Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)
Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B
Coimbatore - 641 043, Tamil Nadu, India

Bachelor's Degree Examination – August 2020

VI Semester

Class : III UG **Time : 2 Hours**
Major : Chemistry **Max Marks: 50**

15BCHC21 Electrochemistry

Part A **10x1=10**
Choose the Correct Answer

1. What mass in grams of copper will be deposited from a solution of Cu^{2+} by a current of 2.50A in 2.00 hr?
   a. 23.7 b. 0.187
   c. 1.65 d. 5.93

2. Specific conductance is the conductance of
   a. one centimetre cube of solution of an electrolyte
   b. one centimetre cube of a solid electrolyte
   c. one gram of the solution of an electrolyte
   d. one gram of the solid electrolyte

3. Conductivity of an electrolyte is due to the
   a. presence of ions in the electrolyte
   b. free movement of ions in the solution
   c. reunion of ions in the solution
   d. release of heat energy due to ionisation

4. When HCl gas is passed through a saturated solution of NaCl, the solubility of NaCl will
   a. increase b. remain the same
   c. decrease d. become zero

5. Which pair, out of the following will show common ion effect?
   a. $HCl+HNO_3$ b. $HCl+H_2S$
   c. $HCl + H_2SO_4$ d. HCl+NaCl

6. Which among the following fuel cells is used in space craft?
   a. H_2-O_2 b. Ni-Cd
   c. methane-O_2 d. carbon-O_2

7. Calomel electrode is reversible with respect to
   a. H^+ ions b. K^+ ions
   c. Cl^- ions d. OH^- ions

8. The electrode potential of standard hydrogen electrode is
   a. +1 b. -1
   c.0 d. + 0.1

9. Dichlorobenzene exists in three isomers-ortho, meta and para isomers. Out of these three isomers, one with highest dipole moment will be
   a. ortho-isomer b. meta-isomer
   c. para-isomer d. all will have the same dipole moment

10. Substances which retain their magnetic property when removed from the magnetic field are called

a. paramagnetic b. diamagnetic
c. ferrimagnetic d. ferromagnetic

Part B **3x6=18**

Answer any **Three** questions

Each answer should not exceed 400 words or two pages

11. State Kohlrausch's law? How does it help in determining λ_α of weak Electrolytes.
12. Explain faraday's II law of electrolysis.
13. List the postulates of Arrhenius theory of electrolytic dissociation.
14. Calculate pH of i. 10^{-8} N aqueous solution of HCl solution
    ii. 10^{-7} aqueous solution of NaOH solution.
15. How the ionic mobility is decreased by Electrophoretic effect ?
16. Describe the construction and working of Weston standard cadmium cell.
17. What do you understand by the liquid junction potential? How does it arise? How is the liquid junction potential eliminated?
18. Illustrate oxidation-reduction electrode.
19. Explain any three applications of EMF measurements.
20. Differentiate between paramagnetic, diamagnetic and ferromagnetic substances.

Part C **2x11=22**

Answer any **Two** questions

Each answer should not exceed 800 words or four pages

21. Derive the expression for the determination of Transport number by Hittorf's Method when electrodes are not attacked.
22. Discuss the applications of conductometric titrations.
23. What is solubility product of an electrolyte? Explain giving three examples, the use of solubility product in qualitative analysis ?
24. Explain with suitable examples-ionic product of water and common ion effect.
25. How is dipole moment used to identify geometry of molecular structure?
26. Derive Nernst equation.
27. Describe electrolytic concentration cell with and without transference.
28. Describe the construction and working of lead storage battery.
29. Derive Mossotti-Clausius equation.
30. What is meant by magnetic susceptibility? How is it determined by Guoy's method?