

6th SEMESTER

OPTION – I

SC616DA SERICULTURE - SILKWORM COCOON TECHNOLOGY

(Credits: Theory-04, Practical-02)

THEORY

UNIT-I: SELECTION OF COCOON FOR REELING

1. Evolution of silk reeling industry and its present status.
2. Quality of cocoon: Cocoon shell ratio, cocoon shell weight, silk filament length, cocoon reelability, factors affecting reelability.
3. Physical and chemical properties of silk fiber.
4. Raw materials for silk reeling: Selection of cocoon for reeling. Assessment of renditta, cocoon gradation, cocoon procurement and transportation.

UNIT-II: COCOON PROCESSING

1. Cocoon drying: Different methods, conventional and modern techniques steam stifling, hot air dryer, sun drying and others, advantages and disadvantages.
2. Cocoon sorting and preservation: Separation of defective cocoons, deflossing, methods of storing and preservation of cocoons.
3. Cocoon cooking: Principles of cocoon cooking.
4. Cocoon cooking equipment and brushing: open pan, three pan boiling methods, cocoon brushing hand and mechanical brushing.

UNIT-III: RAW SILK MANUFACTURE (REELING AND RE-REELING)

1. Reeling appliances: Concept of silk reeling, Country charkha, Cottage machine, Multi-end reeling machine, Automatic machine.
2. Reeling operations : Formation of reeling end, jettebout, croissure, reels
3. Re-reeling: Re-reeling machine, lacing, denier, skeining, booking and storage.
4. Water quality and silk reeling: Use of water in silk reeling, water quality, relationship between water quality and silk reeling, water quality standards.

UNIT-IV: SILK THROWING AND WEAVING:

1. Raw silk testing and grading: Methods of testing, standard testing appliances and equipment methods of grading of raw silk.
2. Silk throwing and twisting: Throwing preparation for twisting, Twisting of yarn, soaking, dressing, drying, winding, doubling and twisting.
3. Silk weaving: Warping, beaming, drawing denting, weft preparation, power loom and handloom weaving.
4. Silk byproducts : Reeling waste and its utility in spun silk industry utility of pupae

PRACTICALS

- a) Identification of Textile fibres by physical and chemical tests—microscopic examinations, flame test and solubility test for polyester, cotton, silk.
- b) Identification of defective cocoons and their percentage in a lot, determination of shell ratio of good cocoon.
- c) Single cocoon reeling—determination of average filament length and denier.
- d) Practical demonstration of cooking, reeling and re-reeling of a sample cocoon.
- e) Practical demonstration of multi-end silk reeling machine.
- f) Reeling appliances used in mulberry cocoon reeling.
- g) Study of silk fabric manufacturing unit power loom and handloom (visit to spun silk mill) during on the training.
- h) Visit to various reeling and weaving units of state and centre for practical demonstration.

6th SEMESTER

OPTION - II

SC616DB SERICULTURE - SILK REELING TECHNOLOGY

(Credits: Theory-04, Practicals-02)

Unit-I: Pre-Reeling operation-I

1. Cocoon harvesting and transportation of Cocoons.
2. Optimum conditions for cocoon storage.
3. Cocoon sorting or assessment of cocoons.
4. Physical properties of cocoons.

Unit-II: Pre-Reeling operation-II

1. Stifling: Different methods of stifling their advantages and disadvantages.
2. Cocoon cooking: Methods of cocoon cooking/boiling open-pan system and three-pan system.
3. Brushing: Hand and mechanical brushing of cocoons.
4. Quality of water for cocoon boiling/cooking.

Unit III: Reeling Process

1. Definition of Silk –Reeling: Different Methods country charkha, cottage machine and multi end reeling machine.
2. Reeling operation: Formation of reeling end, Jeetle boule, and coissures.
3. Quality of water for silk-reeling and impact of water on quality of silk.
4. Re-Reeling what are the advantages of re-reeling.

Unit IV: Silk-throuling and weaving.

1. Raw silk testing and grading: Methods of silk testing and grading.
2. Throuling preparation for lueisting, tuisting of yarn, soaking, drying and winding.
3. Chemical properties of silk yarns.
4. Silk by-products- Reeling waste and its utility in spun silk industry and utility of pupae.

Practicals

- a) Identification of textile fibers by physical and chemical tests, microscopic examination, flame test and solubility test for polyester, cotton and silk.
- b) Define cocoon percentage for cocoon lot.
- c) Single cocoon reeling –determination of average filament length and denier and shell ratio percentage of a sample cocoon.
- d) Practical demonstration of multi end reeling machine.
- e) Practical demonstration of cooking, reeling and re-reeling.
- f) Reeling appliances used in silk reeling.
- g) Visit to different reeling and weaving units of state and center for practical demonstration.

6th SEMESTER

OPTION-III

SC616DC SERICULTURE - COCOON AND REELING TECHNOLOGY

(Credits: Theory -04, Practical-02)

Unit-I: Cocoon drying, sorting and cooking

1. Objective of cocoon drying
2. Various methods of cocoon stifling/drying
3. Cocoon sorting and preservation. Objective of cocoon sorting and formulae
4. Cocoon cooking methods. Advantages and disadvantages

Unit-II: Raw silk Reeling

- 1 Introduction
- 2 Various reeling devices
- 3 Reeling operations : Formation of reeling end, jettebout, croissure, reels
- 4 Re-reeling: Object and re-reeling appliance

Unit-III: Raw silk testing and grading

1. Introduction
2. Types of tests: Qualitative test, Sample test and Quantitative test.
3. Raw silk grading/classification
4. Boil off test and exfoliation test

Unit-IV: Silk throwing and weaving

1. Introduction
2. Throwing preparation for twisting, Twisting of yarn, soaking, dressing, drying, winding, doubling and twisting.
3. Silk weaving: Warping, beaming, drawing denting, weft preparation, power loom and handloom weaving.
4. Chemical processing of silk yarns and fabrics: Degumming, bleaching, dyeing, printing of silk yarns and fabrics.

PRACTICALS

- a) Study of cocoon sorting process: Identification of defective cocoons and their percentage in a lot
- b) Identification of Textile fibres by physical and chemical tests—microscopic examinations, flame test and solubility test for polyester, cotton, silk.
- c) Cocoon assessment: Determination of cocoon weight, shell weight and shell ratio of good cocoon.
- d) Practical demonstration of cooking
- e) Single cocoon reeling—determination of average filament length.
- f) Reeling appliances: Study of Reeling and Re-reeling operations and devices.
- g) Practical demonstration of multi-end silk reeling machine.
- h) Study of silk fabric manufacturing unit power loom and handloom (visit to spun silk mill) during on the training.
- i) Visit to various reeling and weaving units of state and centre for practical demonstration.