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End Semester Examination of Semester-III, 2015

Subject : CHEMISTRY (PG)

Paper : CEM-304 (Inorg. Spl) (Th)

Full Marks : 40

Time : 2 Hrs

The figures in the margin indicate the marks corresponding to the question

Candidates are requested to give their answers in their own word as far as practicable.

Illustrate the answers wherever necessary.

Unit-I

Answer any one question : 10x1=10

1. a) What is lapse rate? Draw a plot of variation of temperature with altitude in the atmosphere indicating appropriate lapse rates. 1+3
- b) Trace the sources and sinks of CO in the atmosphere. Discuss the pollution effect of CO. How does CO in the Automobile exhaust may be monitored? 2+2+2
2. a) What are the effects of increasing concentration of CO₂ in the atmosphere? Explain the effect of electromagnetic radiation with CO₂. 3
- b) Give the major harmful effects of lead. How can lead poisoning be cured? 2+2

(2)

- c) Give a suitable method to monitor a trace amount of SO_2 in air. 3

Unit-II

Answer any one question : 10x1=10

3. a) What is the function of Ozone in the stratosphere of the atmosphere? How is Ozone layer depleted? 2+3
- b) What are pesticides? What are the adverse effects of prolonged use of pesticides? What is Integrated Pest Management? $1\frac{1}{2}+1\frac{1}{2}+2$
4. a) What is smog? Discuss the mechanism of generation of smog. Explain the radical theory of smog formation. 1+2+2
- b) What is acid rain? Discuss its source and harmful effects on environment. 1+2+2

Unit-III

Answer any one question : 10x1=10

5. a) What is PAN? How is it generated? How does it cause environment pollution? 1+2+2
- b) Describe Winkler's method for determination of Dissolved Oxygen (DO) in a sample of water. 5

(3)

6. a) What is Biological Oxygen Demand (BOD)? How does it decide the quality of a sample of water? How do you determine BOD in a water sample? 1+2+2
- b) How to control the pollution caused by the oxides of nitrogen? 2
- c) Explain the role of nitrate (NO_3^-) and phosphate (PO_4^{3-} or other P^v) in water pollution. 3

Unit-IV

Answer any one question : 10x1=10

7. a) What is Chemical Oxygen Demand (COD)? Why it is preferred over BOD in determining the quality of water? 3+2
- b) What are sources and harmful effects of SO_2 gas? How can be the pollution by SO_2 be controlled?
 $1\frac{1}{2}+1\frac{1}{2}+2$
8. a) Outline the major toxic effects of mercury. Give a note on Minamata Disease. 2+3
- b) Why As (Arsenic) is toxic? What are biochemical effect of Arsenic toxicity? How does drinking water purified from Arsenic pollution? 1+2+2
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