

**M. SC. (CHEMISTRY)/M. SC.  
(ANALYTICAL CHEMISTRY)  
(MSCCHEM/MSCANCHEM)**

**Term-End Examination**

**December, 2024**

**MCH-017 : ORGANIC CHEMISTRY-II**

*Time : 2 Hours*

*Maximum Marks : 50*

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**Note :** *There are two Parts. Answer questions from each Part according to the instructions given for them.*

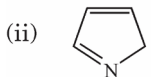
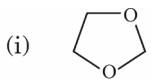
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**Part—A**

**Note :** *Answer any **one** of the following questions.*

1. (a) Write the names of the following compounds according to Hantzsch-Widman system : 2



(b) Write the structures of the following compounds : 3

(i) Benzo[b]furan

(ii) Oxacyclopropane

(iii) Phosphabenzene

*Or*

2. Write the reaction and mechanism for Fischer synthesis of indole. 5

**Note :** Answer any **five** of the following questions.

3. What is Perilezhaev reaction ? Explain the products formed when **cis**-2-butene and **trans**-2-butene undergo this reaction. 4

4. (a) Explain the synthesis of azetidine using intramolecular cyclisation reaction. 2

- (b) Why are four membered heterocyclic compounds more difficult to synthesize as compared to the three-membered ones ? 2
5. Discuss the steps involved in the Maquene synthesis of imidazole. 4
6. Give the products formed when benzimidazole reacts with the following :  $4 \times 1 = 4$
- (i) Alkylhalides
  - (ii) Acrylonitrile
  - (iii) Oxirane
  - (iv) Formaldehyde
7. Discuss Combes synthesis of quinolines giving the sequence of reactions involved. 4
8. Write the synthesis of oxepine from 1, 4-cyclohexadiene. Give the sequence of reactions taking place. 4

**Part—B**

**Note :** Answer any **one** of the following questions.

9. Write the disconnections for the acaricide chlorbenside. Also give its synthesis from suitable synthons. 5

*Or*

10. Write the mechanism for both the acid and base mediated tautomerism of a diethylketone. 5

**Note :** Answer any **five** of the following questions.

11. Briefly explain Stille coupling. List any *three* organostannanes which can be used in it. 4
12. (a) What is Raney Nickel ? Give its use. 2
- (b) Which type of compounds can be reduced using sodium cyanoborohydride ? 2

13. What is DDQ ? Give its structure. How can it be synthesised ? Give the reactions involved. 4
14. How do the sulphur compounds such as dithiane induce Umpolung reactivity ? Explain using a suitable example. 4
15. Discuss the role of phase transfer catalysts in nucleophilic substitution reactions. Explain with the help of an suitable example. 4
16. What is regioselectivity in organic reactions ? Explain with the help of an appropriate example. 4

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