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

1. Discuss the synthesis, reactions and medicinal applications of indole. 3+5+2=10
2. Discuss the CIP sequence rule for the notation of RS and EZ system with examples under each rule. 5+5=10
3. Write down the mechanism and synthetic importance of Wolff Kishner reduction and Oppenauer-oxidation. 5+5=10

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

1. Discuss the relative aromaticity of pyrrole, furan and thiophene. 5
2. Write down two synthetic applications of NaBH4 with specific mechanism. 2.5+2.5=5
3. Mention synthesis and medicinal uses of pyrimidine. 2.5+2.5=5
4. Discuss the mechanism and a synthetic application of Dakin reaction or Beckmann rearrangement. 4+1=5
5. Describe the synthesis, reaction and medicinal uses of quinoline. 2+1+2=5
6. Explain two types of chiral reactions with specific examples. 2.5+2.5=5
7. Describe the synthesis and reactions of pyrazole and oxazole (two each). 2.5+2.5=5
8. Discuss the strategies employed for the resolution of racemic mixture with an working example. 5
9. Discuss any two elements of symmetry with example. 2.5+2.5=5

.★★★

UG (CBCS) EVEN SEMESTER EXAM, JULY 2024

PHARMACEUTICAL SCIENCES

(4th Semester)

Course No: BP - 401T

Pharmaceutical Organic Chemistry- III (Theory)

Full Marks : 75

Time : 3 hours

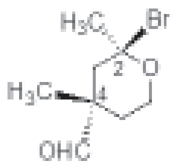
The figures in the margin indicate full marks for the questions

I.A Multiple-choice questions 1x10=10

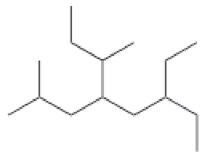
1. Acridine can be synthesized using
   (a) Skraup reaction
   (b) Pfitzinger synthesis
   (c) Pomeranz-Fritsch reaction
   (d) Ullman synthesis
2. NaBH4 cannot reduce
   (a) Acid
   (b) Esters
   (c) Amides
   (d) All the above
3. Pentamethylene diamine on heating and subsequent dehydrogenation results in
   (a) Pyridine
   (b) Piperidine
   (c) Imidazole
   (d) Quinoline

(Turn Over)

4. The Schmidt reaction is an organic reaction in which an azide reacts with ketone to yield
   (a) Amines
   (b) Amides
   (c) Aldehydes
   (d) Nitrile
5. The starting material used in Madelung synthesis is
   (a) Benzaldehyde
   (b) 2-Methylbenzamide
   (c) Acetamidine
   (d) β-keto ester
6. Choose the correct R/S notation for the following molecule at the chiral centers



   (a) 2R, 4R
   (b) 2S, 4R
   (c) 2R, 4S
   (d) 2S, 4S
7. Dehydration of succinaldehyde in presence of phosphorous pentoxide gives
   (a) Pyridine
   (b) Furan
   (c) Oxazole
   (d) Imidazole
8. How many chiral atoms does the following molecule have?



   (a) 3
   (b) 4
   (c) 5
   (d) 6
9. Which of the following nucleus is present in brucine?
   (a) Indole
   (b) Quinoline
   (c) Purine
   (d) Pyrimidine
10. What notation are not used to distinguish between pairs of enantiomers?
   (a) R and S
   (b) E and Z
   (c) D and L
   (d) (+) and (-)

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

1. Write any one method each to synthesize pyrrole and thiazole.
2. Mention two reactions of imidazole.
3. Define syn and anti configuration with examples.
4. Define Claisen-Schmidt reaction with a general reaction.
5. What is the difference between enantiomerism and diastereoisomerism?

(Turn Over)