

### **Unit I: Natural Rubber & Synthetic Rubbers**

Tapping - latex collection - Processing of Latex - Dry rubber production (Smoked sheet, air dried sheet, Crumb rubber) - Grading of rubbers - Modified natural rubber, Reclaimed rubber - process of reclamation – applications.

Manufacturing, structure, properties, compounding, curing and applications - Polyisoprene, Polybutadiene, SBR, EPDM, Butyl rubber, Neoprene, Nitrile rubber, Silicone rubber, Fluoro elastomer, Polysulphide rubber, polyurethane rubber, Acrylic rubber.

### **Unit II: Thermoplastic Elastomers**

Basic structure, Manufacture, Morphology, Commercial grades and Applications – Thermoplastic styrene block copolymers, Polyester thermoplastic elastomers, polyamide thermoplastic elastomer, Polyurethane thermoplastic elastomers.

### **Unit III: Vulcanization and Designing of Compound**

Sulphur vulcanization – mechanism of vulcanization –conventional vulcanization – efficient vulcanization-non-sulphur vulcanization- peroxide vulcanization - radiation curing - designing of compound for desired hardness. Rubber rheology and Rubber testing

### **Unit IV: Rubber Product Manufacturing**

Rubber engineering, Compounding ingredients, Inorganic and Organic materials, Raw materials specification, Mixing, Extrusion, Calendering, Moulding, Manufacturing techniques. Outline of manufacturing of tyres, conveyor belts, hoses, footwear, rubber metal bonded items, cellular rubber products.

### **Text Books**

1. C. M. Blow and Hepburn, - Rubber Technology and Manufacture, 2nd edition, 1982.
2. Hoffman, Rubber Technology Handbook -, Hanser Pub. Munich - 1996.
3. Anil .K. Bhowmic, Howard L. Stephens (Edt), Handbook of Elastomers - New Developments & Technology, Marcel Decker Inc. New York 1988.

### **References:**

1. Tom French, Tyre Technology, Adam Hilger, New York, 1989.
2. F.J. Kovac, Tire Technology, 4th edition, Good year Tire and Rubber company, Akron, 1978.