Seat No.	3055

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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 **Total Marks : 80**
Time :10.30 a.m. to 1.30 p.m.

Instructions :
1) **Attempt in all five questions.**
2) **Question number One is compulsory.**
3) **All questions carry equal marks.**
4) **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.

b) The chemical substance that can destroy life rapidly even when taken in small amount is called _____.

c) What are the physiological manifestation caused due to Cd andHg poisoning?

d) Which specific and selective method used for the analysis of NO and NO_2 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?

j) Define the term monitoring.

k) Which method is used for the determination of dissolved oxygen (DO)?

l) 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_2S 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. [4]

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 dioxide (CO_2). [8]

b) Explain spectrophotometric analysis of Chromium from tannery waste effluents. [4]

c) Explain the nature of industrial effluents given out by various chemical industries. [4]

Q4) a) How do we control particulate pollution? Explain separation methods of particulate pollutant from gaseous stream. [8]

b) Describe West-Gaeke spectrophotometric method used for the analysis of SO_2. [4]

c) How does H_2S determined using ethylene blue technique? [4]

SECTION - II

Q5) a) Explain instrumentation, working and applications of Atomic Fluorescence spectrometry and NDIR spectrometer. [8]

b) What are the major sources of phenolic residues in water? What is phenosolvan? Explain steam gas stripping method. [8]

Q6) a) How do we remove and recover the phenols from petroleum and oil refinery wastes? [8]

b) Discuss principle, instrumentation and applications of AAS and ICPS techniques. [8]

Q7) Write short note on (Any four): [16]

a) Volatile organic compounds (VOCs) and their analysis.

b) Odour and its measurement.

c) Effect of water pollutants on life.

d) Estimation of dissolved oxygen (DO).

e) Analysis of organochlorine pesticides.

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