LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – **APRIL 2016**

CH 1505/CH 1502/CH 5501 – ANALYTICAL CHEMISTRY

Date: 02-05-2016   Dept. No.   Max. : 100 Marks
Time: 01:00-04:00

PART A

ANSWER ALL QUESTIONS   **(10x 2 = 20 Marks)**

1. What are meant by carcinogenic chemicals?   Give an example.

2. Calculate the median and spread of the following data. 19.9, 20.1, 20.0, 20.2 and 19.8.

3. Mention the use of Alumina in Column Chromatography.

4. What is meant by carrier gas? Give an example.

5. Calculate the normality of NaOH if 20 g of NaOH is dissolved in 2000 mL.

6. Identify the following as primary or secondary standards a) Potassium dichromate b) Sodium Carbonate c) Potassium permanganate d) Hydrochloric acid.

7. Mention the medium in which CuS and NiS is precipated.

8. Mention the precipitating agents for the estimation of   i) Baruim as Barium Chromate Sulphate as Barium Sulphate.

9. Sketch is the plots of TGA and DTA.

10. Mention the factors that influence thermogram.

PART B

ANSWER ANY EIGHT QUESTIONS   **(8 x 5 = 40 Marks)**

11. Write a note on systematic errors and how can we minimise these type of errors?

12. Explain in brief the general storage facilities of chemicals in laboratory.

13. Mention any five detectors used in Gas Chromatography.

14. Explain the principle involved in i)   steam distillation ii) vacuum distillation

15. What are the characteristics of a primary standard?

16. What is Molarity? Calculate a) Molarity when 4g of Sodium Hydroxide is made up in 1 Litre of water. b) Molarity of Sodium Chloride when 3.65 g of it is made up in 500mL .

17. a) Draw the structure of EDTA. b) Mention any three acid-base indicators.

18. Distinguish   a) Co precipitation from Post precipitation.

                    b) Nucleation from Crystal growth.

19. Mention the importance of TGA.

20. What are the physical parameters that can be obtained from DTA?

21. What are the characteristics of precipitating agents?

22. Calculate the ionic strength of i) 0.1M solution of KCl ii) 0.1 M Solution of K_2SO_4

PART C

ANSWER ANY FOUR QUESTIONS   **(4 x 10 = 40 Marks)**

23. a) Mention the importance of MSDS of a chemical.   (6)

    b) Calculate the arithmetic mean and standard deviation for the following data

       21, 20, 20, 19 and 20.   (4)

24. a) Explain the following terms i) Elution ii) Seeding.   (4)

    b) What are the factors that influence column efficiency.   (6)

25. a) Sketch schematically the distillation apparatus setup for the distillation of two miscible liquids

      and explain the principle involved.   (5)

    b) Explain the principle involved in the estimation of Magnesium by complexometric titrations.

                                                  (5)

26. a) What is Buffer solution? Mention any four buffer solutions.   (6)

    b) Calculate the pH of 0.1 N and 0.001 N HCl .   (4)

27. a) Mention the principle and procedure involved in the estimation of halide ions by

      Volhard method.   (6)

    b) Mention any two organic precipitating agents with their structures.   (4)

28. a) Explain the DTA Curve of Calcium oxalate monohydrate.   (5)

    b) Sketch and explain the TGA Curve for Silver Nitrate.   (5)

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