

B. Sc. DEGREE END SEMESTER EXAMINATION - APRIL 2021**SEMESTER –6: CHEMISTRY (CORE COURSE)****COURSE: 15U6CRCHE12: PHYSICAL CHEMISTRY - IV**

(Common for Regular 2018 admission & Improvement 2017/Supplementary 2017/ 2016 /2015 admissions)

Time: Three Hours

Max Marks: 60

SECTION A

Answer all questions. Each question carries 1 mark

1. Give Nernst equation for electrode potential.
2. What is molar refraction?
3. Define pOH of a solution.
4. pH of 0.0001M NaOH is.....
5. Define molar conductivity.
6. The methods for the determination of transport numbers are _____.
7. Give the relation between emf of a cell and equilibrium constant.
8. Give the cathodic reaction in the Daniell cell.

(1 × 8 = 8)

SECTION B

Answer any Six questions. Each question carries 2 marks

9. What is meant by liquid junction potential?
10. What is the use of glass electrode?
11. How does conductivity vary with concentration?
12. Corrosion is an electrochemical process. Why?
13. What is meant by chemical shift?
14. What are conductometric titrations? What are their advantages?
15. Explain the Lewis concept of acids and bases.
16. Give Debye-Huckel-Onsager equation and explain the terms involved.

(2 × 6 = 12)

SECTION C

Answer any Four questions. Each question carries 5 marks

17. Daniell cell is a reversible cell. Account for the statement.
18. Explain common ion effect with application.
19. Explain the determination of transport number by moving boundary method.
20. Consider the following cell :



The standard reduction potentials of Ni and Cu are -0.25v and 0.34V respectively. Write the electrode reactions and calculate the emf of the cell at 298K.

21. Write briefly on fuel cells.
22. Comment on cathodic protection and sacrificial anodic protection. (5 x 4 = 20)

SECTION D

Answer any Two questions. Each question carries 10 marks

23. Explain a) nuclear Para magnetism, b) Chemical Shift and c) Electron spin resonance.
24. Explain Pearson's HSAB Principle.
25. Give any two applications of emf measurements.
26. How is pH determined using a. Hydrogen electrode b. Quinhydrone electrode. (10 x 2 = 20)
