LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – **NOVEMBER 2013**

CH 1505/CH 1502/CH 5501 – ANALYTICAL CHEMISTRY

Date : 12/11/2013   Dept. No.   Max. : 100 Marks
Time : 1:00 - 4:00

PART -A

Answer ALL the questions: **(10 x2 =20 marks)**

1. What is universal antidote?

2. List the number of significant figures in the following numbers

   i) 646   ii) 20.2.

3. Name the detectors used in gas chromatography.

4. Define sublimation.

5. What are primary standards? Give an example.

6. State the law of volumetric analysis.

7. Give two examples of metal ion indicators.

8. Define post precipitation.

9. Draw the TGA curve for $CaC_2O_4.H_2O$.

10. Mention any two applications of TGA.

PART -B

Answer any EIGHT questions: **(8x5 =40 marks)**

11. The following replicate weighings were obtained; 29.8, 30.2, 28.6 and 29.7 mg. Calculate the standard deviation of the individual values and the standard deviation of the mean.

12. Name any three carcinogenic chemicals used in the laboratory. What precautions must be observed in using them?

13. Discuss the principle and technique of Thin Layer Chromatography.

14. How is the purity of a compound tested?

15. Discuss the principle and technique of recrystallisation.

16. Suggest an indicator for the titration of

    a) Hydrochloric acid with sodium carbonate

    b) Oxalic acid with sodium hydroxide

    c) Zn^{2+} Vs EDTA

    d) Ag^+ Vs Cl^-

    e) Fe^{2+} and $K_2Cr_2O_7$.

17. Explain the principle of steam distillation.

18. How will you prepare 100 mL of 0.1N HCl from i) Conc.HCl (10 N)   ii) 0.5 N HCl .

19. Discuss the principle of complexometric titrations.

20. Sketch and explain the thermogram of $AgNO_3$.

21. The solubility product of $PbSO_4$ is 1.6 x 10^{-8}. Calculate the molar solubility of $PbSO_4$.

22. What is von Weiman ratio? Define the terms in it.

PART - C

Answer any FOUR questions: **(4x10 =40 marks)**

23. Discuss the theory of acid- base indicators with suitable examples.

24. How is chloride determined by Volhard's method?

25. Explain the technique of GLC with a special reference to the detection systems employed.

26. How do you classify errors? How could it be minimized?

27. With a diagram explain the experimental set up used in TGA.

28. a) Give the properties and uses of drying agents.

    b) What are the advantages of precipitation from homogenous solution?

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