M.Sc. DEGREE II SEMESTER EXAMINATION IN
ENVIRONMENTAL TECHNOLOGY
MAY 2005

**ENV 2201 CHEMICAL METHODS IN ENVIRONMENTAL ANALYSIS**

Time : 3 Hours Maximum Marks: 50

**PART - A**

(Answer ***any five*** questions)
(All questions carry ***equal*** marks)

(5 x 2 = 10)

I. 1. What is the symbol for the nucleus remaining after $^{42}_{20}Ca$ undergoes $\beta$ -emission?

2. What is "chemical oxygen demand"?

3. Define liquid-junction potential.

4. Explain the collection of SPM for analysis.

5. What is the function of a nebulizer?

6. Explain the term "chemical deviation from Beer's law".

**PART - B**

(Answer ***any five*** questions)
(All questions carry ***equal*** marks)

(5 x 3 = 15)

II. 1. Explain the working of a GM counter.

2. What is the principle of a flame photometer? Explain its usefulness.

3. How does information supplied by a direct potentiometric measurement of pH differ from that obtained from a potentiometric acid/base titration?

4. Describe the differences between the following:-
   (a) spectrophotometers and photometers.
   (b) monochromators and polychromators.
   (c) single-beam and double-beam instruments for absorbance measurements.

5. Describe how CO in polluted air is sampled and estimated.

6. Explain the principle of colorimetric determination of nitrate in water.

## PART - C

(Answer ***any five*** questions)
(All questions carry ***equal*** marks)

(5 x 5 = 25)

III. Explain the principle involved in atomic absorption spectrophotometry and discuss its application to trace metal determination in water.

IV. Define ion-selective electrode. How will you estimate fluoride in a water sample using ion selective electrode?

V. Explain the principle involved in the colorimetric estimation of dissolved reactive phosphate in water.

VI. Write a short note on gamma-ray spectroscopy.

VII. Differentiate nephelometry and turbidimetry with suitable examples.

VIII. Explain various sampling devices used in air quality analysis.

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