SS824 CORROSION AND ITS CONTROL 3 1 0 4

Introduction- Thermodynamics of corrosion- mechanism of electrochemical corrosion- different forms of electrochemical corrosion. Kinetic aspects of corrosion. Corrosion behavior of metals - ferrous and non ferrous metals and alloys. Rate of corrosion – determination of corrosion by electrochemical methods-- Linear polarisation (LPR)- Tafel- A C impedance spectroscopy–units of corrosion**.**

Metallic coating – hot dipping - galvanizing- tinning - cladding- electroplating and electroless plating-PVD- CVD- spraying- arc spray-plasma - flame spray.Non- metallic coating- Inorganic coatings – anodizing, phosphating and chromating- chemical conversion coating. Corrosion inhibitors - passivators and vapor phase inhibitors. Corrosion protection by surface modification.

Review:

Polymer coatings- types (high viscosity polymer, nano polymer, bio-polymer, CVD polymerized coating)- methods of applying polymer coating (single and multi layer coating)- Spray coating and Powder Spray coatings, Electro-coating (E-coat)- anodic and cathodic, Fluidized Bed coating, Dip coating, Spin coating, sol- gel coating- binders- Thermosets (Alkyds, Epoxies, Urethanes, Formaldehyde resins, Alkyds -Thermoplastics (latexes)- Acrylics, Vinyls, styrene polymer coating -significance.

TEXT BOOKS/ REFERENCES:

1. Raj Narayana, “An Introduction to Metallic Corrosion and its Prevention”, Eleventh Edition, Wiley Publication, 1981.
2. Fontana and Mars,G, “Corrosion Engineering”, Third Edition, Mc Graw Hill Publications, 1987.
3. Edward Mc Cafferty, “Introduction to Corrosion Science”**,** Springer, 2010.
4. H.H.Uhlig and R.W. Reviees, “Corrosion and its Control”, Wiley Publication, 1985.
5. ASM Metals Handbook, “Corrosion”, ASM Metals Park, Ohio, USA, 1994.
6. D Gabe, “Principles of Metal Surface Treatment and Protection”, Merlin Books, 1993.