LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIRST SEMESTER – APRIL 2010

CH 1502/CH 5501 - ANALYTICAL CHEMISTRY

Date & Time: 28/04/2010 / 9:00 - 12:00   Dept. No.   Max. : 100 Marks

PART – A

Answer ALL the questions   **(10 x 2 = 20 marks)**

1. What are antidotes? Give two examples.

2. State the number of significant figures for the following: a) 646   b) 0.317

3. What are drying agents? Give two examples.

4. What is R_f Value?

5. Define the term normality.

6. What are buffer solutions? Give two examples.

7. What are sequestring agents? Give two examples.

8. Calculate the solubility of AgI in gL^{-1}. Given that $K_{sp} = 0.94 \times 10^{-16}$ at $25^{\circ}C$.

9. Mention any two applications of TGA.

10. What are the factors affecting the DTA curves?

PART – B

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

11. Describe the method of calibrating burettes and weights.

12. Explain normal error curve analysis. Give its application.

13. Explain the chemical methods of purification and the test of purity.

14. What are the first – Aid procedures to be following in the laboratory?

15. What are the characteristics of the detectors used in gas chromatography?

16. Explain the principle and procedure of column chromatography.

17. Explain the requirements for titrimetric analysis.

18. 50 ml of $Ca(OH)_2$ solution required 42.8 ml of 0.02 N solution of HCl for complete neutralisation.
    Calculate the normality of $Ca(OH)_2$ solution.

19. Explain the characteristics of mutation indicators.

20. 25ml of $4 \times 10^{-5}M$ solution of $Ba(NO_3)_2$ is mixed with 500 ml of $5 \times 10^{-5}M$ solution of Na_2SO_4. Will
    a precipitate of $BaSO_4$ be formed? $K_{sp(BaSO_4)^{M^2}}^{=1.08 \times 10^{-10}}$.

21. What are adsorption indicators? Explain.

22. Explain the principle involved in TGA.

PART – C

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

23. a) A sample subset has the following six values.
       7.720, 7.725, 7.736, 7.719, 7.742 and 7.751. Calculate the standard deviation.   (7)

   b) Distinguish between precision and accuracy.   (3)

24. Explain the following:
   a) Soluent extraction.   (5)

   b) Fractional distillation.   (5)

25. Explain the principle, procedure and applications of TLC.

26. Explain the following:
   a) Primary standards   (5)
   b) Choice of indicators in acid-base titrations   (5)

27. Explain a) homogenous precipitation

       b) Co-precipitation

28. a) Explain the thermal analysis for $Ca(COO)_2 . H_2O$.   (4)

   b) Explain the principle and instrumentation of DTGA.   (6)

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