

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIRST SEMESTER – NOVEMBER 2007

CH 1502 - ANALYTICAL CHEMISTRY

AD 2

Date : 01/11/2007

Dept. No.

Max. : 100 Marks

Time : 1:00 - 4:00

PART – A

Answer **ALL** the questions

(10 × 2 = 20 marks)

1. How would you remove peroxides from ethers?
2. Distinguish between accuracy and precision.
3. Define sublimation. Give an example.
4. Give the principle of adsorption chromatography.
5. Mention the requirements of titrimetric analyses.
6. Define common ion effect using a suitable example.
7. Give the characteristics of EDTA in complexometric titrations.
8. Define solubility product with example.
9. What are adsorption indicators? Explain.
10. State the principle of DTA analysis.

PART – B

Answer any **EIGHT** questions

(8 × 5 = 40 marks)

11. Define the following.
a) Threshold vapour concentration b) Universal antidote
c) Carcinogenic chemicals
12. What are determinate errors? How they are occurring?
13. How are liquids separated using solvent extraction methods?
14. Explain the principle of ion exchange chromatography with suitable example.
15. The determination of iron in an ore sample gave the following results (in %) 31.31, 31.07, 31.92, 31.30. Calculate the a) range b) average deviation
16. Explain the role of diphenyl amine indicator in dichromate versus ferrous ion titration.
17. What are general methods for fume disposal?
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. A monobasic acid has a dissociation constant equal to 1.8×10^{-5} at 25°C. Calculate the a) degree of dissociation (α) at a concentration of 0.20 M
b) concentration of hydrogen ion
20. Explain Volhard's method for chlorine determination.
21. Differentiate co-precipitation and post-precipitation.
22. Explain the various components of TG using block diagram.

PART – C

Answer any **FOUR** questions

(4 × 10 = 40 marks)

23. Explain the principles of analytical balance. Discuss the working of single pan balance.
24. a) Explain the factors affecting TG & DTA curves
b) Draw the TG curve of calcium oxalate monohydrate and explain its uses.
25. What is fractional distillation? Explain with suitable example.
26. Discuss the following.
 - a) Requirements of a primary standard
 - b) Use of methyl orange indicator in neutralization titration
27. Define pH. Derive Henderson equation of acidic and basic buffers.
28. Calculate the mean, median and standard deviation for the following five titre values: 4.95, 5.00, 5.11, 5.04, 4.90 mL.
