

M.Sc.-Chem.-IIIS-(AE-505)

2016

(December)

Time : 3 hours

Full Marks : 80

*The figures in the right hand margin indicate marks.
Answer from both the Sections as per direction.*

(Environmental and Analytical Chemistry)

Section -A

1. Answer any **four** of the following : **(4x4=16)**
- (a) Why the affinity of Carbon monoxide to hemoglobin is so much greater than that of oxygen?
 - (b) What are the major causes of Green house effect?
 - (c) What is Ozone depletion and how does it occur?
 - (d) Give two examples of Secondary Pollutants. Why they are called secondary pollutants?
 - (e) Explain the importance of the hollow cathode lamp in atomic absorption spectroscopy.
 - (f) Discuss the benefits and problems associated with the use of one radioactive isotope in industry.

OR

(Turn over)

(2)

2. Answer **all** the questions : (2x8=16)

- (a) What is Sedimentation?
- (b) Describe the health problems associated with high level of fluoride in drinking water.
- (c) Explain why atomic emission spectroscopy is regarded as a superior method of analysis to flame tests.
- (d) What are the major chemical emissions transportation activities?
- (e) What is Radio Chromatography?
- (f) What is hardness of water?
- (g) What is alkalinity?
- (h) Write any two uses of radio isotopes in medicine.

Section -B

Answer **all** questions (16x4=64)

3. (a) What is Acid Rain? Write causes of Acid rain and effect of acid rain on the environment.
- (b) Describe the principles of Flame Ionization Detection Technique used for detection of hydrocarbons.
- OR**
- (c) What are the major air pollutants and describe their effects on human health.
- (d) How photochemical smog formed and describe its behavior?

(Turn over)

(3)

4. (a) Write notes on:
(i) BOD (ii) COD
- (b) Write notes on waste water treatment.
- OR**
- (c) What are the major water pollutants? Describe sources of water pollution.
- (d) Describe detrimental effect of some toxic elements like Cd, Pb, Zn and Hg.
5. (a) Describe the principle and techniques involved in Flame Emission spectroscopy.
- (b) Describe the difference between Fluorimetry and Phosphorimetry and describe applications for each.
- OR**
- (c) What is Atomic absorption spectroscopy? Describe its principle, instrumentation, detection limit and sensitivity.
- (d) Draw and explain Jablonski diagram for Fluorescence and Phosphorescence?
6. (a) Write an elaborate account on uses of radio isotopes in medicine and industry.
- (b) What is isotopic dilution? Explain it.
- OR**
- (c) Give the principle of radiometric titration. Explain any one radiometric titration with suitable example.
- (d) Write Notes on:
(i) Radio Chromatography (ii) Radioactive decay.
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