



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

FOURTH SEMESTER – APRIL 2017

CH 4502 / CH 4504 - ELECTROCHEMISTRY

Date: 21-04-2017
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART- A

Answer ALL questions

10x2 = 20

1. What do you mean by electrode potential?
2. What type of electrode is quinhydrone electrode? Mention its electrode reaction.
3. Define solubility product.
4. Write the cell reaction involved in H₂-O₂ fuel cell.
5. Define Vant Hoff factor.
6. State Hittorf's rule.
7. Define activity coefficient.
8. Mention Debye-Huckel- Onsagar equation.
9. What is Ilkovic equation?
10. Define overvoltage.

PART- B

Answer any EIGHT questions

8x5 = 40

11. State and explain the significances of emf series.
12. Write notes on gas electrode.
13. Discuss the construction and working of calomel electrode.
14. Derive Nernst equation.
15. Calculate the emf of the following electrochemical cell at 25 °C
Cu, Cu²⁺ (c=0.1 M) / H⁺(c=0.01 M), H₂(1 atm); Pt
16. Derive liquid junction potential.
17. Discuss the determination of transport number by moving boundary method.
18. State and explain Faraday's laws of electrolysis.
19. Enumerate the postulates of Arrhenius theory of electrolytic dissociation.
20. Explain Debye- Huckel theory of strong electrolytes.
21. Describe the electrolytic separation of metal.
22. Enumerate the applications of overvoltage.

PART- C

Answer any FOUR questions

4x10 = 40

23. (i) Define emf. (2)
(ii) Describe the measurement of emf using potentiometer with neat diagram. (8)
24. Discuss any five applications of emf measurements.
25. (i) Write notes on the construction and working of Weston saturated standard cell. (5)
(ii) Describe potentiometric acid- base titration. (5)
26. State and explain the applications of Kohlrausch's law.
27. Discuss the factors which affect conductance.
28. (i) Write notes on half wave potential. (5)
(ii) Describe the variation of specific conductance with concentration of solution. (5)
