647510 **MSC4OrgC403x** **Seat No :_____**

M.Sc.(Chem.) Semester - 4 (*CBCS*) Examination
March/April - 2026 (As Per Syllabus Year June-2019)
Heterocyclic Chemistry (Core)

Time: 2:30 Hours **Marks:70**

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1(A) **Answer the following.** **(04)**

(1) Discuss rules for selection of base component in multiple fused heterocyclic ring systems with examples.

Q.1(B) **Answer any Two question out of three.** **(10)**

(1) Explain rules for the systematic IUPAC nomenclature of Bicyclo heterocycles with examples.

(2) Give Two synthesis of followings:
   1) Aziridine.
   2) 1,2-dioxetane.

(3) Discuss chemical reactivity and Two synthesis of Azetidine.

Q.2(A) **Answer the following.** **(04)**

(1) Why pyrolidine is more basic than pyrrole? Provide any Two synthesis of Pyrrole.

Q.2(B) **Answer any Two question out of three.** **(10)**

(1) Describe physical properties and Two synthesis of benzofuran.

(2) Discuss any Two synthesis of followings:
   1) Indolizine.
   2) Thiophene.

(3) Elaborate Electrophilic reaction and any Two synthesis of Furan.

Q.3(A) **Answer the following.** **(04)**

(1) In Pyridine: Why Electrophilic attack is more favourable at position-3? Provide one synthesis of Pyridine.

Q.3(B) **Answer any Two question out of three.** **(10)**

(1) Discuss any Three synthesis of Quinaxoline.

(2) Explain any Two synthesis of followings:
   1) Pyrazine.
   2) Phenothiazine.

(3) Discuss any Three synthesis of Phthalazine.

Q.4(A) **Answer the following.** **(04)**

(1) Discuss any Two synthesis of Benzopyran.

Q.4(B) **Answer any Two question out of three.** **(10)**

(1) Provide oxidation and reduction products of Isoquinoline in different conditions.

(2) Elaborate any Two synthesis of followings:
   1) Acridine.
   2) Benzopyran-4-one.

(3) Describe chemical reactivity and Two preparation of Quinoline.

Q.5(A) **Answer the following.** **(04)**

(1) Explain electrophilic reactions and One synthesis of Pyrazole.

Q.5(B) **Answer any Two question out of three.** **(10)**

(1) Describe any Three synthesis of Triazine.

(2) Give Two synthesis of followings:
   1) Isoxazole.
   2) Oxadiazole.

(3) Describe Chemical properties and Two preparation of Thiazole.

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