AMPTE12 PLASTICS MATERIALS AND APPLICATIONS-I

UNIT-1 HISTORY

1.1 Basic chemistry of polymers-nomenclature of polymers sources for raw materials
1.2 Natural Polymers- Shellac resin and natural rubber
1.3 Cellulosics- Cellulose nitrate, cellulose acetate, cellulose acetate butyrate, Ethyl cellulose & others.

UNIT-2 COMMODITY THERMOPLASTICS & ITS APPLICATIONS

2.1 Methods of manufacturing - general properties
2.2 Processing behavior and applications of the following:
2.3 Polyolefin - Polyethylene, LDPE, HDPE, LLDPE, HMHDPE, Polypropylene- Homo polymers- Copolymers
2.4 Polytyrene & Styrene copolymers - Polystyrene, HIPS, ABS, Styrene - Acrylonitrile Vinyl plastics - Polyvinyl chloride, Polyvinyl Acetate, Polyvinylidene chloride, Polyvinyl alcohol & others.

UNIT-3 ENGINEERING PLASTICS & ITS APPLICATIONS

3.1 UHMHDPE -EPDM – EVA - Polyamides - Nylons 6, 66, 6 10, 11, 12 etc.
3.2 Acrylic plastics - Polymethyl Methacrylate, Polyacrylonitrile
3.3 Polyesters - Polyethylene terephthalate, polybutylene terephthalate
3.4 Polycarbonate - Polyacetals

UNIT-4 HIGH PERFORMANCE PLASTICS

4.1 Aromatic ether - Polypheneylene oxide, Aromatic thioether
4.2 Polyphenylene sulphide, Polysulfone, Polyimides
4.3 Polyimidazoles, Polyurethane, luoropolymers
4.4 Polyvinyl fluoride, Polyvinylidene fluoride, Poly tetra fluoro ethylene, Polychloro tri fluoro ethylene.

UNIT-5 THERMOSET MATERIALS & ITS APPLICATIONS

5.1 Phenol formaldehyde- Urea formaldehyde - Melamine formaldehyde
5.2 Unsaturated polyesters, Alkyd resins - Epoxides - Polyurethane
5.3 Silicones - End use applications- case studies on applications – Moulding Powders

References Books:

1. Plastics Engineering Hand Book Ed. 5 & Society of the Plastic Industry Inc - By SPI.
2. Plastics Materials and Processing - By Schwartz & Goodman. Plastics Materials (Properties & Application) - By Birley & Scott. Modern Plastics Hand Book - By Harper.