

**MCH-017**

**ASSIGNMENTBOOKLET**

**M.Sc. in Chemistry Programme  
(MSCCHEM)**

**M.Sc. in Analytical Chemistry Programme  
(MSCANCHEM)**

**ORGANIC CHEMISTRY-II**

**(Valid from July, 2025 to June, 2026)**

**It is compulsory to submit the assignment before filling in  
the examination form.**



**School of Sciences  
Indira Gandhi National Open University  
Maidan Garhi, New Delhi – 110068  
(2026)**

Dear Learner,

Please read the Section on assignments in the Programme Guide for M.Sc. in Chemistry/M.Sc.in Analytical Chemistry that we sent you after your enrolment. A weightage of 30 per cent, as you are aware, has been earmarked for continuous evaluation, which would consist of one tutor-marked assignment for this course. The assignment is in this booklet, and covers all the four blocks of the course. The total marks of all the parts are 100, of which 40% are needed to pass it.

### Instructions for Formatting Your Assignments

Before attempting the assignment, please read the following instructions carefully:

- 1) On top of the first page of your answer sheet, please write the details exactly in the following format:

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|                               |                |
|-------------------------------|----------------|
| <b>ENROLMENT NO.:</b> .....   |                |
| <b>NAME</b>                   | <b>:</b> ..... |
| <b>ADDRESS</b>                | <b>:</b> ..... |
|                               | .....          |
|                               | .....          |
| <b>COURSE CODE</b>            | <b>:</b> ..... |
| <b>COURSE TITLE</b>           | <b>:</b> ..... |
| <b>ASSIGNMENT NO. :</b> ..... |                |
| <b>STUDY CENTRE</b>           | <b>:</b> ..... |
| <b>DATE:</b> .....            |                |
| <b>(NAME AND CODE)</b>        |                |

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**PLEASE FOLLOW THE ABOVE FORMAT STRICTLY TO FACILITATE EVALUATION AND TO AVOID DELAY.**

- 2) Use only foolscap size paper (but not of very thin variety) for writing your answers.
- 3) Leave about 4cm margin on the left, top and bottom of your assignment response sheet.
- 4) Your answers should be precise.
- 5) Submit the complete assignment answer sheets within the due date.
- 6) The assignment answer sheets are to be submitted to your Study centre within the due date.  
Answer sheets received after the due date shall not be accepted.

***We strongly suggest that you retain a copy of your solved assignment.***

- 7) This assignment is valid from **1<sup>st</sup> July, 2025 to 30 June, 2026**. If you have failed in this assignment or fail to submit it by 30 June, 2026, then you need to get the assignment for the year 2027, and submit it as per the instructions given in the Programme Guide.
- 8) **You cannot fill the examination form for this course until you have submitted the assignment.**

Wishing you good luck

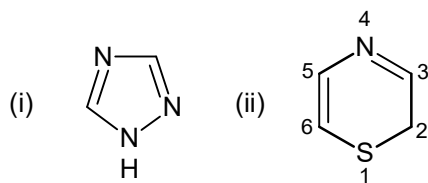
## Tutor Marked Assignment Organic Chemistry-II

Course Code: MCH-017  
Assignment Code: MCH-017/TMA/2026  
Maximum Marks: 100

**Note: Attempt all the questions. The marks for each question are indicated against it.**

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



- (b) Write the structures of the following compounds: (3)
- (i) Pyrazino [2, 3,-c] pyridazine
  - (ii) 2-Methylazacyclohexane
  - (iii) 2,5-Diazaanthracene
2. (a) List the important bands observed in the UV spectra of the following compounds. (2)
- (i) Pyridazine (ii) Pyrazine
- (b) Explain the chemical shift values exhibited in the  $^1\text{H}$ -NMR spectrum of pyridine. (3)
3. Discuss how can tetraalkylaziridines be synthesised. (5)
4. Give the products of the reaction of azetidine with the following reagents: (5)
- (i)  $\text{RCOCl}$  (ii)  $\text{CS}_2$  (iii)  $\text{HNO}_2$  (iv)  $\text{HCHO}$  (v)  $\text{HCl}/\Delta$
5. Illustrate giving two [3+2] cycloaddition reactions how can 1,3-dipolar compounds react with alkenes and alkynes to give pyrazoles. (5)
6. Discuss Bischer synthesis of indole. How can you obtain a single product in this reaction? (5)
7. How can benzotriazole be synthesised starting from *ortho*-phenylenediamine? Give the mechanism of the reaction. (5)
8. Discuss the Skraup synthesis of quinoline giving the reactions involved. (5)
9. Draw the tautomeric forms of azepines and compare their stabilities. (5)
10. Explain the synthesis of azepine using ethoxycarbonyl nitrene. (5)
11. Discuss the disconnections for the synthesis of benzocaine. (5)
12. Explain Negishi coupling reaction with an example and give its mechanism. (5)

13. Explain giving suitable reactions the reduction of benzene using sodium in liquid ammonia. (5)
14. Give examples of alkoxy-substituted LAH reducing agents. Compare their selectivity with LAH. (5)
15. Discuss the oxidation of monoalkynes using thallium nitrate. Also give the mechanism of the reaction. (5)
16. Write various factors which control the formation of enolates. (5)
17. What are homoenolates? Write the methods of their preparation. (5)
18. Discuss the role of phase transfer catalysis in nucleophilic substitution reactions. (5)
19. Write the advantages and disadvantages of chiral approach. (5)
20. With suitable examples, discuss the control of enantioselectivity in alkylation reactions. (5)