



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – CHEMISTRY

FIRST SEMESTER – NOVEMBER 2017

CH 1815 - ANALYTICAL CHEMISTRY

Date: 10-11-2017
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 × 2= 20)

1. What are proportional errors? Give an example.
2. Calculate the standard deviation for an element whose percentage in a sample were found to be 20.8, 21.6, 22.1, 22.0, 23.3, 21.9 and 22.8%.
3. Define electro-osmotic flow.
4. What is longitudinal diffusion?
5. What happens when a compound is aspirated into a flame in FES?
6. What is the principle involved in DSC?
7. What is a masking agent? Give an example.
8. What is the principle involved in the UV-vis spectrometric analysis of iron(III)?
9. Mention any two advantages of DME.
10. State Beer Lambert law.

Part-B

Answer any EIGHT questions.

(8 × 5= 40)

11. What are determinate errors? Explain any two types with suitable examples.
12. A solution containing 8.75 mM KMnO_4 has a transmittance of 75% in a 1 cm cell at 520 nm. Calculate the molar absorptivity of KMnO_4 .
13. Discuss any three types of column packing in HPLC.
14. Write a short note on the sample injection system in gas chromatography.
15. Explain the working principle of katharometer.
16. With a neat diagram, explain the principle and significance of premix burner.
17. Briefly discuss the determination of quinine using fluorimetry.
18. Explain why calcium oxalate monohydrate undergoes three types of weight losses, but magnesium oxalate undergoes only two types of weight losses.
19. Discuss the estimation of copper by electrogravimetry.
20. Explain the working principle of a biochemical ion selective electrode with a suitable example.
21. Explain the precipitation titration of AgNO_3 and KCl .

22. Describe the determination of sulphate by turbidimetry.

Part-C

Answer any FOUR questions.

(4 × 10= 40)

23. Discuss any five methods to eliminate the determinate errors with suitable examples.
- 24a. Write a short note on the chemical interferences in atomic absorption spectroscopy.
- b. How is the temperature of the column maintained in gas chromatography? (5+5)
25. Explain any five factors affecting the fluorescence emission of the samples with suitable examples.
26. Write a short note on the following:
- i) Principle and any two applications of stripping voltammetry
- ii) Coulometric titrations. (5+5)
- 27a. Briefly discuss the working principle of electron capture detector.
- b. How is the presence of alkali metals determined by AAS? (5+5)
28. Draw the block diagram and explain the working principle of turbidimeter.

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