

PEMF5402 SURFACE ENGINEERING

(3-0-0)

MODULE –I

(10 hours)

Definition and Scope of Surface Coating : Purpose of surface coating, resistance / wear hardness, corrosion resistance, weather resistance, surface coating for conduction and insulation, aesthetics and surface finish, etc. Pretreatment for Surface Coating: Degreasing, pickling, phosphating, descaling, cleaning, etc. Metal Coatings: Characteristics; Operational parameters, application and limitations of galvanizing, sherardising, chromating, zinc and aluminum spraying. Hot dipping, gas spraying, arc spraying, plasma spraying.

MODULE- II

(14 hours)

Electro Plating : Vat, barrel, automatic reverse current plating, equipment, operational parameters and electrolytes for electro plating; productivity comparison between metal coating and electroplating, base metals and plating metals, application and limitations. Ceramic Coating: Characteristics of ceramic coating, types of ceramics used for coating, base materials, methods of ceramic coating, vitreous enameling. Polymer Coating: Characteristics, types of polymers and their relative merits and demerits, base materials for polymer coating, equipment for polymer coating; types of polymer coating, spraying, dipping, fluidized bed, powder spraying; use of extrusion, principles, selection of polymers.

MODULE –III

(11 hours)

Paint Coating: Types of paints, their characteristics and properties, selection of paints; technology of application of paints, brush, spray, electrostatic spray, airless spray, dipping flow coating, rumbling, roller coating, etc.

Curing of Paint Coatings: air drying, catalyst drying, convention staving, infrared staving, electron beam curing, UV curing. Miscellaneous Processes: Chemical coloring, blackening, bluing, etc; chromating, chemical polishing, lead sheathing, Newer coating processes and advances in surface technology.

TEXT BOOKS:

1. Electroplating and Other Surface Treatments; C.D.Varghese; TMH, 1993.
2. Metal Pretreatment; N.D.Banik; TMH, 1992.