LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc.DEGREE EXAMINATION – CHEMISTRY

FIRST SEMESTER – APRIL 2019

16/17/18UCH1MC02/ CH 1505 – ANALYTICAL CHEMISTRY

Date: 05-04-2019	Dept. No.	Max. : 100 Marks

Time: 01:00-04:00

PART A

ANSWER ALL QUESTIONS   **10x 2 = 20 Marks**

1. What is an universal antidote?

2. Calculate the median and spread of the following data. 15.5, 15.3, 15.3, 15.8 and 15.6.

3. Identify the following as primary or secondary standards (a) Sodium Hydroxide (b) Sodium Carbonate (c) Potassium Hydrogen Phthalate d) Potassium Permanganate

4. Draw the Structure of EDTA and calculate the molecular weight of it .

5. Mention any two organic precipitating agents.

6. What is meant by absorption indicator?

7. What is the major application of TLC?

8. Classify the following as miscible or immiscible solvents i) Water and Methanol ii) Water and Toluene iii) Water and Oil iv) Phenol and Water.

9. What is the plot of TGA and DTA?

10. Mention the factors that influence the thermogram.

PART B

ANSWER ANY EIGHT QUESTIONS   **8 x 5 = 40 Marks**

11. Write a note on Determinate errors and how can we minimise these type of errors.

12. Write a note on the hazard symbols used on the labels of chemicals.

13. Calculate the pH of i) 10^{-2} molar Nitric acid solution ii) 0.03 N HCl Solution iii) 0.001 N Sulphuric acid solution. (1+2+2)

14. What is Molarity? Calculate a) Molarity when 40g of Sodium Hydroxide is made up in 500mL of water. b) Normality of Ferrous ammonium sulphate when 196 g of it is made up in 1L .

15. Why are chelate complex more stable? Why EDTA is called chelating agent?

16. What are the factors influencing the formation of a precipitate?

17. Distinguish   a) Co precipitation from Post precipitation.

                b) Nucleation from Crystal growth.

18. Mention the principle and procedure involved in the estimation of halide ions by Volhard method.

19. What are the factors influencing column efficiency.

20. What are the essential criteria of a good drying agent? Mention the role of calcium oxide as a drying agent.

21. Mention the importance of TGA.

22. What are the physical parameters that can be obtained from DTA?

PART C

ANSWER ANY FOUR QUESTIONS   **4 x 10 = 40 Marks**

23. a) Mention the importance of MSDS of a chemical.   **(6+4)**

    b) Mention the number of significant figures in i) 5.0 m ii) 2.50 cm iii) 2.500 g iv) 0.0200 kg

24. a) What are the characteristics of a primary standard?   **(6+4)**

    b) Calculate the arithmetic mean and standard deviation for the following burette readings 21.0, 20.0, 20.0, 19.0 and 20.0.

25. a) Explain the principle involved in the estimation of Magnesium by complexometric titrations.

                                                                        (7+3)

    b) Classify the following as Strong / Weak acids or bases: (i) HI (ii) CH_3COOH (iii) HF (iv) KOH (v) Oxalic acid (vi) NaOH.

26. a) What are the factors that determine the particle size of the precipitates. **(6+4)**

    b) Explain the following terms (i) Gravimetric factor (ii) Von-Weirman ratio.

27. a) Outline the principle involved in the separation of a mixture of hexane and toluene.

    b) Mention the basis of separation of two substances by (i) precipitation (ii) distillation (iii) extraction.   **(4+6)**

28. a) Explain the DTA Curve of Calcium oxalate monohydrate.   **(5)**

    b) Sketch and explain the TGA Curve for Silver Nitrate.   **(5)**

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