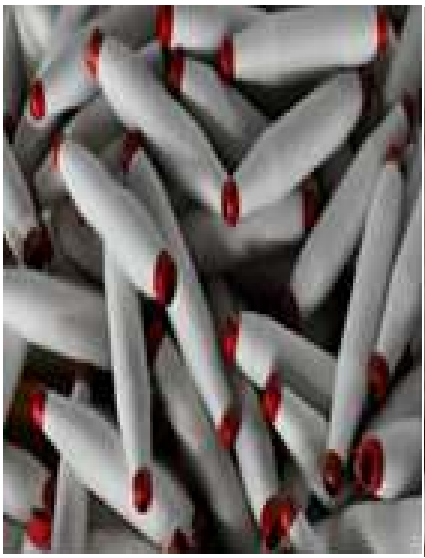
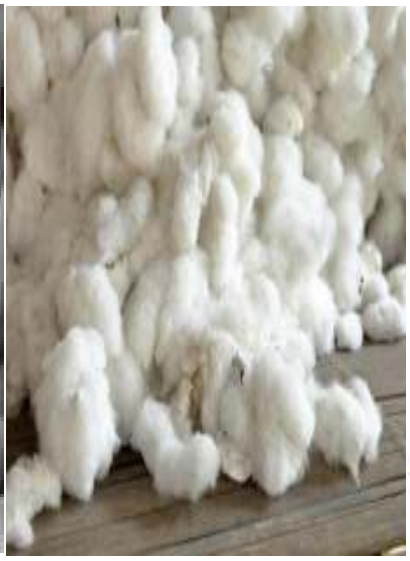
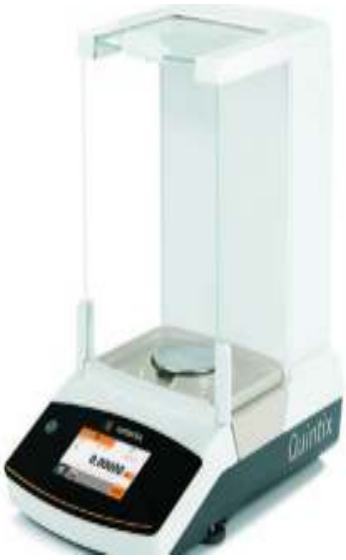
Ginning and Spinning Operation

Level – II

Based on March, 2022, Curriculum Version 1

Module Title: - Weighing and Checking Ginning and Spinning Materials and Products

Module code: IND GSO2 M04 0322

Nominal duration: 20Hour

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Addis Ababa, Ethiopia

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Acronym

LAP: Learning Activity Performance

SOP: Standard Operating Procedure

GMP: Good manufacturing procedure PP: Polypropylene

TTLM: Teaching, Training and Learning Materials.

Introduction to the Module

Accurate quantity control is an important and vital operation at a grain handling facility, and the general expansion of the grain trade has prompted bulk shippers and receivers to look closely at weighing equipment. Weighing technology has improved considerably during the last decades, and greater technological advancements have been made in electronic weighing for the grain industry than in probably any other specific function in a grain facility. In the

past, weighing was labor-intensive and required highly motivated people to perform a delicate operation efficiently, often under adverse conditions.

This module is designed to meet the industry requirement under the Ginning and Spinning Operation occupational standard, particularly for the unit of competency: **Weighing and Checking Ginning and Spinning Materials and Products**

This module covers the units:

- Weighing Preparation
- Weigh
- Materials and products
- Confirming documentation

Learning Objective of the Module

- Prepare for weighing
- Weigh materials and products
- Check materials and products
- Confirm documentation

Module Instruction

For effective use this modules trainees are expected to follow the following module instruction:

1. Read the information written in each unit
2. Accomplish the Self-checks at the end of each unit
3. Perform Operation Sheets and Do the "LAP test" which provided at the end of module
4. Read the identified reference book for Examples and exercise

Unit one: Weighing Preparation

This unit is developed to provide you the necessary information regarding the following content coverage and topics:

- Sample taking of raw materials and products

- Weighing or measuring equipment care and maintenance
- Weighing equipment Calibration

This unit will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Identify samples and equipment for weighing
- Organize appropriate weighing equipment with care and maintenance.
- Calibrate require weighing or measuring equipment.

1.1 Sample taking of raw materials and products

Fibers

Fiber: The fundamental component used in making textile yarns and fabrics. Fibers are fine substances with a high ratio of length to thickness. They can be either natural (e.g. cotton, wool, silk etc.) or synthetic (e.g. polyester, nylon, acrylic etc.).

Synthetic fibers are generally extruded in continuous strands of gel-state materials. These strands are drawn (stretched), annealed (hardened), and cured to obtain properties desirable for later processing.

Identify Weighing Fiber

Cotton: Linen:

Wool: Silk:

Rayon: Spandex:

Nylon: Polyester:

Polypropylene: Glass:

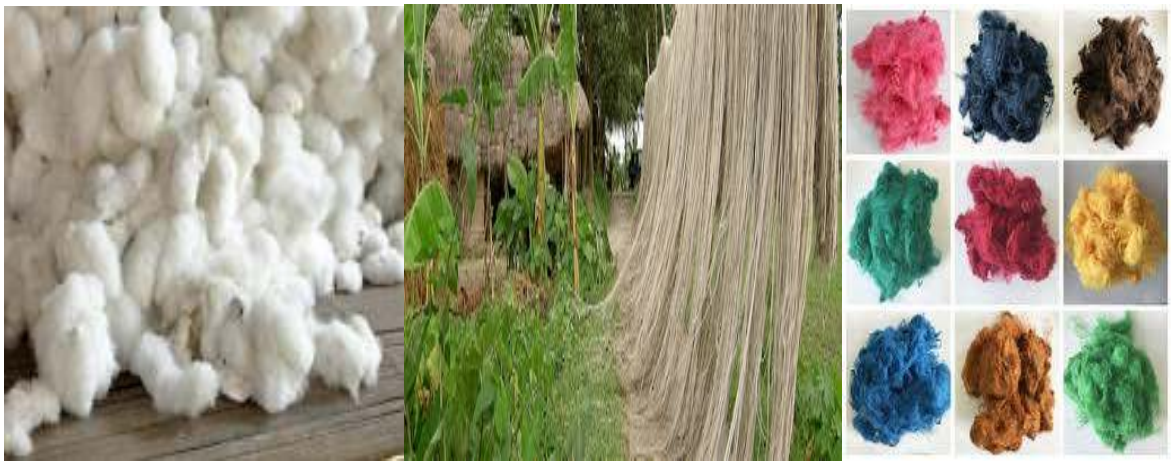


Fig-1: Cotton fiber, jute fiber and different color fiber

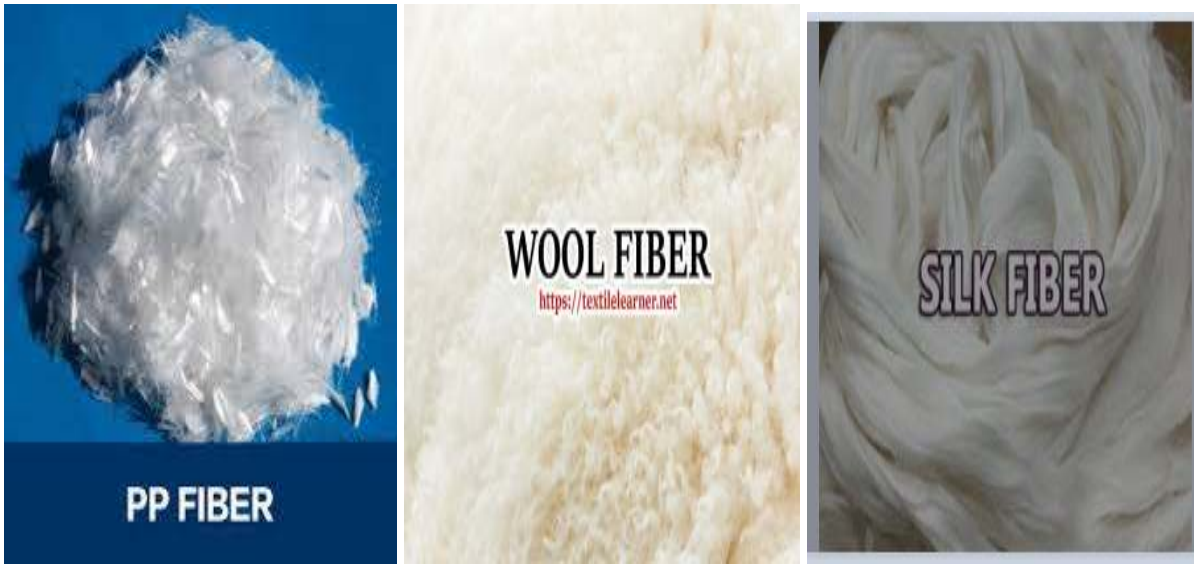


Fig2 pp, wool and silk fiber

Fig3 Polyester fiber, polyester stock and acrylic fiber

Bale

A bale is a bound-up bundle, usually made of hay. When you drive past a farm in the fall, you'll often see bales of hay scattered across the fields. A bale is a compact, easy-to-move bundle of a crop like hay or cotton.




Fig3 types of bale and buckle pet strap

Lint fiber

Lint is the common name for visible accumulations of textile fibers and other materials, usually found on and around clothing. Certain materials used in the manufacture of clothing, such as cotton, linen, and wool, contain numerous, very short fibers bundled together.

Fig4 Cotton lint fiber and seed

Sliver

Sliver in yarn production is loose, soft, untwisted ropelike strand of textile fibre having a roughly uniform thickness. It is produced by the carding process or draw frame which

separates raw fibres to prepare them for spinning. To produce a continuous sheet of fiber stand is called Sliver

Fig5 Surgical, draw frame and roving sliver

Lap

To convert or transfer the opened and cleaned cotton fiber into a sheet form of definite width and uniform unit length is called Lap

Fig6 diferents product of lap

Yarn

Yarn is a long continuous length of interlocked fibres, suitable for use in the production of textiles, sewing, crocheting, knitting, weaving, embroidery, or rope making.

Yarn is selected for different textiles based on the characteristics of the yarn fibres, such as warmth (wool), light weight (cotton or rayon), durability (nylon is added to sock yarn, for example), or softness (cashmere, alpaca).

A continuous strand of textile fibers that may be composed of endless filaments or shorter fibers twisted or otherwise held together.

Fig7 different count of yarn

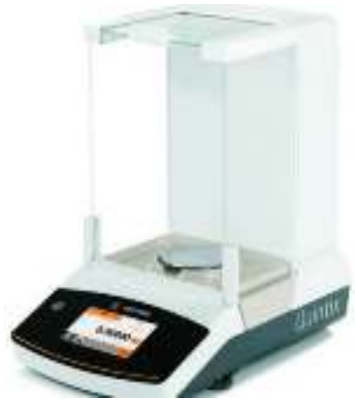
1.2 Organize weighing or measuring equipment care and maintenance

A scale or balance is a device used to measure weight or mass. These are also known as mass scales, weight scales, mass balances, and weight balances.

Weighing or measuring equipment

- ✓ Weight Electronic and mechanical Balance.
- ✓ Raw Cotton Selector
- ✓ Fiber Tenso-Lab
- ✓ Electronic Slivers & Roving's Reel
- ✓ Climates
- ✓ Trash analyzer

Fig8 digital colorimeter, Raw Cotton and fiber tenso lab



Truck Scale Beam Indicator

Fig9 Scales, Common instrument of weighing Balances

Fig10 Wrap Reel for colorimeter and Electronic Slivers &Roving's Reel

Fig11 Digital Cotton Fiber Lap testing, trash analyzer and Climates

1.3 Calibration of weighing equipment

Preparations before calibration

Before you can start the calibration of the weighing instrument, you should clarify a few things and get prepared. You should find out the technical characteristics of the weighing instrument (max weight, d value), the accuracy requirement (max error allowed and uncertainty) and what to do if the calibration fails (adjustment).

Typically, the whole measurement range is calibrated and the calibration is performed in the location where the instrument is being used. Make sure you have enough weights for the calibration procedure available.

The weighing instrument should be switched on at least 30 minutes before the calibration. The temperature of the weights should be stabilized to the same temperature where the calibration is to be done.

The weighing instrument should be at a horizontal level, especially for small and accurate weighing instruments.

Perform a few pre-tests by placing weights close to the maximum of the range on the instrument and to ensure it works normally.

In case the weighing instrument fails in calibration and it is adjusted, you should make an “as found” calibration before adjustment and an “as left” calibration after adjustment.

Next, let’s take a look at the different tests that should be done during the calibration.

Weighing Scale Calibration is a set of processes under controlled conditions that show the relationship between the values of quantities using measurement and the corresponding values according to standards set. The standards output and accuracy are known which means the measurement can be compared with a measurement from the instrument being calibrated. Calibration reports can be made which show whether or not the balance has passed or failed certain conditions.

Instrument calibration is the primary process to maintain instrument accuracy. Calibration is the process of configuring an instrument to provide a result for a sample within an acceptable range.

The calibration process involves using the instrument to test samples of one or more known values. The results are used to establish a relationship between the measurement technique used by the instrument and the known values.

The instrument will provide the best performance when the intermediate points provided in the manufacturer's performance specifications are used in the calibration.

The critical issues are:

Certification and calibration of all moisture measuring equipment, including in-line moisture measuring sensors;

Certification and calibration of weighbridge and lint bale scales;

Certification of test weights;

Fire bales; Sample size.

The methods and procedures shall include, but not be limited to:

(a) Identification of the instrument, gauge or test equipment, or group of such items to which the procedure is applicable

(b) Identification of all measurement standards/reference materials and associated equipment used to perform the calibration

(c) the procedures to be adopted for handling, transporting, storing and using measuring equipment and reference materials used for calibration, including details of lifetime and measures to prevent contamination or loss of determinant

(d) The procedures to be adopted for handling, transporting, storing and preparing items for calibration

(e) The environmental conditions that must be used, the limits applicable, the procedure for any corrections that may have to be made as a result of the environmental conditions and, where relevant, the minimum period of stabilization before calibration

(f) The method or procedure for calibration in the form of written instructions and diagrams where appropriate

(g) Details of the measurement or calibration data to be recorded and the method for presentation and analysis of this data

(h) The limits of acceptance for the calibration data for the item or type of item being calibrated

(i) The estimation of the uncertainty of measurement of the calibration process (j) the procedures to be adopted for selecting calibration intervals when the equipment/reference material is being used by the Laboratory to perform calibration or tests

(k) The procedures for checking equipment and reference materials between calibrations

Notes colorimeter calibration

A colorimeter requires the first calibration using standard solutions of the specified solute concentration to be measured in a test sample.

The machine must be re-zeroed if a new filter is chosen.

The sample cuvettes must be at least two-thirds full.

The outside of the cuvette must be dry and clean.

If an instrument appears to be faulty, do not abandon it but consult a demonstrator

Shirley analyzer procedure

Clean the instrument and the containers

Shake the specimen so that large particles of foreign matter i.e. husk, leaves, stem particles, metal particles etc. (which may otherwise damage the machine) are removed from the specimen. Keep these droppings separately.

Open out the hard lumps of fibers, if present

Spread the specimen on the feed plate in the form of an even layer

Start the machine and let the trash and lint collect in their respective compartments

Take out the lint from the lint chamber and pass it again through the machine without disturbing the discarded matter in the settling chamber

Stop the machine and collect the lint (L1) from the lint chamber and keep it in a separate container

Remove all the discarded particles containing lint from the tray and settling chamber and pass it through the machine.

Collect the lint (L2) and keep it in a separate chamber. Collect all the discarded matter (T1) in the tray, settling chamber and any seeds clinging to the wires of the licker– in the cylinder and combine them

Weigh the discarded matter (T1) (to an accuracy of 100 mg and if the weightis less than 10g, weight to an accuracy of 10 mg), which contains lint again through the machine and ignore the discarde matter collected. Collect the lint (L3) and keep it in a separate container. Weigh the lint (L3) to an accuracy of 10 mg

Combine all the portions of lint (L1, L2, and L3) and weight to an accuracyof 10 mg

Self-check-1

Test-I Choose

Instruction: choose the best answer for the give choice. You have given 1 Minute for each question. Each question carries Point.

1. The fundamental component used in making textile yarns and fabrics is machine.

A true B false

2. Cotton fiber into a sheet form of definite width and uniform unit length is called.

A. Lint fiber B. Yarn

C. Lap D. bale

3. Which one odd?

A. Polyester B. Silk

C. Acrylic D. Nylon,

Test II: short Answer writing

Instruction: write short answer for the given question. You are provided 3 minute for each question and each point has Points.

1. What is weighing Scale Calibration?

2. Write down at least seven types of fiber
3. What is the difference between line and seed?

Part III: long answer writing

Direction: Give **long** answer to the following questions. Time allotted for each item is 5 minute and each question carry point.

1. How to organize the weighing equipment, material and products?
2. Assume you are operator show Shirley analyzer procedure of trash?

Note: Satisfactory rating – above 60% Unsatisfactory - below 60%

You can ask you teacher for the copy of the correct answers

Unit Two: Weigh

This unit to provide you the necessary information regarding the following content coverage and topics:

- Weighing of raw materials and products
- Weighing material handling
- Recording and documentation of weights

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Accurately weigh raw materials and products.
- Weigh handle according to OHS practices.
- Correctly record and document weights.

2.1 INTRODUCTION

Weighing test

The purpose of the weighing test is to test the accuracy (calibrate) of the weighing instrument throughout its whole range in several steps, with increasing and decreasing weight.

The most common practice is the following: start with zeroing the instrument without any load. Set loads of the first test point, wait for stabilization and record the indication. Continue increasing the loads through all the increasing test points. Once the maximum load is recorded, start decreasing the loads through the decreasing test points.

A thorough knowledge and care of the balances used in the laboratory is essential. Many weighing's are rough and require the top-loading balance. However, semi micro quantities must be weighed using an analytical balance.

IMPORTANT RULES FOR WEIGHING:

1) Do not handle objects to be weighed with bare hands. Use tongs, paper towels, or gloves. There are no gloves available, so you will use paper towels for handling objects.

2) Never weigh chemicals directly in contact with the balance pan; use vessels, weighing paper or filter paper.

3) Do not weigh hot or cold objects on the balance. Hot objects will give erroneously lower readings due to air buoyancy, while cold objects will give higher readings due to the condensation of water vapor.

4) Never spill chemicals inside the analytical balance enclosure. If you spill chemicals on the top loading balance, clean it immediately. Keep weighing chamber and weighing pan clean.

5) Do not overload the balance. The usual maximum capacity for the analytical balance is 110g.

6) Always CARE for the balance.

7) Before using the balance, ensure that the pan is clean. If it is dirty report it to your instructor. Then brush the pan down with a special brush.

8) Ensure that the bubble in the Level Indicator is centralized while the balance is "OFF". Your instructor may need to adjust the Leveling Feet.

2.2. Weighing of raw materials and products

Weigh or measurement fiber

- ✓ **Weigh or measure fiber length**

The influence of fiber length

The length of the fiber is also one of the most important parameter for the spinning process as well as quality. The productivity is influenced by numbers of break, quantity of waste, required twist and general spinning conditions.

In general fibers < 5 mm will be lost as waste and fly during the processing. Fibers of 12 through 15 mm do not support the strength and only serves to “fill up” the yarn. Only fibers above this length (> 15 mm) support the positive characteristics of the yarn.

- ✓ **Weigh Fiber Stiffness**

Fiber stiffness plays a major role when rolling and twisting movements are involved. Fiber stiffness is dependent on the fiber substance and upon the relationship between fiber length and fineness. Fibers have the same structure will be stiffer, the shorter they are. This means that the fiber orientation grade is measure for fiber stiffness.

- ✓ **Weigh Fiber Strength**

Strength is very often defined as the most important parameter. The nature produces countless fibers, of which however most are not usable for textiles because of lack in strength. The minimum strength for a textile fiber is approximately 6 cN/tex (6 km breaking length).

The importance of the strength has further increased as today’s processes are more sensitive. Some significant breaking strength of fibers:

- ✓ **Weigh fiber trash content**

The measurement of trash or non-lint content is very important in assessing the lint quality of cotton sample**.** The Shirley Analyzer separates the trash from the lint with a minimum of fiber loss.

Lint content (L) in weight and percentage

Trash content (T) in weight and percentage

Invisible waste (W) in weight and percentage

- ✓ **Weigh fiber color**

Reflectance this value expresses the whiteness of the light that is reflected by the cotton fibers It is used in conjunction with the yellowness to determine the instrument-measured color grade of the cotton.

Yellowness this value expresses the yellowness of the light that is reflected by the cotton fibers. The yellowness of the sample is determined by using a yellow filter.

The yellowness is used in conjunction with former reflectance value to determine the instrument-measured color grade of the cotton.

Color Grade The color grade of a cotton sample is determined in a two filter colorimeter.

- ✓ **Weigh fiber seed**

In the ginning process the raw cotton separate in to cotton seed and cotton fiber. So by collecting the cotton seed weigh the mass. We are producer of quality of cotton seed remain after ginning. Cotton seed dry in our large compound to remove moisture from it. After removal of moisture we use it for cotton seed cake.

- ✓ **Weigh bale weight**

Cotton bales are produced as a result of ginning and pressing process of seed cotton. Bales can weigh from 40 lbs. to 2,000 lbs. (18 kg to 907 kg). They come in two basic shapes, round and square. Round bales are usually quite large and weigh from 600 to 1,600 lbs. (272 kg to 544 kg). But Moisture Content Affects Bale Weight

Fresh bale: 18% to 20% moisture by weight.

Stabilize: 8% to 9% moisture by weight.

Weight before drying - weight after drying / weight before drying = **moisture content percentage**

- ✓ **Weigh sliver count**

A sliver is passing through the measuring drum.

Then the sliver is taking 3 yrds.

Then the weight of the sliver is taking.

Then the count is taking from the formula.

Count is the number of ‘unit length’ per ‘unit weight’ i.e. unit length/unit weight.

- ✓ **Weigh lap**

Sheets of cotton bales are fed between lap roller and shell roller then pressure is to apply at both the end of the lap roller. This pressure initiates the formation of the lap on the lap roller in the blow room. The lab is the ultimate output material of the blow room.

Yarn weigh or measurement

- ✓ **Weigh yarn count**

The yarn count (linear density of the yarn) is expressing the fineness of the yarn. It is a number that indicates the length per unit weight or weight per unit length of yarn. There are two systems of expressing linear density or fineness of the yarn.

- ✓ **Weigh yarn strength**

Single-end strength:

In this method, the exact tensile strength of the yarn is measured. It expresses the force required to break the single strand of yarn. It is usually measured in grams or cent-newton. The tensile strength of the yarn is reflected in the tensile strength of the fabric. The fabric woven from the yarn having good tensile strength shows good tensile strength. It directly affects the productivity and quality of the fabric.

- ✓ **Weigh yarn evenness**

Yarn evenness is a characteristic of yarn that denotes the level of variation in yarn linear density or mass per unit length of yarn. Evenness of yarn refers to the yarn irregularities in respect of yarn count along its length. The evenness of staple spun yarn is judged because staple spun yarn has count variation due to many reasons. The continuous filament yarn has no variation in yarn count so that evenness is not an issue for continuous yarns. The evenness of yarn is a very important quality aspect of yarn because it directly affects the fabric to be woven. Count irregularities directly appear on the fabric surface. A yarn having poor evenness has more thick and thin places along the yarn length, while an even yarn has little variation in the count or linear density along the yarn length. Since twist tends to accumulate in the thin places in the yarn so that irregularity in yarn linear density also causes variations in twist along the yarn length. This twist variation also affects the yarn diameter. Following parameters are observed during testing of evenness of yarn:

- Neps
- Thick places
- Thin places
- Total imperfection

Test and adjust machines/ measuring equipment

- ❖ Care and maintenance of equipment sequence operations

Inspection and Testing Procedures

1). Determine that the scale is "Legal for Trade"..

2). Inspecting the Equipment, Foundation, Installation etc.

3). Accuracy Test.

4). Complete the Scale Accuracy Inspection Form

After the material to be weighed the following tasks must be done:-

1. Interpret work specifications: information, standards and specifications comply with site safety plan, OHS regulations and state and territory legislation applicable to workplace operations comply with ...
2. Interpret technical data: Interpret technical specifications and manuals
3. Results and specifications.
4. Requirements of recording and documentation

2.3 Recording and documentation of weights

Test control records

Laboratory control records should include complete data derived from all tests conducted to ensure compliance with established specifications and standards, including examinations and assays, as follows:

A description of samples received for testing, including the material name or source, batch number and, where appropriate, the manufacturer and/or supplier; alternatively, other distinctive code, date of sample taken and, where appropriate, the quantity of the sample and date the sample was received for testing

- A statement of, or reference to, each test method used
- A statement of the weight or measure of sample used for each test as described
- A complete record of all raw data generated during each test to show the specific material and the batch tested
- A record of all calculations performed in connection with the test including, for example, units of measure, conversion factors, and equivalency factors
- A statement of the test results and how they compare with established acceptance criteria

- The signature of the person who performed each test and the date(s) on which the tests were performed
- The date and signature of a second person, showing that the original records were reviewed for accuracy, completeness, and compliance with established standards.

Documentation is the key to GMP compliance and ensures traceability of all development, manufacturing, and testing activities. Documentation provides the route for auditors to assess the overall quality of operations within a company and the final product.

- ✓ Good documentation constitutes an essential part of the quality assurance system. Clearly written procedures prevent errors resulting from spoken communication, and clear documentation permits tracing of activities performed.
- ✓ Documents must be designed, prepared, reviewed, and distributed with care.
- ✓ Documents must be approved, signed, and dated by the appropriate competent and authorized persons.
- ✓ Documents must have unambiguous contents. The title, nature, and purpose should be clearly stated.
- ✓ Documents must be regularly reviewed and kept up-to-date (e.g., only current documentation should be available for use).
- ✓ Documents must not be handwritten
- ✓ Any correction made to a document or record must be signed or initialed and date
- ✓ Record must be kept at the time each action is taken and in such a way that all activities concerning the conduct of preclinical studies, clinical trials, and the manufacture and control of products are traceable.
- ✓ Storage of critical records must at secure place, with access limited to authorized persons..
- ✓ Records which are critical to regulatory compliance
- ✓ Date may be recorded by electromagnetic or photographic means
- ✓ It is particularly important that during the period of retention.
- ✓ If data is modified, it must be traceable.

There are various types of procedures that a good manufacturing procedure (GMP) facility can follow. Given below is a list of the most common types of documents, along with a brief description of each.

The Laboratory shall have a system for selecting, using, calibrating, checking, controlling and maintaining measurement standards, reference materials used as measurement standards and measuring/test equipment used in the performance of accredited calibrations and tests. Measurements performed by the Laboratory and by sub-contractors that it uses shall be covered by this system.

This system shall be designed to ensure that the Laboratory has the necessary procedures and resources to carry out calibrations, tests and supporting measurements within the required time-scales and designated limits. The Laboratory should set these limits and they shall be consistent with the Laboratory's schedule of accreditation, the relevant calibration or test specifications and/or the requirements of the Client. The system shall also ensure that any measuring and test equipment, and any reference material used, performs as intended.

Self-check-2

Test-I Choose

Instruction: choose the best answer for the give choice. You have given 1 Minute for each question. Each question carries Point.

2. The trash content of the fiber separate from the lint using.

A. Shirley Analyzer B. Weighing Balances

C. Digital colorimeter D. Roving's Reel

2. Bales can weigh from 40 lbs. to 2,000 lbs. (18 kg to 907 kg).

A. True B. False

3. Weight before drying - weight after drying / weight before drying =

A. Moisture content B. Count

C. Trash D. A&B

Test II: short Answer writing

Instruction: write short answer for the given question. You are provided 3 minute for each question and each point has Points.

4. What are the tasks be done after material to be weighed?
5. What is the difference between record and documentation?

Part III: long answer writing

Direction: Give **long** answer to the following questions. Time allotted for each item is 5 minute and each question carry point.

3. What are weighing parameter of fiber raw material?
4. What are weighing parameter of product of yarn?
5. Assume you are weighing operator so what are the important rules for weighing:?

Note: Satisfactory rating – above 60% Unsatisfactory - below 60%

You can ask you teacher for the copy of the correct answers

Operation sheet 1

- **Operation title:** prepare for weigh and weigh count of sliver and lap
- **Purpose:** To practice and demonstrate the knowledge and skill required in measuring the count calculation of sliver or/and lap

- **Instruction:** using carding sliver and draw frame lap calculate or measure the count sliver and lap. For this operation you have given 3Hour and you are expected to provide the answer on the given table.

Sliver Procedures:

step1. First of all, taking the sample of sliver.

Step2. With the help of wrapping drum, measure 6 yards of sliver.

step3. The circumference of the wrapping drum was one yard; 6asured length of sliver was calculated.

Step4. Measure that weight in pounds.

Step5. Then, calculate number of yards per pound.

Step6. Then, dividing it by 840 calculated count of sliver.

Lap Procedures:

Step1. Take the sample of lap.

Step2. With the help of wooden template, measure one yard of sample lap.

Step3. Then, with the help of weighing balance the weight of measure calculate length.

Step4. Then, calculate numbers of yards per pound.

Step5. Then, by dividing it by 840 the count the calculate.

PRECAUTIONS:

1. Drum should be properly adjusted.
2. It should complete one revolution for 1 yard.
3. The lap or sliver should not be entangled.
4. Sample should be weighted properly.
5. Template plate should be adjusted properly.
6. The sample should be taken according to the boundaries of template plate.
7. It should be weighted properly.

LAP Test 1	Practical work

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, workshop, tools and materials you are required to perform the following tasks within 30 minutes.

Task 1: prepare sliver an lap

Task 2: weigh the mass of sliver and lap

Task 3: calculate the count sliver and lap

Task 5: record the result

Unit Three: Checking materials and products

This unit to provide you the necessary information regarding the following content coverage and topics:

- Checking raw materials and products of ginning and spinning

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Checking raw materials and products of ginning and spinning

3.1 Checking raw materials and products of ginning and spinning

Checking the Final Product

In this process the bulk production is examined before delivery to the customer to see if it meets the specifications. By its nature this takes place after the material has been produced. It is therefore too late to alter the production conditions. In some cases selected samples are tested and in other cases all the material is checked and steps taken to rectify faults. For instance some qualities of fiber are inspected for faulty places which are then mended by skilled operatives; this is a normal part of the process and the material would be dispatched as first quality

Monitoring Production

Production monitoring, which involves testing samples taken from the production line, is known as quality control. Its aim is to maintain, within known tolerances, certain specified properties of the product at the level at which they have been set. A quality product for these purposes is defined as one whose properties meets or exceeds the set specifications. Besides the need to carry out the tests correctly, successful monitoring of production also requires the careful design of appropriate sampling procedures and the use of statistical analysis to make sense of the results..

Checking Raw Materials

The production cycle as far as testing is concerned starts with the delivery of raw material. If the material is incorrect or sub-standard then it is impossible to produce the required quality of final product. The textile industry consists of a number of separate processes such as natural fibre production, man-made fibre extrusion, wool scouring, yarn spinning, weaving, dyeing and finishing, knitting, garment manufacture and production of household and technical products. These processes are very often carried out in separate establishments; therefore what is considered to be a raw material depends on the stage in processing at which the testing takes place. It can be either the raw fibre for a spinner, the yarn for a weaver or the finished fabric

for a garment maker. The incoming material is checked for the required properties so that unsuitable material can be rejected or appropriate adjustments made to the production conditions. The standards that the raw material has to meet must be set at a realistic level. If the standards are set too high then material will be rejected that is good enough for the end use, and if they are set too low then large amounts of inferior material will go forward into production.

Investigation of Faulty Material

If faulty material is discovered either at final inspection or through a customer complaint it is important that the cause is isolated. This enables steps to be taken to eliminate faulty production in future and so provide a better quality product. Investigations of faults can also involve the determination of which party is responsible for faulty material in the case of a dispute between a supplier and a user, especially where processes such as finishing have been undertaken by outside companies. Work of this nature is often contracted out to independent laboratories that are then able to give an unbiased opinion.

- Generally during weighing and testing of textile materials and products the following areas must be checked and evaluated accurately.

Raw materials:

Raw material testing and quality control, Intertie tests raw materials, feed stocks and other commodities, ingredients and components used in a wide range of products. Testing raw materials can include evaluation and screening of feed stocks, unprocessed materials, semi-processed materials and finished products for quality specifications, impurities and more, including higher-end analytical testing and characterization if required. Raw materials tested include fiber, bale sliver, lap, yarn and much more. Commodity raw materials sampling, testing and inspection services for incoming bulk materials and products are available on a global basis.

Based on production order check

Product testing, also called consumer testing or comparative testing, is a process of measuring the properties or performance of products.

The theory is that since the advent of mass production manufacturers produce branded products which they assert and advertise to be identical within some technical standard.

Product testing seeks to ensure that consumers can understand what products will do for them and which products is the best value. Product testing is a strategy to increase consumer protection by checking the claims made during marketing strategies such as advertising, which by their nature are in the interest of the entity distributing the service and not necessarily in the interest of the consumer. The advent of product testing was the beginning of the modern consumer movement.

Product testing might be accomplished by a manufacturer, an independent laboratory, a government agency, etc. Often an existing formal test method is used as a basis for testing. Other times engineers develop methods of test which are suited to the specific purpose. Comparative testing subjects several replicate samples of similar products to identical test conditions.

Product testing might have a variety of purposes, such as:

Determine if, or verify that, the requirements of a specification, regulation, or contract are met

- Decide if a new product development program is on track: Demonstrate proof of concept
- Provide standard data for other scientific, engineering, and quality assurance functions
- Validate suitability for end-use
- Provide a basis for technical communication
- Provide a technical means of comparison of several options
- Provide evidence in legal proceedings: product liability, patents, product claims, etc.
- Help solve problems with current product
- Help identify potential cost savings in products

Product tests can be used for:

- Subjecting products to stresses and dynamics expected in use
- Reproducing the types of damage to products found from consumer usage
- Controlling the uniformity of production of products or components

Government role for product testing

The most common government role in product testing is creating laws for the creation of products with the intent of ensuring that manufacturers accurately describe the products they are selling and that products are safe for consumers to use. Lawmakers typically introduce government regulation when the industry's voluntary system will not or cannot solve a serious problem. Government standards are almost always more strict than voluntary standards and almost always have the goal of reducing hazard. Most governments put responsibility to test products on the manufacturer.

Self-check-3

Test I: short Answer writing

Instruction: write short answer for the given question. You are provided 3 minute for each question and each point has Points.

1. Product tests can be used for?
2. What does it mean production order?

Part II: long answer writing

Direction: Give **long** answer to the following questions. Time allotted for each item is 5 minute and each question carry point.

4 Raw material testing includes?

5. How to check ginning and spinning product?

Note: Satisfactory rating – above 60% Unsatisfactory - below 60%

You can ask you teacher for the copy of the correct answers

Operation sheet 2

- **Operation title:** inspect the quality on cone package
- **Purpose:** To practice and demonstrate the knowledge and skill required in measuring the quality of cone package before delivered.
- **Instruction:** using cone package check the production order and test the defect. For this operation you have given 3Hour and you are expected to provide the answer on the given table.

Step1. First of all, the sample of the cone counts to be taken.

Step2. Bring the cones in the cone trolley from storage area.

Step3. Inspect the cone packages visually and check for any damages

Step4. If defects are identified store the defective cones separately.

Step5. Remove the surface defects in cone package.

Ste6. Check whether the surface of the cone packages is in good condition.

Ste7. Check and Weigh the full cone packages

Ste8.Check and take only correct weighing cones for packing

PRECAUTIONS: The operation can be performed by following occupational health and safety rule. Use of proper OHS materials

- Operational workplace activities
- Restricted space
- Hazardous, controlled or exposed conditions.

LAP Test 2	Practical Demonstration

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, workshop, tools and materials you are required to perform the following tasks within 30 minutes.

Task 1: bring the cone package

Task 2: measure quality

Task 3: separate defected and no defected sample

Unit Four: Confirming documentation

This unit to provide you the necessary information regarding the following content coverage and topics:

- Relevant documentation of materials and products confirmation
- Analysing materials and products order details documentation

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Confirm relevant documentation of materials and products
- Check relevant documentation other order details.

4.1 Relevant documentation of materials and products confirmation

Product test reports and technical documentation are only applicable on a product basis. For example, an entire factory cannot be Chartered Engineers Certified' compliant'. It doesn't work that way. How to plan, write, and deliver technical documentation that works

Step 1: Do research and create a "Documentation Plan"

Step 2: Structure and design

Step 3: Create the content

Step 4: Deliver and test

Step 5: Create maintenance and update schedule

4.2. Analyzing materials and products order details documentation

4.2.1. Technical specifications

Technical documentation refers to any document that explains the use, functionality, creation, or architecture of a product.

In this process the bulk production is examined before delivery to the customer to see if it meets
the specifications. By its nature this takes place after the material has been produced. It is therefore too late to alter the production conditions. In some cases selected samples are tested and in other cases all the material is checked and steps taken to rectify faults. For instance some
qualities of fabric are inspected for faulty places which are then mended by skilled operatives; this is a normal part of the process and the material would be dispatched as first quality. In textile manufacturing especially testing and weighing we can check the materials and products
by the following standards. Such as ASTM, AATCC, ISO etc.

4.2.2. Maintain accurate records

Recording and reporting practices

The Laboratory shall maintain records for each item of measuring equipment, including reference measurement standards and reference material standards and test equipment, used in the performance of calibration or tests. The records shall show, either through in-house documentation or calibration certificates from external organizations that each calibration in the chain of traceability has been carried out.

The Laboratory shall ensure that the records contain detailed information of the equipment/reference material used for calibrations and that there is also a full and up-to-date history of the calibration of this equipment/reference material.

The records shall provide sufficient information to demonstrate the measurement capability and traceability of each item of measuring equipment and the range of use of each reference material, its lifetime and required storage conditions.

Each record shall include or refer to:

(a) the date on which each calibration was performed

(b) the calibration results obtained after and, where relevant, before any adjustment and repair

(c) the specified calibration interval

(d) reference to the calibration method or procedure used and any relevant standard or specification

(e) the specified limits of permissible error

(f) calibration certificates, bearing the standards logo, from standards accredited calibration laboratories of appropriate measurement capability or from the Laboratory holding the national standard for the measurement standards used, or from a laboratory meeting the requirements for traceability specified in standards, Traceability of Measurement

(g) certificates or other documentation, for all reference materials used for calibration, providing evidence of characterization of the material, and evidence of traceability to national or international standards of measurement, or to national or international standard reference materials the environmental conditions at the time of calibration and the corrections made, where necessary, for such conditions

(i) a statement of the uncertainties of measurement involved in the calibration and of their cumulative effect

(j) any design or performance specifications met

(k) name of persons performing the calibration and checking the results

(l) any limitations in use resulting from the calibration data obtained

(m) details of any maintenance carried out in accordance with the requirements of ELOT EN ISOIEC 17025 and of any servicing, adjustment, repair or modification, particularly at the time of calibration.

Similar records, as appropriate, shall be maintained for any checks carried out on equipment or reference materials between calibrations.

Calibration intervals to be documented:

The Laboratory shall have documented criteria for the selection of calibration intervals for all measuring and test equipment used.

Reference measurement standards shall be calibrated at intervals approved by standards.
Reference materials shall be checked for deterioration and, if necessary, replaced.
All other measuring and test equipment shall be calibrated at intervals approved by standards.
Generally in textile material and product weighing process the following tasks must be documented.

- production order
- delivery documentation
- tickets or labels
- specification sheet

Self-check-4

Test II: short Answer writing

Instruction: write short answer for the given question. You are provided 3 minute for each question and each point has Points.

1. What tasks must be documented in textile material and product weighing process the?
2. What does it mean maintain accurate records?

Part III: long answer writing

Direction: Give **long** answer to the following questions. Time allotted for each item is 5 minute and each question carry point.

3. What information's to be included during recording?
4. How to plan, write, and deliver technical documentation?

Note: Satisfactory rating – above 60% Unsatisfactory - below 60%

You can ask you teacher for the copy of the correct answers