

[4]

SECTION 'C'

4 × 10 = 40

Long Answer questions (Word limit 400-450 words.)

**UNIT-I**

- Q. 1.** What are primary air pollutants? Discuss their sources and relative contribution to air pollution.

**OR**

Explain -

- (a) Photochemical Smog  
(b) Atmospheric Chemistry of acid rain

**UNIT-II**

- Q. 2.** Discuss the following –  
(a) Water quality standards (b) Biodegradation of pesticides

**OR**

Explain the monitoring and analysis of any two heavy metals in aquatic ecosystem.

**UNIT-III**

- Q. 3.** Explain the analysis of crude protein in food.

**OR**

Identify five factors that one would need to consider when choosing moisture analysis method for a specific food product.

**UNIT-IV**

- Q. 4.** Discuss in detail screening of drugs by gas chromatography.

**OR**

How gaseous fuels are classified? What are the advantages of gaseous fuels? Write the preparation and properties of producer gas.

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ROLL NO.....

**CHE. 404/22**

**IV SEMESTER EXAMINATION, 2022**

**M.Sc. (CHEMISTRY)**

**PAPER-IV**

**ENVIRONMENTAL & APPLIED CHEMICAL ANALYSIS**

**TIME: 3 HOURS**

**MAX.- 80**

**MIN.- 16**

**Note:** The question paper consists of three sections A, B & C. All questions are compulsory.

**Section A-** Attempt all multiple choice/answer in one word questions.

**Section B-** Attempt one question from each unit.

**Section C-** Attempt one question from each unit.

SECTION 'A'

2 × 8 = 16

**Multiple Choice Questions/ Answer in one word**

- Which of the following gas has the highest contribution to global warming?  
(a) Carbon-di-oxide (b) Chlorofluorocarbon  
(c) Nitrous oxide (d) Methane
- The important gaseous pollutant contributing to acid rain is -  
(a) SO<sub>2</sub> (b) CO<sub>2</sub> (c) NO<sub>2</sub> (d) All of the above
- The main sources of Arsenic in water are -  
(a) Floods (b) Fertilizers  
(c) Industrial Waste (d) Both (b) and (c)

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4. The 'Minamata Tragedy' was caused by the eating of fish growing in Minamata Bay contaminated with -  
(a) Peroxy acetylnitrate (b) Methyl isocyanate  
(c) Potassium cyanide (d) Methylmercury
5. Urea is added to milk to increase -  
(a) Thickness (b) Shelf-life  
(c) Nitrogen content (d) Brightness
6. In Kjeldahl method of nitrogen estimation, indicator comprises -  
(a) Methyl red+Methylene blue  
(b) Methyl orange +Bromophenol blue  
(c) Methyl orange+Methylene blue  
(d) Methyl red+Bromophenol blue
7. Fixed carbon in coal is defined as -  
(a) That present in volatile matter  
(b) The total quantity of carbon present in the coal  
(c) Hundred minus the percentage of Volatile matter, ash and moisture.  
(d) The one which is present in the residue after combustion.
8. Opiate narcotic drugs are -  
(a) Antihistamine (b) Hypnotic  
(c) Antianxiety (d) Analgesic

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**SECTION 'B'**  $4 \times 6 = 24$

**Short Answer Type Questions (Word limit 200-250 words.)**

**UNIT-I**

- Q. 1.** Write a note on monitoring and analysis of NO<sub>x</sub>.

**OR**

Write a note on any two air pollution control devices.

**UNIT-II**

- Q. 2.** Briefly explain Chemistry of POPs.

**OR**

Write a note on domestic sewage as water pollutant.

**UNIT-III**

- Q. 3.** You wish to have atleast 100 mg of ash from a cereal grain. Assuming 2.5% ash on average. How many grams of the grain should be weighed for ashing.

**OR**

Explain how calcium is analysed in food products.

**UNIT-IV**

- Q. 4.** Write a method for analysis of albumin in serum.

**OR**

What do you mean by Octane number? What are the advantages of high Octane fuel.