PB **5243**

Roll No. _____ Total No. of Pages: 02

M.Sc. (Semester - III) Examination - Dec. - 2025
Chemistry
Paper- 3.4 CHEM
Heterocyclic Chemistry
(Organic Chemistry Specialization)

Time Allowed: Three Hours **Maximum Marks: 70**

This question paper contains two sections as under

Section - A **(खण्ड - अ)** **Max. Marks-20**

This section will have 10 questions, having 02 questions from each unit with no internal choice. Answer in about 20 words. All questions will have equal marks. (02×10=20)

Section - B **(खण्ड - ब)** **Max. Marks-50**

This section will have 10 questions, having 02 questions from each unit, one question to be attempted from each unit. Words limit approximately 400-500 words. Questions may have sub divisions. All questions will have equal marks. (10×05=50)

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Section - A

1. Answer the following questions 10x2=20

i) What is nomenclature system in Spiro heterocycles?

ii) Explain Anomeric effect in heterocycles.

iii) Write down one synthesis of oxirane.

iv) Write one method of preparation of Thietanes.

v) Explain basicity of Pyrrole.

vi) Explain structure of Furane.

vii) Write one preparation of quinoline.

viii) Write two Benzo-fused six - membered heterocycles with two nitrogen atoms.

ix) What are conmarins?

x) Give one example of Benzothiazepines.

Section - B

Unit - I

2. Describe structural, electronic, energetic and magnetic criteria of aromaticity in heterocycles. 10

OR

Explain strain, bond angle, torsional strain and their effect in small ring heterocycles.

Unit - II

3. Describe the synthesis and reactions of diazirdine and oxaziridine. 10

OR

Short note on any two -

(a) Azetidine (b) Azetidinone (c) Oxetone

Unit - III

4. Describe synthesis and medicinal importance of Triazole and Tetrazole. 10

OR

Describe synthesis and medicinal importance of Indole and Benzimidazole.

Unit - IV

5. Write the preparation of Pyridine, Pyrimidine and striazine, compare their basicity & give their medicinal importance. 10

OR

Describe synthesis, reactions and medicinal importance of quinazoline.

Unit - V

6. What are Pyrylium salts? Give their synthesis and reactivity. 10

OR

Short Note on any three -

(i) Azepines
(ii) Oxepine
(iii) Thiepine
(iv) Benzodiazepine
(v) Benzoxazepine.

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