

**Semester – I (CC-I) - Fibre Science**

**Major Division**

1. Vegetable fibres
2. Animal Fibres
3. Regenerated fibres
4. Synthetic fibres
5. Special Synthetic fibres & Texturisation

**Unit – I :**

Vegetable Fibres:

Definition of Textile fibre – Classification of Textile fibres-Desirable properties of an Ideal Textile fibre – Staple fibre and filament.

Cotton: Chemical composition of Cotton fibre – Varieties of cotton – Physical and Chemical properties and end uses of cotton.

Bast Fibres : Different varieties of bast fibres – Physical and Chemical properties and end uses of Jute and Flax (linen)

**Unit – II:**

Animal Fibres:

Introduction to animal Fibres - Wool: Different types and grades of Wool. Production of clean wool from raw wool – characteristics of woollen and worsted yarn. Physical and Chemical properties and end uses of wool. Felting of wool.

Silk: Different types of silk, wild, Cultivated Life cycle of silkworm. Method of extraction of silk from Cocoon and the process for the preparation of filature silk. Degumming and weighting of silk. Outline of the process for production of Spun silk – Physical and Chemical Properties and end uses of silk.

**Unit – III**

Regenerated Fibres:

Definition and terminology related to fibre molecule – monomer – repeat unit – Polymer – Polymerization – Degree of Polymerization – Types of Polymerization – Addition and condensation Polymerization.

Regenerated Cellulosic fibres: Names of various rayons – Viscose rayon: Chemical reactions in the manufacturing of viscose rayon polymer – Process sequence in the manufacture of Viscose rayon. Properties and uses of Viscose Rayon.

Brief study of the manufacture of Polynosic Rayon. Outline of the manufacture of Acetate rayon – Properties and uses.

#### **Unit – IV:**

Synthetic fibres.

Synthetic fibres –Nylon 6- Chemical reaction in the manufacture of Nylon 6  
– Brief study on the properties and uses of Nylon 6 .

Nylon 66- Manufacturing of Nylon 66 polymer – Properties and uses of Nylon 66.

Aramid fibres – Brief study of Nomex, Kevlar fibres.

Polyester – Outline of the manufacturing of polymer and the production of filament and staple fibres Properties and uses of polyester

#### **Unit – V:**

Special Synthetic fibres & Texturisation

Polyacrylonitrille fibre – Outline of the manufacturing of acrylic fibres – Properties and uses. Polypropylene fibres – Brief study on properties and uses of polypropylene fibres and polyethylene fibres – Brief study on polyurethane fibre – Properties and uses Lycra fibres.

Special application of carbon fibres – Properties end uses carbon fibre.

Texturisation – Importance of Texturisation on synthetic fibres – Properties of textures yarn.

Identification of fibres: Cross sectional and Longitudinal views of Cotton, Wool, Silk, Viscose Rayon, Nylon, Polyester and Acrylic fibres.

#### **Reference Books:**

1. Fibre Science and Technology by S.P.Mishra
2. Textile fibres by V.A Shenai, 2<sup>nd</sup> Revised edition, 1997 Vol. I in the series,
3. Technology of Textile Processing Seavk publications, Bombay. Manmade fibres by P.W.Moncrieff, 6<sup>th</sup> edition 1975 Newnes- Butterworths London
4. Textile Science by E.P.C Gohle and L.D Vilensty, 1<sup>st</sup> Indian edition 1987,CBS Publishers and Distributors Delhi, India.