



Chemistry Department

Beni-Suef University
Faculty of Science

Prepared by

Dr. Hanafy Mahmoud Abd El-salam

Asst. Prof. of physical chemistry

And

Mr. Mohamed Rabia Sayed

Demonstrator of physical chemistry

Part 1 Electrodeposition process.....	1
Electrodeposition process.....	1
Galvanic cell.....	2
Electrolytic cells.....	4
Factors of electrolysis process.....	5
Faraday's laws of electrolysis.....	9
Cyclic voltammetry.....	11
Experiment 1 (Electrodeposition of copper on steel electrode).....	13
Experiment 2 (Preparation of ZnO film on steel electrode by electrodeposition from aqueous zinc solution).....	21
Experiment 3 (Purification of metal (copper) by electrolysis).....	28
Experiment 4 (Electropolishing of metal (steel) surface).....	32
Experiment 5 (Electrodeposition of Fe ₂ O ₃ photocatalyst).....	37
Experiment 6 (Electrodeposition of VO ₂ film on FTO glasss (Smart windows)).....	41
Part 2 Conductometric Titrations.....	45
Measurement the conductance.....	46
Calibration of the electrode.....	47
Factors of conductivity process.....	48
Experiment 1 (Conductimetric titration of strong or weak acid with strong base).....	52
Experiment 2 (Conductimetric titration of strong acid with strong or weak base).....	56