

ASSIGNMENT BOOKLET
Bachelor's Degree Programme (B.Sc.)
ENVIRONMENTAL CHEMISTRY

(Valid from 1st January, 2022 to 31st December, 2022)

**It is Compulsory to submit the Assignment before filling in the
Term-End Examination Form.**

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
Indira Gandhi National Open University
New Delhi
(2022)

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 1-6 of this course.

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) The Assignment is valid from **1st January 2022 to 31st December 2022.**
 - 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 filling the exam for the term end examination.
7. We strongly suggest that you should retain a copy of your assignment responses.

Wishing you Good Luck.

Tutor Marked Assignment
AEC-01: ENVIRONMENTAL CHEMISTRY

Course Code: AEC-01
Assignment Code: AEC-01/TMA/2022
Maximum Marks: 100

Note: Answer all the questions given below.

1. a) Explain the following terms in brief. (5)
 - i) Soil profile
 - ii) Topography
 - iii) Parent material
 - iv) Metamorphic rocks
 - v) Granular disintegration
- b) What is the basis of soil texture analysis? Explain any two methods used for this purpose. (5)
2. a) How do soils become alkaline? Give two disadvantages of alkaline soils. What are the two benefits of nitrogen as a plant nutrient? (5)
- b) Name the properties of water responsible for: (5)
 - i) maintaining ice caps at polar regions.
 - ii) floatation of solid ice on liquid water surface.
 - iii) movement of water through plants and trees.What are the effects of water logging and salinisation on plants.
3. a) Describe the methods of water purification and list the advantages and disadvantages of the methods. (5)
- b) What is the source of sulphates in water systems? Give reactions. What is temporary hardness of water? Give the reason of temporary hardness of water. (5)
4. a) What is meant by the atmospheric effect and the greenhouse effect? Explain how ozone layer depletion is related to global warming. (5)
- b) How do the following factors affect the discharge of pollutants in the atmosphere? (5)
 - i) Atmospheric stability
 - ii) Temperature
 - iii) Precipitation
 - iv) Turbulence
 - v) Solar radiation
5. a) Distinguish between the following pairs giving examples: (5)
 - i) Stationary and Mobile sources of pollutants
 - ii) Indoor and Ambient air pollution
- b) What are the general principles followed during air sampling? (5)
6. a) What type of constituents are present in a dairy waste? Name the important treatment systems used for the treatment of dairy wastes. Give the important features of any one of these methods. (5)
- b) List five different ways in which pesticides can enter water. (5)

7. a) Describe the chemical characteristics of sewage giving the chemical constituents and their effect on the treatment process. (5)
- b) What are different organochlorine compounds that cause water pollution? Give their main sources. Why are these present in traces in raw and treated water? (5)
8. a) What are the qualities of a good extracting solvent ? (5)
- b) What is the principle of paper chromatography? How is the technique of TLC helpful in the identification of a compound? (5)
9. a) What is the difference between gravimetric and volumetric analysis? Given an example each for each of these techniques. (5)
- b) What is standard hydrogen electrode? Why is it preferred as primary reference electrode? Also discuss its limitations. (5)
10. a) What are the main advantages of atomic absorption spectrophotometry method over flame emission method in the detection of elements? Draw a schematic diagram of an atomic absorption spectrophotometer. (5)
- b) What are the indicator microorganisms? Give their important characteristics? (5)