

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Materials Science)
Semester: IV
Syllabus with Effect from: June - 2013

Paper Code: PS04CMTS06	Total Credit: 4
Title Of Paper: Engineering Polymers	

Unit	Description in detail	Weightage (%)
I	Introduction, types and methods for preparation, characterization and applications of polyblends, alloys and IPN.	25%
II	Adhesive bonding, theories of adhesion, requirements for a good bond, mechanism of bond failure, surface preparation, primers and adhesion promoters, commercial adhesives based on casein, starch, polyvinyl alcohol, rubber based adhesives, high temperature adhesives, hot melt adhesive, pressure sensitive adhesives.	25%
III	Structures, synthesis, properties and applications of selected engineering plastics such as, polyphenylene, poly (Phenylene oxide)s, poly (ether ketone)s, polyimides, polyamide-imide, poly(phenylene sulfide)s, polysulfones, poly ether-imides, Polycarbonates, Polybutylene terephthalates, Polyacetals.	25%
IV	Polymers for miscellaneous applications: Action of ion exchange resins, ion exchange chromatography, ion exchange in organic and aqueous organic solvents, chelating ion exchange resins, liquid ion exchange resins. Insulating polymers, semiconducting polymers, semiconducting and metallic conjugated polymers, other highly conductive polymers, applications of conducting polymer. classes of biomedical materials, biocompatibility of biomedical materials, biocompatibility tests, selected polymer based bio-implants, recycling of polymers.	25%

Basic Text & Reference Books:-

- Fundamentals of plastics and Elastomers by C. A. Happers.
- Plastic Materials by J. A. Brydson.
- Handbook of adhesive tech by Pizzi, A , Mittal K. A.
- Textbook of quantitative chemical analysis by A.I. Vogel
- Electrochemistry of conducting polymers by J.Plocharski and S. Roth.
- Biomaterials Science & Engineering by John Bupark.

