Total No. of Questions : 6]

SEAT No. :

P2639

[Total No. of Pages : 4

[5023]-60
M.Sc.II
ORGANIC CHEMISTRY
CH-452:Heterocyclic Chemistry Chiron Approach and Medicinal Chemistry
(2008 Pattern) (Semester-IV)

Time : 3 Hours] *[Max. Marks : 80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Answers to the two sections should be written in separate answer books.***

SECTION-I

Q1) a) Explain any three of the following. **[9]**

i) Oxazole is less basic than imidazole.

ii) Thiophene is resistant to ring opening than furan and pyrrole.

iii) Quinoline is used as a solvent in decarboxylation reactions.

iv) Describe two different reactions of pyrrole indicating its aromatic nature.

b) Write application of supramolecular chemistry in medicine and data storage. **[3]**

Q2) a) Give the reactions of following reagents with thiophene. **[4]**

i) HCHO, $CHCl_3$ 0^oC.

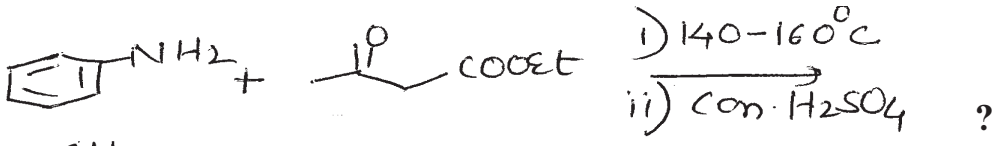
ii) $ClSO_3H$, PCl_5, R-T.

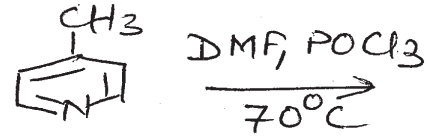
iii) HNO_3, AC_2O, ACOH, 0^oC.

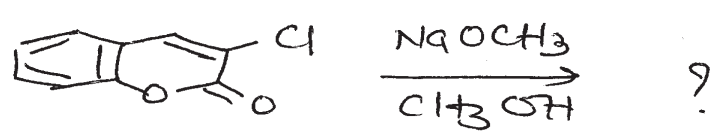
iv) I_2, $HNO_{3(aq)}$, 90^oC.

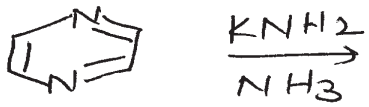
P.T.O.

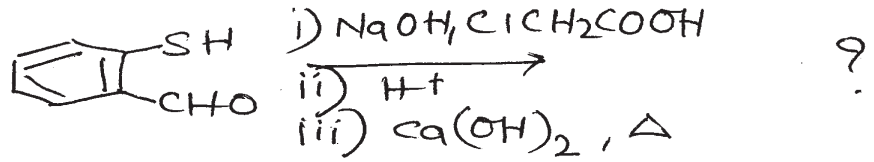
b) Predict the product/s in any four of the following. **[8]**

i) 

ii) 

iii) 

iv) 

v) 

c) Give the use of any two of the following reagents in heterocyclic synthesis. Write mechanism. **[4]**

i) n-BuLi in formylation of furan

ii) Phenylhydrazine in synthesis of indoline

iii) Pd $(Ph_3)_4$ in arylation of pyridine.

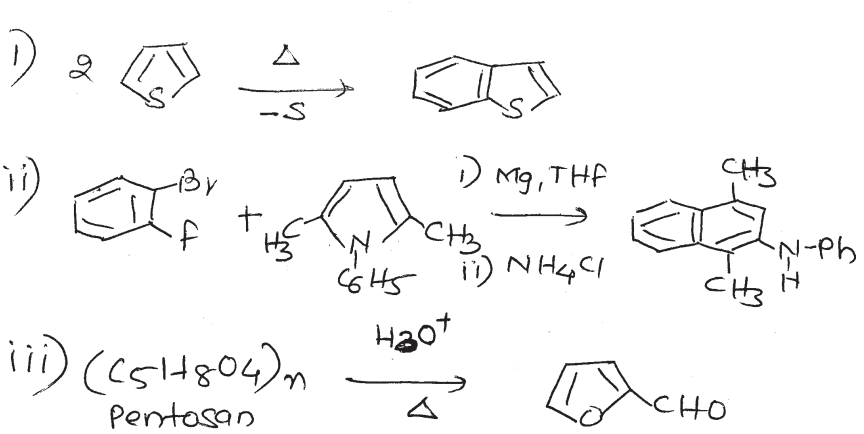
Q3) a) Write notes on any two of the following. **[6]**

i) Hantzsch pyridine synthesis.

ii) Paal knorr thiophene synthesis

iii) Feist- Benary synthesis.

b) Suggest suitable mechanism for any two of the following. **[6]**



SECTION-II

Q4) Answer any Four of the following **[16]**

a) Draw $1C_4$ and $4C_1$ conformation of D- mannose and L- mannose.

b) Give various types of targets derived from carbohydrate precursors by synthesis.

c) Two isomeric compounds A and B having molecular formula $C_5H_{10}O_5$ gives following reactions.

i) Both A and B Forms tetra acetate derivative.

ii) Both A and B Forms phenyl hydrazone derivative.

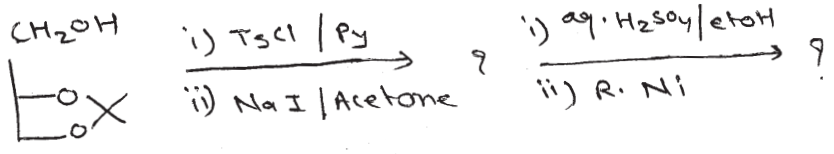
iii) A can form both furanose as well as pyranose ring while B can form only furanose ring.

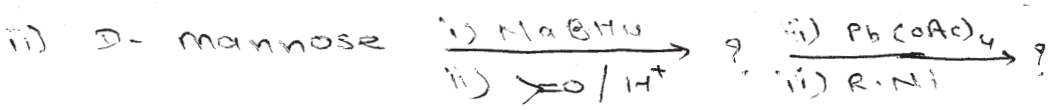
Determine the structure A and B .

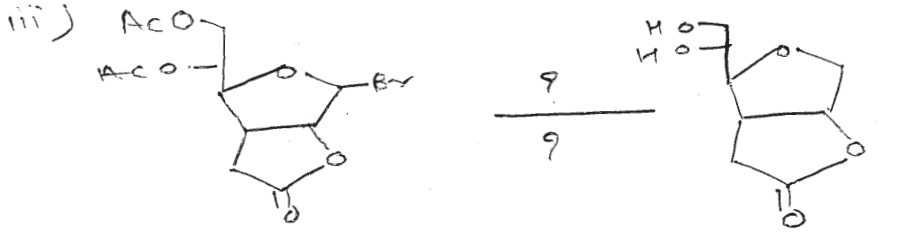
d) Write the synthesis of R- Epichlorohydrin.

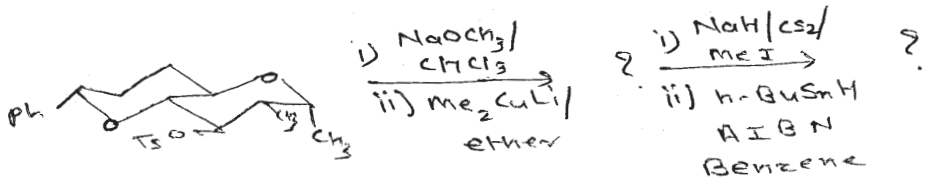
e) Give the evidences for ring structure of D- Glucose.

Q5) Complete the following reaction sequence [any three]. **[12]**

i) 

ii) 

iii) 

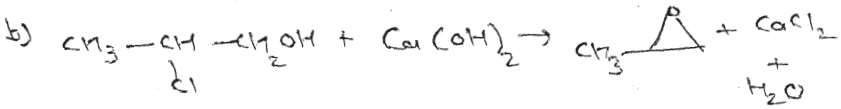
iv) 

Q6) a) Solve any two of the following **[8]**

i) Write the short note on elimination of drug from body.

ii) Calculate the atom economy for the following reactions

a) 

b) 

iii) Give the theoretical aspects of drug design.

b) Answer the following. **[4]**

i) Retrosynthetic analysis of shikimic acid.

ii) Concept of chiron

❖ ❖ ❖