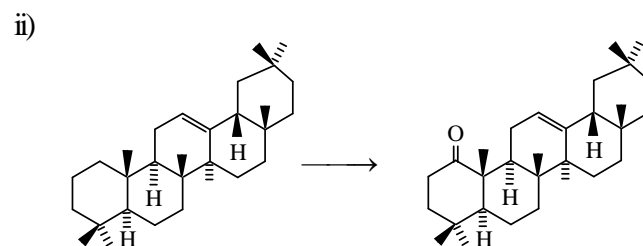
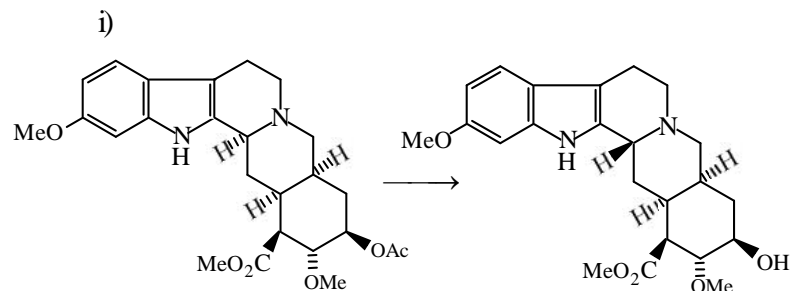


- e) Give the structure of **E** in the following reaction and account for the stereochemical outcome of this transformation. 3



[5]

- c) Carry out the following transformations. Show all the intermediate products formed. Discuss plausible mechanistic and stereochemical interpretations as necessary. 4+4+4+3+3

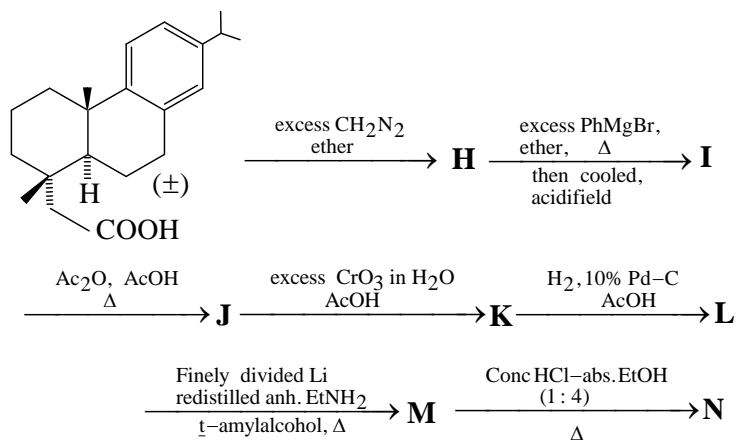


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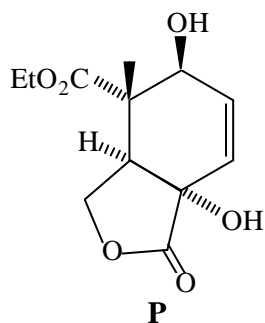
[4]

UNIT - O - 4142

2. a) Predict the products (**H** to **N**) of the following reactions (Mechanism is not required). Comment on the relative stereochemistry of the newly generated chiral centre in the final product **N**. 4

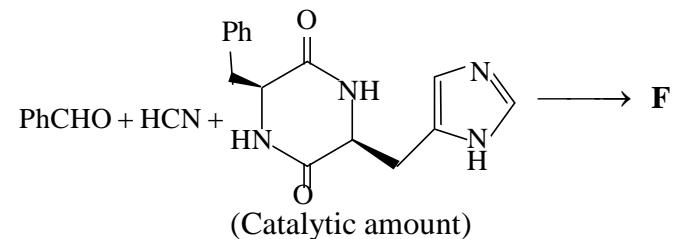


- b) Mechanistically discuss synthesis of the following compound **P** (racemic variety) from two achiral starting materials. 3

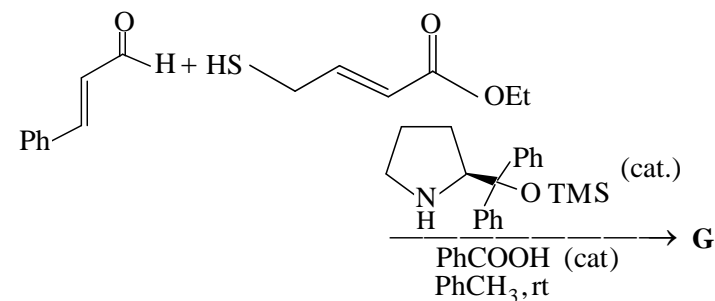


[3]

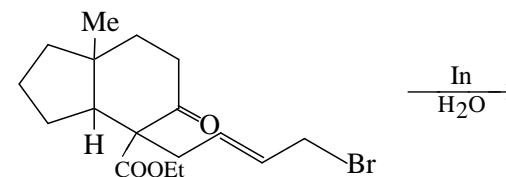
- f) Predict the configuration of the major product **F** in the following reaction with proper justification. 2



- g) Suggest the major product **G** in the following reaction with proper emphasis to the stereochemical aspects. 3



- h) Acetophenone reacts with benzaldehyde in the presence of a catalyst in refluxing benzene to produce benzylideneacetophenone ($\text{PhCOCH}=\text{CHPh}$). Calculate the atom economy and comment on the greenness of this process. 1+1
- i) Predict the product of the following reaction with mechanism. 3



[Turn over