

No. of Printed Pages : 8

MCH-017

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

Term-End Examination

June, 2026

MCH-017 : ORGANIC CHEMISTRY-II

Time : 2 Hours

Maximum Marks : 50

Note : (i) *There are two Parts.*

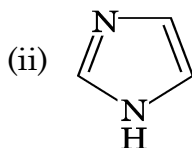
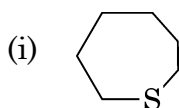
(ii) *Answer questions from each part according to the instructions given for them.*

(iii) *Question No. 1 of both Parts A and B is compulsory.*

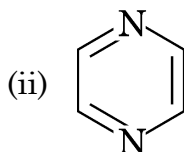
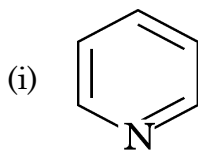
Part—A

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

1. (a) Write the names of the following compounds according to Hantzsch-Widman nomenclature : $2\frac{1}{2}$



- (b) Give the number of expected signals in the ^1H -NMR spectrum of the following compounds along with expected S value. $2\frac{1}{2}$



Or

Give the synthesis of aziridine by Gabriel method. How would you synthesize a substituted aziridine starting from oxirane ? 5

2. How would you synthesize azetidine-2-carboxylic acid starting from a γ -lactone ? 4

3. Briefly explain the Bredereck reaction for the synthesis of 2-unsubstituted imidazole. 4

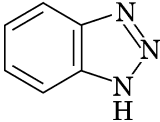
4. Write the reduction of indole using the following set of reagents : 4

(i) Li/liq. NH_3 ; CH_3OH

(ii) Catalytic reduction using H_2 , $\text{Pd}(\text{OH})_2$,
 CH_3COOH

5. (a) Draw the tautomeric forms of benzimidazole and label the atoms with numbers as per IUPAC nomenclature.

2

- (b) Give the products of the reaction of benzotriazole,  with the following reagents :

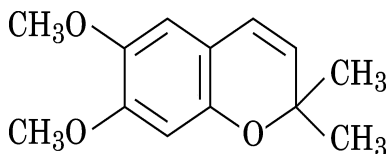
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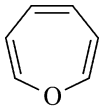
(i) Conc. $\text{HNO}_3/\text{H}_2\text{SO}_4$, room temp.

(ii) $\text{C}_6\text{H}_5\text{NCO}$

6. (a) Starting from a suitable chromanone, how will you synthesize the following compound ?

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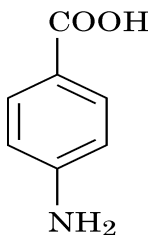


- (b) Give the products of nitration of quinoline. 2
7. (a) Write the preparation of quinoxaline from glyoxal. 2
- (b) How would you synthesize oxepin,  starting from [2, 2, 0] hexa-2,5-diene ? 2

Part—B

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

1. Write the disconnections for the following molecule : 5

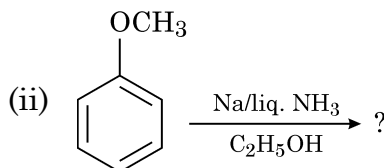
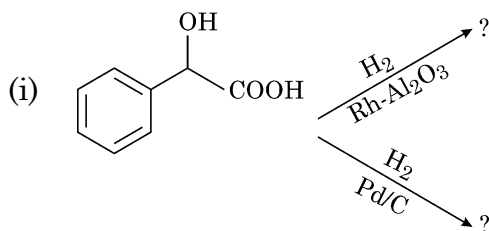


Provide the scheme of its synthesis from the synthesis obtained.

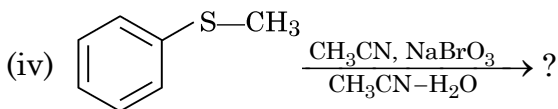
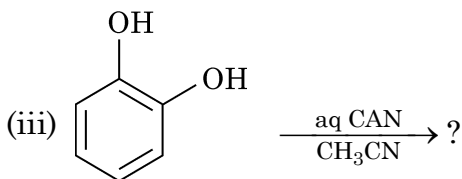
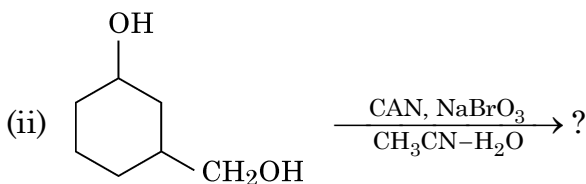
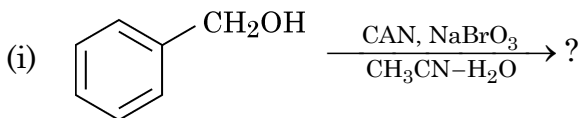
Or

Why is water or alcohol not preferred for the generation of enolates ? Which solvents are generally used for enolate generation ? Give any *three* solvents along with their structures. 5

2. What is Suzuki coupling reaction ? Give the advantages of this reaction. 4
3. (a) What is Lindlar's catalyst ? 1
- (b) Give the products of the following reactions : 3



4. Write the products obtained in the following reactions : 4



5. What are homoenolates ? How are they different from enolates ? Write the method of their preparation from β -bromoacetal. 4

6. Give any *four* advantages of PEGs.
Comment on their utility as phase transfer catalysts. 4
7. What are chemoselective and regioselective reactions ? Give *one* example of each of these reactions. 4

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