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 –June 2021
VI Semester

Class : III UG **Time : 3 Hours**
Major : Chemistry **Max. Marks: 100**

18BCHC21 Electrochemistry

Part A **10 x 1 = 10**
Choose the Correct Answer

1. Pick the molar conductance unit CO1K1
   a. S cm^2 mol^{-1} b. Kg/cm^3
   c. cm^{-1} d. Ohm $cm^1 mol^{-1}$

2. The fraction of the total current carried by an ion is known as CO1 K1
   a. Transport number b. Transference number
   c. Hittorf number d. All of the above

3. The equivalent conductivity of an electrolyte at infinite dilution is equal to the sum of the conductance of the anions and cations is known as CO2 K1
   a. Faradays law b. Kohlrausch's law
   c. Oswalt dilution law d. None of the above

4. The concentration of H+ and OH- ions increases with _____ in temperature. CO2 K1
   a. Increases b. Decreases
   c. Does not depend on temperature d. Unaltered

5. Which of the following has 0 value in electrochemical series CO3 K1
   a. Lithium b. Lead
   c. Hydrogen d. Fluorine

6. Nickel-cadmium cell is a type of CO3 K1
   a. dry cell b. wet cell
   c. Both A and B d. None of the above

7. Oxidation occurs at CO4 K1
   a Cathode b. Insulation
   c. Anode d. Resistance

8. Lead storage battery is CO4 K1
   a. Secondary battery b. Rechargeable battery
   c. Both A and B d. Only B

9. Ideal solutions are defined as having an enthalpy of mixing or enthalpy of solution equal to CO5 K1
   a. Negative value b. Positive value
   c. Either positive or negative value d. Zero

10. Dipole moments occur due to the _____ in electronegativity between two chemically bonded atoms.
    a. Difference b. Addition
    c. Differential d. Integral CO5 K1

Part B **5 x 6 = 30**

Answer ALL questions

Each answer should not exceed 400 words or two pages

11.a. Define metallic and electrolytic conductors.	CO1 K1
(or)	
11.b. Explain the measurement of conductance and cell constant.	CO1 K2
12.a. Describe common ion effect.	CO2 K2
(or)	
12.b. Discuss Henderson equation with one example.	CO2 K2
13.a. Explain following electrodes i. Galvanic cell ii. Weston standard cadmium cell.	CO3 K2
(or)	
13.b. Derive Nernst equation.	CO3 K1
14.a. Explain liquid junction potential.	CO4 K1,K2
(or)	
14.b. What are the applications of overvoltage?	CO4 K2
15.a. Explain the following i. Mossotti-Clausius equation ii. Debye equation.	CO5 K1,K2
(or)	
15.b. How will you measure the dipole moment of H_2O and NH_3?	CO5 K2

Part C **5 x 12 = 60**

Answer ALL questions

Each answer should not exceed 800 words or four pages

16.a. Explain Debye Huckel Onsager theory with verification.	CO1 K2
(or)	
16.b. Explain Kohlrausch's law and its application.	CO1 K2
17.a. Discuss degree of hydrolysis with suitable examples.	CO2 K2
(or)	
17.b. Describe Arrhenius electrolytic dissociation.	CO2 K2
18.a. Explain types of electrodes.	CO3 K2
(or)	
18.b. What is electrochemical series, Write any 5 applications.	CO3 K2
19.a. Describe potentiometric titration.	CO4 K2
(or)	
19.b. Explain the following i. Salt bridge ii. Applications of EMF measurements iii. Lead storage battery.	CO4 K2
20.a. Explain Dipole moment of diatomic and polyatomic molecules.	CO5 K2
(or)	
20.b. How will you determine dipole moment by vapour temperature method?	CO5 K2

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