



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FOURTH SEMESTER – APRIL 2015

CH 4502 - ELECTROCHEMISTRY

Date : 22/04/2015
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

PART- A

Answer ALL questions:

(10x2=20 marks)

1. Define standard electrode potential.
2. Calculate the standard emf of a galvanic cell. The standard reduction potential of Zinc and Copper are **-0.76 V** and **+0.34 V** respectively.
3. What is liquid junction potential?
4. Give an example of precipitation titration.
5. Define equivalent conductance.
6. What is Van't Hoff factor?
7. What is transport number?
8. State degree of dissociation.
9. What do you mean by decomposition potential?
10. What is limiting current density?

PART-B

Answer any EIGHT questions:

(8x5 = 40 marks)

11. Write notes on saturated calomel electrode.
12. Explain redox electrode with an example.
13. Enumerate any five applications of electromotive series.
14. Derive Nernst equation.
15. Discuss the determination of emf of a concentration cell.
16. Give a brief account on H₂ – O₂ fuel cell.
17. Describe Arrhenius theory of electrolytic dissociation.
18. Explain the determination of transference number by Hittorf's method.
19. Enumerate Debye Huckel theory of strong electrolyte.
20. Write notes on the effect of solvent dielectric constant and temperature on conductance.
21. Describe the applications of polarography in the
 - (i) Determination of stability constant of Metal ion complexes 2 ½ marks
 - (ii) Analysis of mixture. 2 ½ marks
22. Discuss any two applications of Over voltage.

PART- C

Answer any FOUR questions:

(4x10= 40marks)

23. Define emf. How is emf of a cell determined?
24. (i). Discuss the construction and working of Western Cadmium cell with a neat diagram. 5 marks
(ii). Write notes on Metal – Amalgam electrode. 5 marks
25. Explain the determination of p^H of an aqueous solution using glass electrode.
26. (i). How will you determine the solubility of Silver Chloride salt using emf measurement ? 5 marks
(ii). Calculate the concentration of H^+ in the following cell 5 marks
 $Pt, H_2(P= 1 atm)/ H^+(C = 10^{-6} M) // H^+ C = ? /H_2(P= 1 atm)/ Pt$
 $E_{cell} = 0.118 V$ at $25^{\circ}C$.
27. (i). State and explain Kohlrausch's law. 5 marks
(ii). Explain Faraday's laws of electrolysis. 5 marks
28. (i). Enumerate the applications of conductance measurements. 5 marks
(ii). Discuss the principle of Polarography. 5 marks

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