Total No. of Questions: 3 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Pharmacy

End Sem (Even) Examination May-2022

PY3CO13 Pharmaceutical Organic Chemistry -III

Programme: B. Pharma Branch/Specialisation: Pharmacy

Duration: 3 Hrs. **Maximum Marks: 75**

Note: All questions are compulsory. Internal choices, if any, are indicated.

Q.1 i. A mixture of equal amounts of two enantiomers—such as (R)-lactic acid and (S)- lactic acid is called as **2**

(a) Symmetrical mixture (b) Asymmetrical mixture

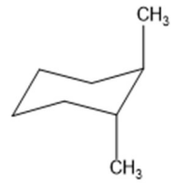
(c) Racemic mixture (d) Achiral mixture

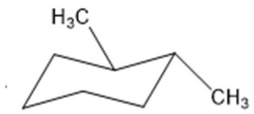
ii. Which of the following compounds have asymmetric carbons? **2**

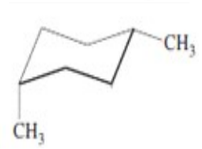
(a) 2-Chlorobutane (b) Ethanol

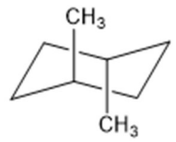
(c) 3-Methylpentane (d) 3- Methylbutane

iii. Which of the following structures represents a *cis*-isomer? **2**

(a) 

(b) 

(c) 

(d) 

iv. Which of the following system is not used for the nomenclature of geometrical isomers? **2**

(a) cis-trans (b) *E/Z* (c) syn/anti (d) R/S

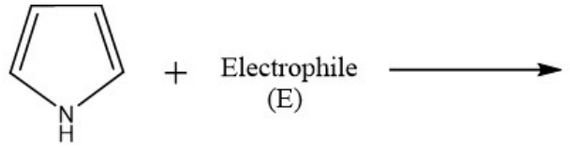
v. Which of the following is not a five-membered heterocyclic compound? **2**

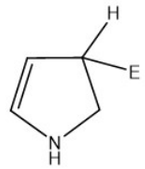
(a) Furan (b) Pyridine

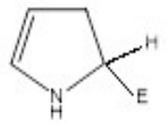
(c) Pyrrole (d) Thiophene

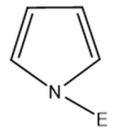
P.T.O.

vi. Which of the following product will be the most stable? **2**



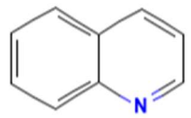
(a) 

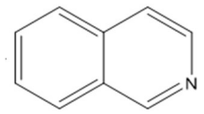
(b) 

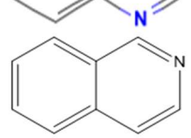
(c) 

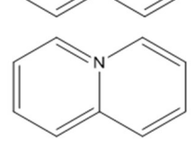
(d) No Reaction

vii. Structure of quinoline is **2**

(a) 

(b) 

(c) 

(d) 

viii. Pyrimidine and purines are **2**
(a) Sulphur bases
(b) Phosphorus bases
(c) Nitrogen bases
(d) Acids

ix. Which of the following metal is not used for reduction? **2**
(a) Sodium (b) Potassium
(c) Lithium (d) None of these

x. Esters can be easily reduced by **2**
(a) $NaBH_4$ (b) LiAlH4
(c) Both (a) and (b) (d) None of these

Q.2 Attempt any two:

i. Describe reactions of the chiral molecules with any four examples. **10**

ii. Describe Atropisomerism in Biphenyl compounds. **10**

iii. (a) Explain D, L system of nomenclature illustrating with an example of D- & L- glucose. **5**
(b) Draw the different conformational isomers of cyclohexane using Newman Projection. **5**

Q.3 Attempt any seven: Two questions from each section is compulsory.

Section - A

i. Give one reaction of electrophilic substitution in pyrrole, furan and thiophene each. **5**

ii. Make a comparative analysis for the relative aromaticity of pyrrole and furan. Justify your answer with an appropriate reason. **5**

iii. Give the synthetic reactions and any two chemical properties of thiophene. **5**

Section - B

iv. Compare the basicity of pyridine with pyrrole and aliphatic amines. Account the reason for the same. **5**

v. Give the synthetic scheme for the synthesis of azepines and any two medicinal uses of azepines. **5**

vi. Give two chemical reactions of Oxazole and thiazole. **5**

Section - C

vii. Explain Beckmann rearrangement in detail. **5**

viii. Differentiate between Schmidt rearrangement and Claisen-Schmidt condensation. **5**

ix. Compare the reduction strength of NaBH4 and LiAlH4 with reaction illustration. Which reagent would you prefer for the reduction of a carboxylic acid and why? **5**

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Marking Scheme

PY3CO13 Pharmaceutical Organic Chemistry -III

sss

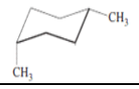
Q.1 i. A mixture of equal amounts of two enantiomers—such as (R)-lactic acid and (S)- lactic acid is called as **2**

(c) Racemic mixture

ii. Which of the following compounds have asymmetric carbons? **2**

(a) 2-Chlorobutane

iii. Which of the following structures represents a *cis*-isomer? **2**

(c) 

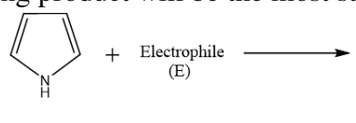
iv. Which of the following system is not used for the nomenclature of geometrical isomers? **2**

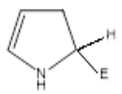
(d) R/S

v. Which of the following is not a five-membered heterocyclic compound? **2**

(b) Pyridine

vi. Which of the following product will be the most stable? **2**



(b) 

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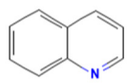
(a) 

viii. Pyrimidine and purines are **2**

(c) Nitrogen bases

ix. Which of the following metal is not used for reduction? **2**

(b) Potassium

x. Esters can be easily reduced by **2**

(b) LiAlH4

Q.2 Attempt any two:

i. Reactions of the chiral molecules with any four examples. **10**

Definition	1 mark
Reaction	6 marks
Examples	3 marks

ii. Describe Atropisomerism in Biphenyl compounds. **10**

Definition	2 marks
Reaction-1	4 marks
Reaction-2	4 marks

iii. (a) D, L system of nomenclature illustrating 3 marks **5**
An example of D- & L- glucose. 2 marks
(b) Different conformational is **5**
Eclipsed 2.5 marks
Stagged 2.5 marks

Q.3 Attempt any seven: Two questions from each section is compulsory.

Section - A

i. Explanation 0.5 mark **5**
reaction for pyrrole, furan and thiophene each (1.5 marks * 3)

ii. Comparative analysis for the relative **5**
Pyrrole 2.5 marks
Furan 2.5 marks

iii. Synthetic reactions 3 marks **5**
Two chemical properties of thiophene 2 marks

Section - B

iv. Basicity of pyridine 3 marks **5**
Account the reason for the same 2 marks

v. Synthetic scheme for the synthesis 2.5 marks **5**
Two medicinal uses of azepines. 2.5 marks

vi. Two chemical reactions of Oxazole **5**
2.5 marks for each (2.5 marks * 2)

Section - C

vii. Beckmann rearrangement in detail **5**
As per the explanation

viii. Schmidt rearrangement (0.5 mark * 5) 2.5 marks **5**
and Claisen-Schmidt condensation.
(0.5 mark * 5) 2.5 marks

ix. Reduction strength of NaBH4 and LiAlH4 with reaction illustration. 2.5 marks **5**
Reagent would you prefer for the reduction of a carboxylic acid and why 2.5 marks

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