

**M.Sc. IV Semester Degree Examination, Sept./Oct. - 2024****CHEMISTRY****Environmental and Biochemical Analysis****(NEP)**

Time : 3 Hours

Maximum Marks : 70

Note : Answer **any five** of the following questions with Question no. **1** is **compulsory**, each question carries **equal** marks.

1. (a) Describe the sources, health impacts, and control methods for sulfur oxides (SO_x). How can ambient SO_x levels be effectively reduced ? **5**
- (b) Explain the causes and consequences of the ozone hole. How do CFCs contribute to ozone depletion ? **5**
- (c) Discuss the effects of noise pollution on health and well-being. What measures can mitigate these effects ? **4**
2. (a) Describe the sources and health implications of high fluoride in drinking water. What are the safe drinking water standards for fluoride ? **5**
- (b) Explain COD and TOC in assessing water quality. **5**
- (c) Discuss pesticide contamination sources in water bodies, ecological impacts and mitigation strategies. **4**
3. (a) Explain the importance of soil texture and structure in agriculture. How do they affect soil fertility, water retention, and root growth ? **5**
- (b) Discuss soil acidity types and liming processes to mitigate acidity. **5**
- (c) Differentiate between ultimate and proximate analysis of coal. How do these analyses help understand coal composition and energy content ? **4**
4. (a) Describe methods for estimating sodium and phosphate in food samples. **5**
- (b) Explain methods to detect methanol in alcoholic drinks and their safety implications. **5**
- (c) Discuss tests and methods for analyzing milk and milk products. **4**
5. (a) Discuss sources of noise pollution in urban areas and their impact on health and well-being. **5**
- (b) Discuss strategies for controlling and safely storing radioactive waste. **5**
- (c) Explore key environmental laws and regulations for controlling water and air pollution. **4**



- 6.** (a) Explain the formation and characteristics of photochemical smog. What are its primary precursors and reduction measures ? **5**
- (b) Explain the hydrologic cycle and its significance in freshwater availability. **5**
- (c) Explain the greenhouse effect and its role in climate change. Provide examples of greenhouse gases and their sources. **4**
- 7.** (a) Explain the significance of analyzing common food adulterants. **5**
- (b) Describe techniques for estimating saccharin in food products. **5**
- (c) Compare the effectiveness of environmental laws addressing water and air pollution. **4**
- 8.** (a) How are COD and TOC determined, and what do they indicate about water pollution ? **5**
- (b) What are the challenges in enforcing environmental laws, and how can they be overcome for better conservation ? **5**
- (c) Explain Cation Exchange Capacity (CEC) and its importance in soil chemistry. How can CEC be determined ? **4**

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