

Unit IV

8. (a) Write the Current Potential Laws and also write its applications. 8
(b) Discuss the hot emission of electrons from a metal into a vacuum. 6
9. Give a comparison of electrolytic interface to other type of charged interface in brief. 14

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Roll No.

(07/21-II)

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M. Sc. EXAMINATION

(For Batch 2017 & Onwards)

(Fourth Semester)

CHEMISTRY

CHP(H)-401

Physical Special-IV

Time : Three Hours Maximum Marks : 70

Note : Attempt Five questions in all, selecting one question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

1. (a) Explain the meaning of symmetry factor (β). 2
(b) Explain the Electrode potential by taking example. 2
(c) What is Maximum intrinsic efficiency ? 2

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- (d) Write the advantages and disadvantages of dry cell. 2
- (e) Give the factors affecting the corrosion on metal. 2
- (f) What is resistance polarization ? 2
- (g) What is the effect of temperature on semiconductors ? 1
- (h) Explain Cold Emission. 1

Unit I

2. (a) Discuss about the equilibrium exchange current density and rate of charge transfer reactions under zero field. 7
- (b) Explain Polarizable and non-polarizable interface in brief. 7
3. Derive Butler-Volmer equation and discuss its limiting case resulting in Tafel equation. 14

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Unit II

4. Write any two short notes on the following with their advantages : 14
- (i) H_2-O_2 fuel cell
- (ii) CO-air fuel cell
- (iii) Hydrocarbon-air fuel cell.
5. Explain reactions of charging and discharging, construction, working, advantages and disadvantages of Ni-Cd battery. 14

Unit III

6. (a) Show that corrosion is inhibited by polarization. Discuss the factors affecting cathodic and anodic polarization. 8
- (b) Explain the concentration and activation polarization of metal electrode in brief. 6
7. Write short notes on electrochemical measurement of corrosion current density, corrosion potential and mixed potential theory and Tafel slope. 14

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