LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

FIRST SEMESTER – **APRIL 2022**

16/17/18UCH1MC02 – ANALYTICAL CHEMISTRY

Date: 23-06-2022 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A

Answer ALL Questions: **(10 x 2 = 20 Marks)**

1. Define threshold vapour concentration.
2. How many significant figures are there in the following numbers? a) 0. 565 b) 1.56×10^{-5}
3. What are primary standards? Give an example.
4. Write the significance of buffers in EDTA titration.
5. Mention the factors affecting solubility.
6. State the term gravimetric factor.
7. List any two properties of drying agents.
8. Specify any two adsorbents used in column chromatography.
9. Draw the TGA curve of Calcium oxalate monohydrate
10. Give any two differences between TGA and DTA.

PART – B

Answer any EIGHT Questions: **(8 x 5 = 40 Marks)**

11. Write a note on Material Safety Data Sheet.
12. Outline the general rules in the storage and handling of chemicals.
13. Calculate the mean deviation of the following five titre value:

    8.5, 9.5, 10.0, 10.5, 11.5
14. Derive Henderson equation for an acidic buffer.
15. List the applications of buffers in biological system.
16. State and explain the effect of co precipitation and post precipitation in gravimetric analysis.
17. Explain briefly the precipitation from a homogeneous solution.
18. Discuss the principle of steam distillation with a neat sketch.
19. Define Rf value. Explain the various factors affecting Rf value.
20. Describe the various steps involved in recrystallization process.
21. Mention the factors affecting the size and shape of a thermogram.
22. Discuss the instrumentation and principle involved in Thermogravimetric Analysis (TGA).

PART – C

Answer any FOUR Questions: **(4 x 10 = 40 Marks)**

23. i) Discuss about the different types of errors. (6)
    ii) Distinguish accuracy and precision. (4)
24. i) Explain any three types of titrations with an example for each. (6)
    ii) Define the term normality. Calculate the normality of NaOH if 40g of it is dissolved in 1Litre of water. (4)
25. What are argentometric titrations? Explain the principle and procedure involved in the determination of chloride by Volhard's method. (10)
26. i) Discuss the principle and working of the ion exchange chromatography. (5)
    ii) Write briefly about the types of paper chromatography. (5)
27. i) Describe the instrumentation and principle involved in Differential Thermal Analysis (DTA). (6)
    ii) Explain the thermogram of $CuSO_4.5H_2O$ with a neat diagram. (4)
28. i) State and explain the criteria for choosing an indicator for a given acid - base titration. (5)
    ii) How distillation is used in the purification of liquids? (5)

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