

ASSIGNMENT BOOKLET**Bachelor's Degree Programme (B.Sc.)
ENVIRONMENTAL CHEMISTRY****Valid from January 1, 2023 to December 31, 2023****Please Note**

- You can take electives (56 to 64 credits) from a minimum of TWO and a maximum of FOUR science disciplines, viz. Physics, Chemistry, Life Sciences and Mathematics.
- You can opt for elective courses worth a MINIMUM OF 8 CREDITS and a MAXIMUM OF 48 CREDITS from any of these four disciplines.
- At least 25% of the total credits that you register for in the elective courses from Life Sciences, Chemistry and Physics disciplines must be from the laboratory courses. For example, if you opt for a total of 64 credits of electives in these 3 disciplines, at least 16 credits should be from lab courses.
- You cannot appear in the Term-End Examination of any course without registering for the course. Otherwise, your result will not be declared and the onus will be on you.



School of Sciences
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Maidan Garhi, New Delhi-110068
(2023)

Dear Student,

We hope, you are familiar with the system of evaluation to be followed for the Bachelor's Degree Programme. At this stage you may probably like to re-read the section on assignments in the Programme Guide that we sent you after your enrolment. A weightage of 30 percent, as you are aware, has been earmarked for continuous evaluation, which would consist of one tutor-marked assignment. The assignment is based on Blocks 1, 2, 3, 4, 5 and 6.

Instructions for Formatting Your Assignments

Before attempting the assignments, 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:

ENROLMENT NO:.....
NAME:.....
ADDRESS:.....
.....
.....

COURSE CODE :
COURSE TITLE :
ASSIGNMENT NO.:
STUDY CENTRE : DATE:.....

(NAME AND CODE)

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

- 2 Use only foolscap size writing paper (but not of very thin variety) for writing your answers.
- 3 Leave 4 cm margin on the left, top and bottom of your answer sheet.
- 4 Your answers should be precise.
- 5 While writing answers, clearly indicate the Question No. and part of the question being solved.
- 6 Please note that:
 - (i) Last date for submission of Assignment is December 31, 2023.
 - (ii) The response to this assignment is to be submitted to the Study Centre Coordinator within eight weeks of the receipt of this booklet in order to get the feedback and comments on the evaluated assignment.
 - (iii) In any case, you have to submit the assignment response before appearing in the term end examination.
- 7 **We strongly suggest that you should retain a copy of your assignment responses.**

Wishing you all good luck.

Tutor Marked Assignment
Environmental Chemistry
Application Oriented Course in Chemistry

Course Code: AEC-01
Assignment Code: AEC-01/TMA/2023
Maximum Marks: 100

Answer all the questions given below.

1. a) Describe in brief the two phases of soil genesis. (5)
b) Describe the effects of soil aeration on the metal ions present in it. (5)
2. a) What is meant by soil fertility evaluation? Describe the concepts involved in soil fertility. (5)
b) What is the relation between girls schools attendance, and drinking water scarcity in rural area? (2)
c) What are the different methods of desalination of brackish water? (3)
3. a) What are the reasons of not utilising the rain water along the hill slopes of India? (1)
b) Why the methods of bio monitoring of water quality are more precise and sensitive than those of chemical analysis? (2)
c) In agriculture, what will be the adverse effects of using water has high Na^+ concentration. (3)
d) Henry's law constant for oxygen gas at 25°C is 4.4×10^9 Pa. Calculate the dissolved oxygen content, if the partial pressure of the oxygen gas over water is 3.762×10^4 Pa. (5)
4. a) Describe the regions of atmosphere based our chemical composition. (5)
b) Explain the air pollution ecosystem. (5)
5. a) Describe the common forms of air pollutants. (5)
b) Discuss the ways of controlling anthropogenic air pollutants. (5)
6. a) Discuss the method of aeration in the treatment of doing wastes. What are the problems associated with this method? (5)
b) Describe the effects of pesticides in ecosystem. (5)
7. a) Explain important parameters which are required to be known for proper treatment of sewage. (5)
b) Briefly discuss the water associated hazards from ingestion of biological agents (5)

8. a) List the precautions which must be followed during sampling for analy (5)
- b) Describe the application of ion exchange in treatment of petroleum refinery drainage water. (5)
9. a) Describe briefly the principle and working of the glass electrode. How is the pH of Soil measured? (5)
- b) Find the cell constant for a conductance cell in which the conductance, G , of a 0.100 M KCl solution is 0.01178 at 25°C . The molar conductance for 0.100 M KCl at 25°C is $128.96\text{ S cm}^2\text{ mol}^{-1}$. If a 0.0500 M solution of an electrolyte has a measured conductance of 0.00824 S using this cell, what is the molar conductance of the electrolyte? (5)
10. a) Discuss the basic components of flame photo meter and atomic absorption spectrometer. Write down the limitations and advantages of both the technique (5)
- b) Why coliforms are selected as indicator microorganisms? Discuss briefly the membrane filter tests for their detection in water. What are advantages and disadvantages of this method over other methods? (5)