

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIRST SEMESTER – November 2009

CH 1502 - ANALYTICAL CHEMISTRY

Date & Time: 12/11/2009 / 1:00 - 4:00

Dept. No.

Max. : 100 Marks

PART – A

Answer ALL the questions.

(10 x 2 = 20 marks)

1. Distinguish between accuracy and precision.
2. What are antidotes? Give an example.
3. What are the advantages of single pan balance?
4. Name the adsorbents used in TLC.
5. Define sublimation.
6. What are buffer solutions?
7. Give an example each for primary and secondary standard.
8. Draw the TGA curve for calcium acetate.
9. Mention two indicators used in precipitation titrations?
10. Calculate the solubility of AgCl given the $K_{sp} = 1.6 \times 10^{-10}$.

PART – B

Answer any EIGHT questions

(8 x 5 = 40 marks)

11. How is a pipette calibrated?
12. Mention the types of error. What are methods of minimizing errors?
13. Write a note on storage and handling of chemicals.
14. Describe the principle involved in fractional distillation. How is this technique used in the purification of liquids?
15. Define R_f value. What are the factors affecting R_f value?
16. Discuss the principle involved in ion exchange chromatography.
17. List the types of titrations. What are the requirements for titrimetric analysis?
18. Explain the use of EDTA in volumetric analysis with an example.
19. A solution of 0.1 M acetic acid is found to be dissociated to the extent of 1.33% at room temperature. Calculate K_a of the acid at this temperature and its pH.
20. 20 ml of Ca(OH)_2 solution required 19.7 ml of 0.1 N HCl for neutralization. Calculate the normality of Ca(OH)_2 .
21. Write notes on a) Co-precipitation b) post precipitation.
22. Give the characteristics of TG and DTA.

PART – C

Answer any FOUR questions

(4 x 10 = 40 marks)

23. a) How many significant numbers are there in the following
i. 1.2680 ii. 1.0062 iii. 0.0025 iv. 2.1540
- b) Analyses of a sample of iron ore gave the following % values for the iron content 7.08, 7.21, 7.12, 7.09, 7.16, 7.14, 7.07, 7.14, 7.18, 7.11. Calculate the mean, standard deviation and co-efficient of variation for the values. **(4+6)**
24. Explain the principle of column chromatography and explain the separation of compounds by it.
25. Outline theory of acid-base indicators.
26. Discuss the various components with block diagram in thermo gravimetric analysis.
27. How is chloride determined by Volhard's method?
28. a) Distinguish equivalence point and end point. **(4)**
- b) Explain the principle of metal – ion indicators with an example. **(6)**

