PPE5I102PLASTIC TESTING TECHNIQUES

Module – I

Standards, specifications and testing

Standard and specification-National and International standards-Test specimen preparation-preconditioning and test atmosphere.

Mechanical Properties: Hardness-tensile strength-compressive strength-shearstrength-flexural strength-heat strength-impact strength-dynamic stress-strain properties-creep-relaxation and set tests-friction and wear-abrasion test-fatigue-burst strength-and folding endurance.

Thermal Properties: Specific heat and thermal conductivity thermal dependantproperties-thermal endurance-glass transition temperature-thermal yield tests-Heat deflection temperature- Vicat softening temperature- Marten's heat resistance test-low temperature brittle point and flexibility test-coefficient of thermal expansion-shrinkage-Thermal stability-Thermal ageing and flammability.

Module – II

Optical and electrical properties

Optical Properties -Refractive index-light transmission-haze-clarity-gloss-colour guard and microscope. Electrical Properties-Insulation resistance-power factor-permittivity – dielectric strength-tracking resistance-arc resistance and antistatic test.

Permeation properties: Water absorption-soluble and insoluble matter-chemicalresistance environmental stress cracking resistance-ageing-gas permeability-water vapour permeability and weathering.

Knowledge and exposure on Sectorial Testing Standards

Preconditioning and test atmosphere - Testing of Mechanical, Thermal, Optical,Electrical properties, Permeability Properties and Rheological properties.

Module – III

Product testing

Pipe and fittings-film and sheets-container testing and FRP based products.

Factors for designing tests for newer products- Factors affecting the quality of materials and products- analysis of failure and its measurements

Techniques of characterization-Principles and application of DSC- TGA AND FTIR,Concepts of non-destructive testing

Text Books

1. *Hand Book of Plastics Testing Technology, Shah, Vishnu, John Wiley and Sons, SPE Monograph (1984)*
2. *Hand Book of Polymer Testing, Brown; Roger P (Ed.), Marcel Dekker, Inc, New York (1999)*
3. *Hand Book of Plastics Technology 2 vol. By Allen, W.S & Baker P.N*

Reference Books

1. *Plastic Engineering Hand Book & D-5 By Society of Plastics Industry Inc*
2. *Brown; Paul F (Ed), Hand Book of Plastics Test Methods, Longman Scientific and Technical, Harlow88*
3. *Blythe;A. R, Electrical Properties of Polymers, Cambridge University Press, Cambridge (1979).*
4. *Electrical Properties of Polymers, Blythe;Tony and Bloor; David, 2nd Ed, Cambridge Press*
5. *Plastic Engineering Hand Book & D-5 By Society of Plastics Industry Inc*
6. *Mitcheli Jr.; John, Applied Polymer Analysis and Characterization-Recent Development in Techniques, Instrumentation, Problem Solving, Hanser Publishers*