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**63/2 (SEM-3) CHM 303**

**2021**

(held in 2022)

**CHEMISTRY**

(Theory Paper)

Paper : CHM-303

**(Environmental Chemistry)**

Full Marks – 80

Time – Three hours

The figures in the margin indicate full marks  
for the questions.

1. Discuss briefly the Case histories of environmental disasters and accidents. 5
2. Answer any *five* of the following questions : 5×5=25
  - (a) Write a short note on the chemical composition of the atmosphere.
  - (b) Write a short note on the Arctic Haze.
  - (c) Write a short note on CNG and the other alternative fuels.

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- (d) How can you control anthropogenic nitrogen and sulphur emissions ?
- (e) Write a short note on the Antarctic and Arctic ozone holes.
- (f) During a thunderstorm, rain water contains nitric and sulphuric acid. Explain with reaction.
- (g) Describe how sulphuric acid is produced in the atmosphere.

3. Answer any *five* of the following questions :

5×5=25

- (a) What is meant by polluted water ? What are the major groups of surface water pollutants ? Why are organic water pollutants called DO demanding pollutants ?  
1+2+2=5
- (b) Explain how the metal ion mobility in water bodies is influenced by the humic materials ?  
5
- (c) What are humic materials ? How are these formed ? Discuss the salient points of any of the two prevalent hypotheses on its formation.  
1+1+3=5
- (d) Discuss with suitable examples the reaction between humic materials and organic molecules of anthropogenic origin.  
5

- (e) What are the basic features of the structure of humic materials ? Explain how the humic materials entrap a purely covalent compound like DDT ?  
3+2=5

- (f) Write short notes on any *two* :  
2×2½=5

- (i) Zonation of large water bodies.
- (ii) O<sub>2</sub> sag curve and diurnal variation of DO.
- (iii) Role of clay minerals in the environment.

4. Answer any *five* of the following questions :

5×5=25

- (a) How does mining waste affect the environment ?
- (b) Explain the physical properties of soil.
- (c) Explain the chemical properties of soil.
- (d) What is Leachate formation ?
- (e) Name different types of pesticides and their actions.
- (f) Discuss the role of ODT in soil chemistry or environment.