M.Sc. DEGREE II SEMESTER EXAMINATION IN ENVIRONMENTAL TECHNOLOGY, MAY 2006

ENB 2201 CHEMICAL METHODS IN ENVIRONMENTAL ANALYSIS

Time : 3 Hrs.   Maximum marks : 50

PART – A

(Answer *ANY FIVE* questions)
(All questions carry *EQUAL* marks)

(5 x 2 = 10)

I.   (a)   What is chemical speciation ?
        (b)   Alkalinity in water is due to what ?
        (c)   Why saturated calomel is chosen as the reference electrode ?
        (d)   Explain the functioning of electrostatic precipitator.
        (e)   Explain the difference between scintillation counter and G.M. counter.
        (f)   Explain Bear-Lambert's law.

PART – B

(Answer *ANY FIVE* questions)
(All questions carry *EQUAL* marks)

(5 x 3 = 15)

II.   (i)   Explain the principle of AAS with an example.
       (ii)   Explain, with an example, how radioactive pollutant in water is measured.
       (iii)   Differentiate the temporary and permanent hardness in water.
       (iv)   What is the difference between 'grab sample' and 'composite sample' in waste water analysis.
       (v)   Write a note on dissolved oxygen in water.
       (vi)   From the following cell, how the pH of waste water can be evaluated ?

$$Pt_1 H_2(g, latus) \left| \begin{array}{c} waste \\ water \end{array} \right\| SCE$$
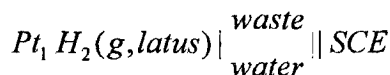
PART – C

(Answer *ANY FIVE* questions)
(All questions carry *EQUAL* marks)

(5 x 5 = 25)

I.   (1)   Explain with a flow diagram the West-Gaete spectrophotometric method for the determination of SO_2 in air. What are the sources of error ?
       (2)   Explain how Eriochoon-T acts as an indicator in the titration involving EDTA.
       (3)   Explain the principle behind flameless (cold vapour) atomic absorption for monitoring of mercury.
       (4)   Explain how nitrate and free ammonia can be estimated in water.
       (5)   Write a note on pollution due to PO_4^{3-} and how it can be monitored.
       (6)   A water sample contains dissolved chloride and fluoride ions. Write a note on how to estimate them individually by potentiometry.

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