LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

FIRST SEMESTER – **APRIL 2018**

17/16UCH1MC02 / CH 1505 / CH 1502 – ANALYTICAL CHEMISTRY

Date: 26-04-2018   Dept. No.   Max. : 100 Marks
Time: 09:00-12:00

PART A

ANSWER ALL QUESTIONS:10x 2 = 20 Marks

1. What do you mean by carcinogens? Give an example.

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

3. Mention the use of Alumina in Column Chromatography.

4. What is retention factor?

5. Calculate the normality of NaOH if 4.0 g of NaOH is dissolved in i) 100 mL ii) 500mL.

6. Identify the following as primary or secondary standard a) Copper sulphate pentahydrate
   b) Potassium permanganate.

7. Draw the structure of EDTA and mention the nature of this ligand.

8. Mention the precipitating agents for the estimation of i) Barium as Barium Chromate
   ii) Sulphate as barium sulphate.

9. How are the plots of TGA and DTA drawn?

10. Mention the factors that influence the thermogram.

PART B

ANSWER ANY EIGHT QUESTIONS:8 x 5 = 40 Marks

11. Write a note on determinate errors. How can they be minimised?

12. Explain in brief the general storage and handling of acids and ethers.

13. Mention the salient features of TLC.

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

15. What are the characteristics of a primary standard?

16. Distinguish Molarity from Molality. Calculate the Molarity when 126g of Oxalic acid dihydrate is made up in 1 Litre of water.

17. Calculate the pH of the following.   i) 0.001 N HCl   ii) 0.1 N NaOH.

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. Mention the advantages of Organic precipitating agents over Inorganic precipitating agents?

22. Calculate the ionic strength of i) 0.1N solution of NaCl ii) 0.1 N Solution of Na_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) Mention the number of Significant Figures in i) 6.023×10^{23} ii) 6.626×10^{-34}

(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. **(4)**

b) i) Distinguish Accuracy from Precision .

ii) Mention any three acid-base indicators . **(3+3)**

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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