

M.Sc.(Chem.) Semester - 4 (CBCS) Examination
April/May-2023 (NEW COURSE)
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 questions. (04)**
Draw any four heterocyclic analogues of cyclopropane with two heteroatom and give its IUPAC nomenclature.
- Q.1(B) Answer the following question. (Any Two) (10)**
 1. Describe three synthesis of (I) azirine and (II) oxirane.
 2. Explain rules for the systematic IUPAC nomenclature of Spiro heterocycles with examples.
 3. (I) Give Two synthesis of azetidine
(II) Discuss ring opening reaction of oxetane.
- Q.2(A) Answer the following questions. (04)**
 1. Compare aromatic character of pyrrole, furan and thiophene.
 2. Write any two synthesis of indolizine.
- Q.2(B) Answer the following question. (Any Two) (10)**
 1. Discuss Electrophilic reaction and give any two synthesis of Pyrrole
 2. Discuss reactivity and Two synthesis of thiophene.
 3. Discuss reduction reaction of followings: (I) Indole (II) Benzofuran
- Q.3(A) Answer the following questions. (04)**
 1. Explain reduction reaction of pyridine
 2. Discuss any Three synthesis of Phenothiazine
- Q.3(B) Answer the following question. (Any Two) (10)**
 1. Explain nucleophilic addition reaction of pyrylium ion.
 2. Provide Nucleophilic reactions and any Two synthesis of Pyridine.
 3. Explain any Two synthesis of followings: (I) Quinazoline. (II) Phthalazine.
- Q.4(A) Answer the following questions. (04)**
 1. Explain any Two synthesis of Benzopyran
 2. Describe any two nucleophilic substitution reactions of quinoline.
- Q.4(B) Answer the following question. (Any Two) (10)**
 1. Describe Electrophilic reaction and Two preparation of Isoquinoline.
 2. Discuss Electrophilic reaction and Two synthesis of Acridine.
 3. Elaborate any Two synthesis of followings: (I) Benzopyran-2-one.
(II) Benzopyran-4-one.
- Q.5(A) Answer the following questions. (04)**
Discuss electrophilic and nucleophilic reaction on thiazole.
- Q.5(B) Answer the following question. (Any Two) (10)**
 1. Give Two synthesis of followings: (I) 1,2,4-thiadiazole (II) Triazole.
 2. Describe Chemical reactions and Two preparation of Oxazole.
 3. Provide two synthesis of followings: (I) Pyrazole. (II) Imidazole.
