

D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1**SEMESTER EXAMINATIONS****APRIL – 2019****15CCH6C****ELECTIVE III: ELECTROCHEMISTRY****Time : 3 Hrs****Max. Marks : 75****SECTION-A (10 x 2 = 20)****Answer ALL the questions.**

1. Define transport number.
2. What is meant by liquid junction potential?
3. Write any two uses of fuel cells.
4. What are strong electrolytes? Give example.
5. Write the principle of conductometric titration.
6. What is an irreversible cell? Give an example.
7. Define Specific Conductance.
8. Write the Cell reaction for $Pt/H_2/H^+//Zn^{2+}/Zn$.
9. Define EMF.
10. What is recharging battery?

SECTION-B (5 x 5 = 25)**Answer any FIVE of the following questions.**

11. State and explain the Kohlrausch law and its application.
12. Describe the difference between the electrochemical cell and electrolytic cell.
13. Explain the various types of reversible electrode with suitable examples.
14. From the following data calculate the equivalent conductance at infinite dilution Λ° for NH_4OH .
 $Ba(OH)_2 \Lambda^\circ = 228.8 \text{ ohm}^{-1}\text{cm}^2 \text{ equi}^{-1}$
 $BaCl_2 \Lambda^\circ = 120.3 \text{ ohm}^{-1}\text{cm}^2 \text{ equi}^{-1}$
 $NH_4Cl \Lambda^\circ = 129.8 \text{ ohm}^{-1}\text{cm}^2 \text{ equi}^{-1}$
15. How to determine the pH using Quinhydrone electrode?
16. Discuss about Potentiometric titration.
17. Derive the Nernst equation for electrode potential.
18. Write short note on the advantages of electrochemical series.

SECTION-C (3 x 10 = 30)

Answer ALL the questions.

19. (a) Describe the Hittorf's method and moving boundary method of determination of transport number of ions.

(Or)

(b) Explain concentration cells with and without transference with examples. Mention the applications of concentration cells.

20. (a) What are storage cells? Explain the construction and working of lead storage cell.

(Or)

(b) Derive the relationship between the emf of a cell and thermodynamic parameters such as ΔG , ΔH and ΔS .

21. (a) Discuss the Debye – Huckel Onsagar theory and their significance of Onsagar equation.

(Or)

(b) Outline an experimental method for determining the equivalent conductance of an electrolyte solution.

* * * * *