Total No. of printed pages = 4

BP 401T

28/5/24

Roll No. of candidate

2024

B.Pharm. 4th Semester (Regular) End-Term Examination

PHARMACEUTICAL ORGANIC CHEMISTRY – III

(New Regulation)

Full Marks – 75 Time – Three hours

The figures in the margin indicate full marks for the questions.

1. Multiple Choice Questions (MCQ) : (Answer *all* questions) (20 × 1 = 20)

(i) Which halogen will have the highest priority in E–Z configuration?

(a) Br (b) Cl

(c) F (d) I

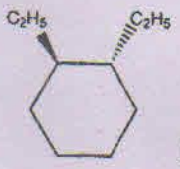
(ii) Thiazine is a

(a) 4–membered heterocyclic ring

(b) 5–membered heterocyclic ring

(c) 6–membered heterocyclic ring

(d) 7–membered heterocyclic ring

(iii) 

is an example of

(a) chiral molecule

(b) achiral molecule

(c) cannot be determined as chiral or achiral molecule

(d) none of these

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(iv) Madelung synthesis is used for the preparation of

(a) Imidazole (b) Indole

(c) Pyridine (d) Thiazole

(v) Sodium amide reacts with Pyridine at 100°C to give

(a) 2–aminopyridine

(b) 3–aminopyridine

(c) 4–aminopyridine

(d) None of these

(vi) The total number of optically active forms present for

Cl–CH(OH)–CH(OH)–CH(OH)–CH_3

(a) 8 (b) 4

(c) 3 (d) 2

(vii) –COOH functional group can be reduced by

(a) Clemmensen reduction

(b) Wolff–Kishner reduction

(c) Both of these

(d) None of these

(viii) The molecular formula of pyrimidine is

(a) $C_4H_4N_2$ (b) C_5H_5N

(c) C_4H_6N (d) $C_4H_5N_2$

(ix) Which of the following is strong hydride donor?

(a) $NaBH_4$ (b) $LiAlH_4$

(c) B_2H_2 (d) None of above

(x) Electrophilic substitution reactions of pyrazole take place which position?

(a) C-3

(b) C-4

(c) C-5

(d) Resistant to electrophilic attack

(xi) Which statement is not true for a meso compound?

(a) The specific rotation is 0°

(b) There are one or more planes of symmetry

(c) More than one stereogenic center must be present

(d) Stereochemical labels, R and S must be identical for each stereogenic centre

(xii) The process of separation of racemic mixture into d– and 1– enantiomer is called

(a) revolution

(b) resolution

(c) inversion

(d) chiral pool

(xiii) Histamine is a derivative of _____

(a) pyridine (b) pyrrole

(c) purine (d) imidazole

(xiv) Hydrogenation of Pyridine results in

(a) Morpholine (b) Pyrrolidine

(c) Piperazine (d) Piperidine

(xv) In Oppenauer oxidation, which of the following conversion can be seen?

(a) Primary alcohols to aldehydes

(b) Secondary alcohols to ketones

(c) Primary alcohols to carboxylic acids

(d) All of these

(xvi) Which of the following can make difference in optical isomers?

(a) Heat

(b) Temperature

(c) Polarized light

(d) Pressure

(xvii) Which reagent is used to convert Thiazole into Thiazole-5-sulphonic acid?

(a) Oleum in mercury

(b) NBS

(c) Mixture of H_2SO_4 and HNO_3

(d) H_2SO_4 in Pyridine

(xviii) The sufficient condition for showing optical activity is _____

(a) Molecule should have measurable amount of optical activity only

(b) Polarimeter should have capacity of recording low-degree optical activity

(c) Chirality of molecule as a whole only

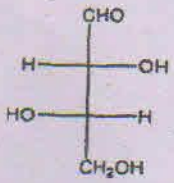
(d) Both (a) and (b)

(xix) Which of the following groups has the highest priority according to the sequence rules?

(a) $C \equiv CH$ (b) $CH=CH_2$

(c) $CH(OH)CH_3$ (d) CH_2CH_2OH

(xx) The mirror image of the following structure will be



(a) D enantiomer (b) L enantiomer

(c) diastereomer (d) a meso compound

2. Answer any *seven* questions : (7 × 5 = 35)

(a) Write the CIP rules for determination of R/S configuration of a stereoisomer with necessary examples.

(b) Discuss various methods of synthesis and reactions for Oxazole in brief.

(c) Draw and explain the conformational isomerism of n–Butane.

(d) Describe the reactions and medicinal uses of Thiophene.

(e) What are enantiomerism, diastereoisomerism and meso compounds? Cite examples.

(f) Write a note on Dakin Reaction along with mechanism of reaction.

(g) Draw the resonance structures of Pyridine. Compare the basicity of pyridine with pyrrole, pyrazole and imidazole. (2+3 =5)

(h) Describe Optical activity and inactivfty in the light of stereochemistry.

(i) Write the structure and medicinal uses of any *two* :

(i) Thiophene

(ii) Acridine

(iii) Purine.

3. Answer the following questions : (Any *Two*) : (2 × 10 = 20)

(a) (i) Describe absolute and partial Asymmetric synthesis with suitable illustration. (7)

(ii) Write a note on Birch reduction. (3)

(b) Discuss the nomenclature of geometrical isomers with vivid examples. Write short note on Atropisomerism in Biphenyl Compounds. (8+2 = 10)

(c) Discuss various reactions of Quinoline and Isoquinoline. Write three medicinal uses of them. (7+3 = 10)
