GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

SPINNING TECHNICIAN

(Duration: Two Years)
Revised in July 2022

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 4

SECTOR –TEXTILE AND HANDLOOM

Directorate General of Training

SPINNING TECHNICIAN

(Engineering Trade)

(Revised in July 2022)

Version: 2.0

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 4

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City,

Kolkata – 700 091

www.cstaricalcutta.gov.in

CONTENTS

1. COURSE INFORMATION

During the two-year duration of 'Spinning Technician' trade, a candidate is trained on Professional Skill, Professional knowledge, Engineering Drawing, Workshop Calculation & Science and Employability Skill related to job role. In addition to this, a candidate is entrusted to undertake project work and extra-curricular activities to build up confidence. The broad components covered under Professional Skill subject are as below:

First Year- During this year the candidates will learn to identify various types of hand tools, observing safety precautions during filing, marking, punching and drilling practices. The trainees will know about various types of gauges, lathes and their functions. They will perform tool setting and job setting, facing and chamfering, plain turning etc., they will develop skills on various types of welding and welding process and apply a range of skills to execute different carpentry work. In the course of time the trainees will also learn to identify and handle different electrical and electronic measuring instruments and test electrical assembly. They will be involved in identification of fiber type, sketching of various parts of ginning machine. They will work on auxiliary blow room machine, carding machine and set the machine for different operation ensuring maintenance of machines on regular basis.

Second Year: In the second year the trainees will learn to identify, select and troubleshoot the various components in comber preparatory and comber machines. They will acquire the skills for setting the draw frame machine, speed frame machine and ring frame machine using proper tools and gauges and ensure its maintenance activities. The trainees will be trained to check maintain and adjust the winding machines using proper tools and gauges. Also, the trainees will be trained to perform setting of splicer, perform maintenance of spinning machinery for routine and preventive maintenance and will follow the proper procedure with safety precautions.

2. TRAINING SYSTEM

2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of economy/ Labor market. The vocational training programmes are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer schemes of DGT for strengthening vocational training.

The Spinning Technician trade under CTS is one of the popular newly designed courses delivered nationwide through a network of ITIs. The course is of two years duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while Core area (Workshop Calculation science, Engineering Drawing and Employability Skills) imparts requisite core skill & knowledge and life skills. After passing out of the training programme, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Trainee broadly needs to demonstrate that they are able to:

- Read & interpret technical parameters/documentation, plan and organize work processes, identify necessary materials and tools;
- Perform tasks with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional knowledge, core skills & employability skills while performing the job, and repair & maintenance work.
- Check the job with circuit diagrams/components as per drawing for functioning, diagnose and rectify faults in the components/module.
- Document the technical parameters in tabulation sheet related to the task undertaken.

2.2 CAREER PROGRESSION PATHWAYS:

- Can join industry as Technician and will progress further as Senior Technician, Supervisor and can rise up to the level of Manager.
- Can become Entrepreneur in the related field.
- Can take admission in the diploma course in notified branches of Engineering by lateral entry.
- Can join Apprenticeship programs in different types of industries leading to a National Apprenticeship certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming an instructor in ITIs.

- Can join Advanced Diploma (Vocational) courses as applicable conducted by DGT.

2.3 COURSE STRUCTURE:

Table below depicts the distribution of training hours across various course elements during a period of two-years: -

S No.	Course Element	Notional Training Hours	
		1st Year	2nd Year
1	Professional Skill (Trade Practical)	840	840
2	Professional Knowledge (Trade Theory)	240	300
3	Employability Skills	120	60
	Total	1200	1200

Every year 150 hours of mandatory OJT (On the Job Training) at nearby industry, wherever not available then group project is mandatory.

4	On the Job Training (OJT)/ Group Project	150	150

Trainees of one-year or two-year trade can also opt for optional courses of up to 240 hours in each year for 10th class /12th class certificate along with ITI certificate or add on short term courses.

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

a) The **Continuous Assessment** (Internal)during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute have to maintain individual *trainee portfolio* as detailed in assessment guideline. The marks of internal assessment will be as per the Formative assessment template provided on www.bharatskills.gov.in.

b) The final assessment will be in the form of summative assessment. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. The pattern and marking structure is being notified by DGT from time to time. **The learning outcome and assessment criteria will be basis for setting question papers for final**

assessment. The examiner during final examination will also check individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising some of the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work
- Computer based multiple choice question examination
- Practical Examination

Evidences of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking pattern to be adopted while assessing:

Performance Level	Evidence
(a) Marks in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and	• Demonstration of good skill in the use of hand tools, machine tools and workshop equipment. • 60-70% accuracy achieved while

due regard for safety procedures and practices	undertaking different work with those demanded by the component/job. • A fairly good level of neatness and consistency in the finish. • Occasional support in completing the project/job.
(b) Marks in the range of 75%-90% to be allotted during assessment	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices	• Good skill levels in the use of hand tools, machine tools and workshop equipment. • 70-80% accuracy achieved while undertaking different work with those demanded by the component/job. • A good level of neatness and consistency in the finish. • Little support in completing the project/job.
(c) Marks in the range of more than 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	• High skill levels in the use of hand tools, machine tools and workshop equipment. • Above 80% accuracy achieved while undertaking different work with those demanded by the component/job. • A high level of neatness and consistency in the finish. • Minimal or no support in completing the project.

3. JOB ROLE

Brief description of job roles:

Doffer, Spinning/Ring Spinning Doffer; Doffer, Ring Frame; Gaiter; Shifter replaces filled bobbins with empty one on spindles of spinning frame. Brings and arranges sliver canes behind spinning frame. Brings empty bobbins in doffing boxes or baskets and set them in spindles of spinning frame. Watches winding of yarns on bobbins. Lifts filled bobbins from spindles and collects them in tray or baskets. Collects waste and removes them to go down. Keeps machine sides and department clean. May help Piecer in piecing broken ends of yarn May clean bobbins.

Spinner, Frame (Textile)/Ring Frame Tenter; tends spinning frame that draws out and twists roving or sliver into yarn: Patrols work area and observes spinning to detect nearly exhausted supply packages and breaks in yarn, roving, and sliver. Pieces up breaks in yarn, roving, and sliver and replaces nearly exhausted supply packages with full packages. Twists end of material from supply package to material in machine or threads material from supply package through machine guides and drawing rollers. Brushes yarn or lint from drawing rollers, guides, and rails. Notifies designated personnel of machine malfunction. May doff machine.

Reeler Textile; operates reeling machine for winding yarn from bobbins or cops into coils (skeins or hanks) places yarn bobbins or cops on spindles of machine, pulls ends of yarn from each bobbin or cop through guide hook and traverse rail and loops it to pin on reel. Sets dial that measures yardage of yarn wound. Turns reel by operating lever or by hand so that yarn is pulled from bobbins or cops and wound into coils. Replaces cops or bobbins when empty with filled ones and knots loose ends from new cops or bobbins to tail ends of coils. Stops machine when coils of prescribed yardage are made and removes coils from reel. May collect together required number of coil or hanks and make them in knots by hand. Is designated as RE-REELER or HAND MAKER when reeling silk yarn.

Yarn Tester; tests yarn by using various instruments for ascertaining its strength, elasticity, thickness, neatness, etc. conducts various tests such as 'winding breaks, test' to ascertain continuity of hank, ’size test' by using sizing-skein winder to find out thickness of yarn 'seriplane test' to find out uniformity and neatness of yarns 'serigraph test' to check strength and elasticity, cohesion test' to find out extent of wear and tear yarn will stand, 'conditioning oven test' to fix standard weight.

Combing Tenter; Comberman (Cotton Textile) tends combing machine for combing or separating short fibres from long ones and converting lap into sliver preparatory to drawing. Places lap rolls or spools in proper position on creel of combing machine. Pulls out and leads ends of lap through assembly on to feedrolls. Sets calender rollers to position and starts machine. Watches running of sliver through machine. Detects and joins broken ends of sliver. Removes surplus sliver after stopping machine to avoid jamming and when necessary. Leads

web coming through funnel like guide into can at delivery end and replaces filled can with empties. Removes waste sliver rolls from back of machine to specified place or to waste bag. Cleans and oils machine.

Fibre Preparing, Spinning and Winding Machine Operators, Other; include workers who operate and monitor machines which prepare fibres, and spin, double, twist and wind yarn and thread not elsewhere classified.

Reference NCO-2015:

(i) 7318.4800 – Doffer, Spinning/Ring Spinning Doffer
(ii) 8151.0600 – Spinner, Frame (Textile)/Ring Frame Tester
(iii) 8151.1000 – Reeler Textile
(iv) 8151.1400 – Yarn Tester
(v) 8151.0500 – Combing Tenter
(vi) 8151.9900 – Fibre Preparing, Spinning and Winding Machine Operators, Other

Reference NOS:

i) TSC/N0402
ii) TSC/N0407
iii) TSC/N0412
iv) TSC/N0905
v) TSC/N0403
vi) TSC/N9403
vii) TSC/N0404
viii) TSC/N0408
ix) TSC/N0409
x) TSC/N0413
xi) TSC/N0414
xii) TSC/N0212
xiii) TSC/N9401
xiv) TSC/N940

4. GENERAL INFORMATION

Name of the Trade	**Spinning Technician**
Trade Code	DGT/1096
NCO - 2015	7318.4800, 8151.0600, 8151.1000, 8151.1400, 8151.0500, 8151.9900
NOS Covered	TSC/N0402, TSC/N0407, TSC/N0412, TSC/N9403,TSC/N0905, TSC/N0403,TSC/N0404, TSC/N0408, TSC/N0409, TSC/N0413, TSC/N0414, TSC/N0212, TSC/N9401, TSC/N9402, TSC/N9404, TSC/N9405, TSC/N9406, TSC/N9402
NSQF Level	Level-4
Duration of Craftsmen Training	Two Years (2400+300 Hours OJT/Group Project)
Entry Qualification	Passed 10th class examination with Science and Mathematics or with vocational subject in same sector or its equivalent.
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD,CP,LC,DW,AA,LV,DEAF,HH,AUTISM,ID,SLD
Unit Strength (No. Of Students)	20 (There is no separate provision of supernumerary seats)
Space Norms	525 sq. m
Power Norms	19 KW
Instructors Qualification for:	
1. Spinning Technician Trade	B.Voc/Degree in Textile Technology/ Spinning Technology from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field. **OR** 03 years Diploma in Textile Technology from AICTE recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field. **OR** NTC/NAC passed in the Spinning Technician trade with 3 years experience in the relevant field. **Essential Qualification:**

	Relevant Regular/ RPL variants of National Craft Instructor Certificate (NCIC) under DGT. ***Note: Out of two Instructors required for the unit of 2 (1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications. However, both of them must possess NCIC in any of its variants.***
2. Workshop Calculation & Science	B.Voc/Degree in Engineering from AICTE/UGC recognized Engineering College/ university with one-year experience in the relevant field. OR 03 years Diploma in Engineering from AICTE recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field. OR NTC/ NAC in any one of the engineering trades with three years' experience. **Essential Qualification:** Regular / RPL variants of National Craft Instructor Certificate (NCIC) in relevant trade. OR Regular / RPL variants of NCIC in RoDA or any of its variants under DGT.
3. Engineering Drawing	B.Voc/Degree in Engineering from AICTE /UGC recognized Engineering College/ university with one-year experience in the relevant field. **OR** 03 years Diploma in Engineering from AICTE recognized board of technical education or relevant Advanced Diploma (Vocational) from DGT with two years' experience in the relevant field. NTC/ NAC in any one of the Mechanical (Gr-I) trades categorized under Eng. Drawing/ D' man Mechanical / D' Man Civil with three 3 years experience. **Essential Qualification:** Regular / RPL variants of National Craft Instructor Certificate (NCIC) in relevant trade. OR Regular / RPL variants of NCIC in RoDA / D'man (Mech /civil) or any of its variants under DGT.
2.4 Employability Skill	MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability Skills (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above) OR Existing Social Studies Instructors in ITIs with short term ToT Course

	in Employability Skills.
3.5.Minimum Age for Instructor	21 Years
List of Tools and Equipment	As per Annexure – I

5. LEARNING OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

5.1 LEARNING OUTCOMES (TRADE SPECIFIC)

FIRST YEAR

1. Plan and organize the work to make job as per specification applying different types of basic fitting operations and Check for dimensional accuracy following safety precautions. *[Basic fitting operations – marking, Hack-sawing, punching, Chiselling, Filing, Drilling, Grinding and job setting].* (TSC/N0402, TSC/N0407, TSC/N0412)
2. Plan and organize the work to make job on facing, chamfering, plain Turning, taper turning and simple thread. (TSC/N0402, TSC/N0407, TSC/N0412)
3. Plan and identify different types of skill related to sheet metal work and on various types of welding practices like square butt joint, single V butt joint, arc welding and gas welding. (TSC/N0402, TSC/N0407, TSC/N0412)
4. Apply a range of skill to execute different carpentry work. (TSC/N0402, TSC/N0407, TSC/N0412)
5. Plan, identify and test on electrical /electronic measuring instruments. (TSC/N0402, TSC/N0407, TSC/N0412)
6. Identify the fibre type i.e. natural/synthetic/ regenerated fiber by chemical method, burning method and using microscope. (TSC/N9403)
7. Maintain the ginning machine, adjust the speed of opening roller and set the important settings in ginning machine. (TSC/N0409)
8. Maintain the blow room machineries, setting of various parts of the opening roller, cleaning roller and check the speed of the machines in blow room line. (TSC/N0402, TSC/N0403, TSC/N0404)
9. Identify the auxiliary blow room machines. (TSC/N0402, TSC/N0403, TSC/N0404)
10. Identify the motors in blow room line and various switches in blow room panel board. (TSC/N0402, TSC/N0403, TSC/N0404)
11. Identify defects in blow room laps, causes and remedial measures. (TSC/N0402, TSC/N0403, TSC/N0404)

12. Identify various parts of carding machine and know their functions. (TSC/N0402, TSC/N0403, TSC/N0404)
13. Maintain the carding machine and setting of various parts of the carding machine. (TSC/N0402, TSC/N0403, TSC/N0404)
14. Identify and selection of the card clothing based on the type of fiber processed. (TSC/N0402, TSC/N0403, TSC/N0404)
15. Read and apply engineering drawing for different application in the field of work. (TSC/N9401)
16. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study. (TSC/N9402)

SECOND YEAR

17. Identify, select and troubleshoot the various components in comber preparatory and comber machines. (TSC/N0402, TSC/N0403, TSC/N0404)
18. Set the speed frame machine using proper tools and gauges and maintenance activities in Speed frame machine. (TSC/N0402, TSC/N0403, TSC/N0404)
19. Set the ring frame machine using proper tools and gauges, maintenance and cleaning activities in ring frame machine. (TSC/N0407, TSC/N0408, TSC/N0409)
20. Check and adjust the winding machines using proper tools and gauges. (TSC/N0412, TSC/N0413, TSC/N0414)
21. Maintain the winding machines using proper tools and gauges. (TSC/N0412, TSC/N0413, TSC/N0414)
22. Maintain and Set the splicer .Familiarize and check the functions of splicer. (TSC/N0412, TSC/N0413, TSC/N0414)
23. Identify and select the functions of Overhead clearer and perform its maintenance. (TSC/N0407, TSC/N0408, TSC/N0409)
24. Identify and record the Routine and Preventive Maintenance. (TSC/N0407, TSC/N0408, TSC/N0409
25. Identify the functions of various parts in rotor spinning machine. Perform the maintenance activities in rotor spinning machine. (TSC/N0212)
26. Perform the maintenance activities in air spinning machine. TSC/N9404
27. Perform the maintenance activities in DREF spinning machine. TSC/N9405
28. Perform the maintenance activities in TFO. (TSC/N0412, TSC/N0413, TSC/N0414)
29. Perform the maintenance activities in Ring Doublers. (TSC/N0412, TSC/N0413, TSC/N0414)
30. Record the study of working of reeling and bundling. (TSC/N0412, TSC/N0413, TSC/N0414)
31. Test the different yarn quality and record the data. (TSC/N9406)

32. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study. (TSC/N9402)

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
FIRST YEAR	
1. Plan and organize the work to make job as per specification applying different types of basic fitting operations and Check for dimensional accuracy following safety precautions. *[Basic fitting operations – marking, Hack-sawing, punching, Chiselling, Filing, Drilling, Grinding and job setting].* (TSC/N0402, TSC/N0407, TSC/N0412)	Observe the safety precautions during filing, marking and punching, internal fitting and drilling practice.
	Identify the type of hand tools, care and maintenance during various practices.
	Identify the cutting and measuring tools used for filing, marking and punching practice.
	Identify the types and specifications of drills, cutting angles, tap drills and dies used for internal fitting and drilling.
	Identify the geometrical construction of various types of grinding machine.
	Identify the various types of gauges, uses, care and maintenance.
	Identify the types of lathes, parts and its functions of lathe machinery.
	Identify the specification and different accessories of lathe machinery.
2. Plan and organize the work to make job on facing, chamfering, plain Turning, taper turning and simple thread. (TSC/N0402, TSC/N0407, TSC/N0412)	Select the different types of operations performed in lathe.
	Identify the cutting tool materials, types and selection of cutting angles.
	Select the uses and applications of various types of cutting angles.
	Identify the different types of threads and its application for tapping and dyeing process.
3. Plan and identify different types of skill related to sheet metal work and on various types of welding practices like square butt joint, single V butt joint, arc welding and gas welding. (TSC/N0402, TSC/N0407, TSC/N0412)	Identify the various types of hand tools, marking and cutting tools used for sheet metal work.
	Identify soft and hard soldering operations used in sheet metal joint.
	Identify the types of sheets used for folding, notching, wiring and hemming operations.
	Identify the allowances and uses of sheets for folding, notching, wiring and hemming operations.
	Identify the tools, equipments and types of welding joints.
	Identify the various types of welding practices, electrodes and current selection for the welding process.
	Observe the specifications and safety precautions during welding practice.
	Observe the type of gases, pressure and nozzle selection used in

	gas welding.
	Perform the edge preparation for arc and gas welding process.
4. Apply a range of skill to execute different carpentry work. (TSC/N0402, TSC/N0407, TSC/N0412)	Identify the hand and measuring tools, work holding devices used in carpentry.
	Identify the types of clamps, sizes and its uses in carpentry.
	Identify the plan and setting parameters for sharpening.
	Identify the different types of saws, setting parameters and its uses in carpentry.
	Familiar on specifications and uses of wood working machine.
	Identify adhesive types and identify its uses in carpentry.
5. Plan, identify and test on electrical /electronic measuring instruments. (TSC/N0402, TSC/N0407, TSC/N0412)	Select the different electrical measuring instrument.
	Identify the instruments used for testing.
	Identify the fundamental terms of work power, energy, units, voltage, current resistance, and Colour codes.
	Identify the types of cables, standard wire gauge, ohm's law and Kirchhoff's law.
	Identify the concepts of series and parallel connection.
	Identify the properties of conductor, semi-conductor and insulator.
	Identify the primary and secondary cells, common electrical accessories and their specification.
	Demonstrate the functioning of domestic appliances.
	Measure and record the data by using the testing instrument like ammeter, voltmeter and multimeter of AC and DC.
6. Identify the fibre type i.e. natural/synthetic/ regenerated fiber by chemical method, burning method and using microscope. (TSC/N9403)	Select the suitable chemical for the fiber.
	Carry out chemical method to find the type of fiber.
	Burn the fiber.
	Identify the fiber type based on burning behavior of the fiber.
	Use the microscope and find the morphology of the fiber.
7. Maintain the ginning machine, adjust the speed of opening roller and set the important settings in ginning machine. (TSC/N0409)	Identify the parts of the ginning machine and their functions.
	Carry out the important settings and adjust the settings.
	Adjust the speed of the rotating components in ginning machine.
	Carry out the maintenance activity as per schedule.
8. Maintain the blow room machineries, setting of	Identify the parts of blow room machine and their functions.
	Carry out the important settings and adjust the settings of various

various parts of the opening roller, cleaning roller and check the speed of the machines in blow room line. (TSC/N0402, TSC/N0403, TSC/N0404)	machines in blow room.
	Adjust the speed of the rotating components in blow room.
	Maintain the chute feed system.
	Carry out duct setting in chute feed system.
	Carry out the maintenance activity as per schedule.
9. Identify the auxiliary blow room machines. (TSC/N0402, TSC/N0403, TSC/N0404)	Identify the various auxiliary machines of blow room machine and their functions.
	Carry out the important settings and adjust the settings of auxiliary machines in blow room.
	Adjust the speed of the rotating components in auxiliary machines.
	Carry out the maintenance activity as per schedule.
10. Identify the motors in blow room line and various switches in blow room panel board. (TSC/N0402, TSC/N0403, TSC/N0404)	Identify synchronize motor, induction motors in blow room line and identify their functions.
	Identify the door stop motion switches.
	Identify various places of door stop motion switches in blow room.
	Check the function of photo cell in the chute feed.
11. Identify defects in blow room laps, causes and remedial measures. (TSC/N0402, TSC/N0403, TSC/N0404)	Carry out maintenance activity on PIV gears.
	Analyze drives of various parts of the scutcher.
	Carry out the top and bottom cone drum setting.
	Check the function of piano feed regulating motion, rack motion and length measuring motion.
	Check the pressure and identify air pressure requirement of various parts of the blow room.
12. Identify various parts of carding machine and identify their functions. (TSC/N0402, TSC/N0403, TSC/N0404)	Identify various parts in carding machine and identify their functions.
	Piece the broken slivers.
	Doff the sliver can.
	Remove the licker-in, cylinder and doffer wastes.
	Clean the flat strips.
	Clean clearer roller wastes.
13. Maintain the carding machine and setting of various parts of the carding machine. (TSC/N0402, TSC/N0403,	Adjust the speed of the rotating components in carding.
	Carry out Motor plate alignment and setting.
	Carry out Motor pulley and machine pulley alignment, flat belt setting.
	Identify various oiling and greasing parts and carry out the

TSC/N0404)	lubrication.
	Overhaul the coiler mechanism.
	Carryout the maintenance activity as per schedule.
14. Identify and selection of the card clothing based on the type of fiber processed. (TSC/N0402, TSC/N0403, TSC/N0404)	Identify the cylinder, doffer, licker-in and flat strip wires and identify their specifications.
	Identify the wire specifications for processing cotton and different blends.
	Carry out wire mounting of cylinder, doffer and licker in
	Carry out flat wire grinding.
	Check up the level of the carding and carry out machine leveling.
15. Read and apply engineering drawing for different application in the field of work. (TSC/N9401)	Read & interpret the information on drawings and apply in executing practical work.
	Read &analyze the specification to ascertain the material requirement, tools and assembly/maintenance parameters. Encounter drawings with missing/unspecified key information and make own calculations to fill in missing dimension/parameters to carry out the work.
16. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study. (TSC/N9402)	Solve different mathematical problems
	Explain concept of basic science related to the field of study
SECOND YEAR	
17. Identify, select and troubleshoot the various components in comber preparatory and comber machines. (TSC/N0402, TSC/N0403, TSC/N0404)	Check creel stop motion.
	Set the bottom roll setting.
	Set the top roll setting, top roll pressure, calendar roll, nipper setting, Index wheel, detaching roll, fleece guide, safety door sensor, top comb, noil setting, piecing index.
	Clean the detach roller and the top comb.
	Overhaul headstock, coiler and draft gear.
	Re-needle unicomb.
	Buff the cots.
18. Set the speed frame machine using proper tools and gauges and maintenance activities in	Check creel stop motion.
	Set the bottom roll setting and top roll setting.
	Set the top roll pressure scan roll, belt tension, timer and calendar roll.
	Overhaul draft gear and coiler head.

Speed frame machine. (TSC/N0402, TSC/N0403, TSC/N0404)	Check the timer belt and working of stop motion.
	Check top roller pressure.
	Demonstrate cots buffing.
	Check pneumafil fan suction.
	Select proper guides as per sliver hank.
	Set the bottom roll clearer cloth and gear play.
	Demonstrate gear change.
	Overhaul headstock.
	Overhaul draft gear.
	Demonstrate greasing of bearings.
	Demonstrate the trueing of bottom roller.
	Set the roving stop motion sensor.
	Set the sliver stop motion sensor.
	Demonstrate flyer alignment.
	Overhaul of builder motion.
	Set the cone drum belt position.
	Overhaul differential gear box.
	Set the ratchet wheel.
	Check the pneumatic valves.
	Check the dead weight on bobbin rail.
19. Set the ring frame machine using proper tools and gauges, maintenance and cleaning activities in ring frame machine. (TSC/N0407, TSC/N0408, TSC/N0409)	Select proper roving guides as per roving hank.
	Set the roving guide bar height.
	Set the top roll setting.
	Set the top roll pressure.
	Set the bottom roll setting.
	Demonstrate ring centering.
	Demonstrate machine levelling.
	Set the traveller clearer.
	Overhaul headstock.
	Overhaul draft gear.
	Demonstrate greasing of bearings.
	Buff the cots.
	Demonstrate the trueing of bottom roller.
	Check ring rail levelling.
	Check and replenish spindle oil.
	Demonstrate spindle tape joining.
	Grease the bottom roller needle bearing.
	Demonstrate creel alignment.
	Change the twist wheel.
	Change the total draft and break draft change wheel.
	Set lappet gauge.
	Demonstrate top roller greasing.

	Set the jockey pulley for spindle tape tension.
20. Check and adjust the winding machines using proper tools and gauges. (TSC/N0412, TSC/N0413, TSC/N0414)	Check and adjust yarn guides.
	Check and adjust the cone drum alignment.
	Check and set the stop motion.
	Check and set the yarn clearers.
	Check and set the yarn tension devices.
21. Maintain the winding machines using proper tools and gauges. (TSC/N0412, TSC/N0413, TSC/N0414)	Clean the various parts of the machine.
	Check and set the motor.
	Check and Set the plate alignment, belt drum pulley check up, drum alignment.
	Set and adjust the cop pulley alignment.
	Set the rotary magazine.
	Set the cop holder.
22. Maintain and Set the splicer. Familiarize and check the functions of splicer. (TSC/N0412, TSC/N0413, TSC/N0414)	Check and adjust the parts of the splicer.
	Identify the Mechanical adjustment.
	Check and adjust the splicer parts.
	Check and adjust the air level in splicer.
	Check the splicing techniques.
	Check and adjust the mechanical setting and air.
	Check and adjust Knife setting and air blade setting.
	Check and adjust the balloon adjustment. Knife breaker setting.
	Check and adjust the Cone blade setting, balloon holder setting.
	Check and adjust package dia setting.
	Check and adjust Cone gauge, length measuring holder.
	Check length measuring motion &set.
23. Identify and select the functions of Overhead clearer and perform its maintenance. (TSC/N0407, TSC/N0408, TSC/N0409)	Clean the Overhead clearer.
	Check and adjust Overhead clearer, rail track check up.
	Check and carry out mechanical adjustment.
	Setting of individual drive to all.
	Check and set drive to all parts.
	Check and adjust the speed of the parts in overhead clearer.
24. Identify and record the Routine and Preventive Maintenance. (TSC/N0407, TSC/N0408, TSC/N0409)	Identify the Procedure of Maintenance and carry out.
	Make the Equipment history and maintain.
	Prepare the inventory records and follow.
	Carry out the inventory control.
	Prepare the maintenance check list and maintain.
	Prepare the machine audit , machine tool applications.

25. Identify the functions of various parts in rotor spinning machine. Perform the maintenance activities in rotor spinning machine. (TSC/N0212)	Identify the Functions of feed roll.
	Identify the Functions of rotor box, rotor, opening roller.
	Identify the functions of stop motion.
	Identify the functions of navel.
	Identify the functions of, traverse guide.
	Identify the functions of auto doff and auto piece.
	Check and adjust the driving system suction.
	Check and adjust the filter unit-basic settings.
	Clean the various parts of the machine.
	Set the rotor box, rotor, opening roller.
	Check and set the stop motion.
	Check and adjust the auto doff and auto piece.
	Check and set the navel.
	Check and set the traverse guide.
26. Perform the maintenance activities in air spinning machine. (TSC/N9404)	Identify the various parts of the machine.
	Identify the important setting points and carry out.
	Adjust the speed of the rotating components.
	Maintain the various parts of the machine.
	Carry out the cleaning activities of the parts.
	Check the yarn traverse setting.
27. Perform the maintenance activities in DREF spinning machine. (TSC/N9405)	Identify the working of various parts of the machine.
	Identify the important setting points and carry out.
	Adjust the speed of the rotating components.
	Maintain the various parts of the machine.
	Carry out the cleaning activities of the parts.
28. Perform the maintenance activities in TFO. (TSC/N0412, TSC/N0413, TSC/N0414)	Identify the working of various parts of the machine.
	Identify the important setting points and carry out.
	Adjust the speed of the rotating components.
	Maintain the various parts of the machine.
	Carry out the Cleaning activities of the parts.
29. Perform the maintenance activities in Ring Doublers. (TSC/N0412, TSC/N0413, TSC/N0414)	Identify the working of various parts of the machine.
	Identify the important setting points and carry out.
	Adjust the speed of the rotating components.
	Maintain the various parts of the machine.
	Carry out the Cleaning activities of the parts.
30. Record the study of working of reeling and	Identify the functions of 7 lea motion.
	Carry out the doffing procedure.
	Carry out the bundling.

bundling. (TSC/N0412, TSC/N0413, TSC/N0414)	Carry out the baling and check the weight.
31. Test the different yarn quality and record the data. (TSC/N9406)	Identify the concept of quality.
	Identify and prepare the quality assurance procedure.
	Identify the various yarn quality test procedure.
	Carry out testing of yarn count, strength and twist.
	Identify and carry out the yarn irregularity.
32. Demonstrate basic mathematical concept and principles to perform practical operations. Understand and explain basic science in the field of study.(TSC/N9402)	Solve different mathematical problems
	Explain concept of basic science related to the field of study

7. TRADE SYLLABUS

SYLLABUS FOR SPINNING TECHNICIAN TRADE			
FIRST YEAR			
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical) With Indicative Hours**	**Professional Knowledge (Trade Theory)**
Professional Skill 168Hrs; Professional Knowledge 36Hrs	Plan and organize the work to make job as per specification applying different types of basic fitting operations and Check for dimensional accuracy following safety precautions. *[Basic fitting operations – marking, Hack-sawing, punching, Chiselling, Filing, Drilling, Grinding and job setting]* (Mapped NOS: TSC/N0402, TSC/N0407, TSC/N0412)	1. Observe the safety precautions during filing, marking and punching, internal fitting and drilling practice. (13 hrs) 2. Identify the type of hand tools, care and maintenance during various practices. (08hrs) 3. Identify the cutting and measuring tools used for filing, marking and punching practice. (13 hrs) 4. Identify the types and specifications of drills, cutting angles, tap drills and dies used for internal fitting and drilling. (13 hrs) 5. Identify the geometrical construction of various types of grinding machine. (17 hrs) 6. Identify the various types of gauges, uses, care and maintenance. (13 hrs) 7. Identify the types of lathes, parts and its functions of lathe machinery. (18 hrs) 8. Identify the specification and different accessories of lathe machinery. (08 hrs) 9. Filing to size and chipping. (08 hrs) 10. Marking and Punching, Hack sawing. (08hrs)	Trade instruction-safety-types of safety workshop safety-Hand Tools safety-personal safety. Hand tools-Types of hand tools- Types of tools used, Vices-specification-uses, care and maintenance. Accident-Prevention-machine men- Industry -Marking tools-calipers- Dividers-Surface plates-Angle plates-Scribers-punches- Surface gauges-Types-Uses, Care & maintenance. Cutting tools-Files-Chisels-Hacksaw blades-Scrapper-Various cutting angles and their uses-care & maintenance. specification of steels flats & strips-specification steel flats & strips-specification of steel angles -Specification of steel sections. Measuring tools-Precision and non-precision-steel rule calipers- Vernier caliper-micrometer-Vernier Height gauge-depth gauge types-uses and Specification-calibration and setting as per standard. Measurement of angles-Vernier Bevel protractor-Graduation on universal Bevelprotractor- Reading of

		11. Checking of different surfaces Open fitting of sized metals. (08hrs) 12. Scrapping to roug hand size. (08 hrs) 13. Internal Fitting. Drilling & Fitting. (08 hrs) 14. Grinding practice. (17 hrs) 15. Snap gauge filing. (08 hrs)	universal Bevel Protractor. Drilling machine types-Drill chuck-specification Drill types – reamer types-various cutting angles-tapes and dies-types - uses-tap drills and dies calculation. Grinding m/c practice types method of drill bit and chisel grinding. Gauges- types- Uses- care & Maintenance - tolerance-limits - fits-definitions & applications. (36 hrs.)
Professional Skill 84Hrs; Professional Knowledge 18 Hrs	Plan and organize the work to make job on facing, chamfering, plain Turning, taper turning and simple thread. (Mapped NOS: TSC/N0402, TSC/N0407, TSC/N0412)	16. Turning Tool grinding tool setting & job setting. (08 hrs) 17. Facing and chamfering, plain turning. (08 hrs) 18. Different types of shoulder and small radius turning. (13 hrs) 19. Taper turning and simple thread forming. (13 hrs) 20. Select the different types of operations performed in lathe. (13 hrs) 21. Identify the cutting tool materials, types and selection of cutting angles. (08 hrs) 22. Select the uses and applications of various types of cutting angles. (13 hrs) 23. Identify the different types of threads and its application for tapping and dyeing process. (08 hrs)	Lathe-types-construction-parts - functions- specification. Lathe accessories. Different types of operations performed in lathe. Cutting tools materials-types selection-various cutting angles-uses and applications. Types of threads-application tapping and dyeing process metrics and inch threads. Different process of taper Turning & calculation. (18 hrs.)
Professional Skill 42Hrs; Professional Knowledge 9Hrs	Plan and identify different types of skill related to sheet metal work and on various types of welding practices like square butt joint, single V butt joint, arc welding	24. Identify the various types of hand tools, marking and cutting tools used for sheet metal work. (04 hrs) 25. Identify soft and hard soldering operations used in sheet metal joint. (04 hrs) 26. Identify the types of sheets	Welding types-Arc Welding-Gas Welding- Welding tools and equipments Types of welding joints-Electrode and current selection-Specifications and safety precautions Types of gases used in gas

	and gas welding. (Mapped NOS: TSC/N0402, TSC/N0407, TSC/N0412)	used for folding, notching, wiring and hemming operations. (04 hrs) 27. Identify the allowances and uses of sheets for folding, notching, wiring and hemming operations. (04 hrs) 28. Identify the tools, equipments and types of welding joints. (04 hrs) 29. Identify the various types of welding practices, electrodes and current selection for the welding process. (09 hrs) 30. Observe the specifications and safety precautions during welding practice. (04 hrs) 31. Observe the type of gases, pressure and nozzle selection used in gas welding. (04 hrs) 32. Perform the edge preparation for arc and gas welding process. (05 hrs)	welding oxy acetylene flame setting Gas pressure and nozzle selection. Edge preparation for Arc & Gas Welding process. (09 hrs.)
Professional Skill 42 Hrs; Professional Knowledge 09 Hrs	Apply a range of skill to execute different carpentry work. (Mapped NOS: TSC/N0402, TSC/N0407, TSC/N0412)	33. Identify the hand and measuring tools, work holding devices used in carpentry. (04 hrs) 34. Identify the types of clamps, sizes and its uses in carpentry. (04 hrs) 35. Identify the plan and setting parameters for sharpening. (09 hrs) 36. Identify the different types of saws, setting parameters and its uses in carpentry. (06 hrs) 37. Familiar on specifications and uses of wood working machine. (03 hrs) 38. Identify adhesive types and its uses in carpentry. (08 hrs)	Carpentry hand tools-Measuring tools-Work holding devices- Bench vice. Work Bench - Clamps types-sizes - uses- safety methods saws-Plan types- setting Sharpening- Uses etc. Different types of saws-Saw setting-Types of joints-Application –wood working machine- specification and their uses. Adhesives type and uses. (09 hrs.)

		39. Simple mortise and Ten on joints practice. (08 hrs)	
Professional Skill 105Hrs; Professional Knowledge 22Hrs	Plan, identify and test on electrical/ electronic measuring instruments (Mapped NOS: TSC/N0402, TSC/N0407, TSC/N0412)	40. Identify the fundamental terms of work power, energy, units, voltage, current resistance, and colour codes. (09 hrs) 41. Identify the types of cables, standard wire gauge, ohm's law and Kirchoff's law. (09 hrs) 42. Select the different electrical measuring instrument. (09 hrs) 43. Soldering practice-Series-Parallel connection Measurement of electrical energy- Multi-meter. (08 hrs) 44. Identify the properties of conductor, semi-conductor and insulator. (09 hrs) 45. Identify the primary and secondary cells, common electrical accessories and their specification. (09 hrs) 46. Demonstration & practice on fixing common electrical accessories. (04 hrs) 47. Identify the instruments used for testing. (04 hrs) 48. Testing of domestic appliances-Building layout assemble of small electrical circuits. (04 hrs) 49. Constructional of calling bell (Electromagnet) Testing. (04 hrs) 50. Rewinding of electromagnet identification of DC generator. (04 hrs) 51. Use of Ohmmeter and merger. (04 hrs) 52. Demonstration and Reading	Atom & Atomic structure electrons- Fundamental terms, work, power, energy units voltage- current, resistance colour codes. Types of cables-standard wire Gauge-Ohm's law- Kirchoff's law. Series and parallel connection-Simple problems properties of conductor, semi conductor and insulator. Primary and secondary cells common electrical accessories and their specification. Demonstration and description of domestic appliances. Magnetism and Electro magnetism-simple-Motors Generators - Principles and rules applied. Explanation of electrical measuring instruments - Ammeter-Voltmeter-Wattmeter-Energy meter. Electronic Activities-Passive components- Resistors-Capacitors-inductors-coils-Simple rectifiers, power supply, amplifier-logic gates-Principle of operations. (22 hrs.)

		of Electrical Measuring Instruments. (04 hrs) 53. Testing of active & passive component with suitable meters like Ammeter, Voltmeter &Multimeter. (08 hrs) 54. Testing of DC & AC Assembly and testing of simple electronic circuits(power supply)Testing of amplifier. (08 hrs) 55. Measure and record the data by using the testing instrument like ammeter, voltmeter and multimeter of AC and DC. (08 hrs)	
Professional Skill 21Hrs; Professional Knowledge 04 Hrs	Identify the fibre type i.e natural/synthetic/ regenerated fiber by chemical method, burning method and using microscope. (TSC/N9403)	56. Collection of various fibers samples and methods of identification. (06 hrs) 57. Select the suitable chemical for the fiber. (03 hrs) 58. Carry out chemical method to find the type of fiber. (04 hrs) 59. Burn the fiber. (02 hrs) 60. Identify the fiber type based on burning behaviour of the fiber. (03 hrs) 61. Use the microscope and find the morphology of the fiber. (03 hrs)	**Orientation to Textile** **Sector:** Overview of Textile Industry-History, Scope &Future Prospects, Strengths & Weakness of the industry. **Orientation to Fibers:** Definition ofTextile Fiber. Classification of fibersw.r.t. Origin-natural, synthetic and regenerated types. (04 hrs.)
Professional Skill 22Hrs; Professional Knowledge 04Hrs	Maintain the ginning machine, adjust the speed of opening roller and set the important settings in ginning machine (Mapped NOS: TSC/N0409)	62. Sketching of various parts of ginning machine, maintenance of ginning, speed and setting parameters of ginning. (05 hrs) 63. Identify the parts of the ginning machine and their functions. (05 hrs) 64. Carry out the important settings and adjust the settings. (05 hrs) 65. Adjust the speed of the	**Ginning:** Introduction to Ginning, Objectives of Ginning - types of ginning, types machines in ginning, setting parameters &process control in ginning. Blending & Mixing – Types &Equipments. (04 hrs.)

		rotating components in ginning machine. (05 hrs) 66. Carry out the maintenance activity as per schedule. (05 hrs)	
Professional Skill 63Hrs; Professional Knowledge 14Hrs	Maintain the blow room machineries, setting of various parts of the opening roller, cleaning roller and check the speed of the machines in blow room line (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)	67. Sketching of various gears, bevels, belts, bearings & Various Tool-kits, Belt and rope driver: speed ratio, limiting ratio of tensions. (04 hrs) 68. Identify the parts of blow room machine and their functions. (04hrs) 69. Carry out the important settings and adjust the settings of various machines in blow room. (04 hrs) 70. Adjust the speed of the rotating components in blow room. (03 hrs) 71. Maintain the chute feed system. (03 hrs) 72. Carry out duct setting in chute feed system. (03 hrs) 73. Centrifugal tension condition for maximum power transmission and speed. (04 hrs)	**Blow room:** Objectives of Blow room process –Principle of Opening and Cleaning - Opening and cleaning machines: Hopper Bale Breaker, Hopper feeder, Step cleaner, Axiflow cleaner, Mono cylinder, ERM cleaner, Porcupine opener, 3 bladed beaters, Kirschnerbeater, Salient features of Mixers and bale plucker. (05 hrs.)
		74. Maintenance schedule of the Blow room Machineries. (08 hrs) 75. Setting of various parts of the opening roller, cleaning roller and speed check up.(08 hrs) 76. Cleaning check up of the machine parts with general checklist. (04 hrs)	Maintenance schedule of the Blow room machineries. Setting of various parts of the opening roller, cleaning roller and speed checkup. (04 hrs.)
		77. Tachometer, tools kits, leaf gauge, allenkey, inner and outer caliber. (08hrs) 78. Motor pulley, machines pulley fitting and belt alignment of various machines. ‘(07 hrs)	Motor pulley, machine pulley fitting and belt alignments of various machines. Greasing of bearing, types of greases. Greasing techniques to various bearings in the Blow room machinery. (05 hrs.)

		79. Compressor and air pressure check up. (03 hrs)	
Professional Skill 84Hrs; Professional Knowledge 18 Hrs	Identify the auxiliary blow room machines (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)	80. Line diagram of bye pass arrangement, two-way distributor, air pressure setting, valve alignment, photocell setting.(08 hrs) 81. Identify the various auxiliary machines of blow room machine and their functions. (09 hrs) 82. Function and maintenance of cage, condenser, grid bars, metal detector, limit switches and Photo cell alignment in mixing machines. (08 hrs) 83. Carry out the important settings and adjust the settings of auxiliary machines in blow room. (10 hrs) 84. Adjust the speed of the rotating components in auxiliary machines. (05 hrs) 85. Carry out the maintenance activity as per schedule. (05 hrs)	**Auxiliary blow room machines:** Cages, pneumatic conveyors, condenser, distributors, dust extractor, Automatic Waste Evacuation System (AWES), rotary filters, cellar less blow room, filter bags, contaminator eliminator, metal detectors & Fire Diverters. Function of Two-way distributor, Bye-pass arrangement of material flow. (06 hrs.)
		86. Maintenance of piano feed regulating motion, rack motion, length measuring motion, pressure check-up. (19 hrs)	Function of piano feed regulating motion, rack motion, length measuring motion and pressure checkup, air pressure requirement of various parts of the Blow room.(06 hrs.)
		87. Maintenance of PIV gears, top & bottom cone drum, greasing, oiling of various parts of the Scutcher. (10 hrs) 88. Profile design of and construction of to pand bottom cone drum. (10 hrs)	Function of PIV gears, drives analysis to various parts of the Scutcher. Mechanical understanding of top& bottom cone drum setting, Belt alignment. Study of automatic scutcher – auto doffing unit – Defects in blow room laps, causes and remedial measures. (06 hrs.)

Professional Skill 21Hrs; Professional Knowledge 05Hrs	Identify the motors in blow room line and various switches in blow room panel board (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)	89. Identify the Parts of induction motor, synchronize motor. (04 hrs) 90. Select the Function of stop motion switches in Blow room. (04 hrs) 91. Identify various places of door stop motion switches in blow room. (04 hrs) 92. Select electrical panel in Blow room. (04 hrs) 93. Check the function of photo cell in the chute feed. (05 hrs)	Function of Synchronize motor, induct, motor. Door Stop motion switches. Various places of door stop motion switches in Blow room. (05hrs)
Professional Skill 42Hrs; Professional Knowledge 09 Hrs	Identify defects in blow room laps, causes and remedial measures. (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)	94. Check up of various parts of the machines with standard setting. (10 hrs) 95. Carry out maintenance activity on PIV gears. (11 hrs) 96. Analyze drives of various parts of the scutcher. (10 hrs) 97. Maintenance of chute feed line. (11 hrs)	Trouble shooting problems in Blow room. Lap c.v% control technique, One meter lap c.v%, Chute feed system; Introduction to Chute feed system, Maintenance of chute feed systems: flock feeder, flock meter. Duct setting,. Function of photocell in chute feed. (09 hrs.)
Professional Skill 42Hrs; Professional Knowledge 09 Hrs	Identify various parts of carding machine and identify their functions. (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)	98. Manufacturers of carding machine, various models, Passage of material through carding machine. (11 hrs) 99. Various parts of the carding machine. Wire specification for processing cotton, synthetic and blends.(10 hrs) 100. Heel and toe mechanism. Waste control. (11 hrs) 101. Effect of licker in, cylinder, flat and doffer speed on web quality. (10 hrs)	**Carding Department:** Introduction to carding, Objects and Principles of Carding. Functions of carding achines, Passage of material through carding machine. Wire specification for processing cotton, synthetic and blends. Heel and to e. mechanism. Waste control. Effect of lick cylinder, flat and doffer speed on web quality. (09 hrs.)
Professional Skill 62Hrs; Professional Knowledge 14 Hrs	Maintain the carding machine and setting of various parts of the carding machine. (Mapped NOS: TSC/N0402,	102. Maintenance schedule of the carding department. (08 hrs) 103. Motor plate alignment and setting. (08 hrs) 104. Motor pulley and machine	Maintenance schedule of the carding department. Motor plate alignment and setting. Motor pulley and machine pulley alignment, flat belt setting. Overhauling of coiler

	TSC/N0403, TSC/N0404)	pulley alignment, flat belt setting.(08 hrs) 105. Checklist of General cleaning of the card. (05 hrs) 106. Setting of various parts of the machine.(08 hrs) 107. Leaf gauge, Allen key, and toolbox. (08 hrs) 108. Wire mounting: Cylinder, doffer, licker in and flat strip.(05 hrs) 109. Wire specification details. (07 hrs) 110. Machine leveling check-up. (05 hrs)	mechanism General cleaning of carding machine, Gearing diagram, speed particulars and technical data, greasing & oiling parts. Wire mounting: Cylinder, doffer, licker in and flat strip. Wire specification details. Machine leveling checkup. (14 hrs.)
Professional Skill 42Hrs; Professional Knowledge 09 Hrs	Identify and selection of the card clothing based on the type of fiber processed. (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)	111. Overhauling of coiler mechanism, Selection of card clothing for cotton, synthetic, blends. (06 hrs) 112. Auto leveller functions, setting and maintenance.(05 hrs) 113. Selection of card clothing for cotton, synthetic blends.(06 hrs) 114. Half setting, Full setting, Grinding operation, stripping operation. (05 hrs) 115. Flat grinding, under casing setting & polishing.(06 hrs) 116. Web doffing unit servicing coiler unit servicing. (05 hrs) 117. Change gears: Draft, production, tension, coiler, production change gears.(05 hrs) 118. Analysis of machine speed & setting wire point. (04 hrs)	Salient features on new generation cards, feed zone-integrated feed plate, sensor feed, unifeed, pre-carding, segment, carding zone, integrated grinding system, flat measuring system. Automation in cards. Study of Apron Web doffing device. Brief study of auto leveler. Dust extraction system in card - Automatic Waste Evacuation System (AWES).Half setting, Full setting, Grinding operation, stripping operation. Stationary flat change. Flat grinding, under casing setting & polishing Change gears: Draft, production, tensions, coiler and can-changer. Trouble shooting techniques: Control of neps generation, flat stripping waste, licker in dropping, and cylinder dropping. (09 hrs.)
Engineering Drawing : (40Hrs.)			
Professional Knowledge	Read and apply	Engineering Drawing: Introduction to Engineering Drawing and Drawing Instruments-	

ED-40 Hrs. TSC/N9401	engineering drawing for different application in the field of work.(TSC/N9401)	• Conventions • Sizes and layout of drawing sheets • Title Block, its position and content • Drawing Instrument Free hand drawing of – • Geometrical figures and blocks with dimension • Transferring measurement from the given object to the free hand sketches. • Free hand drawing of hand tools. Drawing of Geometrical figures: • Angle, Triangle, Circle, Rectangle, Square, Parallelogram. • Lettering & Numbering – Single Stroke Dimensioning Practice • Types of arrohead Symbolic representation – • Different symbols used in the Spinning / Textile wet processing /weaving Technician trades. Reading of chemical plant Circuit Diagram Reading of Chemical plant Layout drawing
WORKSHOP CALCULATION &SCIENCE(38hours)		
Professional Knowledge Wcs-20Hrs. TSC/N9402	Demonstrate basic mathematical concept and principle of perform practical operations. Understand and explain basic science in the field of study.(TSC/N9402)	WORKSHOP CALCULATION &SCIENCE: **Unit, Fractions** • Classification of unit system • Fundamental and Derived units F.P.S, C.G.S, M.K.S and SI units • Measurement units and conversion • Factors, HCF, LCM and problems • Fractions - Addition, subtraction, multiplication & division • Decimal fractions - Addition, subtraction, multiplication & division • Solving problems by using calculator **Square root, Ratio and Proportions, Percentage** • Square and square root • Simple problems using calculator • Applications of Pythagoras theorem and related problems • Ratio and proportion • Ratio and proportion - Direct and indirect proportions • Percentage **Material Science** Types metals, types of ferrous and non ferrous metals Introduction of iron and cast iron **Mass, Weight, Volume and Density** **Speed and Velocity, Work, Power and Energy** **Heat & Temperature and Pressure** • Concept of heat and temperature, effects of heat,

		difference between heat and temperature, boiling point & melting point of different metals and non-metals **Basic Electricity** Introduction and uses of electricity, molecule, atom, how electricity is produced, electric current AC,DC their comparison, voltage, resistance and their units **Mensuration** **Levers and Simple machines** **Trigonometry** • Measurement of angles • Trigonometrical ratios
In-plant training / Project work.		

SYLLABUS FOR SPINNING TECHNICIANTRADE			
SECOND YEAR			
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical) With Indicative Hours**	**Professional knowledge (Trade Theory)**
Professional Skill 105Hrs; Professional Knowledge 34 Hrs	Identify, select and troubleshoot the various components in comber preparatory and comber machines. (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)	119. Introduction to comber preparatory machines and comber, Function of various parts of the comber machines. (20 hrs) 120. Passage of a comber preparatory machines and comber machine. (20 hrs)	**Comber Department:** Introduction to comber preparatory machines and comber. Objects of Combing. Degree of Combing. Function of various parts of the comber machines. Material passage of comber preparatory machines: Sliver lap, ribbon lap and super lap machines. Combing Cycle. Comber timing diagram, comber draw box. (14 hrs.)
		121. Checklist during general cleaning. (10 hrs) 122. Head stock overhauling, Draft gear overhauling. (10 hrs) 123. Coiler mechanism overhauling, re-needling of half comb. (10 hrs) 124. Inching motion, index wheel setting, cost buffing techniques, detaching roller setting & buffing. (10 hrs)	Maintenance schedule of the comber preparatory machines and comber. General cleaning of a comber. Head stock overhauling, Draft gear overhauling. Coiler mechanism overhauling , re needling of half comb. Inching motion, index wheel setting, cots buffing techniques, detaching roller setting & buffing. (14hrs.)
		125. Trouble sheeting: Piecing index setting, noil level setting: head to heat, Overall machine. (13 hrs) 126. Unicom, draw box drafting auto motion in comber. (12 hrs)	Trouble shooting: Piecing index setting, noil level setting: head to heat, Overall machine. Salient features of new generation, preparatory machines and combers. (06 hrs.)
Professional Skill 189Hrs; Professional Knowledge 59 Hrs	Set the draw frame and speed frame machine using proper tools and gauges and maintenance activities in Speed	127. Functions of various parts, material passage. (20 hrs) 128. Gearing diagram of the machine. (20 hrs)	**Draw frame:** Introduction to Draw frame, Objects of Drawing. Functions of various parts, material passage. Gearing diagram of the machine. Machine speed particulars. (13

	frame machine. (Mapped NOS: TSC/N0402, TSC/N0403, TSC/N0404)		hrs.)
		129. Headstock overhauling, draft gear overhauling, timer belt check up, coiler mechanism overhauling, stop motion, clearer, roller setting, pneumafil fan suction& net check up. (20 hrs)	Maintenance schedule of the Draw frame & General cleaning. Headstock timer belt checkup, coiler mechanism overhauling, stop motion, clearer, roller setting, pneumafil fan suction & net checkup. (07 hrs.)
		130. Function of draft change gear, break draft change gear, tension draft change gear. (20 hrs) 131. Top roller pressure checking, cots buffing. Setting of auto levellers. (20 hrs)	Function of draft change gear, break draft change gear, tension draft change gear. Top roller pressure checking, cots buffing. Automation in Draw frame. Brief study of darting irregularities. Sliver defects in draw frame, their causes and remedies. (10hrs.)
		132. Function of various parts of the simplex machine, material passage, stop motion switches, motor plate alignment, setting of belts, cots buffing, inching motion, creel guide roller check-up& oiling, photo sensor setting. (45 hrs)	**Simplex:** Introduction to simplex, Objects of Speed frame, function of various parts of the machine, passage of material, stop motion switches, motor plate alignment, setting of belt cots buffing, inching motion, creel guide roller checkup & oiling, photo sensor settings. (10 hrs.)
		133. Maintenance schedule of the simplex machine. (05 hrs) 134. Headstock overhauling, draft gear overhauling, draft roller setting, top arm pressure gauge & saddle gauge, needle bearing greasing. (10 hrs) 135. Flyers, spindles, builder motion, differential motions, cone drums, process Parameter. (09hrs)	Maintenance schedule of the simplex machine. Headstock overhauling, draft gear overhauling, draft roller setting, top arm pressure gauge & saddle gauge, needle bearing greasing. (09 hrs.)
		136. Bobbin rail levelling, differential box oiling &	Bobbin rail leveling, differential box oiling & noise check up,

		noise check up, builder motion overhauling flyer alignment, false twister types, spacer & condenser, creel drafting systems, suspended flyers, differential and builder mechanisms. (20 hrs)	builder motion overhauling flyer alignment, false twister types, spacer & condenser. Defects in speed frame process, causes and remedies. Salient features of new generation speed frames. Automation in Speed frames. (10 hrs.)
Professional Skill 105Hrs; Professional Knowledge 34 Hrs	Set the ring frame machine using proper tools and gauges, maintenance and cleaning activities in ring frame machine (Mapped NOS: TSC/N0407, TSC/N0408, TSC/N0409)	137. Function of various parts of the machine. Maintenance schedule of the Ring frame. (10 hrs) 138. Headstock overhauling, draft gear overhauling, spindle gauge (Centring). (10 hrs) 139. Ring rail leveling, drafting roller setting, bottom roller, top roller, top arm pressure gauge & saddle gauge. (11 hrs) 140. Spindle: Inserts, Bolsters. Highspeed spindles. Spindles drives. (11 hrs)	**Ring frame:** Introduction to Ring frame, Objects of Ring frame, function of various parts of the machine. Design of roller stand, bobbin holder, top rollers ball bearings, needle bearings, cots, aprons and spacer's specifications, drafting system, Lappet, balloon control rings, separator, Ring rail movement, builder motions, Ring and Travelers, profile matching, High speed travelers. (13 hrs.)
		141. Checklist for General cleaning of the machine, Needle bearing greasing, lappet Gauge, tin roller bearing check-up& change. (11 hrs) 142. Machine leveling, change gear replacement: draft, twist, ratchet, break draft change gear. Creel alignment (bobbin holder setting), top roller buffing, idle spindle rectification work. Over head cleaner, auto doffing, dual drive motor. (12 hrs)	General clearing of the machine. Needle bearing greasing, lappet gauge, tin roller bearing checkup& change. Gear replacement draft, twist, ratchet, break draft change gear. Creel alignment (bobbin holder setting), top roller buffing, idle spindle rectification work. General study of ring frame gearing end -off end, gears, spur gears, helical gear bearings. (8 hrs.)
		143. Spindle oil replenishing, greasing of top roller & jockey pulley, traveller clearer setting, traveller	Spindle oil replenishing, greasing of top roller & jockey pulley, traveler clearer setting, traveler change, and Jockey pulley

		change, and Jockey setting. (20 hrs) 144. Design of Ring frame builder motion cam. (10 hrs) 145. Hi-speed rings and spindles travellers. Auto doffing, improved driving systems, Automation in ring frame. Introduction of various Spinning Systems For diversified products. (10 hrs)	setting. Common defects in ring spun yarns, causes and remedies. Causes of end breakages in ring frame. Salient features of new generation ring frame. Creel, drafting systems, apron specifications & automatic doffing systems. Study of Compact Spinning System. (13 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14 Hrs	Check and adjust the winding machines using proper tools and gauges. (Mapped NOS: TSC/N0412, TSC/N0413, TSC/N0414)	146. Identify Models of various winding machines. (20 hrs) 147. Function of various parts of the machine. (12 hrs) 148. Maintenance schedule of the winding machine. (10 hrs)	**Winding:** Introduction to winding, function of various parts of the machine, yarn clearing system & its setting. Maintenance schedule of the winding machine. (14 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14 Hrs	Maintain the winding machines using proper tools and gauges. (Mapped NOS: TSC/N0412, TSC/N0413, TSC/N0414)	149. General cleaning, individual motor plate alignment, belt check up, drum pulley alignment, setting of cop holder, rotary magazine setting and check up. (42 hrs)	General cleaning, individual motor plate alignment, belt check up, drum pulley alignment, setting of cop holder, rotary magazine setting and checkup. (14 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14 Hrs	Maintain and Set the splicer. Familiarize and check the functions of splicer. (Mapped NOS: TSC/N0412, TSC/N0413, TSC/N0414)	150. Splicer: mechanical setting and air adjustment. Knife blade setting, balloon breaker setting. (20 hrs) 151. Cone holder setting, package dia setting gauge, length measuring motion setup. (22 hrs)	**Splicer:** Mechanical setting and air adjustment. Knife blade setting, balloon breaker setting. Cone holder setting, package dia setting gauge, length measuring motion setup. (14 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14 Hrs	Identify and select the functions of Overhead clearer and perform its maintenance. (Mapped NOS: TSC/N0407, TSC/N0408, TSC/N0409)	152. Overhead clearer check up, speed adjustment, rail track check up. (17 hrs) 153. Mechanical setting of individual drive to all parts of the machine: slab catcher, winding drum, splicer setting, EYC checking, yarn guide groove formation checking. (25 hrs)	Overhead clearer check up, speed adjustment, rail track check up. Mechanical setting of individual drive to all parts of the machine: slab catcher, winding drum, splicer setting, EYC checking, yarn guide groove formation checking. (14 hrs.)

Professional Skill 42Hrs; Professional Knowledge 14 Hrs	Identify and record the Routine and Preventive Maintenance. (Mapped NOS: TSC/N0407, TSC/N0408, TSC/N0409)	**Maintenance of spinning machinery:** 154. Routine and Preventive Maintenance. (10 hrs) 155. Procedure of Maintenance. (10 hrs) 156. Equipment history records, inventory control, preventive maintenance checklist, machinery audit check points. (10 hrs) 157. Application of mechanic tools, machinery erection, modernization. (12 hrs)	**Maintenance of spinning machinery:** Routine and Preventive Maintenance. Maintenance Program. Procedure of Maintenance. Equipment history records, inventory control, preventive maintenance checklist, machinery audit check points. (14 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14Hrs	Identify the functions of various parts in rotor spinning machine. Perform the maintenance activities in rotor spinning machine (Mapped NOS: TSC/N0212)	158. Maintenance activities in rotor spinning machine. (10 hrs) 159. Functions of feed roll, rotor box, rotor, opening roller, feed roller, navel, stop motion, traverse guide, auto doff and auto piece etc. (12 hrs) 160. Driving system suction and filter unit-basic settings-machine speed particulars and technical data- cleaning schedule and maintenance schedule. (20 hrs)	Modern Spinning Technology Rotor Spinning (OE): Introduction: Rotor spinning, material passage. Wire specifying opening roller for cotton, synthetic and blends, Rotor design, navel design, take-up and package from mechanism. Drive mechanism: Feeding. Opening roller, rotor, take-up and yarn traversing. (14 hrs.)
Professional Skill 21 Hrs; Professional Knowledge 07 Hrs	Perform the maintenance activities in air spinning machine. (TSC/N9404)	161. Identify the various parts of the machine. (03 hrs) 162. Identify the important setting points and carry out. (02 hrs) 163. Adjust the speed of the rotating components. (04 hrs) 164. Maintain the various parts of the machine. (04 hrs) 165. Carry out the cleaning activities of the parts. (04 hrs) 166. Check the yarn traverse setting. (04 hrs)	Air jet Spinning: Introduction to Air jet spinning, working of various parts of the machine: creel, drafting system, twisting mechanism, winding. Working of air jet nozzle and setting of nozzle with other parts, air pressure adjustment. Yarn traverse setting, winding package hardness, change places of various areas in air jet spinning control panel setting. (07 hrs.)

Professional Skill 21 Hrs; Professional Knowledge 07 Hrs	Perform the maintenance activities in DREF spinning machine. (TSC/N9405)	167. Identify the working of various parts of the machine. (04 hrs) 168. Identify the important setting points and carry out. (04 hrs) 169. Adjust the speed of the rotating components. (04 hrs) 170. Maintain the various parts of the machine. (04hrs) 171. Carry out the cleaning activities of the parts. (05 hrs)	DREF Spinning: Introduction to Dref spinning, function of various parts of the machines: creel, drafting system, twisting mechanism, winding. Working of drum with parts, yarn withdrawal. (07 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14 Hrs TSC/N9406	Perform the maintenance activities in TFO (Mapped NOS: TSC/N0412, TSC/N0413, TSC/N0414)	172. Head stock overhauling, traverse motion, winding drum, twisting assembly, spindle oiling and tension adjustment. (20 hrs) 173. Function of change gears: Twist change gear, production change gear, and traverse change gear and tension adjustment. (22 hrs)	Two For One twister (TFO): Introduction to two for one twister, functions of various parts-machine speed set up & technical data-cleaning schedule and maintenance schedule. (14 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14 Hrs	Perform the maintenance activities in Ring Doublers (Mapped NOS: TSC/N0412, TSC/N0413, TSC/N0414)	174. Introduction to ring doublers, types, creel, roller arrangement, rings, spindles, travellers, packages, and builder motions. (20 hrs) 175. Maintenance of machine: overhauling of headstock, spindle oiling, ring cantering, ring rail leveling. (22 hrs)	**Ring Doublers:** Introduction to ring doublers, types, creel, roller arrangement, rings, spindles, travelers, packages, and builder motions **Maintenance of machine:** overhauling of headstock spindle oiling, ring centering, ring rail leveling. (14 hrs.)
Professional Skill 21 Hrs; Professional Knowledge 07 Hrs	Record the study of working of reeling and bundling (Mapped NOS: TSC/N0412, TSC/N0413, TSC/N0414)	176. Identify the functions of 7 lea motion. (01 hr) 177. Carry out the doffing procedure. (08 hrs) 178. Carry out the bundling. (06 hrs) 179. Carry out the baling and check the weight. (06 hrs)	**Reeling:** Objects of Reeling. Study of Working of 7 Lea motion. Study of doffing mechanism. **Bundling:** Objects of Bundling and baling. Need of bundling weight correction and its importance. Packing and its

			types. (07 hrs.)
Professional Skill 42Hrs; Professional Knowledge 14 Hrs	Test the different yarn quality and record the data.	180. Familiarization to QA Systems: Visit to Companies which have ISO 9000 certification. (20 hrs)	Quality Assurance: Concepts of quality, Control and Assurance. Introduction to ISO 9001, 2000, ISO 14000 and SA 8000, OHSAS 18001 systems, 5S Practices. (09 hrs.)
		181. Testing of different yarn quality. Count, Twist and Single yarn Strength. (22 hrs)	Concept of yarn quality. Testing of different yarn quality. Count, Twist and Single yarn Strength. Study of yarn irregularities. (07 hrs.)
WORKSHOP CALCULATION & SCIENCE (26 hours)			
Professional Knowledge WCS-26	Demonstrate basic mathematical concept and principle of perform practical operations. Understand and explain basic science in the field of study. (TSC/N9402)	**WORKSHOP CALCULATION & SCIENCE:** **Friction** • Friction - Advantages and disadvantages, Laws of friction, co-efficient of friction, angle of friction, simple problems related to friction **Friction - Lubrication** **Friction - Co- efficient of friction, application and effects of friction in workshop practice** **Centre of Gravity** • Centre of gravity - Centre of gravity and its practical application **Area of cut out regular surfaces and area of irregular surfaces** **Algebra** Algebra - Addition , subtraction, multiplication & division Algebra - Theory of indices, algebraic formula, related problems **Elasticity** Elasticity - Elastic, plastic materials, stress, strain and their units and young's modulus Elasticity - Ultimate stress and working stress **Heat Treatment** **Profit and Loss** **Estimation and Costing** Estimation and costing - Simple estimation of the requirement of material etc., as applicable to the trade Estimation and costing - Problems on estimation and costing	
Project Work/Industrial Visit			

SYLLABUS FOR CORE SKILLS
1. Employability Skills (Common for all CTS trades) (120Hrs. + 60 Hrs.)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in/ dgt.gov.in

ANNEXURE-I

LIST OF TOOLS & EQUIPMENT			
SPINNING TECHNICIAN (For batch of 20 Candidates)			
S No.	**Name of the Tools and Equipment**	**Specification**	**Quantity**
A.TRAINEES TOOL KIT (For each additional unit trainees tool kit s no. 1-25 is required additionally)			
1.	Combination Plier	200 mm insulated	21 Nos.
2.	Screw Driver	200 mm	21 Nos.
3.	Screw Driver	100 mm	21 Nos.
4.	Terminal Screw Driver		21 Nos.
5.	Hammer Ball Pein	0.25 kg	21 Nos.
6.	Try Square	200 mm	21 Nos.
7.	File round (half) 2nd cut	250 mm	21 Nos.
8.	File round	150 mm	21 Nos.
9.	Plumb Bob	115 gm.	21 Nos.
10.	Bar wood Mallet	1 kg (75 mm x 150 mm)	21 Nos.
11.	Knife		21 Nos.
12.	Wood rasp file	250 mm	21 Nos.
13.	Firmer chisel	12 mm	21 Nos.
14.	Firmer chisel	6mm	21 Nos.
15.	Neon Tester		21 Nos.
16.	Tenon saw	250 mm	21 Nos.
17.	File flat 2nd cut	25 cm.	21 Nos.
18.	File flat Smooth	25 cm.	21 Nos.
19.	Steel Rule	300mm to read Metric	21 Nos.
20.	Test lamp		21 Nos.
21.	Circlip Opener		21 Nos.
22.	Continuity Tester		21 Nos.
23.	Glouse		21 Nos.
24.	Insulating Tape		21 Nos.
25.	Electrical Soldering Iron		21 Nos.
B. LIST OF SHOP GENERAL OUTFIT– For 2 (1+1) units no additional items are required			
26.	Pliers side cutting	200 mm	6 Nos.
27.	Pliers flat nose	150 mm	6 Nos.
28.	Pliers round nose		6 Nos.
29.	Pliers long nose		6 Nos.
30.	Screw driver heavy duty	250 mm	5 Nos.

31.	Screw driver	7 mm x 300 mm square blade	6 Nos.
32.	Firmer Chisel	25 mm	6 Nos.
33.	Firmer Chisel	10 mm	6 Nos.
34.	Marking Gauge		6 Nos.
35.	Combination bevel Protractor		2 Nos.
36.	Cold Chisel Flat	25 x 200 mm	4 Nos.
37.	Cold Chisel flat	18 x 200 mm	4 Nos.
38.	Hammer Ball Pein	0.5 kg	5 Nos.
39.	Hammer Ball Pein	0.75 kg	5 Nos.
40.	Hammer Ball Pein	1 Kg	5 Nos.
41.	Hammer Cross Pein	0.5 kg	5 Nos.
42.	Wall jumper octagonal	37mmx450mm, 37 mm x 600 mm	2 Nos.
43.	Centre punch	100 mm	5 Nos.
44.	File Flat	300 mm rough	5 Nos.
45.	File Flat 2nd cut	300 mm	5 Nos.
46.	File Flat Bastard	250 mm	5 Nos.
47.	File flat smooth	250 mm	5 Nos.
48.	File half round 2nd cut	300 mm	5 Nos.
49.	File triangular 2nd cut	150 mm	4 Nos.
50.	Spanner double ended	set of 6	5 sets
51.	Adjustable Spanner	350 mm	2 sets
52.	Foot Print grip	250 mm	2 sets
53.	Allen keys	Metric & Inches	20 sets
54.	Steel rule	300 mm	5 Nos.
55.	Steel Measuring Tape	2m	5 Nos.
56.	Steel Measuring Tape	20 m	2 Nos.
57.	Hacksaw frame Adjustable	200 mm to 300 mm	5 Nos.
58.	Spirit level	300 mm	3 Nos.
59.	Bench vice	150 mm	3 Nos.
60.	Bench vice	100 mm	2 Nos.
61.	Pipe Wrench	300 mm	12 Nos.
62.	Spanner	up to 32 mm	12 Nos.
63.	Vernier Caliper		2 Nos.
64.	Ring spanner		3 sets
65.	Grip Plier	12"	4 Nos.
66.	Inner caliper		5 Nos.
67.	Outer caliper		5 Nos.
68.	Box spanner		4 sets
69.	Torque spanner		3 Nos.
70.	File Swiss type needle set		5 Nos.

71.	Shore hardness tester for		1 No.
72.	Needle file		3 sets
73.	Nylon hammer		5 Nos.
74.	Puller	2 arm, 3 arm	3 each
75.	Copper tube cutter		3 Nos.
76.	Ratchet brace	6 mm capacity	5 Nos.
77.	Ratchet bit	4mm and 6 mm	5 Nos.
78.	Vernier Caliper	200mm (ordinary)	5 Nos.
79.	Snips		5 Nos.
80.	Conduit Pipe die set		5 Nos.
C. LIST OF MACHINERY & EQUIPMENT			
81.	Blow room (Miniature)		1 No.
82.	Carding (Miniature)		1 No.
83.	Draw frame (Miniature)		1 No.
84.	Simplex (Miniature)		1 No.
85.	Ring frame		1 No.
86.	TFO (Miniature)		1 No.
87.	Rotor spinning machine (miniature)		1 No.
88.	Winding machine (miniature)- Autoconer		1 No.
89.	Classimat/classifault system		1 No.
D. MAINTENANCE EQUIPMENTS			
90.	Machine leveling gauge (Spirit level)		1 No.
91.	Greasing pump		1 No.
92.	Spindle oil lubricating machine		1 No.
93.	Roll trueing machine		1 No.
94.	Pressure gauge		1 No.
95.	Machine pulley adopter assembly	3Arm, 4Arm type	1 No.
96.	Cots buffing machine.		1 No.
97.	Tachometer		1 No.
98.	Tensionometer		1 No.
99.	Computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM:-4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch.) Licensed Operating System and Antivirus compatible with trade related software.	1 No.

100.	Laser Printer		1 No.

Note: -

1. *All the tools and equipment are to be procured as per BIS specification.*
2. Internet facility is desired to be provided in the class room.

ABBREVIATIONS

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Locomotor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with disabilities


कौशलं बलम्