AMTE-17 TECHNOLOGY OF MANUFACTURED FIBRE PRODUCTION

UNIT-1 POLYMER RHEOLOGY

1.1 Transport Phenomena in FIBRE Manufacturing- Heat and mass;
1.2 Polymer rheology-Newtonian and non-Newtonian fluids,
1.3 Factors affecting shear viscosity;
1.4 Necessary conditions of FIBRE forming polymer;
1.5 Melt instabilities.

UNIT-2 MELT SPINNING

2.1 Melt Spinning
2.2 Polymer Selection and Preparation, equipment's,
2.3 Properties and applications of polyester,
2.4 Polyamide and polypropylene FIBREs.

UNIT-3 SOLUTION SPINNING

3.1 Solution spinning-
3.2 Polymer Selection and Preparation, equipment's,
3.3 Properties and applications of acrylic,
3.4 Polyurethane and regenerated cellulose FIBREs.

UNIT-4 POST SPINNING OPERATIONS

4.1 Neck drawing, drawing systems,
4.2 Influence of drawing on structure and properties of FIBREs;
4.3 Types of heat setting, influencing parameters on heat setting,
4.4 Influence of heat setting on FIBRE behavior;
4.5 Spin finish composition and application; texturising.

UNIT-5 ADVANCES IN FIBRE SPINNING

5.1 Liquid crystal spinning; Gel spinning;
5.2 Profile FIBREs, hollow & porous FIBREs;
5.3 Specialty FIBREs polyglycolic acid, polylactic acid,
5.4 Chitosan FIBREs preparation properties and applications.

References Books:

1. Gupta V. B. and Kothari V. K. (Editors), "Manufactured FIBRE Technology", Kluwer Academic Publishers, 1997.
2. Cook J. G., "Handbook of Textile FIBREs: Vol. 2: Man Made FIBREs", The Textile Inst., 5th Ed. 1984.
3. Srinivasa Murthy H. V., "Introduction to Textile FIBREs", Textile Association, India, 1987.