647510 **MSC3HETC0310** Seat No :_____

# M.Sc.(Chem.) Semester - 3 (*CBCS*) Examination
## Oct/Nov-2022 (OLD COURSE)
## HETEROCYCLIC CHEMISTRY (CORE)

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

**Instructions:**

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

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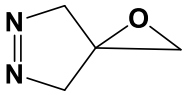
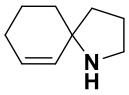
**Q.1** Answer any **Seven** of the following ten questions. [14]

**1.** Give IUPAC nomenclature of the following heterocyclic compounds.




(a)




(b)

**2.** Generate correct Structures from the followings IUPAC names.

a) 3-oxa-1-thia-8-azaspiro[4.5]deca-6,9-diene

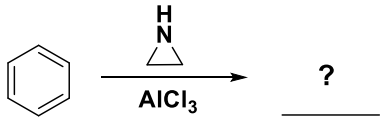
b) pyrido[2,3-*b*]pyrazine

c) pyrrolo[1,2-*a*]quinoxaline

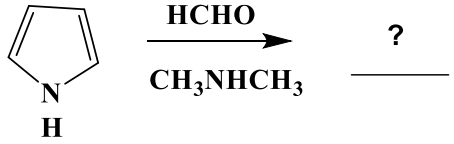
d) 4*H*-imidazo[5,4-*d*]thiazole

**3.** Complete the following reactions

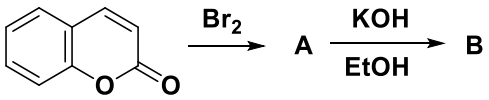
a)



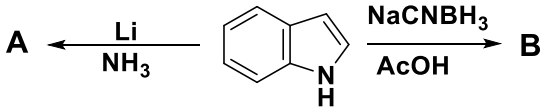

b)




**4.**




**5.**




**6.** Why electrophilic reaction occurs at position-3 in indole?

**7.** Give any Two synthesis of Indolizine.

**8.** Provide any two ring opening reactions of Aziridine.

**9.** Give physical properties of Benzothiophene.

**10.** Why Electrophilic substitution occurs at position-2 in Pyrrole?

**Q.2** Answer any **Two** of the following three questions. [14]

1. Explain chemical reactivity of Thiirane.
2. Provide any three synthesis of Imidazole.
3. Give preparation and properties of Pyridine.

**Q.3** Answer the following questions. [14]

1. Give any Two synthesis of Diazepine
2. Explain any Two synthesis of Indole.
3. Give any Two synthesis of Azetidine.

**OR**

**Q.3** Answer the following questions. [14]

1. Give Three synthesis and physical properties of Pyrazole.
2. Explain chemical reactivity and Two synthesis of Quinoline.

**Q.4** Answer the following questions. [14]

A. Answer any **Two** of the following three questions. (5 Marks each)

1. Give at least Two synthesis of 1,4-Diazocine.
2. Give at least Two synthesis of Coumarin.
3. Describe the chemical reactivity of Phenanthridine.

B. Answer any **One** of the following two questions. (4 Marks)

1. Give at least Two synthesis of Tetrazole.
2. Give at least Two synthesis of Oxiran.

**Q.5** Answer any **Two** of the following four questions. [14]

Give at least Two synthesis of following heterocyclic compounds:

1. (a) Carbazole (b) Thiazole
2. (a) Isoindole (b) Cinnoline
3. (a) Isoquinoline (b) Triazole
4. (a) Aziridine (b) Diazirine

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