C 80678   (Pages : 2)   Name...

Reg. No...

FOURTH SEMESTER M.Sc. DEGREE EXAMINATION, MARCH 2020

(CUCSS)

Chemistry

CH 4C 12—INSTRUMENTAL METHODS OF ANALYSIS

Time : Three Hours   Maximum : 36 Weightage

Section A

Answer all questions.
Each question carries a weightage of 1.

1. Distinguish between accuracy and precision.

2. What is student 't' text ?

3. Explain with example colour change interval in acid-base titration.

4. In the titration of Fe^{2+} against $KMnO_4$ in acid medium, Cl^- ions should be avoided. Why ?

5. What are the advantages of dropping mercury electrode in polarography ?

6. What is differential pulse polarography ?

7. Explain with example biamperometry.

8. Name two sources used in IR spectrometers.

9. What is nebulization ?

10. Distinguish between electron spectroscopy and electronic spetroscopy.

11. What is the experimental parameter measured in (a) DTG ; (b) DSL ?

12. What is meant by 'size exclusion chromatography' ?

(12 × 1 = 12 weightage)

Section B

Answer any eight questions.
Each question carries a weightage of 2.

13. The following data were obtained for x-y plot. Find the slope and intercept by linear least square method :

x	:	0.001	0.002	0.003	0.004	0.005	0.006
y	:	20.60	20.72	20.82	20.93	21.03	21.15

Turn over

14. The solubility of a sparingly soluble salt A_2X_3 is 5×10^{-5} moles per litre. Find the solubility product. What would be the solubility of the salt in 10^{-2} M solution of X^{3-} ?

15. Draw the potential-volume curve for a redox titration with the help of one example. Discuss.

16. Discuss the working of a biocatalytic electrode.

17. Briefly discuss chronopotentiometry as an analytical technique.

18. Discuss the advantages of fluoremetry over uv-visible spectrophotometry.

19. Briefly discuss instrumentation in XRF.

20. Discuss one method of measuring gamma radiation.

21. How would you select column for GC ? Discuss.

22. Briefly discuss ion exchange chromatography.

23. How would you select indicator for nonaeqous titration ? Explain.

24. With the help of one example discuss organic polarography.

$(8 \times 2 = 16$ weightage

Section C

Answer any two questions.
Each question carries a weightage of 4.

25. Discuss instrumentation in AAS.

26. What is neutron activation analysis ? Discuss.

27. Discuss theory and applications of HPLC.

28. Write a brief account of organic precipitating agents in gravimetry.

$(2 \times 4 = 8$ weightage