

Total No. of Questions : 9]  
(2034)

[Total No. of Printed Pages : 4

## UG (CBCS) IInd Year Annual Examination

# 2802

### B.Sc. CHEMISTRY

(Basic Analytical Chemistry)

(SEC-2)

Paper : CHEM 203 TH

**Time : 3 Hours]**

**[Maximum Marks : 70**

*Note* :- Attempt *five* questions in all. Choosing *one* question each from Sections A, B, C and D. Section-E is compulsory.

#### Section-A

1. (a) Explain the concept of sampling in analysis.
- (b) Differentiate between accuracy and precision.
- (c) What are determinate errors ? How can they be classified into different types according to their sources ?

5,5,5

2. (a) Explain the humus component of the soil. What is its importance in soil ?  
(b) What is soil pH ? Explain the importance of soil pH.  
(c) What are metal-ion indicators ? Discuss the essential requirements for a good metal-ion indicator. 5,5,5

### Section-B

3. (a) Explain the industrial sources of water pollution.  
(b) Discuss the pH metric method for the determination of pH of water.  
(c) What is the difference between biochemical oxygen demand and chemical oxygen demand ? 5,5,5
4. (a) Explain food preservatives.  
(b) Discuss a qualitative method for the determination of benzoic acid in food.  
(c) Give a suitable method of detection of the following food colours :  
(i) Caramel  
(ii) Turmeric 5,5,5

### Section-C

5. (a) Differentiate between thin layer and column chromatography.  
(b) What is the principle of column chromatography ?



- (c) How are the paint samples analysed by thin-layer chromatography ? 5,5,5
6. (a) What is ion exchange capacity ? Describe the batch method for the determination of ion exchange capacity.
- (b) Discuss the cation exchange resins and anion exchange resins.
- (c) What are the advantages of thin-layer chromatography ? 5,5,5

### Section-D

7. (a) Discuss the major constituents of cosmetics. What are their functions ?
- (b) What are deodorants and antiperspirants ? How do they reduce body odours ?
- (c) Give a suitable method to determine the aluminium content in a sample of deodorant. 5,5,5
8. (a) Give a brief account of thickeners used in cosmetics.
- (b) Why boric acid is added to deodorants and antiperspirants ? Give a suitable method for its estimation in a sample of deodorant/antiperspirant.
- (c) Discuss the method of determination of caffeine in soft drinks. 5,5,5



## Section-E

### (Compulsory Question)

9. (i) The number of significant figures in 0.02040 is ..... and 0.0204 is ..... .
- (ii) Excess of calcium causes ..... in the pH of soil.
- (iii) EDTA cannot be used to estimate cations such as  $\text{Ni}^{2+}$ ,  $\text{Cr}^{3+}$ , and  $\text{Zn}^{2+}$ . (True/False)
- (iv) The metal-indicator complex should be more stable than metal-EDTA complex for sharp end point. (True/False)
- (v) A higher BOD value indicates that the level of ..... is high.
- (vi) Wrinkler's method is used to determine .....
- (vii) The Calgon method is used for ..... of water.
- (viii) Component adsorbed more strongly has .....  $R_f$  value than the less strongly adsorbed component.
- (ix) Parabens are used as ..... in cosmetic products.
- (x) The role of emollients in cosmetics is to .....

$1 \times 10 = 10$