

15P409

(Pages:2)

Name.....

Reg. No.....

**FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, MARCH 2017**

(CUCSS - PG)

(Chemistry)

**CC15P CH4 C13 – INSTRUMENTAL METHODS OF ANALYSIS**

(2015Admission)

Time: Three Hours

Maximum: 36 Weightage

**Section A**

(Answer *all* questions. Each one carries a weightage 1)

1. Explain the variation of potential during a redox titration.
2. What is ICP emission?
3. What is the theory of atomic fluorescence spectrometry?
4. What are the different stationary phases of GLC
5. Distinguish between electron spectroscopy and electronic spectroscopy?
6. Explain the principle of ESCA. How it can be used for chemical analysis?
7. Explain linear regression analysis.
8. Give examples of adsorption indicators.
9. What is a glass electrode? What are its limitations?
10. Explain the terms TCD, FID and NPD in gas chromatography.
11. Define student f-test.
12. Explain the principle of chronopotentiometry.

(12 x 1 = 12 Weightage)

**Section B**

(Answer *any eight* questions. Each one carries a weightage 2)

13. Explain the principle and application EXAFS spectroscopy.
14. Distinguish between Voltammetry and Polarography.
15. Explain the difference in information that you can get from SEM and TEM.
16. Differentiate between KLL and KLM Auger electron spectroscopy.
17. Water is electrolysed between two platinum electrodes. If 0.50A is passed for 30 minutes, calculate the amount of H<sub>2</sub> and O<sub>2</sub> released at cathode and anode respectively.
18. Discuss the theory of redox indicator with example.
19. What is biamperometry? Discuss.
20. What is Oxine? Explain its use in separation science.

21. Discuss the working principle of double beam IR spectrophotometer.
22. Discuss the flame structure, different temperature regions and chemical reactions in flame photometry.
23. Explain Nephelometry and Turbidometry.
24. Compare the amperostatic coulometry with potentiostatic coulometry.

(8 x 2 = 16 Weightage)

### Section C

(Answer **any two** questions. Each one carries a weightage 4)

25. Discuss the theory and applications of HPLC
26. Discuss the theory and instrumentation in TG and DSC
27. Explain the principle of non aqueous titrations. Also explain the different types of solvents and indicators used for this.
28. Discuss the principle, instrumentation and application of AFM

(2 x 4 = 8 Weightage)

\*\*\*\*\*

### Section B

(Answer **any eight** questions. Each one carries a weightage 3)

13. Explain the principle and application EXAFS spectroscopy.
14. Distinguish between Voltammetry and Polarography.
15. Explain the difference in information that you can get from SEM and TEM.
16. Differentiate between KLM and KLM Auger electron spectroscopy.
17. Water is electrolysed between two platinum electrodes. If 0.50A is passed for 30 minutes, calculate the amount of H<sub>2</sub> and O<sub>2</sub> released at cathode and anode respectively.
18. Discuss the theory of redox indicator with example.
19. What is diamperometry? Discuss.
20. What is Oxine? Explain its use in separation science.