



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

FIRST SEMESTER – NOVEMBER 2018

CH 1809 – ANALYTICAL CHEMISTRY

Date: 23-10-2018

Dept. No.

Max. : 100 Marks

Time: 09:00-12:00

Part-A

Answer ALL questions.

(10 × 2 = 20)

1. What is the significance of Gaussian curve?
2. Why is hydrogen not preferred as a carrier gas for analytical purposes?
3. Define electro-osmotic effect.
4. What is gradient elution?
5. Mention the significance of guard column in HPLC.
6. Draw the DTA diagram for the decomposition of Calcium oxalate monohydrate.
7. Draw a cyclic voltammogram and mention its importance.
8. State Beer-Lambert's Law.
9. What is the significance of autoprotolysis constant of solvents?
10. Calculate the mole fractions of each gas in a mixture having 2.8 g of nitrogen and 3.2 g of oxygen.

Part-B

Answer any EIGHT questions.

(8 × 5 = 40)

11. What are determinate errors? Explain any two types.
12. Explain the solvent delivery system in HPLC.
13. What are the important characteristics of a detector in analytical techniques?
14. Discuss any three factors affecting the migration of ions in electrophoresis.
15. Explain the determination of quinine by fluorimetry.
16. Explain the working principle of flame ionization detector with a neat diagram.
17. Explain the principle and reactions of complexometric titrations with two examples.
18. What are non aqueous titrations? Mention the types of non aqueous solvents.
19. Discuss two types of coulometry highlighting the principle.
20. Discuss the principle and applications of DSC.
21. Explain the principle and an application of Turbidimetry.
22. How is iron spectrophotometrically estimated?

Part-C

Answer any *FOUR* questions.

(4 × 10 = 40)

23. Explain the working principle of capillary electrophoresis.
24. Discuss the sample injection system and derivatisation in gas chromatography.
25. Explain any three factors affecting the fluorescence emission with suitable examples.
26. Discuss the principle and reactions involved in redox titrations.
27. Write a comparative account of thermoanalytical techniques.
28. Discuss the principle, instrumentation and an application of AAS.
