

6. Explain how the following soil characteristics vary with depth : **15**
- (i) Structure
  - (ii) Texture
  - (iii) Colour
  - (iv) Porosity
  - (v) Bulk density.

**Unit IV**

7. (a) Write note on ion-chromatography. **5**  
(b) Show a schematic diagram of a gas chromatography. Explain the functions of its components. **10**
8. Explain working of atomic absorption spectrophotometry. How sensitivity of AAS differ from ICP-AES (Inductively coupled Plasma Emission Spectrometry (ICPAES). **15**

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**AA-604**

**M. Tech. EXAMINATION, May 2017**

(First Semester)

(B. Scheme) (Re-appear Only)

(ESEM)

ESEM-107-B

ANALYTICAL CHEMISTRY OF  
ENVIRONMENT

*Time : 3 Hours]*

*[Maximum Marks : 75*

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit.

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## Unit I

1. Define the following :
  - (i) pH
  - (ii) Ionisation
  - (iii) Solubility
  - (iv) Normality
  - (v) First Order Reaction
  - (vi) Molecular weight and equivalent weight
  - (vii) Alkalinity. **15**
  
2. (a) You have measured the process effluent from an industry and found that during the production day the pH value were 5, 7 and 9. What does that mean to you and what is the average pH ? **5**
- (b) Explain common ion effect. **3**
- (c) What is buffer solution ? **2**
- (d) Calculate the hydroxide ion concentration of a solution if its pH is 6. **5**

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## Unit II

3. Explain acid rain. Illustrate adverse effect of acid rain on human being, aquatic biota and terrestrial ecosystem and list general options for control of acid rain. **15**
  
4. What are CFCs and how they attacks on ozone. Enumerate the harmful effects of CFCs. What efforts have been taken for safe disposal of CFCs ? **15**

## Unit III

5. (a) Illustrate with reactions involved in chemical weathering process :
  - (i) Hydration/Dehydration
  - (ii) Oxidation
  - (iii) Acid Hydrolysis
  - (iv) Complexation. **12**
- (b) Draw soil profile indicating soil horizons. **3**

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P.T.O.