

KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session: 2022-23

Discipline : Metallurgical Engineering	Semester:6th, Summer/2023	Name of the Faculty:Manas Ranjan Behera Lecturer E-mail Id:mrbeherafmt@kp.kiit.ac.in
Subject: Corrosion Engineering(Th.4)	No. of Days/Week:4	Start date:13/02/2023 End date :23/05/2023
Week	Class Day	Theory Topics
1st	1st	Introduction to corrosion
	2nd	Definition of corrosion
	3rd	Cost of corrosion
	4th	Direct and indirect losses due to corrosion
2nd	1st	Importance of corrosion studies
	2nd	Different types of corrosion
	3rd	Electrochemical corrosion
	4th	Chemical corrosion
3rd	1st	Difference between electrochemical corrosion and chemical corrosion
	2nd	Corrosion rate
	3rd	Discussion on possible questionnaire
	4th	Introduction to Corrosion Principles
4th	1st	Electrochemical principle of corrosion(without kinetics)
	2nd	Faraday's laws of electrolysis
	3rd	Causes of laws
	4th	Deviation of Faraday's laws
5th	1st	Discussion on possible questionnaire
	2nd	Types of electrochemical cells
	3rd	Discussion on galvanic cell
	4th	Discussion on concentration cell
6th	1st	Discussion on electrolytic cell
	2nd	Application of different cells
	3rd	Quiz test
	4th	Introduction to electrodes potential
7th	1st	Significance of electrode potential

	2nd	Discussion on electromotive force
	3rd	Discussion on galvanic series
	4th	Application of emf series and galvanic series
8th	1st	Discussion on possible questionnaire
	2nd	Different forms of corrosion
	3rd	Details about different forms of corrosion
	4th	Factors affecting mechanism of corrosion
9th	1st	Methods of prevention of corrosion
	2nd	Atmospheric corrosion
	3rd	Intergranular corrosion
	4th	Pitting corrosion
10th	1st	Corrosion fatigue
	2nd	Galvanic corrosion
	3rd	Stress corrosion cracking
	4th	Cavitation corrosion
11th	1st	Quiz test
	2nd	Fretting corrosion
	3rd	High temperature oxidation corrosion
	4th	Stray current corrosion
12th	1st	Discussion on possible questionnaire
	2nd	Introduction to Corrosion prevention
	3rd	Study of physical characteristics of protective coating
	4th	Study of mechanical characteristics of protective coating
13th	1st	Study of chemical characteristics of protective coating
	2nd	Types of coating
	3rd	Different application of coating
	4th	Principles of inhibition
14th	1st	Types of inhibitors
	2nd	Mechanism of inhibition
	3rd	Corrosion prevention by inhibition
	4th	Corrosion prevention by passivation
15th	1st	Cathodic protection and Anodic protection
	2nd	Discussion on Previous year's questions
	3rd	Practice test
	4th	Practice test

Recommended books: 1. Introduction to electrometallurgy and corrosion by Saran&Narayan

2. Corrosion Engineering by M.G.Fontana and Green