



## M.Sc. (Part-II) (Semester -III) (CBCS) Examination, November - 2015 ANALYTICAL CHEMISTRY

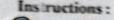
## Environmental Chemical Analysis and Control (Elective Paper - XIIA)

Sub. Code: 61051

Day and Date: Saturday, 07-11-2015

Time:10.30 a.m. to 1.30 p.m.

Total Marks: 80



- 1) Attempt in all five questions.
- 2) Question number One is compulsory.
- 3) All questions carry equal marks.
- Answer to the two section should written in the same answer book and attempt at least two questions from each section.
- 5) Figures to the right indicate marks.
- 6) Neat labeled diagram should be drawn wherever necessary.
- 7) Use of log table and calculator is allowed.

## Q1) Answer the following:

[16]

- a) List the sampling methods for particulate pollutants.
- The chemical substance that can destroy life rapidly even when taken in small amount is called \_\_\_\_\_\_
- What are the physiological manifestation caused due to Cd and Hg poisoning?
  - d) Which specific and selective method used for the analysis of NO and NO<sub>2</sub> gaseous pollutants?
  - e) Reduction precipitation technique is particularly used for the removal of pollution.
  - f) What do you mean by biodegradation?
  - g) Define the term waste.

P.T.O.

- h) Draw the structure of Cadmium (II) dithiozone complex.
- i) What is chemical speciation?
- i) Define the term monitoring.
- k) Which method is used for the determination of dissolved oxygen (DO)?
- Name two methods used for the separation of phenols from industrial waste effluents.
- m) What is BOD?
- n) Name the methods used for the analysis of H<sub>2</sub>S pollutant.
- o) What is NDIR? Where it is used?
- p) Name the methods used for sampling of gaseous pollutants.

## SECTION - I

- Q2) a) How do we carry out estimation of biological oxygen demand (BOD) and chemical oxygen demand (COD) from waste effluents? [8]
  - b) Explain physiological manifestation due to lead(Pb) and cadmium (Cd) poisoning.
  - c) What are the sources of mercury in the environment? Explain monitoring and analysis of organomercurials from industrial effluents.
  - Q3) a) What are the sources of gaseous pollutants in the atmosphere? Describe the monitoring and analysis of carbon monoxide (CO) and Carbon diox de (CO<sub>2</sub>).
    - b) Explain spectrophotometric analysis of Chromium from tannery waste effluents. [4]
    - Explain the nature of industrial effluents given out by various chemical industries.

| Q4) | a)         | How do we control particulate pollution? Explain separation methods particulate pollutant from gaseous stream. |          |
|-----|------------|--|----------|
|     | b)         | Describe West-Gaeke spectrophotometric method used for the analy of SO <sub>2</sub> .                          | rsis [4] |
|     | c)         | How does H <sub>2</sub> S determined using ethylene blue technique?  | [4]      |
|     |            | SECTION - II   |          |
| Q5) | a)         | Explain instrumentation, working and applications of Atomic Fluoresce spectrometry and NDIR spectrometer.      |          |
|     | b)         | What are the major sources of phenolic residues in water? Whenesolvan? Explain steam gas stripping method.     |          |
| Q6) | a)         | How do we remove and recover the phenols from petroleum an refinery wastes?                                    |          |
|     | b)         | and applications of AAS and  |          |
| Q7  | ) Wi       | rite short note on (Any four):   | [16]     |
|     | a)         | Volatile organic compounds (VOCs) and their analysis.  |          |
|     | b)         |  |          |
|     | c)         | Effect of water pollutants on life.  |          |
|     | (d)        | Estimation of dissolved oxygen (DO).   |          |
|     | <u>e</u> ) | Analysis of organochlorine pesticides.   |          |
|     |            |  |          |

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