LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – **APRIL 2023**

16UCH1MC02 – ANALYTICAL CHEMISTRY

Date: 09-05-2023 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

PART – A

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

1. What are meant by carcinogenic chemicals? Give an example.
2. Find the significant figures for the following numbers.
   (i) 0.0210 (ii) 999.91
3. What are primary standards? Give an example.
4. Mention any two disadvantages of volumetric analysis.
5. What are metal ion indicators? Give an example.
6. Define post precipitation.
7. Find the normality of oxalic acid when 0.63 g of oxalic acid is dissolved in 250 mL of distilled water.
8. Mention any two differences between adsorption and partition chromatography.
9. Draw the TGA curve for $CaC_2O_4.H_2O$.
10. Sketch the TGA curve of $AgNO_3$.

PART – B

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

11. List the general rules to be borne in mind in storage and handling of chemicals.
12. Calculate the standard deviation for the following five titre values. 5.95, 8.00, 10.04, 5.11 and 4.90 mL.
13. Discuss the principle and applications of column chromatography.
14. How is chloride determined by Volhard method?
15. Find out the solubility of magnesium hydroxide in g L^{-1} if its solubility product is 1.20×10^{-11} at 25°C.
16. What are the advantages of precipitation from homogenous medium?
17. Discuss the factors that affect thermogravimetric analysis.
18. 15 mL of 0.25 N HCl solution requires 25 mL of NaOH solution for neutralization. Find the strength of NaOH and its amount in 100 mL.
19. Explain the principle of complexometric titration with a suitable example.
20. Sketch the DTA and TGA curves of $CaCO_3$.
21. Differentiate between the inclusion and occlusion.
22. What is von Weiman ratio? Mention it significance.

PART – C

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

23. Discuss the quinonoid theory of acid-base indicators.
24. Explain the various types of titrations with example.
25. (a) Mention the principle and procedure involved in the estimation of halide ions by Mohr's method.
26. (b) Mention any two organic precipitating agents with their structures. (5 + 5)
27. (a) Discuss the instrumentation of DTA analysis.
    (b) Sketch and explain the DTA curve of CuSO4. $5H_2O$.
28. (a) Explain the principle of thin layer chromatography. What are the advantages of TLC over paper chromatography?
    (b) Enumerate the various types of titration curves with examples. (5 + 5)

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