I Sem. B. Tech. – Engg. Chemistry
Mid-term test syllabus
2021-22

Electrochemistry- Introduction, Electrochemical cells - galvanic cell and electrolytic cell, representation of galvanic cell, Construction and working of galvanic cell, Liquid junction potential, Functions of salt bridge, Energetics of cell reaction (derive expression for ΔG) , Numericals (calculate ΔG , ΔH, ΔS), Single electrode potential, Origin of single electrode potential, Derivation of Nernst equation to calculate the electrode potential, Numerical problems, EMF of cell, Determination of EMF of cell by Poggendorff's method using Standard cell, Construction, working, applications and limitations of calomel electrode, Numerical problems, Construction, working, applications, advantages and limitations of glass electrode, Numerical problems,

Classification of Batteries: Introduction, requirements of primary and secondary batteries with examples; construction, working and applications of lead acid battery, Construction, working and applications of Ni-Cd and Li-ion batteries, advantages and disadvantages, Fuel Cells – Introduction, construction and working of AFC & PEMFC, advantages and disadvantages,

Metal finishing: Electroplating – polarization, over voltage, decomposition potential including determination of decomposition potential, Characteristics of good deposit, Factors influencing the nature of the deposit, Methods of cleaning the metal surface, Electroplating of Cu & Cr & electroless plating of Cu

Corrosion and its Control: Introduction, Importance of corrosion study, Corrosion classification, Electrochemical theory with special reference to rusting of iron, Galvanic series: need, characteristics, advantages. Factors affecting corrosion: Primary and Secondary factors, Brief account of galvanic corrosion, pitting corrosion, intergranular corrosion, Brief account of stress corrosion, Corrosion control by material selection and proper design, Cathodic protection of metals, Anodic protection, Corrosion control by use of inhibitors, Coatings -metallic, organic and inorganic.