



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FIRST SEMESTER – NOVEMBER 2014

CH 1505/CH 1502/CH 5501 - ANALYTICAL CHEMISTRY

Date : 07/11/2014

Dept. No.

Max. : 100 Marks

Time : 01:00-04:00

PART – A

Answer **ALL** the questions:

(10 x 2 = 20 marks)

1. What precautions should be taken before distillation of ether?
2. List the number of significant figures in the following numbers:
i. 0.0405 ii. 0.04050
3. Suggest a method for each of the following: a) purifying a crude sample of camphor
b) separating a mixture of benzene and toluene.
4. Mention one difference between adsorption and partition chromatography.
5. Give any two characteristics of metal ion indicators.
6. Calculate the normality of 0.4 g of NaOH dissolved in water to give 100mL of the solution.
7. Give an example for primary and secondary standards.
8. Define sequestering agent.
9. Write the principle of DTA.
10. Sketch the TGA curve for $\text{CaC}_2\text{O}_4 \cdot \text{H}_2\text{O}$.

PART – B

Answer any **EIGHT** questions:

(8 x 5 = 40 marks)

11. Calculate the mean and the standard deviation of the following set of analytical results 15.67, 15.69 and 16.03 g.
12. Name any three carcinogenic chemicals used in the laboratory. What precautions must be taken in using them?
13. Explain the principle and technique of GLC with special reference to the detection system employed.
14. Discuss the principle and technique of recrystallisation.
15. a) What is the molarity of a solution containing 7.46 g of KCl in 1 litre of the solution?
b) What are redox indicators? Give an example. (3 + 2)
16. Suggest an indicator for the titration of
 - a) hydrochloric acid with sodium carbonate
 - b) oxalic acid with KMnO_4
 - c) Zn^{2+} Vs EDTA
 - d) Fe^{2+} and $\text{K}_2\text{Cr}_2\text{O}_7$
17. Distinguish between co-precipitation and post-precipitation.
18. What are the advantages of precipitation from homogenous medium?

19. Discuss the principle and the importance of pH control in complexometric titration.
20. What is von Weiman ration? Define the terms involved in it.
21. Explain the thermogram AgNO_3 .
22. Discuss the factors affecting thermogram curves.

PART – C

Answer any **FOUR** questions:

(4 x 10 = 40 marks)

23. Explain the principle of TLC. How is it performed?
24. Discuss the theory of acid-base indicators with suitable examples.
25. a) Explain the principle of steam distillation.
b) What are the types of errors encountered in analytical measurements? (5+5)
26. How is chloride determined by Volhard's method?
27. Describe with a diagram the experimental setup used in TGA.
28. a) Explain the importance of solubility product in gravimetric analyses.
b) Explain the principle, technique and applications of ion-exchange chromatography. (5+5)

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