

PC-377 CV-19
M.Sc. Chemistry (III SEM.)
Examination Dec-2020
Compulsory
Paper-IV

CHEMISTRY OF HETEROCYCLIC COMPOUNDS

Time: Three Hours]

[Maximum Marks: 80

[Minimum Pass Marks: 29

Note: Question paper is divided into three Sections Attempt questions of all Three Section as per direction. Distributions of marks is given in each Section.

Section -A

1. Answer the following questions: 1X10
- a. Write the structure of 1,3 thiazine.
 - b. Draw the structure of benzofuran.
 - c. Define empirical resonance energy
 - d. Write the bond length between N-C in pyridine.
 - e. Write the medicinal value of Oxyperline.
 - f. Write two application of Benzo-Furan.
 - g. What is the difference between Coumarin and chromones
 - h. What do you understand by cyclo addition reaction?
 - i. What is anomeric effect.
 - j. Give two example of bridged heterocycle's.

Section -B

2. a. Write down the Gabriel method of Aziridine Synthesis. 2X5
- b. Define Dewar resonance energy with one example.
 - c. Explain hydrogen bonding in non-aromatic heterocycles.
 - d. Explain the synthesis of azepines from nitrobenzene.
 - e. Write the structure of borabenzene.

Section -C

Unit-1

3. a. Discuss Systematics and replacement nomenclature of fused and bridged heterocycles. 8
- b. Explain tautomerism in heterocycles. 4

OR

- a. Discuss the main characters of aromaticity in heterocyclic compound. 6
- b. Describe the resonance energy in heterocyclic compound. 6

Unit-2

4. Discuss the following- [6+6]
1. Stereoelectronic effect 2. 1,3 diaxial interactions
- OR
1. Explain the anomeric effect in saturated heterocyclic compounds [8+4]
 2. Write a note on bond angle strain.

Unit-3

5. Explain the principles and application of cycloaddition reaction for the synthesis of heterocyclic compounds [12]

OR

Describe the synthesis of the following compound

1. Azetidine 2. Oxitanes 3. Thietanes

Unit-4

[12]

6. Discuss synthesis and important reactions of following Six membered heterocycles.

1. Thiazines 2. Diazines

OR

Write synthesis and reactions of chromones

Unit-5

[12]

7. Give synthesis and reactions including medicinal application of Benzo-pyrrole.

OR

Explain the synthesis and reaction of the following compounds:-

1. Azepines 2. Thiepines