

M.Sc.(Chem.) Semester - 3 (CBCS) Examination
Nov/Dec-2023 (OLD COURSE)
HETEROCYCLIC CHEMISTRY (CORE)

Time: 2:30 Hours

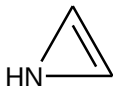
Marks: 70

Instructions:

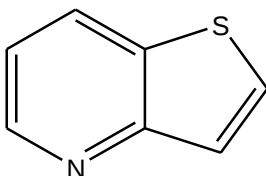
1. All questions are compulsory.
 2. Figures to the right indicate marks.
-

Que.1 Answer any seven of the following questions: (14)

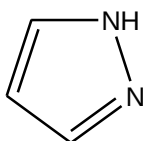
- 1) What are heterocyclic compounds? Name the following heterocycle.



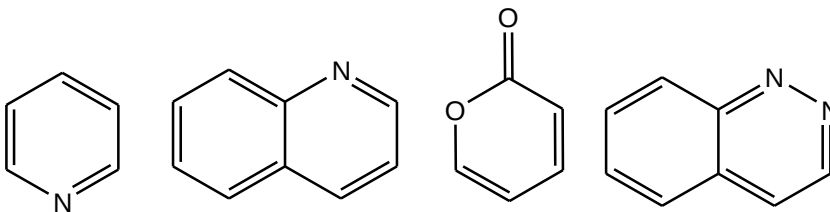
- 2) Which is the base component in the following heterocycle and why?



- 3) How can oxirane be prepared?
- 4) Draw structures of azetidine and thiirane.
- 5) Draw structures of benzofuran and tetrazole.
- 6) Mention any two chemical reactions of the following heterocycle:



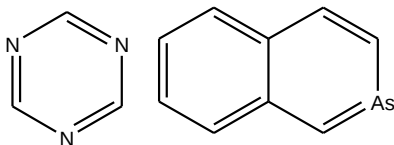
- 7) Name the following heterocycles:



- 8) Draw structures of Pyrimidine, Pyran, Pyridazine and Pyrazine.
- 9) Draw structures of 1,4-diazocine and diazepine.
- 10) How will you synthesize thiepine?

Que.2 Answer any two of the following questions: (14)

- 1) Name prefixes for phosphorous, bismuth and tin. Which rules are applied to name the following heterocycles? Write names also.



- 2) Explain the synthesis of isoindole and carbazole. Draw structures of isoquinoline and acridine.
- 3) What are the chemical reactions of oxaziridine and thietane?

Que.3 Answer the following questions: (14)

- 1) Explain the rules with suitable example to name bridged heterocycles.
- 2) How will you synthesize phenanthridine, thiazole and triazole.

Que.4 Attempt any two of the following questions: (14)

- 1) Mention different reactions to synthesize 1,4-dithiane.
- 2) Draw the structure of benzopyran. How will you synthesize benzo-4-pyran?
- 3) Discuss three methods of synthesis of carbazole.

Attempt any one of the following questions:

- 1) What are fused heterocycles? Name the two components of a fused heterocycle. Draw the structure of benzimidazole.
- 2) How will you prepare isoxazole? Draw the structure of oxazole.

Que.5 Answer any two of the following questions: (14)

- 1) What are the different rules for numbering a heterocycle given by Hantzsch-Widman? Give proper examples.
- 2) Draw structures of : 1,4-dioxocin, isobenzofuran and oxetane. Fill in the blanks for the following to show appropriate stem for nomenclature:

Ring Size	Unsaturation	Saturation
3-membered	_____ (Nitrogen containing)	_____ (other than nitrogen)
7-membered	_____	_____

- 3) Name the following:

