

**Curriculum
For
Certificate in Cotton Ginning
(6- Months)
Code:VI87S002.1
(2013)**

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Scheme of Studies

20% Theory 80% Practical

Certificate in Cotton Ginning

Duration: 6 months

Sr. No.	Modules	Theory Hours	Practical Hours	Total Hours
1	Module 1:	20	80	100
2	Module 2:	20	80	100
3	Module 3:	20	80	100
4	Module 4:	20	80	100
5	Module 5:	20	80	100
6	Module 6:	20	80	100
7	Module 7:	20	80	100
8	Module 8:	20	80	100
	Total Hours	160	640	800

1. Introduction

- **Name of the Curriculum**

Certificate in Cotton Ginning

- **Overall objective of course**

To be able to monitor all the operations of fabric cotton ginning.

- **Competencies gained after completion of course**

- Trainees will be able to monitor cotton supplied from cotton fields for ginning process.
- Trainees will be able to supervise all processes involved in Ginning.
- Trainees will ensure that the settings of all machines are according to the specifications and according to the instructions of ginning manager.
- Trainee should be able to distinguish different types of cotton fibers (i.e. fibers from fields of different areas).
- Trainee should be able to assess different types of impurities present in raw cotton.
- Trainee should be able to segregate the cotton based on different quality parameters.

- **Job opportunities available immediately and in the future**

Textile ginning mills.

- **Trainee entry level**

Matriculation

- **Minimum qualification of trainer**

BSc. Textile Engineer (preferably specialized in Spinning)

- **Medium of Instruction i.e. language of instruction**

Urdu

- **Sequence of the modules**

Trainees must complete all modules in the following given sequence.

- 1) Inspect material from cotton fields
- 2) Check process machinery
- 3) Check Process
- 4) Check process maintenance

- 5) Inspect the Material
- 6) Separation of Material into lots
- 7) Monitor conditioning
- 8) Plan material packing

- **Timeframe of assessment (recommendation)**

Duration of course	6 months
Total hours	800
Theory hours	160
Practical hours	640

2. Overview about the program –Curriculum for (Certificate in Cotton Ginning)

Module Title and Aim	Learning Units	Theory ¹ Days/hours	Workplace ² Days/hours	Timeframe of modules
1. Inspect material from cotton fields	<ol style="list-style-type: none"> 1. Check the weight 2. Unload the material 3. Placement of cotton 4. Sorting of cotton 5. Check material of cotton from heap 6. Drying with dryer or sun 7. Identify cotton characteristics 	20 hrs	80hrs	
2. Check process machinery	<ol style="list-style-type: none"> 1. Check working and settings of machine 2. Use hand tools 3. Check power tools held operations 4. Check type of machines 	20 hrs	80 hrs	Completing Module 1
3. Check Process	<ol style="list-style-type: none"> 1. Check material flow 2. Check humidity and temperature 3. Check feeding of material 4. Check ginning rate 	20 hrs	80 hrs	Completing Module 1,2
4. Check process maintenance	<ol style="list-style-type: none"> 1. Check maintenance schedule 2. Repair machine when needed 3. Check working of parts of machine 4. Check the oiling 	20 hrs	80 hrs	Completing Module 1,2,3
5. Inspect the Material	<ol style="list-style-type: none"> 1. Check fiber length 2. Check trash 3. Check short fiber percentage 4. Check waste percentage, fiber strength, moisture content 	20 hrs	80 hrs	Completing Module 1,2,3,4

6. Separation of Material into lots	<ol style="list-style-type: none"> 1. Place different lot separately quality wise 2. Inspect the lots 3. Inspect staple length, waste, strength, and moisture of lots 	<p style="text-align: center;">20 hrs</p>	<p style="text-align: center;">80 hrs</p>	<p style="text-align: center;">Completing Module 1,2,3,4,5</p>
7. Monitor conditioning	<ol style="list-style-type: none"> 1. Check moisture content of material 2. Control moisture in material by showering water 3. Check humidity conditions w.r.t harvesting and ginning 	<p style="text-align: center;">20 hrs</p>	<p style="text-align: center;">80 hrs</p>	<p style="text-align: center;">Completing Module 1,2,3,4,5,6</p>
8. Plan material packing	<ol style="list-style-type: none"> 1. Feed the material to bale press 2. Press the material into compact bales 3. Check material use for packing 4. Check the weight of bales 5. Check the moisture of bales, and trash percentage in compressed bales 6. Check staking of bales 	<p style="text-align: center;">20 hrs</p>	<p style="text-align: center;">80 hrs</p>	<p style="text-align: center;">Completing Module 1,2,3,4,5,6,7</p>

3. “Certificate in Cotton Ginning” Curriculum Contents (Teaching and Learning Guide)

Module 1: Inspect material from cotton fields

Objective of the Module: To study about material inspection

Duration:20 hours Theory:80 hours Practice: 100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Check the total weight of received material	Trainee must know how to measure and check the weight	Knowledge of measuring standards (e.g. Kg, Lbs, tons, etc.) Ability to make calculations and unit conversions	2	12		
2. Unload the material	Know about material handling	Knowledge of material loading and unloading means and methods (place must be clean, different material based on must be unloaded separately) Ability to make the process time efficient (by controlling the unloading workers)	3	11	Unloading machine (loader)	Ginning mill, class room, and Lab
3. Placement of cotton	Placing the cotton depending on quality and place of growth	Knowledge of Segregation by checking: <ul style="list-style-type: none"> • Yellow spot • Trash • Moisture • Staple 	3	11	Cotton	Ginning mill, class room, and Lab

		<p>length</p> <ul style="list-style-type: none"> • Shinning • Seed quality <p>Ability to segregate by checking the quality parameters mentioned above</p>				
4. Inspection of cotton	Know about inspection methods and instruments (e.g. moisture meter, etc.)	<p>Knowledge of tools and instruments (e.g. moisture meter, etc.) of inspection (e.g. ginner's turn out)</p> <p>Ability to inspect different properties of cotton, e.g. length, trash, moisture, etc.</p>	3	12	Different tools and instruments used for inspection	Ginning mill, class room, and Lab
5. Check material of cotton from heaps	Trainee will have knowledge and skill of heap formation and feeding of material to the machines	<p>Knowledge of selection of material for inspection and feeding of material depending on moisture level</p> <p>Ability to proceed the process of ginning keeping the required level of moisture (i.e. about 9%)</p>	3	11	Cotton	Ginning mill, class room, and Lab
6. Drying with dryer or sun	Know about drying methods, processes, and	Knowledge of various types of materials to be dried	3	11	Dryer/ oven	Ginning mill, class room, and Lab

	conditions	Ability to assess the moisture content in the material				
7. Identify cotton characteristics	Know about different properties of cotton (physical)	<p>Knowledge of cotton's properties: length, mic, moisture, strength, UR, RD, color, shinning</p> <p>Ability to identify above mentioned properties</p>	3	12	Instruments used for characteristic analysis	Ginning mill, class room, and Lab

Module 2: Check Process Machinery

Objective of the Module: Know how about the ginning machines

Duration: 20 hours Theory:80 hours Practice: 100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Check working and settings of machine	Complete knowledge of saw gin machine	Knowledge of how to adjust rib in saw gin machine, how to adjust saw blade, how to adjust pulleys, how to adjust take up nozzle Ability to run and control the machine	5	20	Ginning machine	Ginning mill, class room, and Lab
2. Use hand tools	Know how to use hand tools (moisture meter, screw driver, wrench, wooden stick, etc.)	Knowledge of tools used for ginning (moisture meter, wooden stick, wrench, screw driver, etc.) Ability to use hand tools	5	20	Different hand tools	Ginning mill, class room, and Lab
3. Check power tools held operations	Know about power tools (blower, drill machine, grinder, welding plant, etc.)	Knowledge of using power tools and their operations (blower, drill machine, grinder, welding plant, etc.) Ability to use power tools skillfully	5	20	Different power tools	Ginning mill, class room, and Lab
4. Check type of machines	Know about different types of ginning machines (separator, cleaning machine, saw gin, bale	Knowledge of ginning machinery types (Saw Gin 1, Saw Gin 2, Saw Gin 3, Saw Gin 4, Roller Gin, etc.)	5	20	Ginning machinery	Ginning mill, class room, and Lab

	press, weight machine)	Ability to check the functions of different machines				
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Module 3: Check Process

Objective of the Module: know about ginning process

Duration: 20 hours Theory: 80 hours Practice: 100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Check material flow	Trainee will be able to monitor the material flow from machine to machine and within machine	Knowledge of material passage through the machine and machine to machine, conveyer belt speed and material quantity delivered Ability to check & analyze the machine speed, input and output	5	20	Cotton	Ginning mill, class room, and Lab
2. Check humidity and temperature	Know about the atmospheric conditions (RH, temperature, etc.)	Knowledge of measuring RH and temperature, different methods of calculations and devices used for measurement Ability to calculate RH and temperature	5	20	Devices/ instruments for measuring RH and humidity	Ginning mill, class room, and Lab

3. Check feeding of material	Know about material feeding process (suction feeding system is used)	<p>Knowledge of material types and feeding systems (for saw ginning, suction feeding system is used with 3 to 4 laborers needed)</p> <p>Ability to carry the process efficiently</p>	5	20	Cotton	Ginning mill, class room, and Lab
4. Check ginning rate	Know about ginning rate and its calculation	<p>Knowledge of ginning rate calculations and know how to change the rate of ginning, how to change the speed gears of machines</p> <p>Ability to adjust the ginning rate at optimum required level</p>	5	20	Cotton, ginning machinery	Ginning mill, class room, and Lab

Module 4:Check Process Maintenance

Objective of the Module: Skill for maintenance of ginning machinery

Duration: 20 hours Theory: 80 hours Practice: 100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Check maintenance schedule	Know about maintenance and its importance	<p>Knowledge of requirement of maintenance: check the blade, check the rib, check the machine mesh, check the general parts of machine (screw, nut, bolt, etc.)</p> <p>Ability to perform maintenance</p>	5	20	Machinery and spare parts	Ginning mill, class room, and Lab
2. Repair machine when needed	Know about the machine conditions for maintenance	<p>Knowledge of health of different machine parts: blade, rib, bearings, etc.</p> <p>Ability to check and analyze machine conditions and the quality of maintenance done</p>	5	20	Maintenance tools and equipment	Ginning mill, class room, and Lab
3. Check working of parts of machine	Know about different parts of machine and their working. Also know about machine settings.	<p>Knowledge of machine working, ginning rate, machine performance, condition and performance of different parts of machine</p> <p>Ability to check, analyze and replace the</p>	5	20	Machinery	Ginning mill, class room, and Lab

		required machine parts				
4. Check the oiling	Know about machine oiling status and oil application	Knowledge of using oil, types of oils, and need of oiling Ability to estimate the need of oiling	5	20	Oils, tools for oiling	Ginning mill, class room, and Lab

Module 5: Title: Inspect The Material

Objective of the Module: Enable the learner to inspect the out put material

Duration: 20 hours Theory: 80 hours Practice: 100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Check fiber length	Able to estimate the fiber length	Knowledge of physical characteristics (fiber length, strength, mic. Trash, moisture, etc.) Ability to estimate fiber parameters	5	20	Fibers, tools and equipment for measuring fiber parameters	Ginning mill, class room, and Lab
2. Check trash	Know about trash content in raw material	Knowledge of physical characteristics (fiber length, strength, mic. Trash, moisture, etc.) Ability to estimate fiber parameters	5	20	Tools and instruments used for trash analysis	Ginning mill, class room, and Lab
3. Check short fiber percentage	Know about short fibers and their calculation in the raw material	Knowledge of different methods of finding short fiber content in the raw material Ability to check	5	20	Tools and equipment	Ginning mill, class room, and Lab

		the short fibers				
4. Check waste percentage, fiber strength, moisture content	Know about different cotton quality parameters	Knowledge to collect and analyze waste of ginning, estimate fiber strength, estimate moisture content Ability to estimate and control the moisture, and other cotton quality parameters	5	20	Tools and equipment	Ginning mill, class room, and Lab

Module 6: Separation of Material into Lots

Objective of the Module: Enable the learner to separate and stalk the material into lots
Duration: 20 hours Theory: 80 hours Practice: 100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Place different lot separately	Know how to segregate the material	Knowledge of raw material characteristics, allotting of numbers to specific lots Ability to plan and place the material in segregates/ groups	6	24	Cotton	Ginning mill, class room, and Lab
2. Inspect the lots	Trainee must know the different quality parameters of cotton to be checked for inspection, and methods	Knowledge of lot's specifications: fiber strength, trash, color, growth area, cultivation quality Ability to	7	28	Cotton	Ginning mill, class room, and Lab

	used to inspect the material	assess and analyze the collected data				
3. Inspect length, waste, strength and moisture of lots	Trainee must about fiber physical properties	Knowledge of assessing fiber's physical properties: fiber strength, moisture, length Ability to make tests for fiber's physical characteristics	7	28	Cotton and testing instruments	Ginning mill, class room, and Lab

Module 7: Monitor Conditioning

Objective of the Module: Enable the learner to maintain required atmospheric conditions

Duration: 20 hours Theory: 80 hours Practice: 100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Check moisture content of material	Know about fiber moisture requirements and methods of fiber conditioning	Knowledge of fiber's moisture content and regain and methods to get optimum moisture content: spray method, showering, Air conditioning Ability to check the moisture content and perform conditioning	7	28	Conditioning devices	Ginning mill, class room, and Lab
2. Control moisture in the material	know how to provide required moisture to the material and assess required quantity of	Knowledge of various methods of material conditioning: spray method, showering, Air conditioning	7	28	Moisture and temperature measurement devices	Ginning mill, class room, and Lab

	moisture	Ability to change the settings to change conditioning				
3. Check humidity conditions w.r.t harvesting and ginning	know about requirements of conditioning of raw material depending on their source of growth and conditions of picking	Knowledge of picking processes and different methods: time of picking (morning, noon, afternoon), preferable time is noon, and afternoon Ability to assess raw cotton received from the field	6	24	Humidity checking tools	Ginning mill, class room, and Lab

Module 8: Plan Material Packing

Objective of the Module: Enable the learner to fully understand and carry out packing process
Duration: 20 hours Theory:80 hours Practice:100 hours

Learning Unit	Learning Outcomes	Learning Elements	Duration TH+PR		Materials Required	Learning Place
1. Feed the material to bale press	Trainee will be able to supervise the continuous feeding of lint to bale press and control the feeding process	Knowledge of fiber feeding methods and process parameters: continuous air current feeding system, how to run the machine and control the process and knowledge of pressing mechanism, Feeding of packing material (bags,	3	13	Bale press	Ginning mill, class room, and Lab

		strips, etc.) to the pressing machine Ability to control the labor and bale pressing process				
2. Press the material into compact bales	Complete understanding of pressing mechanism	Knowledge of bale pressing process, feeding of material, feeding of packing material, pressing pressure, adjustment of bale weight output Ability carry the process and make changes if necessary	3	14	Bale press	Ginning mill, class room, and Lab
3. Check the material used for packing	Know the properties of packing material	Knowledge of different types of packing materials and their characteristics Ability asses the packing material	3	13	Packing material	Ginning mill, class room, and Lab
4. Check the weight of bales	Complete knowledge of weight measurement and size of bale	Knowledge of weighing parameters and processes (methods), size of bale (160 kgto 170 kg), operations of weighing machine Ability to control the pressing and	4	14	Weighing balance	Ginning mill, class room, and Lab

		weighing process				
5. Check the moisture of bales, and trash percentage in compressed bales	Complete knowledge of moisture content, types of trash and assessing the trash percentage	Knowledge of moisture content, moisture regain, assessing the moisture content, assessing the trash percentage Ability to assess the different parameters of compressed bales and lint	4	13	Process control devices	Ginning mill, class room, and Lab
6. Check stalking of bales	Complete knowledge of stalking the material on the basis of quality parameters	Knowledge of bale stalking techniques, segregation, tagging Ability to carry and control the stalking process of bales	3	13	Cotton	Ginning mill, class room, and Lab

4. Assessment Template

Module 1 (Inspect material from cotton fields)

Learning Units	Theory Days/hrs	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Check the weight	8 min	34 min	Check the weight of given material Solve the given numerical	Practical Class quiz	
Unload the material	8 min	34 min	Describe different methods of loading and unloading Visit a ginning mill to study unloading process	Class quiz Practical	
Placement of cotton	9 min	34 min	Discuss different methods for cotton placement Visit the ginning mill for practical observation	Class quiz Practical	
Sorting of cotton	9 min	35 min	How to sort different qualities of cotton Sort the given samples of cotton	Class quiz Practical	
Check material of cotton from lots	9 min	35 min	Demonstrate methods for cotton testing from different lots		
Drying with dryer or sun	8 min	34 min	Dry the given sample to cotton to get 9% moisture content Explain different cotton drying methods	Practical Class quiz	
identify cotton characteristics	9 min	34 min	Describe the need of testing the cotton	Class quiz	

			parameters/ characteristics		
			Find out staple length, trash, strength of given cotton sample	Practical	

Module 2 (Check process machinery)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Check working and settings of machine	12 min	48 min	Describe which settings must be checked before machine running Study the machine in detail and write down the existing settings	Class quiz Practical	
Use hand tools	12 min	48 min	Enlist hand tools used in ginning Use hand tools to change given settings	Class quiz Practical	
Check power tools held operations	12 min	48 min	Enlist power tools used in ginning Use power tools to change settings or to carry given operation	Class quiz Practical	
Check type of machines	12 min	48 min	Enlist different types of machines Visit a ginning factory to view various machines	Class quiz Practical	

Module 3 (Process Checking)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Check material flow	12 min	48 min	how to check material flow visit ginning factory to observe material flow	Class quiz Practical	
Check humidity and temperature	12 min	48 min	Describe the importance of humidity and temperature in ginning process Calculate RH and Temperature of ginning factory production hall	Class quiz Practical	
Check feeding of material	12 min	48 min	Importance of proper feeding to machine Calculate the feeding and output rate of material	Class quiz Practical	
Check ginning rate	12 min	48 min	Explain the term ginning rate Calculate ginning rate. How can you change the ginning rate	Class quiz Practical	

Module 4 (Check process maintenance)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Check maintenance schedule	12 min	48 min	Explain importance of machine maintenance Observe machine maintenance	Class quiz Practical	

Repair machine when needed	12 min	48 min	When a machine needs repair Observe repairing of machines in ginning factories	Class quiz Practical	
Check working of parts of machine	12 min	48 min	Importance of various parts' working Observe working of machine parts and their effect on production	Class quiz Practical	
Check the oiling	12 min	48 min	Importance of oiling Observe timing and methods of oiling	Class quiz Practical	

Module 5 (Inspect the material)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Check fiber length	12 min	48 min	How to measure fiber length Assess/ calculate estimate staple length of given cotton sample	Class quiz Practical	
Check trash	12 min	48 min	How to estimate trash in cotton Estimate the trash content in given cotton sample	Class quiz Practical	
Check short fiber percentage	12 min	48 min	Effect of short fibers on ginning rate/ process Estimate the short fiber percentage in given cotton sample	Class quiz Practical	

Check waste percentage	12 min	48 min	Effect of waste on ginning process Estimate the waste percentage in given sample	Class quiz Practical	
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Module 6 (Separation of Material into lots)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Place different lots separately	16 min	64 min	Explain Importance of placing the lots separately Observe the placement of lots	Class quiz Practical	
Inspect the lots	16 min	64 min	Describe different parameters of lots Visit the ginning factory and observe lot inspection	Class quiz Practical	
Inspect length, waste, strength and moisture of lots	16 min	64 min	Demonstrate different parameters of cotton Calculate length, and strength of given cotton sample	Class quiz Practical	

Module 7 (Monitor conditioning)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Check moisture content of material	16 min	64 min	Illustrate importance of optimum moisture content in cotton Calculate the moisture content of given cotton sample	Class quiz Practical	
Control moisture in material	16 min	64 min	Explain different methods to control material moisture Visit a ginning factory and observe the change in moisture content	Class quiz Practical	
Check humidity conditions w.r.t harvesting and ginning	16 min	64 min	Demonstrate the importance of optimum RH Estimate the moisture in raw cotton given sample	Class quiz Practical	

Module 8 (Plan material packing)

Learning Units	Theory Days/hours	Workplace Days/hours	Recommended formative assessment	Recommended Methodology	Scheduled Dates
Feed the material to bale press	12 min	64 min	Illustrate continuous feeding to the machine Study/ observe material feeding system	Class quiz Practical	
Press the material into	12 min	64 min	Explain bale pressing	Class quiz	

compact bales			mechanism Study the bale pressing process in a ginning mill	Practical	
Check material use for packing	12 min	64 min	Describe some required properties of packing material Observe the quality of packing material in a ginning factory	Class quiz Practical	
Check the weight of bales	12 min	64 min	Describe the standard of pressed bale Check the weight of given bales	Class quiz Practical	
Check the moisture of bales, and trash percentage in compressed bales	12 min	64 min	Illustrate the effect of moisture, trash on ginning output Estimate the moisture and trash percentage of given samples of cotton	Class quiz Practical	
Check stalking of bales	12 min	64 min	Explain the process and methods of bales stalking Visit a ginning mill and observe bale stalking	Class quiz Practical	

Supportive Notes

- This certificate will be assessed on the job.
- Critical aspects:
 1. Setting of machines
 2. Types of waste materials
 3. Careful handling of equipment
 4. Safety of oneself and others
- Assessment condition:

1. The learner will have access to all tools
 2. The learner will be permitted to look at reference materials
 3. The learner will be required to communicate their answers to the assessor
 4. The learner will have to give presentation on the required topic
- Resources required for assessment:
All machines with respect to the relevant department, settings, tools, etc.

5. List of Tools, Machinery & Equipment

Name of Trade	Certificate in Cotton Ginning
Duration	6 months

Sr. No.	Name of Item/ Equipment / Tools	Qty.
Equipment		
Cleaning module		
1.	Condenser	01
2.	Rock catcher	01
3.	Flat cleaner	01
4.	Inclined cleaner	01
5.	Stick machine	01
6.	Feeder extractor cleaner (FEC)	01
7.	Dust collector (Cyclone)	01
8.	Lint cleaner	01
9.	Fan / blowers	01
10.	Ducts	01
11.	Plate valves	01
12.	Dragon machine	01
13.	Suction Fan with all accessories	01
Ginning Module		
14.	Saw ginning machine (Gin stand)	01
15.	Gin saws	01
16.	Ribs (various sizes and designs)	01
17.	Roller ginning machine	01
Packing Module		
18.	Hydraulic press	01
19.	Hydraulic pump station	01
Baling unit		
20.	Weighting unit	01
21.	Over Head Crane	01

22.	Fork Lifter	01
23.	Pillar Type Drill Machine	01
24.	Pedestal Grinder	01
25.	Power Saw Machine	01
Tools		
26.	Bearing Puller	01
27.	Tools box (steel)	01
28.	Steel rule	01
29.	Screw driver set	01
30.	Phillips screw driver set	01
31.	Combination pliers set	01
32.	Allen key set	01
33.	Open ended spanner set	01
34.	Ball peen hammer	01
35.	Gross peen hammer	01
36.	Mill file	01
37.	Square file	01
38.	Needle file set	01
39.	File brush	01
40.	Oil can ¼ Liters	01
41.	Hand vice	01
42.	Vernier caliper	01
43.	Adjustable wrench	01
44.	Round file	01
45.	Half round file	01
46.	Triangle file	01
47.	Counter sink	01
48.	Twist drill set	01
49.	Micrometer (mm)	01
50.	Micrometer (inch)	01
51.	Scribers	01
52.	Safety goggle	01
53.	Grinding wheel dresser with holder	01
54.	Bench vices	01
55.	Surface plate	01
56.	Work bench	01
57.	Hand shear	01
58.	Riveting gun	01
59.	Numbering Punch Sets	01
60.	Lettering punch set	01
61.	Portable hand disk grinder	01
62.	Try square	01
63.	Combination set	01
64.	Steel divider	01
65.	Portable electric hand drill machine	01

66.	Tap set	01
67.	Die set	01
68.	Hack saw	01
69.	Hacksaw blade	01
70.	Hacksaw blade	01
71.	Pressure dial gauge	01
72.	Pedestal grinder	01

6. List of Consumable Supplies

Name of Trade	Certificate in Cotton Ginning
Duration	6months

Sr. No.	Name of Consumable Supplies
1.	Mobile oil
2.	Grease
3.	Nuts
4.	Bolts
5.	Dusting Cloth

7. Recommended Text Books

- 1) Ginning Cotton: An Entrepreneur's Story by A. L. Vandergriff
- 2) Bale o' Cotton: The Mechanical Art of Cotton Ginning by Karen Gerhardt Britton
- 3) Cotton Ginning (Textile Progress) by Indra Doraiswamy, 1993
- 4) The Cotton Gin (Inventions That Shaped the World) by Nancy Robinson Masters, 2006
- 5) Cotton ginner's handbook by W.S Anthony, 1994

8. Contributions for Development of This Curriculum

DACUM Working Group

Muhammad Fahim, supervisor Almajeed cotton factory, Veharri	Qurbat Zahra, ASM Skytex, Lahore
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