

**G-3/362/22**

Roll No. ....

**III Semester Examination, January 2022**

**M.Sc.**

**CHEMISTRY**

Paper IV

(Environmental and Analytical Chemistry)

Time : 3 Hours ]

[ Max. Marks : 80

**Note :** *All questions are compulsory. Question Paper comprises of 3 Sections. Section A is objective type/multiple choice questions with no internal choice. Section B is short answer type with internal choice. Section C is long answer type with internal choice.*

**SECTION A**

**1×8=8**

**(Objective Type/Multiple Choice Questions)**

*Choose the correct answer :*

1. Peeling of Ozone umbrella, which protects us from UV rays is caused by.  
(a) PAN (b) CO<sub>2</sub>  
(c) CFC's (d) Global Warming
2. Which one is not an essential part of protein ?  
(a) N (b) C  
(c) S (d) Ne

P.T.O.

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3. Acid Rain mainly consist of :

- (a)  $\text{H}_2\text{SO}_4$                       (b)  $\text{HNO}_3$   
(c)  $\text{H}_2\text{CO}_3$                       (d) All of these

4. Which one of the following gases can deplete the ozone layer in the upper atmosphere ?

- (a)  $\text{CH}_4$                       (b)  $\text{NH}_3$   
(c)  $\text{CO}_2$                       (d)  $\text{SO}_2$

5. Which of the following is the part of cement ?

- (a) Lime  
(b) Silica  
(c) Calcium Oxide  
(d) All of the above

6. Olsen method is used to determine total :

- (a) P                      (b) N  
(c) S                      (d)  $\text{NH}_3$

7. Petrol engine is a :

- (a) CIE                      (b) SIE  
(c) DO                      (d) BOD

8. Water gas is mixture of :

- (a)  $\text{CO} + \text{CO}_2$                       (b)  $\text{CO} + \text{H}_2$   
(c)  $\text{N}_2 + \text{CO}$                       (d)  $\text{CO} + \text{H}_2\text{O}$

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## SECTION B

4×6=24

(Short Answer Type Questions)

Note : Answer the following questions in 250 words.

### Unit-I

1. Write notes on the following :

- (a) Biogeochemical Cycle of Nitrogen  
(b) Photochemical Smog

Or

Write short notes on the following :

- (a) Global Warming (b) Acid Rain

### Unit-II

2. Explain these in short :

- (a) COD                      (b) Water Quality Standard

Or

How will you analyze soil moisture volumetrically ?

### Unit-III

3. Discuss the total nitrogen in soil.

Or

What is soil pollution ? How does it happened by the use of fertilizers and plastic ?

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## Unit-IV

4. Explain these with example :

- (a) Flash Point (b) Octane number

*Or*

Write the characteristics property of solid, liquid and gaseous fuel.

## SECTION C

$$12 \times 4 = 48$$

**(Long Answer Type Questions)**

**Note :** Answer the following questions in 500 words.

## Unit-I

1. Explain the analytical method for measuring Air Pollution.

$$Or$$

Define Biological cycle. Describe about carbon cycle using proper diagram.

## Unit-II

**2. What do you mean by water Pollution ? How following Metals cause water pollution.**

- (a) Pb
- (b) Cd
- (c) As

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*Or*

Write short notes on the following :

- (a) Measurement of BOD
- (b) Water Quality Index
- (c) Measurement of dissolve oxygen

### Unit-III

**3. Discuss about industries pollution caused by the following and their controlling :**

- (a) Cement Plant      (b) Nuclear Power Plant  
(c) Thermal Power Plant

*Or*

Write short notes on the following :

- (a) Metallurgy                      (b) Polymer industries
- (c) Sugar industries

## Unit-IV

4. Discuss about composition of blood. Explain in brief about collection of blood sample and its preservation.

$$Or$$

What is fuel analysis ? How can you grade the quality of coal using fuel analysis method ?

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