2. Discuss the CIP sequence rule for RS notation along with Fischer projection rule with examples under each rule.What are meso compounds? Give an example 7+3=10

3. Write down the mechanism and synthetic importance of Schmidt rearrangement and Oppenauer-oxidation. 5+5=10

III. Short answers (Answer seven out of nine questions) 5x7=35

1. Describe the two synthesis and a medicinal use of thiophene. 4+1=5

2. Discuss the relative aromaticity and reactivity of pyrrole, furan and thiophene. 5

3. Write a note on metal hydride reduction. 5

4. Mention synthesis and medicinal uses of thiazole. 2.5+2.5=5

5. Discuss the mechanism and a synthetic application ofBeckmanns rearrangement. 4+1=5

6. Discuss DL system of nomenclature of optical isomers. 5

7. Describe the two methods of synthesis andmedicinal use of indole. 4+1=5

8. Define specific rotation.If the specific rotation of a compound is +60° and a 0.05 g/mL solution gives an observed rotation of +1.5°, what is the path length in dm of the polarimeter tube?

9. Classification of heterocyclic compounds with examples under each class. 5

*****

B.Pharm Even Semester Examination, May, 2025

PHARMACEUTICAL SCIENCES

(4th Semester)

Course No: BP-401T

(Pharmaceutical Organic Chemistry-III)

FM: 75

Time: 3 Hours

The figures in the right margin indicate full marks for the question

I. A. Multiple-choice questions 1x10=10

1. Pyrazole differs from imidazole in that:
   (a) Pyrazole is aromatic and imidazole is not
   (b) Pyrazole has adjacent nitrogen atoms
   (c) Imidazole is six-membered
   (d) Pyrazole contains sulfur

2. Stereoisomers have:
   (a) Same molecular formula but different connectivity
   (b) Same molecular formula and same connectivity
   (c) Different molecular formula
   (d) Same boiling point always

3. Which of the following is not a type of stereoisomerism?

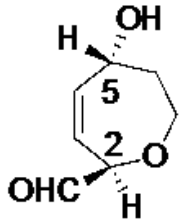
(a) Geometrical isomerism

(b) Optical isomerism

(c) Chain isomerism

(d) Conformational isomerism

4. Choose the correct absolute configuration for the following molecule:



(a) 2R, 5S (b) 2S, 5S

(c) 2S, 5R (d) 2R, 5R

5. Which heterocycle is a six-membered ring with two nitrogen atoms at positions 1 and 2?

(a) Pyrimidine (b) Pyrazine

(c) Pyridazine (d) Imidazole

6. The correct order of aromaticity among furan, pyrrole, and thiophene is:

(a) Pyrrole > Furan > Thiophene

(b) Thiophene > Pyrrole > Furan

(c) Furan > Pyrrole > Thiophene

(d) Pyrrole > Thiophene > Furan

7. Imidazole is a common structural component of which biologically important molecule?

(a) Glucose (b) Histidine

(c) Cholesterol (d) Ribose

8. Which of the following reagents selectively reduces aldehydes and ketones, but not esters or acids?

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

(c) Zn/HCl (d) H_2/Ni

9. Birch reduction converts aromatic rings to:

(a) Fully saturated rings

(b) 1,3-dienes

(c) Non-aromatic enones

(d) 1,4-cyclohexadienes

10. Beckmann rearrangement converts oximes to:

(a) Aldehydes (b) Ketones

(c) Amides (d) Nitriles

I. B. Objective type (Answer the following in brief) 2x5=10

1. Write any two method of synthesis of furan.

2. Mention two reactions of pyrazole.

3. Define enantiomer with an example.

4. What do you mean antiperiplanar migration? Give an example.

5. What areepimers? Give an example.

II Long answers (Answer two out of three questions) 10x2=20

1. Discuss the synthesis, reactions and medicinal applications of pyrrole. 3+5+2=10