Total No. of printed pages = 4

BP 401T

Roll No. of candidate | | | | | | | | | | |

2023

B.Pharm 4th Semester End-Term Examination

PHARMACEUTICAL ORGANIC CHEMISTRY — III – Theory

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) According to CIP rule which of the following has highest priority?

(a) OH (b) H

(c) COOH (d) CH_3

(ii) Cis-2-butene is optically inactive because

(a) No chiral atom

(b) No chiral axis

(c) Presence of plane of symmetry

(d) Double bond is present

(iii) Which of the following best explains the relative stabilities of the eclipsed and staggered forms ethane? The ———— form has the most ———— strain.

(a) Eclipsed;steric

(b) Eclipsed;torsional

(c) Staggered;steric

(d) Staggered;torsional

(iv) The preferable position for electrophilic substitution reaction in Pyrrole is

(a) C-2 (b) C-3

(c) Oxygen atom (d) C-2 & C-3

[Turn over

(v) Which one the following five-membered rings is most resonance stabilized?

(a) Furan (b) Thiophene

(c) Pyrrole (d) Pyridine

(vi) The basicity order in imidazole, pyrazole, thiazole and oxazole is

(a) Imidazole>Pyrazole>thiazole>oxazole

(b) Pyrazole>thiazole>oxazole>imidazole

(c) Oxazole>imidazole>pyrazole>oxazole

(d) Thiazole>imidazole>pyrazole>oxazole

(vii) Quinacrine contains ———— ring.

(a) Isoquinoline (b) Quinoline

(c) Acridine (d) Indole

(viii) The Wolff-kishner reduction reduces carbonyl compounds to ————.

(a) Hydrocarbon (b) Acid

(c) Aldehyde (d) Alcohol

(ix) Why Sodium borohydride is an important reagent in reducing a ketone?

(a) It is good for hydrolytic type reaction

(b) It is a good source of hydride ion

(c) It can act as a base

(d) It can act as a free radical initiator

(x) Which of the following compounds displays optical isomerism?

(a) $CH_2(OH)$-$CH_2(OH)$ (b) CH_3-CHCl-COOH

(c) CH_2=CHCl (d) CH_3-O-C_2H_5

(xi) Which one of these is true for meso compounds?

(a) Are optically inactive

(b) Are optically active

(c) Contain one chiral center

(d) Are enantiomers.

(xii) The "N"atom in Pyridine is

(a) Sp^3 hybridized (b) Sp^2 hybridized

(c) sp hybridized (d) May be sp or Sp3 hybridized

(xiii) Which of the following molecule is achiral?

(a) (2R,3R)-2,3-Dichloropentane

(b) (2R,3S)-2,3-Dichloropentane

(c) (2S,4S)-2,4-Dichloropentane

(d) (2S,4R)-2,4-Dichloropentane

(xiv) Which of these is a comparatively insignificant factor affecting the magnitude of Specific optical rotation?

(a) Concentration of the substance of interest

(b) Purity of the sample

(c) Temperature of the measurement

(d) Length of the sample tube

(xv) An alkane which can exhibit optical activity is

(a) Neopentane (b) Isopentane

(c) 3-Methylpentane (d) 3-Methylhexane

(xvi) Which of the following is true of any (S)-enantiomer?

(a) It rotates the plane polarized light to the right

(b) It rotates plane-polarized light to the left

(c) It is a racemic form

(d) It is the mirror image of corresponding (R)-enantiomer

(xvii) How many chiral stereoisomers can be drawn for $CH_3CHFCHFCH(CH_3)_2$?

(a) 1 (b) 2

(c) 3 (d) 4

(xviii) Which of the statements below correctly describes an achiral molecule?

(a) The molecule has a nonsuperimposible mirror image

(b) The molecule exhibits optical activity when it interacts with plane-polarized light

(c) The molecule has an enantiomer

(d) The molecule might be a meso form

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

(a) Heat (b) Temperature

(c) Polarized light (d) Pressure

(xx) Hexane and 3-methylpentane are example of:

(a) Enantiomers (b) Stereoisomers

(c) Diastereomers (d) Constitutional isomers

2. Long answers (Answer *two* out of three) : (2 × 10 = 20)

(a) What do you mean by Geometrical isomerism? Write the methods of determining the configuration of geometrical isomers.

(b) Write short note (Any *two*)

(i) Syn-Anti isomers

(ii) Beckmann Rearrangement reaction

(iii) Stereospecific reactions.

(c) Explain the Rand S system of nomenclature of optical isomers with the help of sequence rule. Discuss the stereoisomerism in biphenyl compounds.

3. Short answers (Answer *seven* out of nine) (7 × 5 = 35)

(a) Write about conformational isomer of Cyc1ohexane.

(b) What are meso compounds? Write the methods for racemic modification.

(c) Describe the basicity of Pyrrole, Furan and Thiophene.

(d) Write note on following: (Any *one*)

(i) Dakin reaction

(ii) Claisen-schmidt reaction

(e) What are the various types of Elements of symmetry? Mention them with examples.

(f) What is optical isomerism? Classify with example.

(g) What are heterocyclic compounds? Classify heterocyclic compounds with examples.

(h) Write the synthesis, reactions and medicinal uses of Pyridine.

(i) Illustrate the mechanism of Lithium aluminium hydride reduction process.
