

COURSE CURRICULUM

OF

**BROAD BASED BASIC TRAINING
IN SECTOR**

TEXTILE PROCESSING AND TECHNOLOGY

**(To be implemented in ITIs offering Multiskill courses
under Craftsmen Training Scheme or ITIs Upgraded
as Centre of Excellence)**

**Directorate General of Employment & Training
(DGE&T)
M/o Labour & Employment**

Trade Committee

1	Mr. Naveen Sharma,	Chairman.	Vice –President, M/s Nahar Industrial Enterprises Ltd, Lalru cum Chairman IMC, Govt. ITI, Lalru
2.	Dr. Sudhir Chauhan,	Technical Member	G.M M/s Rana Polycot Ltd., Alamgir (Lalru)
3	Mr. S.S Aich ,	Technical Member	AGM, M/s Nahar Industrial Enterprises Ltd, Lalru
4.	Mr. S.C. Garg	Technical Member	(G.M.) M/s Steel Strips & Wheels Ltd., Dappar
5	Mr. S.K Sharma ,	Technical Member	DGM , M/s Rana Polycot Ltd., Alamgir (Lalru)
6.	Mr. Sarvjit Singh Singh,	Convener	Supdt. (Tech), I.T.I. Lalru
7.	Mr. Harbinder Singh,	Technical Member	Instructor , ITI Lalru

**Up gradation of ITIs into Centers of Excellence-
Broad guidelines for implementation of the
Broad Based Basic Training in**

TEXTILE PROCESSING AND TECHNOLOGY

These Centers will be providing multi skill training to meet the skill requirement of particular sector of industry with their active involvement in all aspects of training. The training will be provided in three parts as given below:

- Training in Basic skill areas for a period of one year.
- Training in Advanced modules for next six months.

The testing & certification for the Basic skill training during first year & also for advanced training during next six months will be conducted by NCVT.

Training in specialized modules mainly in the industry (The course curricula, duration etc is designed in consultations with the IMC/local industry. The trade testing & certification for this component will be done jointly by the State Government & Industry. Said certificate will be recognized by NCVT

The training programme will have multi-entry and multi-exit provisions:

- Trainee can opt to go to the labour market after completing broad based basic training of one year duration as well as after completing 1½ year of training.
- Trainee can join training after some time for advanced/specialized training in another module of same sector
- ITI pass out trainee of the particular trade(s) from the conventional system can seek admission for advanced/specialised training in relevant sector.
- In first year, curricula in the Area/Sector of 'TEXTILE PROCESSING AND TECHNOLOGY uniform rotation for eight weeks each in the Basic Modules as mentioned below will be taken up. The trades from where existing infrastructure i.e. equipment/ instructor etc could be utilized for the training in 'TEXTILE PROCESSING AND TECHNOLOGY) sector is given below:

Basic modules	Name of the Module	Trade(s) from where existing infrastructure / equipment/ instructor could be utilized
TPT Basic Module -01	Basic Workshop Practices Fitting and Measurements	Fitter
TPT Basic Module -02	Basic Electrical , Electronics and Computer Operations	COPA, Electronics , Electrician
TPT Basic Module -03	Basics of Spinning	Textile Technology related trades
TPT Basic Module -04	Basics of Weaving	Textile Technology related trades
TPT Basic Module -05	Basics of Bleaching & Finishing	Textile Technology related trades
TPT Basic Module -06	Chemistry of Dyeing	Textile Technology related trades

For these modules, Trade Practical will be 28 hours /week and Trade theory for 4 hours /week. Apart from above modules as mentioned below will be taught throughout the year.

WORKSHOP CALCULATION & SCIENCE.....2 hrs/week
 ENGINEERING DRAWING.....2hrs/week
 ENTREPRENEURSHIP AND COMMUNICATION SKILLS..... 2hrs/week

In addition, 4 hours/week have been kept for Library studies & Physical Training

Vocational Instructors :

NAME OF THE MODULE	No. of Vocational Instructors (VIs)
TPT Basic module 2 to 5	Four VIs one each for 4 module of relevant trades or Diploma in Textile /Engineering Technology
TPT Basic module 1	One with Diploma in Mechanical Engineering or NTC/CTI in Fitter Trade.
TPT Basic module 6	One with Diploma in Electrical /Electronics Engineering with Computer Knowledge or NTC/CTI in Electronics or Electrician with Computer Knowledge
Workshop Cal & Sc. /Engineering Drawing	Diploma in Mechanical Engineering
ENTREPRENEURSHIP AND COMMUNICATION SKILLS	One contract/part time / guest faculty for Generic module, ENTREPRENEURSHIP AND COMMUNICATION SKILLS –G-01

The eligibility and other criteria will be as follows:

Eligibility : 10th pass under 10+2 system .

Batch size : 96 trainees 16 in each module (20% supernumeraries be allowed to take care of drop outs as already exist under CTS)

Admission:

For basic training, admissions are to be made in August / Feb each year.

Fee Structure:

Fee Structure may be decided by States Govt. in consultation with IMCs . It may be desirable to prescribe a uniform tuition fee for a sector in all Centers of Excellence of a state.

Space: Since workshop/theory class rooms are envisaged to be accommodated in the existing building of the ITI, therefore, following norms are prescribed only for new infrastructure is to be created .

- (1) Workshop space of 70 Sqm. for each basic module from TPT Module-2 to Module-6 may be provided. For TPT-1 Workshop space of 90 Sqm may be provided.
- (2) Three Theory classrooms of 30 Sqm. each.
(Some flexibility i.e. from 70 - 60 Sqm. area for workshop and 20-30 Sqm. area for class room area is proposed to be provided)

Classrooms Infrastructure:-

The Theory classrooms should have latest infrastructure including AV aids as per details given below:

1. Suitable Chairs/ tables -	As required
2. OHP/Epidiascope -	1 No.
3. Laptop computer/PC (latest) & LCD projector -	1 No.
4. Magnetic white board -	1 No.
5. White board -	1 No.
6. Flip chart -	1 No.
7. Storage Almirah -	As required

(Optimum utilization of space/flexibility may be kept in view)

(Keeping in view the constraints of funds under the scheme, it is proposed to procure only one set of Laptop computer/PC / LCD projector for CoE. However, States if so desire may procure additional Laptop computer/PC/LCD projector from their funds) While selecting furniture, it should be kept in mind that these are meant for Centers of Excellence. Criteria like maximum flexibility/utilization of space should be kept in view.

Office Equipment:

For each CoE one Scanner, one Photocopy Machine and one PC/printer along with suitable accessories/furniture and internet connection (if not already available in the institute) is proposed to be provided for each CoE, in addition to the equipment prescribed in the syllabus.

While planning for addition /alteration/Construction of workshop and Class rooms, following may be kept in view:

- Concept of a Centre of Excellence
- The fact that the requirement of funds for construction /addition /alteration for advanced training will be higher than that of basic training.

Publicity:-

Wide publicity & advertisement be given for better response. The role of the local as well as the concerned Industry is very vital for the success of this program.

States may consider providing additional equipment/ other facilities like separate Library/upgradation of existing Library, Conference Hall/ Committee Room etc. from their own funds.

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Up gradation of ITI s into Centers of Excellence (CoE)

SECTOR – TEXTILE PROCESSING AND TECHNOLOGY

BROAD BASED BASIC TRAINING

(One year)

SN	Module No.	Name of the Module	Duration in Weeks
1	TPT Basic Module -01	Basic Fittings and measurements	8 weeks
2	TPT Basic Module -02	Basic Electrical , Electronics and Computer operations	8 weeks
3	TPT Basic Module -03	Basics of Spinning	8 weeks
4	TPT Basic Module -04	Basics of Weaving	8 weeks
5	TPT Basic Module -05	Basics of Bleaching & finishing	8 weeks
6	TPT Basic Module -06	Chemistry of Dyeing	8 weeks
COMMON SUBJECTS			
7	TPT Basic Module -07	WORKSHOP CALCULATION & SCIENCE	2 Hrs/ week for 48 weeks
8	TPT Basic Module -08	ENGINEERING DRAWING	2 Hrs/ week for 48 weeks
9	TPT Generic Module -01	ENTREPRENEURSHIP	2 Hrs/ week for 48 weeks

SECTOR – TEXTILE PROCESSING AND TECHNOLOGY

BROAD BASED BASIC TRAINING BASIC MODULE – TPT –01

COURSE CONTENT -BASIC WORKSHOP PRACTICES AND MEASUREMENTS

(Duration - 8 weeks)

Week No	Practical	Theory
1	Physical introduction to measuring instruments – handling of instruments – exercises in the use of Linear measuring instruments such as Steel rule of different ranges. Outside calipers, inside calipers for measuring inside, outside parameters. Vernier calipers - Least count , exercise in outside measurement, inside measurements, depth gauge.	Introduction to Metrology, Objectives of Metrology Measurements principles - methods of measurement. Terminology used in Metrology - Accuracy - Repeatability - Resolution etc. SI units of measurements – physical quantities under SI system
2	Measurement of flat rectangular objects , cylindrical objects, hollow components, threaded components Exercises on external & internal measurements using Micrometers and Height gauges	Selection of measuring instruments, care, use and maintenance of measuring instruments – Handling of precision instruments – Vernier Caliper, Micrometer, Height Gauge, Dial Gauge (Plunger and bevel type) with stand (0.01 mm Resolution), checking squareness using combination set.
3	Introduction to safety including fire equipments and their uses. Familiarize with Fitter’s hand tools Filing a flat surface of Mild steel and cast iron. Check for flatness, straightness and squareness	Manufacturing processes in brief. Outline of various subjects to be covered. Introduction to hand tools and their safety. Environmental Factors and Personal Safety
4	Simple blue print reading Mark out according to simple blue print, Punching, Hack sawing to dimension	Marking and punching tools and their uses, Hacksaw – types, specification and their uses.
5	Filing flat and square to size to an accuracy of $\pm 0.1\text{mm}$, Marking and punching of stepped and angular components and finishing the part to the required shape and size to an accuracy of $\pm 0.1\text{mm}$, Exercise on angular measurement using combination set & Vernier Bevel protector	Classification and specification of files, shapes, sizes & grades. Bench vice - constructional details Selection criteria of files Vernier Bevel Protector-reading and use. Use of thread gauge & screw thread micrometer.

6	Center drilling, drilling, reaming, counter sinking, counter boring and tapping for various sizes of mild steel and tapping on various sizes of mild steel material	Drilling machine - Types - Drilling operation - Drill bits. Reamers – types, care and maintenance
7	Fitting exercises – simple to complex (Involving drilling, tapping, reaming, counter sinking, counter boring and slide fitting.)	Taps and Dies – Description, care and maintenance. Lubrication for tapping. Determination of drill size for tapping. Selection of Spindle RPM for drilling. Tool holding and work holding devices Types of Fasteners Standard size of threads, types. Applications of adhesives, Metal, Shellac etc.
8	Manufacturing of different components individually and assembling with fasteners	Limits and fits according to IS: 919

TOOLS, MACHINERY, EQUIPMENTS etc. for a batch of 16 trainees

Sl. No	Item	Qty
01	Steel rule 30 cm graduated both in English & Metric units	17 Nos.
02	Outside spring caliper 150 mm	17 Nos.
03	Inside spring caliper 150 mm	17 Nos.
04	Hermaphrodite caliper 150 mm	17 Nos.
05	Divider spring 150 mm	17 Nos.
06	Centre punch 100 mm	17 Nos.
07	Hammer B.P. 0.5 kg	17 Nos.
08	Combination plier 150mm	17 Nos.
09	Safety glasses	17 Nos
10	File flat bastard 300mm	17 Nos
11	File flat 2 nd cut 250 mm	17 Nos.
12	Engineers screw driver	17 Nos.
13	File flat smooth 200 mm	17 Nos
14	Cold chisel flat 25 x 200 mm	17 Nos.

Tools, Instruments and General Shop Out fits:

Sl.No	Item	Qty
1.	Granite Surface plate 1000mm x 630 mm grade 1	4Nos
2.	Metal stand Table for surface plate 900 x 900 x 1200mm	4Nos
3.	Screw Driver Set (multi heads)	1Set
4.	Scribing block universal 300mm	2Nos
5.	Vee Block universal 300mm	2Nos
6.	Try square 150 mm	2Nos
7.	Outside spring caliper 200 mm	2Nos
8.	Divider spring 200mm	2Nos
9.	Inside spring caliper 200mm	2Nos
10.	Straight edge steel 1 meter	1No
11.	Straight edge steel 500 mm	1No
12.	Steel tape 2 meter in case	1No
13.	Spirit level 2V 250, 05 meter	1 No
14.	Hammer B.P. 800 gms with handle	6 Nos.
15.	Screw driver, heavy duty 300mm with handle	4 Nos.
16.	Hammer lead 1 Kg	2 Nos
17.	Combination set 300mm	2Nos
18.	Spindle blade screw driver 100mm	2
19.	Allen hexagonal keys 2.5 to 12	2 sets

20.	Spanner D.E.C.P. series 2(7 pcs. each)	6setsof
21.	Adjustable spanner 12 Nos	3 Nos.
22.	Reduction sleeve MT as required	1Set
23.	Angle plate size 200 x 100 x 200mm	2 Nos.
24.	Angle plate adjustable 250 x 150 x 175	2 Nos.
25.	Solid parallels in pairs (Different sizes) in Metric	12 pairs
26.	Oil can pressure feed 500 mg	6 Nos.
27.	Oil stone 150 x 50 x 25 mm	2 Nos.
28.	Twist drills 3mm to 13mm (Parallel Shank)	1 set
29.	Drill chuck 0 -20 with taper shank	1 No.
30.	Centre drill A1 to 5	2 sets
31.	Grinding wheel dresser (star type)	1No.
32.	Clamps C 100mm	2 Nos.
33.	Clamps C 200mm	2 Nos.
34.	Tap and die set in box metric pitch	1 set
35.	Drill HSS taper shank	1 set
36.	File flat 2 nd cut 250 mm	4 Nos.
37.	File flat smooth 200mm	4 Nos.
38.	File H/R 2 nd cut 250 mm	4 Nos
39.	File triangular smooth 200mm	4 Nos.
40.	Needle file set	1 No.
41.	File square 2 nd cut 250mm	4 Nos.
42.	Reamer 6 mm to 13mm by 1 mm	1 set
43.	Hacksaw adjustable 250 – 300 mm with blades	8 Nos.
44.	Hand vice 50 mm jaw	2 Nos.
45.	Magnifying glass 75 mm	2 Nos.

Measuring Instruments :

Sl. No	Item	Qty
1	Micrometer outside 0-25 mm	4 Nos.
2	Micrometer outside 25 – 50mm	4 Nos
3	Micrometer outside 50 – 75mm	2 No
4	Micrometer depth gauge 0-150mm	8Nos
5	Direct reading Vernier caliper 0 to 300	4 Nos
6	Vernier height gauge 250 mm	1 No
7	Vernier bevel protractor with least count of 5 minutes	1 No.
8	Dial Gauge	4 Nos
9	Lever Type dial gauge	4 Nos
10	Dial gauge stand	4 Nos
11	Screw pitch gauge for metric pitches (0.5 to 7 mm)	2 sets

12	Radius gauge metric set (1-6mm)	1 set
13	Feeler gauge	1 No.

General installation:

1	Sensitive Drilling machine pillar 12mm capacity with accessories	2 No
2	Radial drill 1200mm motorized with tapping attachment	1 No.
3	Drilling machine pillar 20mm capacity with accessories	1 No
4	Pedestal grinder	1 No
5	Hand Drilling Machine Power (10 mm)	1 no

Workshop furniture:

Sl. No.	Workshop furniture	Qty
1	Suitable Work Tables with vices	As required
2	Stools	17 Nos
3	Discussion Table	1 No
4	Tool Cabinet	2 Nos
5	Trainees locker	2 Nos
6	Fire fighting equipment, first aid box etc	As required
7	Book shelf (glass panel)	1 No.
8	Storage Rack	As required
9	Storage shelf	As required

SECTOR – TEXTILE PROCESSING AND TECHNOLOGY

BROAD BASED BASIC TRAINING MODULE – TPT- 02

COURSE CONTENT - BASICS ELECTRICAL ELECTRONICS & COMPUTER SKILLS (DURATION : 8 Weeks)

Week No.	Practical	Theory
1	<ul style="list-style-type: none"> -Demonstration of use of Safety equipments and artificial respiration. -Use of hand tools. Joining Practice with single and multi-stand conductors of different wires. -Joining practice of bare conductors - Soldering Practice on Printed circuit boards - Demonstration & practice on soldering the Aluminum conductor, cable joints. Use of Aluminum flux and Alca 'P' solder. Demonstration and practice of crimping of various wires 	<ul style="list-style-type: none"> -Importance of Safety- Description, specification, general care & maintenance of common hand tools -Wires & cables - conductors, Insulators & semiconductors - their shapes, sizes with respect to low, medium & high voltage -Soldering Printed circuit boards & its uses - Different fluxes for different purposes on metals- Crimping equipment - Joining of conductors by soldering -Importance of Preventive Maintenance and routine tests - Earthing and its importance.
2	<ul style="list-style-type: none"> -Making of a simple circuit with a lamp and battery -Study and use of Multi meters - measurement of current, voltage, resistance in DC / AC circuits -Demonstration & verification of ohm's law - Series circuits - Parallel circuits -Demonstration & Practice on connecting & replacement of common electrical accessories in circuits – Use of tong tester and megger.. 	<ul style="list-style-type: none"> -Resistance, Voltage, Current, open circuit and short circuits- Ohm's law - Voltage drop - series & parallel circuits - Power & energy relations - Electrical measuring Instruments – Multi-meters -Common electrical accessories used in Industries - Bus-bars, Relays, Contactors, Circuit Breakers, etc.. -Fuses and its ratings – materials used
3	<ul style="list-style-type: none"> - Simple wiring practice with distribution boards, Junction Boxes, Main Switches two way and intermediate Switches. - Identification of different parts of DC generators- testing and measuring the field and Armature resistances - Identification of different parts of AC Motors - Testing and measurement on Induction motors - Demonstration on Alternators . -Identification and testing of transformers. - Grouping & testing of cells for a 	<ul style="list-style-type: none"> - Induction principles - Electro-magnetism - Faraday's Laws -Single phase & Poly phase system 3 phase star-delta connections, Impedance & power factor – -Principles & Applications of DC Motors , Series, Shunt & compound motor – AC Motors -Transformers & its applications -Chemical effect of electric current - Rechargeable batteries - Care & maintenance of cells -AC Motor starting with DOL Starter and

	specified voltage & current - Preparation of battery charging .	Star - Delta Starter
4	-Identification of different type of capacitors - Testing of capacitors - Identification and Testing of assorted diodes, PNP/NPN Transistors - Uni - junction Transistor, Field effect Transistor & Silicon Controlled Rectifier ICs etc. - Demonstration on Rectifiers - Identification of ICs	-Static Electricity - Capacitors & its applications -Fundamentals of a electron theory - semiconductor devices - Symbols - specifications - Diodes, Transistors, Uni-junction Transistor, Field effect Transistor Silicon Controlled Rectifier & ICs. -Half wave, full wave & Bridge rectifier with filters, DC Power supply
5	-Bootting The Computer , Opening Windows Menus, using the mouse, refresh computer desktop using right click of the mouse, create a directory in xp and linux, format a floppy, create a file using notepad, save the file in Floppy, copy the file into hard disk, copy a file from hard disk to floppy, create a directory in floppy, create a directory in hard disk, use my documents, use start menu for opening an application, to open a document recently written, change control panel settings for display, change the volume name of the hard disks using system properties., Familiarize with Keyboard and Keys.	-Introduction To Computer Fundamentals And Its Parts, Familiarizing With Disk Drives, Booting Of A Computer System, Using The Mouse, Right Click, Left Click And Use Of Operating Systems Like Windows XP, Linux , Menu System, Tool Bars, File Structures, Directories, Moving And Copying A File From Floppy To Hard Disk, Hard Disk To Floppy Disk, Creating Directories. Formatting Floppy Disk.
6	Techniques of Changing desktop wall paper, changing Desktop Screen properties, Control Panel , User Accounts, customizing icons, writing a sample text using Notepad, Using Paint for drawing figures to get accustomed with mouse. Saving a file. Using Windows Explorer, Install a software, Remove a Software, Add new hardware to the system (like a Printer, Change the system date and Time, changing the Regional Settings of the system like country, Currency , Date Format , Using Start Menu, Creating Desktop Short Cuts	Use of desktop , control panel settings, Explorer, regional settings, creating shortcuts, Use of Simple applications like Paint, Notepad,
7	Open internet explorer, change the settings in IE, customize Internet Explorer for default applications, enable cookies, change the security settings, setup an internet connection, user ID	Study of Internet Explorer, Modem, Settings in the IE and Modem, Dial Up and Broadband connections, Outlook Express, Viewing Email from the web site and Outlook Express, Creating email

	<p>and password saving in the computer for future usage, setup outlook express for an e-mail account, setup server authentication settings, receive and send emails from the account. Search using Yahoo and Google for certain topics, download a file from the internet, save the downloaded file. Set up the net meeting using MSN or Yahoo Messenger.</p>	<p>Accounts, using search engines, Video conferencing, MS Chat</p>
8	<p>Open MS WORD, Create a new file, Save a file, open an existing file, Save as a text file, type a paragraph , Set for left and right margins, change the letters from upper to lower case, vice versa, cut a paragraph, copy a paragraph, setup tab positions, set hanging indents, draw a simple table, insert rows, insert columns, erase rows, erase columns, search the document for spelling corrections, print the letter in a printer attached, in portrait and landscape.</p> <p>- Open Excel, and workout the following to understand the theory commands – Prepare a salary bill for ABC organization with Column A for names, column B for Basic Salary, Column C for DA, Column D for addition of B & C to get the full salary. Add the Column D into a new cell as TOTAL amount - Copy the sheet into sheet 2. Sort the sheet 1 as per names. Sort the sheet 2 as per Total salary - Insert two rows in sheet1. Merge these rows. Enter heading as Salary Bill. Use border and shading for the entire used column - Print the sheet using set print area with margins, and use scale factor for reduction and enlargement. Use portrait and Landscape.</p>	<p>Creating sample documents using MS WORD. Text wrapping, Text Formatting, Changing Letters to different case, drawing table, Mail Merging, Page formatting, Using different Font Types, Printing a document</p> <p>- Using Excel as spread Sheet, Familiarizing with Cells, Formulae, Text , Numbers, and date, Using shortcuts for entering date and Numbers in Progressive cells, Copying Formulae, Text and Numbers, Using borders, Merging Cells, Unmerging, Changing Cell width, Row height, Printing an area of the sheet, Options of Printing like fit to paper, shrinking, etc , Using different Sheets in a work book, changing Colour of cells, fonts, text</p>

List of Tools for a batch of 16 trainees

Sl. No	Name of tool	Qty
1	Combination Pliers 200mm insulated.	17 Nos.
2	Screw Driver 100mm200mm	17 Nos.
3	Neon Tester 500V Pencil bit type.	17 Nos.
4	Electrician Knife	17 Nos.
5	Hammer ball pein 0.25 kg	17 Nos.
6	File round 150mm	17 Nos.
7	Pliers side cutting 200mm	4 Nos.
8	Pliers round nose 200mm	4 Nos.
9	Pliers flat nose 150mm	4 Nos.
10	Pliers long nose 200mm	4 Nos.
11	Firmer chisel 25mm	4 Nos.
12	Hammer ball pein 1.0kg.	1 No.
13	Wall jumper octagonal 37mmx455mm	1 No.
14	Center punch 100mm	1 No.
15	Steel measuring tape 20mts.	1 No.
16	Allen Keys	1 Set.
17	Spanner double ended set of 6	2 Sets
18	Adjustable spanner	1 No.
19	Steel rule 300mm	4 Nos.
20	Electric soldering iron 35W	4 Nos.
21	Electric soldering iron 125W	2 Nos.
22	Rubber gloves 5000W	2 pairs
23	Multimeter 0-5, 100, 200, 500 mill amperes 0-100-1000-10000 ohms 0-150, 300, 600V AC/DC	2 Nos.
24	Bar magnet	1 No.
25	Horse shoe magnet	1 NO.
26	Electric Drill Machine 6mm capacity universal type 250V	1 No.
27	D.C. shunt motor 1HP, 250V (Laboratory type)	2 Nos.
28	Universal motor 750W AC/DC 250V	2 Nos.
29	Squirrel cage induction motor 1 HP 230V with DOL Starter.	1 No.
30	Transformer single phase 500ma./250/12V	4 Nos.
31	L.F oscilloscope with Alternuation probes.	1 No.
32	Star Delta starter (contact type 8 points)	1 No.
33	Tony Tester	1 No.
34	Meggar	1 No.
35	DC Power Supply 0V-110V/5A	1 No.
36	Auto-transformer-variatic 230V	1 No.
37	Tweezers	16 Nos.
38	Crimping tools.	1 set.

GENERAL INSTALLATION

Sl. No	Item	Qty
	PENTIUM IV COMPUTER or latest WITH 512 MB RAM WITH FOLLOWING ACCESSORIES - DVD COMBO DRIVE WITH THE LATEST X VERSION, HARD DISK WITH 80 GB OR ABOVE, 17" MONITOR , AGP GRAPHICS CARD WITH 64 MB, 10/100 ETHERNET CARD, MODEM	9 NO
	CENTRALIZED UPS WITH 5KVA CAPACITY	1 NO
	LASER PRINTER	1 NO
	DOT MATRIX PRINTER	1 NO
	WINDOWS XP OPERATING SYSTEM	09 NO
	MS – OFFICE 2000	09 NO

Workshop furniture:

Sl. No.	Workshop furniture	Qty
1	Suitable Work Tables with vices	As required
2	Stools	17 Nos
3	Discussion Table	1 No
4	Tool Cabinet	2 Nos
5	Trainees locker	2 Nos
6	Fire fighting equipment, first aid box etc	As required
7	Book shelf (glass panel)	1 No.
8	Storage Rack	As required
9	Storage shelf	As required

SECTOR – TEXTILE PROCESSING AND TECHNOLOGY

BROAD BASED BASIC TRAINING MODULE – TPT – 03

COURSE CONTENT : BASIC OF SPINNING(DURATION : 8 Weeks)

Week No	Theory	Practical
1	Orientation of Textile Sector: Orientation to Textile sectors, Overview of Textile industry-History, Scope & further Prospects, Strengths and weakness of Industry	Familiarization to Textile machines – Industrial Visit to Spinning.
2	Orientation of Fibers: Definition of Textile Fibers., Classification of fibers w.r.t Origin –natural, synthetics and regenerated types	Collection of various fiber samples and methods of identification.
3	Blow Room: Opening and cleaning machines, step cleaner , Axi flow cleaner, Mono cylinder, RM cleaner, Porcupine opener, 3 bladed beaters, Kishner beater, Salient features of Mixer and bale pluckers	Sketching of various gears , bevels, belts, bearing & Various Tool-Kits, Belts and rope drivers, Sped ratio, limiting ratio of tensions, centrifugal tension condition maximum power transmission and speed.
4	Carding Department: Introduction to carding , Functions of carding Machine , passage of material through carding M/x. Wire specifications for processing cotton synthetics and blends, Heel and toe mechanism waster control, Effects of lick cylinder , flat and doffer speed on web quality.	Manufacturing of carding machine, various models, passage of material through carding machine. Various parts of carding machine, Wire specification for processing cotton, synthetic and blends, Heel and toe mechanism, waste control Effects of licker in, cylinder, flat and doffer speed on web quality.
5	Draw frame: Introduction to draw frame, functions of various parts, material passage, Gearing diagram of machine. Machine speed particulars	Functions of various parts, material passage. Gearing diagram of the machine.
6	Simplex : Introduction to simplex, functions of various parts of machines , passage of material , stop motion switches , motor plate alignment , setting of belt cots buffing , inching motion , creel guides roller checkup and oiling , photo sensor setting	Function of various parts of the simplex machine, material passage , stop motion switches , motor plate alignment, setting of belt cots buffing, inching motion, creel guides roller checkup and oiling, photo sensor setting
7	Ring frame: Introduction to ring frames, Functions of various parts of the machine. Design of roller stand, bobbing bolder, top rollers ball bearing , needle bearing , cots and apron specifications , drafting system , Lappet , balloon control rings, separator Ring rail movement ad Travelers profile matching , High speed travelers	Functions of various types of machines, maintenance schedule of ring frames. Headstock overhauling, draft gauge (centering), Ring rail leveling, drafting roller settings, bottom roller, top arm pressure gauge & Saddle gauge, spindle : Inserts, Bolsters, High-speed spindles, spindle drivers

8	<p>Winding : Introduction to winding function of various parts of the machine, yarn clearing system & its setting Two for One twister (TFO) Introduction of two for one twister, function of various parts.</p> <p>Quality Assurance: Concept of quality control and assurance. Introduction to ISO 9001, 2000 , ISO 14000 and SC 8000 OHSAS 18001 systems.</p>	<p>Model of various winding machines, functions of various parts of the machine. Maintenance schedule of the winding machines.</p> <p>Head stock overhauling, transverse motion winding drum, twisting assembly, spindle oiling and tension adjustments.</p> <p>Familiarization of QA systems, Industrial visits to companies having ISO 9000 certification.</p>
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List of Tools for a batch of 16 trainees

Sl. No	Name of tool	Qty
01	Combination pliers 200mm insulated	17 Nos.
02	Screw driver 200 mm	17 Nos.
03	Screw driver 100 mm	17 Nos.
04	Terminal screw driver	17 Nos.
05	Hammer ball pein (0.25 kg)	17 Nos.
06	Try square (200 mm)	17 Nos.
07	File round half 2 nd cut 250 mm	17 Nos.
08	File round 150 mm	17 Nos.
09	Plumb bob 115 gms	17 Nos
10	Bar wood mallet 1 kg (75 mm X 150 mm)	17 Nos
11	Knife	17 Nos.
12	Wood rasp file 250 mm	17 Nos.
13	Firmer chisel 12 mm	17 Nos
14	Firmer Chisel 6 mm	17 Nos.
15	Neon tester	17 Nos.
16	Tenon saw 250 mm	17 Nos.
17	File flat 25 cm 2 nd cut	17 Nos.
18	File flat 25 cm smooth	17 Nos.
19	Steel rule 300 mm to read metric	17 Nos.
20	Test lamp	17 Nos.
21	Circlip opener	17 Nos.
22	Continuity tester	17 Nos.
23	Glouse	17 Nos
24	Insulating Tape	17 Nos
25	Electric soldering Iron	17 Nos.

List of Shop General Outfit for 16 trainees

Sl. No	Name of tool	Qty
01	Pliers side cutting 200 mm	17 Nos.
02	Pliers flat nose 150 mm	17 Nos.
03	Pliers round nose	17 Nos.
04	Pliers long nose	17 Nos.
05	Screw driver heavy duty 250 mm	17 Nos.
06	Screw driver 7 mm X 300 mm square blade	17 Nos.
07	Firmer chisel 25 mm	17 Nos.
08	Firmer Chisel 10 mm	17 Nos.
09	Marking Gauge	17 Nos.
10	Combination bevel Protector	17 Nos.

11	Cold chisel Flat 25 x 200 mm	17 Nos.
12	Cold chisel Flat 18 x 200 mm	17 Nos.
13	Hammer Ball pein 0.5 kg	17 Nos.
14	Hammer Ball pein 0.75 kg	17 Nos.
15	Hammer Ball pein 1.00 kg	17 Nos.
16	Hammer Cross pein 0.5 kg	17 Nos.
17	Wall jumper octagonal 37 mm x 240 mm, 37 mm x 600 mm	17 Nos.
18	Centre Flat 300 rough	17 Nos.
19	Centre Flat 2 nd cut	17 Nos.
20	Centre Flat 250 bastard	17 Nos.
21	Centre Flat 250 mm smooth	17 Nos.
22	Centre half round 300 mm 2 nd cut	17 Nos.
23	File Triangular 150 mm 2 nd cut	17 Nos.
24	File triangular 150 mm 2 nd cut	17 Nos.
25	Spanner double ended set of 6	17 sets
26	Adjustable spanner 350 mm	17 sets
27	Foot Print grip 250 mm	17 sets
28	Allen Keys (metric & Inches)	17 sets
29	Steel rule 300 mm	17 Nos.
30	Steel measuring tape (2 m)	05 Nos.
31	Steel measuring Tape (20 m)	05 Nos.
32	Hacksaw from adjustable 200 mm to 300 mm	17 Nos.
33	Sprit lever 300 mm	17 Nos.
34	Bench vice 150 mm	17 Nos.
35	Bench vice 100	17 Nos.
36	Pipe wrench	17 Nos.
37	Spanner (up to 32 mm)	17 Nos.
38	Vernier caliper different sizes	05 Nos.
39	Ring spanner	17 Nos.
40	12 " grip Pliers	17 Nos.
41	Inner caliper	05 Nos.
42	Outside caliper	05Nos.
43	Box Spanner	17 Nos.
44	Torque spanner	05 Nos.
45	File Swiss type needle set	5 Nos.
46	Shore hardness tester	1 No.
47	Needle file	3 sets
48	Nylon hammer	5 Nos
49	Puller 2 arm. 3 arm	3 each
50	Copper tube cutter	3 Nos.
51	Ratchet bit 6 mm capacity	5 Nos.
52	Ratchet bit 4 mm and 6 mm	5 Nos.
53	Vernier caliper 200 mm (ordinary)	5 Nos.
54	Snip	5 Nos.
55	Conduit pipe die set	5 Nos.

Spinning Machinery

S.No	Machinery	Required
1	Blow room (Miniature)	1
2	Carding (Miniature)	2
3	Draw Frame (Miniature)	3
4	Simplex (Miniature)	4
5	Ring frame	5
6	TFO (Miniature)	6

Workshop furniture:

Sl. No.	Workshop furniture	Qty
1	Suitable Work Tables with vices	As required
2	Stools	17 Nos
3	Discussion Table	1 No
4	Tool Cabinet	2 Nos
5	Trainees locker	2 Nos
6	Fire fighting equipment, first aid box etc	As required
7	Book shelf (glass panel)	1 No.
8	Storage Rack	As required
9	Storage shelf	As required

SECTOR – TEXTILE PROCESSING AND TECHNOLOGY

BROAD BASED BASIC TRAINING MODULE – TPT– 04

: COURSE CONTENT -BASICS OF WEAVING

(DURATION : 8 Weeks)

WEEK	PRACTICAL	THEORY
1	Weaving Preparatory: Process Flow from yarn to Fabric for cotton, blended Synthetic yarns, types and Sizes of yarn package-Warp Winding, Warping, Sizing & Beaming etc. Warp winding: Principle	Familiarization to Weaving, Preparatory Machines-Industrial visit to see warp Winding, warping, sizing & Beaming, Gaiting & Pirn Winding Machine. Calculation of different Important parameter of Preparatory machines. Winding & wind, wind per Double traverse setting Length & diameter setting.
2	Warping: Parts and functions, creeling System, Drive system, difference between direct and Sectional warping, beaming Mechanism, maintenance Schedule, machine related Technical data. Pirn winding: Introduction	Gearing arrangement, Passage of yarn, over head Blower, type of creel, stop, Motion function, tension Bar arrangement, types of Drive, direct and indirect- Direction control valve, Pneumatic and hydraulic-Type of brake and length, Measuring method-speed Control method-doffing ,System-maintenance Schedules etc. Calculation of different important Parameter of winding,
3	Sizing and Beaming Machine: Parts and function-types of Machines types of speed Regulator. PIV, regulator and Variator. Pressure gauges, Safety valves, pneumatic; and Hydraulic loading devices, Creel changing mechanism, Function of steam trap and Rotary joint, direction control Valves and gate valves, Hydraulic and pneumatic Cylinders.	Control valves (direction Control valves and gate Valves) servicing-Hydraulic and pneumatic Cylinder arrangement Service-PIV, regulator And variator servicing, Lubrication and Maintenance schedules. Calculation of different Parameter related with Production and others, Creel marking length, Length measurement System etc; Friction drive Arrangement, sizing roller And beam roller surfaceSpeed, etc. Factors affecting production and Efficiency of the said M/cs.
4	Expression of Reed/ Heald Count Methods, different Popular reed count System, Stockport Bradford Types of Heald and heald wire Loom Gaiting & Knotting :	Observation of Reed/ dents Dent spacing. Formation of Knots- Manually and Using Knotters, knotting machine working principle, needle specification. Auto drawing machine – working principle Fabric Formation:

	Drawing –in & tying. Types Of pinning machines- Manual, automatic and Universal Tying-in machines Designing of Basic Weaves: Plain. Twill, and Satin/ Sateen, derivative of Twills, etc.	Principle ,classification of Looms- Handloom, Non- Automatic and automatic Power loom, Shuttles looms: Advantages of automatic Shuttle and shuttle loom- Salient features of automatic Shuttle and shuttles looms, Etc.
5	Plain Loom: Objectives, Parts and Functions, gearing, diagram, Tappet changing and fitting Various mechanism, Loom drive: Crank shaft, bottom shaft And auxiliary shaft and Driving Diagram. Dobby: Objectives Parts and Functions, Jacquard: Functions-types of Jacquards.	Primary and Secondary motions timing with reference to slay position –setting of picks per inch-Setting of proper shedding- Changing of tappets for shedding – operating the Loom – lubrication – attending warp and weft break. Picking force and timing setting and turning. Study and analyze timing Diagram of various types looms and it effect on fabric quality, productivity and efficiency etc.
6	Projectile Loom: Introduction –main features-Advantages Rapier Loom: Introduction-main features– Advantages Air-jet Loom-Introduction-main features-advantages	Trace Driving diagram for Various looms and calculation of loom speed, adjustment of picking force, eccentricity of loom etc. Knife setting – selector pin setting –return spring boxes-shed setting, Lubrication, schedule etc Calculation, i.e. production, Efficiencies, etc.
7	Power Loom Introduction - main features –Advantages	Card punching –synchronizing with loom-lift setting of jacquard-cam Throw setting-harness setting and trying-lubrication. Pirn alignment and firmness In shuttle-picking force and Timing-shuttle checking in Shuttle box-belt fork setting Loom brake function-warp Protector motion function-anti crack motion-reed alignment and firmness-loom parts lubrication-shuttle box, swell setting –picker centering-reed Alignment and angle-race board alignment-warp protection. Motion-slay check and repair.
8	Quality Assurance: Concepts of quality, control And Assurance. Introduction to ISO 9001-2000, ISO 14001-2004 & SA 8000 systems, OHSAS-18001-1999.	Familiarization to QA Systems:Visit to companies, which have ISO 9000 certification.

List of Tools for a batch of 16 trainees

Sl. No	Name of tool	Qty
01	Combination pliers 200mm insulated	17 Nos.
02	Screw driver 200 mm	17 Nos.
03	Screw driver 100 mm	17 Nos.
04	Terminal screw driver	17 Nos.
05	Hammer ball pein (0.25 kg)	17 Nos.
06	Try square (200 mm)	17 Nos.
07	File round half 2 nd cut 250 mm	17 Nos.
08	File round 150 mm	17 Nos.
09	Plumb bob 115 gms	17 Nos
10	Bar wood mallet 1 kg (75 mm X 150 mm)	17 Nos
11	Knife	17 Nos.
12	Wood rasp file 250 mm	17 Nos.
13	Firmer chisel 12 mm	17 Nos
14	Firmer Chisel 6 mm	17 Nos.
15	Neon tester	17 Nos.
16	Tenon saw 250 mm	17 Nos.
17	File flat 25 cm 2 nd cut	17 Nos.
18	File flat 25 cm smooth	17 Nos.
19	Steel rule 300 mm to read metric	17 Nos.
20	Test lamp	17 Nos.
21	Circlip opener	17 Nos.
22	Continuity tester	17 Nos.
23	Glouse	17 Nos
24	Insulating Tape	17 Nos
25	Electric soldering Iron	17 Nos.

List of Shop General Outfit for 16 trainees

Sl No	Name of tool	Qty
01	Pliers side cutting 200 mm	17 Nos.
02	Pliers flat nose 150 mm	17 Nos.
03	Pliers round nose	17 Nos.
04	Pliers long nose	17 Nos.
05	Screw driver heavy duty 250 mm	17 Nos.
06	Screw driver 7 mm X 300 mm square blade	17 Nos.
07	Firmer chisel 25 mm	17 Nos.
08	Firmer Chisel 10 mm	17 Nos.
09	Marking Gauge	17 Nos.
10	Combination bevel Protector	17 Nos.

11	Cold chisel Flat 25 x 200 mm	17 Nos.
12	Cold chisel Flat 18 x 200 mm	17 Nos.
13	Hammer Ball pein 0.5 kg	17 Nos.
14	Hammer Ball pein 0.75 kg	17 Nos.
15	Hammer Ball pein 1.00 kg	17 Nos.
16	Hammer Cross pein 0.5 kg	17 Nos.
17	Wall jumper octagonal 37 mm x 240 mm , 37 mm x 600 mm	17 Nos.
18	Center Flat 300 rough	17 Nos.
19	Center Flat 2 nd cut	17 Nos.
20	Center Flat 250 bastard	17 Nos.
21	Center Flat 250 mm smooth	17 Nos.
22	Center half round 300 mm 2 nd cut	17 Nos.
23	File Triangular 150 mm 2 nd cut	17 Nos.
24	File triangular 150 mm 2 nd cut	17 Nos.
25	Spanner double ended set of 6	17 sets
26	Adjustable spanner 350 mm	17 sets
27	Foot Print grip 250 mm	17 sets
28	Allen Keys (metric & Inches)	17 sets
29	Steel rule 300 mm	17 Nos.
30	Steel measuring tape (2 m)	05 Nos.
31	Steel measuring Tape (20 m)	05 Nos.
32	Hacksaw from adjustable 200 mm to 300 mm	17 Nos.
33	Sprit lever 300 mm	17 Nos.
34	Bench vice 150 mm	17 Nos.
35	Bench vice 100	17 Nos.
36	Pipe wrench	17 Nos.
37	Spanner (up to 32 mm)	17 Nos.
38	Vernier caliper different sizes	05 Nos.
39	Ring spanner	17 Nos.
40	12 " grip Pliers	17 Nos.
41	Inner caliper	05 Nos.
42	Outside caliper	05Nos.
43	Box Spanner	17 Nos.
44	Torque spanner	05 Nos.
45	File Swiss type needle set	5 Nos.
46	Shore hardness tester	1 No.
47	Needle file	3 sets
48	Nylon hammer	5 Nos
49	Puller 2 arm. 3 arm	3 each
50	Copper tube cutter	3 Nos.
51	Ratchet bit 6 mm capacity	5 Nos.
52	Ratchet bit 4 mm and 6 mm	5 Nos.
53	Vernier caliper 200 mm (ordinary)	5 Nos.
54	Snip	5 Nos.
55	Conduit pipe die set	5 Nos.
56	Tong Tester	2 Nos.

57	Ohm meter	2 Nos.
58	Grimpinhg tool (manual)	1 No.
59	Blow lamp	2 nos.
60	Multi meter	2 Nos.
61	Ladle	5 Nos.
62	Pipe vice 18"	2 Nos.

Weaving Machinery

S.No	Machinery	Required
1	Warp Winding Machine	1
2	Pirn Winder	1
3	Plaon loom with Dobby	1
4	Handloom with Jack & loom arrangement	1
5	Semi automatic Powe r Loom	1
6	Hand Knottier , Spicer etc.	1

Workshop furniture:

Sl. No.	Workshop furniture	Qty
1	Suitable Work Tables with vices	As required
2	Stools	17 Nos
3	Discussion Table	1 No
4	Tool Cabinet	2 Nos
5	Trainees locker	2 Nos
6	Fire fighting equipment, first aid box etc	As required
7	Book shelf (glass panel)	1 No.
8	Storage Rack	As required
9	Storage shelf	As required

SECTOR – TEXTILE TECHNOLOGY AND PROCESSING

BROAD BASED BASIC TRAINING MODULE – TPT - 05

: BASICS OF BLEACHING & FINISHING (DURATION : 8 Weeks)

COURSE CONTENT

Week No	Practical	Theory
1	Identification of different fibers, physical & Chemical methods in practice. Quantities analysis of fiber in blended yarn/fabrics (polyester /cotton etc)	Classification of Textile Fibers, description & properties of fibers, cotton , jute flax , silk, wool , nylon, polyester , acrylics & viscose –rayon's, identification of textile fibers & their blends. essential requirements for Textile fiber , physical chemical properties of test fiber.
2	Types of water & their specifications, hardness of water, there testing procedure, calculations for use of water and steam general Use of soft water for chemical processing.	Classification of soft and hard water , water softening , use of eater , steam & gases , Cycling & recycling of water and water conservation. Analysis of fresh water & effluents. introduction of effluents Treatment plants.
3	Bleaching using hypochlorite of cotton , peroxide bleaching methods of silk bad wool, use of optional whitening agents. Quantitative evaluation of bleaching agents ,.	Study of various chemicals and auxiliaries involved in bleaching process. Study of damages during bleaching , their method of detection by physical methods and their prevention, Study of different bleaching agents, use of optical brightening agents. Introduction , aim of mercerization . Importance of pH and stabilizer in peroxide bleaching.
4	Processing , bleaching of yarn and grey cloth in practice Whiteness Index , competitive study of cylinder and stenter drying	Introduction to bleaching methods of wool and silk , study of different types of washing machines. Concept of mechanical & Chemical degradation of cotton , wool and polyester
5	Desizing of cotton , Scouring of cotton and wool Determination of size % in cotton fabric, calculation of weight loss on scouring of cotton fabric.	Working principals of different types of bleaching /washing machinery. Principal purpose , classification and description
6	Degumming of silk .Preparation of starches and its applications of various concentrations on cotton .	Drying of textiles , different types of dryers introduction . , aim and importance of Textiles finishing , classifications of various types of finishes.

7	Measurements of whiteness . safety instructions for different chemicals and machines. To draws the line diagram of different finishing machines.	Desizing , scouring and bleaching of cotton .mercerization of cotton , shrink , proofing of cotton , purpose , principal and working of sanforzing of M/c , Zero – zero finish .
8	Washing of yarns / fabrics after resizing / scouring / bleaching using suitable washing machines , Drying of yarn and fabrics.	Practice in bleaching of different types of fibers . Semi permanent and permanent finishes –purpose , principal and method s for wash and wear , crease , resistance , durable press

List of Tools for a batch of 16 trainees

Sl. No	Name of tool	Qty
01	Combination pliers 200mm insulated	17 Nos.
02	Screw driver 200 mm	17 Nos.
03	Screw driver 100 mm	17 Nos.
04	Terminal screw driver	17 Nos.
05	Hammer ball pein (0.25 kg)	17 Nos.
06	Try square (200 mm)	17 Nos.
07	File round half 2 nd cut 250 mm	17 Nos.
08	File round 150 mm	17 Nos.
09	Plumb bob 115 gms	17 Nos
10	Bar wood mallet 1 kg (75 mm X 150 mm)	17 Nos
11	Knife	17 Nos.
12	Wood rasp file 250 mm	17 Nos.
13	Firmer chisel 12 mm	17 Nos
14	Firmer Chisel 6 mm	17 Nos.
15	Neon tester	17 Nos.
16	Tenon saw 250 mm	17 Nos.
17	File flat 25 cm 2 nd cut	17 Nos.
18	File flat 25 cm smooth	17 Nos.
19	Steel rule 300 mm to read metric	17 Nos.
20	Test lamp	17 Nos.
21	Circlip opener	17 Nos.
22	Continuity tester	17 Nos.
23	Glouse	17 Nos
24	Insulating Tape	17 Nos
25	Electric soldering Iron	17 Nos.

List of Shop General Outfit for 16 trainees

Sl. No	Name of tool	Qty
01	Pliers side cutting 200 mm	17 Nos.
02	Pliers flat nose 150 mm	17 Nos.
03	Pliers round nose	17 Nos.
04	Pliers long nose	17 Nos.
05	Screw driver heavy duty 250 mm	17 Nos.
06	Screw driver 7 mm X 300 mm square blade	17 Nos.
07	Firmer chisel 25 mm	17 Nos.
08	Firmer Chisel 10 mm	17 Nos.
09	Marking Gauge	17 Nos.

10	Combination bevel Protector	17 Nos.
11	Cold chisel Flat 25 x 200 mm	17 Nos.
12	Cold chisel Flat 18 x 200 mm	17 Nos.
13	Hammer Ball pein 0.5 kg	17 Nos.
14	Hammer Ball pein 0.75 kg	17 Nos.
15	Hammer Ball pein 1.00 kg	17 Nos.
16	Hammer Cross pein 0.5 kg	17 Nos.
17	Wall jumper octagonal 37 mm x 240 mm , 37 mm x 600 mm	17 Nos.
18	Centre Flat 300 rough	17 Nos.
19	Centre Flat 2 nd cut	17 Nos.
20	Centre Flat 250 bastard	17 Nos.
21	Centre Flat 250 mm smooth	17 Nos.
22	Centre half round 300 mm 2 nd cut	17 Nos.
23	File Triangular 150 mm 2 nd cut	17 Nos.
24	File triangular 150 mm 2 nd cut	17 Nos.
25	Spanner double ended set of 6	17 sets
26	Adjustable spanner 350 mm	17 sets
27	Foot Print grip 250 mm	17 sets
28	Allen Keys (metric & Inches)	17 sets
29	Steel rule 300 mm	17 Nos.
30	Steel measuring tape (2 m)	05 Nos.
31	Steel measuring Tape (20 m)	05 Nos.
32	Hacksaw from adjustable 200 mm to 300 mm	17 Nos.
33	Sprit lever 300 mm	17 Nos.
34	Bench vice 150 mm	17 Nos.
35	Bench vice 100	17 Nos.
36	Pipe wrench	17 Nos.
37	Spanner (up to 32 mm)	17 Nos.
38	Vernier caliper different sizes	05 Nos.
39	Ring spanner	17 Nos.
40	12 " grip Pliers	17 Nos.
41	Inner caliper	05 Nos.
42	Outside caliper	05Nos.
43	Box Spanner	17 Nos.
44	Torque spanner	05 Nos.
45	File Swiss type needle set	5 Nos.
46	Shore hardness tester	1 No.
47	Needle file	3 sets
48	Nylon hammer	5 Nos
49	Puller 2 arm. 3 arm	3 each
50	Copper tube cutter	3 Nos.
51	Ratchet bit 6 mm capacity	5 Nos.
52	Ratchet bit 4 mm and 6 mm	5 Nos.
53	Vernier caliper 200 mm (ordinary)	5 Nos.
54	Snip	5 Nos.
55	Conduit pipe die set	5 Nos.

BLEACHING & FINISHING Machinery
General Equipments

S.No	Name of machinery	Qty
1	Iron tanks for storing water (1200 mm x1200 mm x1200 mm)	1 No.
2	Thermometer 0-110 deg. C and 0-300 deg. C	3 Nos each
3	Electric water heater 45 lit	2 Nos.
4	Yarn reeling arrangements (Wrap reel)	2 Nos.
5	Kit box for keeping cloths /dyes	16 Nos.
6	Buckets	4 Nos.
7	Fire Extinguisher	6 Nos
8	Hydrometers	2 sets
9	Test tube holders	32nos
10	Test tubes	32 Nos
11	Brusher for cleaning apparatus	16 Nos
12	Plastic Bottles with nozzles	16 Nos
13	Glass Beakers	1 No
14	Computer with for colour matching software	

General installation

S.No	Name of machinery	Qty
1	Open bath Beaker dyeing M/C	01
2	Infra Red Dyeing M/c	01
3	Glass shaking M/C	01
4	Padding M/c	01
5	Laundrometre	

Workshop furniture:

Sl. No.	Workshop furniture	Qty
1	Suitable Work Tables with vices	As required
2	Stools	17 Nos
3	Discussion Table	1 No
4	Tool Cabinet	2 Nos
5	Trainees locker	2 Nos
6	Fire fighting equipment, first aid box etc	As required
7	Book shelf (glass panel)	1 No.
8	Storage Rack	As required
9	Storage shelf	As required

SECTOR – TEXTILE TECHNOLOGY AND PROCESSING

BROAD BASED BASIC TRAINING MODULE – TPT – 06

COURSE CONTENT CHEMISTRY OF DYEING (DURATION : 8 Weeks)

Week No	Practical	Theory
1	Familiarization with fabric and yarn dyeing machines - High Temperature, High Pressure dyeing M/c. - Soft Flow. - Jigger - padding Mangle.	Classifications of dyes, study of various dyes used for natural and man made fibers and their blends such as Direct , basics , sulphur vat, solubilised vat, Azoics. Introduction to natural /eco friendly dyes and their applications
2	Dyeing practice in laboratory by breaking dyeing process. Preparation of standard solution of (0.5 %, 1%, 3%) dyes. What is normality, gram per liter?	Mordant and Mineral colours, Aniline black and metal complex acid dyes, disperse dyes, pigment colours, reactive dyes.
3	Concept of dyeing , Types of dyeing and their applications and uses .Dyeing with direct , basic , sulphur , vat , solublised , vat , azoic and reactive types on cotton , jute and viscous, fast and Non fast dyes.	Trouble shooting in dyeing machines. Description and working of Beam/Jet , soft flow /semi continues and continuous dyeing Machine
4	Dyeing of cotton fabric using jigger machine and padding mangle with vat, reactive dyes and pigment colours etc,	Introduction to dyeing machines for loose fiber yarns and their uses. Study of various Textile auxiliaries, used in dyeing –wetting agents, anti foaming agents, carriers, dye fixing agents, after washing agents.
5	Dyeing of wool and acrylic. Differentiation between wool / acrylic. What is Bulkiness, Types of dyes used in wool / v properties of wool / acrylic.	Introduction to yarn hank dyeing and yarn package dyeing machines. Principal, properties and applications of basics dyes.
6	Stripping at/of dyeing , correction of dyeing defects etc Method of evaluation of colour fasteners by grey scale , international standards	Introduction and basic knowledge of wool and acrylic dyeing. Principal and application of disperse dyes on polyester fiber . fundamentals of colour theory and colour mixing laws
7	Practice in dyeing of various types of fabrics. Methods of determination of colour fastness to washing , perspiration , hot pressing , sublimation , nibbing , light	Dyeing defects and their causes and remedial measures. Study of dyeing of blends (polyester .cotton polyester/wool). To study the concept of metamerism in textiles and matching of shade.
8	Instruments used in colour, fastness, testing – laundrometer ,perspirometer , crock meter , exposure rack and light fastness tester.	Introduction & importance of colour fastness tests. Concept of computer colour matching

List of Tools for a batch of 16 trainees

SI No	Name of tool	Qty
01	Combination pliers 200mm insulated	17 Nos.
02	Screw driver 200 mm	17 Nos.
03	Screw driver 100 mm	17 Nos.
04	Terminal screw driver	17 Nos.
05	Hammer ball pein (0.25 kg)	17 Nos.
06	Try square (200 mm)	17 Nos.
07	File round half 2 nd cut 250 mm	17 Nos.
08	File round 150 mm	17 Nos.
09	Plumb bob 115 gms	17 Nos
10	Bar wood mallet 1 kg (75 mm X 150 mm)	17 Nos
11	Knife	17 Nos.
12	Wood rasp file 250 mm	17 Nos.
13	Firmer chisel 12 mm	17 Nos
14	Firmer Chisel 6 mm	17 Nos.
15	Neon tester	17 Nos.
16	Tenon saw 250 mm	17 Nos.
17	File flat 25 cm 2 nd cut	17 Nos.
18	File flat 25 cm smooth	17 Nos.
19	Steel rule 300 mm to read metric	17 Nos.
20	Test lamp	17 Nos.
21	Circlip opener	17 Nos.
22	Continuity tester	17 Nos.
23	Glouse	17 Nos
24	Insulating Tape	17 Nos
25	Electric soldering Iron	17 Nos.

List of Shop General Outfit for 16 trainees

SI No	Name of tool	Qty
01	Pliers side cutting 200 mm	17 Nos.
02	Pliers flat nose 150 mm	17 Nos.
03	Pliers round nose	17 Nos.
04	Pliers long nose	17 Nos.
05	Screw driver heavy duty 250 mm	17 Nos.
06	Screw driver 7 mm X 300 mm square blade	17 Nos.
07	Firmer chisel 25 mm	17 Nos.
08	Firmer Chisel 10 mm	17 Nos.
09	Marking Gauge	17 Nos.
10	Combination bevel Protector	17 Nos.
11	Cold chisel Flat 25 x 200 mm	17 Nos.

12	Cold chisel Flat 18 x 200 mm	17 Nos.
13	Hammer Ball pein 0.5 kg	17 Nos.
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23	File Triangular 150 mm 2 nd cut	17 Nos.
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34	Bench vice 150 mm	17 Nos.
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37	Spanner (up to 32 mm)	17 Nos.
38	Vernier caliper different sizes	05 Nos.
39	Ring spanner	17 Nos.
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41	Inner caliper	05 Nos.
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45	File Swiss type needle set	5 Nos.
46	Shore hardness tester	1 No.
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48	Nylon hammer	5 Nos
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50	Copper tube cutter	3 Nos.
51	Ratchet bit 6 mm capacity	5 Nos.
52	Ratchet bit 4 mm and 6 mm	5 Nos.
53	Vernier caliper 200 mm (ordinary)	5 Nos.
54	Snip	5 Nos.
55	Conduit pipe die set	5 Nos.
56	Tong Tester	2 Nos.
57	Ohm meter	2 Nos.
58	Grimpinhg tool (manual)	1 No.

59	Blow lamp	2 nos.
60	Multi meter	2 Nos.
61	Ladle	5 Nos.
62	Pipe vice 18"	2 Nos.

General Equipments

S.No	Name of machinery	Qty
1	Iron tanks for storing water (1200 mm x1200 mm x1200 mm)	1 No.
2	Thermometer 0-110 deg. C and 0-300 deg. C	3 Nos each
3	Electric water heater 45 lit	2 Nos.
4	Yarn reeling arrangements (Wrap reel)	2 Nos.
5	Kit box for keeping cloths /dyes	16 Nos.
6	Buckets	4 Nos.
7	Fire Extinguisher	6 Nos
8	Hydrometers	2 sets
9	Test tube holders	32nos
10	Test tubes	32 Nos
11	Brusher for cleaning apparatus	16 Nos
12	Plastic Bottles with nozzles	16 Nos
13	Glass Beakers	1 No
14	Computer with for colour matching software	

General installation:

S.No	Name of machinery	Qty
1	Open bath Beaker dyeing M/C	01
2	Infra Red Dyeing M/c	01
3	Glass shaking M/C	01
4	Padding M/c	01
5	Laundrometre	

Workshop furniture:

Sl. No.	Workshop furniture	Qty
1	Stools	17 Nos
2	Discussion Table	1 No
3	Tool Cabinet	2 Nos
4	Trainees locker	2 Nos
5	Fire fighting equipment, first aid box etc	As required
6	Book shelf (glass panel)	1 No.
7	Storage Rack	As required
8	Storage shelf	As required

WORKSHOP CALCULATION & SCIENCE

(DURATION – 2 HOURS/WEEK-48 WEEKS)

WORKSHOP CALCULATION

- Applied Workshop problems involving multiplication, division.
- Common fractions, additions, subtractions, multiplications and divisions of fractions.
- Applications of fractions to shop problems (Measurement in units). Conversion from decimal to common fractions shop problems (Measurement in units.)
- Decimals addition, subtraction, multiplication, conversion from decimal to common fractions shop problems (Measurement in units).
- Square roots of a perfect square root of whole number and decimals.
- Ration and proportion and shop problems (including percentage calculations).
- Algebraic symbols, addition, subtractions, multiplication and division of expressions involving algebraic symbols.. Simple equations and transposition problems. Standard Formulae, simple simultaneous equations with two unknown quantities, Simple algebraic problems.
- Menstruation area of rectangles, squares, triangles, circles, regular polygons etc. Calculation of areas, calculation of volumes and weight of simple solid bodies such as cubes, squares and prisms shop problems,. (cylinder, pyramid, cone, rotating body, examples out of automotive assemblies).
- Geometry properties of lines, angles, triangles and circles, simple solid problems.
- Reading of simple graphs. Exercises in reading in monograph. Calculations of volume.
- All of the above mentioned items should be taught in a way that they are directly related to the trade area.

SCIENCE

- Mass, units of mass, force, weight of a body, units of weight, shop problems MKS & SI system of units of force, weight etc. their conversion shop problems. Forces, torque and lever.
- Heat and temperature thermometric scales conversion of °F & °C and vice versa. Temperature measuring instruments used in workshops. Heat and thermal quantities: Temperature, units of temperature, heat quantity and units, calorific value, fuel value, specific melting resp. evaporation heat, heat extension (length and volume).
- Properties and uses of cast iron, wrought iron, plain carbon steel. HSS and alloy steel.
- Properties and uses of copper and aluminum, brass, bronze, solder, bearing metals.
- Characteristics of ferrous and non-ferrous metals.
- Alloying of ferrous and non-ferrous metals are explained in terms of binary systems. (Brass, carbon steel, solder.)
- Characteristics of ferrous and non-metals are identified and related to their application. (Mechanical properties, mach inability, cast ability, weld ability, formability, corrosion resistance,.)

- Heat treatment, hardening, annealing, tempering and normalizing. Case hardening their standards and measurements. Heat treatment processes of ferrous metals are explained in terms of procedures. (Homogenizing, annealing, normalizing, stress relieving, sub-critical annealing, hardening, tempering, case hardening.) Hardening and tempering are completed and related to color method for temperature determination of tool. (Punch, scriber, chisel.)
- Heat treatment of non-ferrous metals is explained in terms of procedures. (Homogenizing, annealing, stress relieving, solution treatment, precipitation hardening).
- Meaning of tenacity, elasticity, malleability, brittleness, hardness. Compressibility and ductility examples.
- Work, units of work, energy, power, different forms of energy simple applied problems.,
Horsepower and brake Horsepower, mechanical advantage and velocity ratio.
- Meaning of stress, strain, modulus elasticity and ultimate strength., Examples., Factors of safety.
Electricity and its uses, electric current positive and negative terminals. Use of switches and uses, conductors and insulators. Electricity: atomic mode, potential, current, voltage and resistance, ohms law, serial, parallel circuits, specific resistance, conductivity, current density, voltage drop, preheating of diesel engine (glow plug)”: Electric work, power and efficiency, examples to starter alternator and battery.
- Velocity, average velocity, circumferential velocity, rotation speed cutting velocity.
- Friction: Static friction, dynamic friction, rolling friction, dry friction, friction and lubrication; examples for clutches, brakes, tire and pavement.

ENGINEERING DRAWING

(Duration – 2 hours/week – 48 weeks)

- Free hand sketching of straight lines, rectangles, circles, polygon's simple solids, cube, rectangular blocks, cylinders, their dimensioning.
- Free hand sketching of nuts, bolts, rivets, washers, keys screw threads, keys with dimensions from samples. Dimensioning technique.
- Explanation of simple orthographic projection first angle and third angle. Sketching of different views of simple solid and hollow bodies with dimensions.
- Use of different types of lines and symbols of drawing welding symbols, electric symbols.
- Simple isometric drawing, isometric views of square, rectangle, circle, cubes, various types of prism.
- Use of drawing instruments. Drawing simple figures and solids with dimensions and titles. Use of different types of seals and lettering numbers and alphabets. Isometric drawings with dimensions of various simple objects.
- Sections and sketching orthographic views of various solids and hollow objects with section views.
- Blue print reading. Preparation of simple working drawings from sketches.
- Dimensioning, system of dimensioning, various methods of dimensioning.
- Introduction to Auto CAD.

COMMUNICATION, GENERAL AWARENESS AND ENTREPRENEURSHIP
SKILL

DURATION: 2 HOURS PER WEEKS (throughout a year)

OBJECTIVE:

- To communicate properly with others
- To be aware of business environment
- To learn various aspects of entrepreneurship

COURSE CONTENTS: BUSINESS COMMUNICATION & BEHAVIOURS SCIENCE

1) Communication:

- Art of listening
- Art of English speaking
- Barrier to communication & methods to overcome
- Meaning of Communication – Definition Need importance
- Types of communication – Verbal, written non-verbal
- Channel of communication – Formal, informal
- Non-Verbal communication / written communication advantages and disadvantages/letter writing/enquiries/replies /quotations/notice/Circular/Order/Reporting/Insurance Format/Bank correspondence
- Essential of effective correspondence
- Verbal Communication /Oral Communication, Telephone Handling
- Complaints expression through language, Vocabulary, Voice Modulation
- Body language/Kinetics – Importance /advantage/limitations/facial expression/Eye-contact/Gestures/Appearance
- Team building, leadership, attitude, motivation, morale, communication & negotiation-practical experience
- Individual and group behavior, group dynamics
- Self-management

2) GENERAL AWARENESS:

Brief introduction to following acts

- Factory Act & Apprentice Act 1961
- ESI Act
- Payment wages Act 1936
- Employees Provident fund and payment of Gratuity Act 1952

3) OCCUPATIONAL HAZARDS & SAFETY MEASURE

- Causes of Accident & Safest Management and accident prevention
- Medical first – Aid

4) ENVIRONMENTAL AWARENESS AND ENERGY CONSERVATION

A) PRINCIPLE OF ENERGY CONSERVATION WITH SPECIAL REFERENCE TO :

- Domestic application and Cooking Gas
- Industries including Industrial lighting
- Heating, Ventilation and Air-conditioning
- Recovery of Waste Heat and Recycling of waste material

- Linkage of lack of energy conservation and environmental pollution

B) ELEMENTS OF ENVIRONMENT PLANNING AND MANAGEMENT:

- I. Conservation of available natural resources
- II. Conservation of wild life
- III. Water Management – Resources

C) POLLUTION CONTROL:

- Types of pollution and its source
- Effects of pollution on environment and on humanity, plant, animal, machine, health and thus on energy conservation
- Remedial steps to control pollution
- Introduction of work culture

5) Awareness of population education, HIV and aids awareness

6) Concept of Total Quality Management (TQM) 5'S and KAIZEN

7) Concept of Just-In-Time (JIT)

8) Globalization and impact on business industry & service.

9) ENTREPRENEURSHIP

- a) Needs, scope for self-employment with special reference to self-employment scheme and sources of Assistance in Central & State Government Organization like DIC, SIDA, SISI, NSIC, SIDO, Financial institutes and Banks
- b) Entrepreneurial values, attitude & motivation.
- c) Identifying & developing entrepreneurial competence and networking, entrepreneurial culture.
- d) Characteristics of successful entrepreneur and successful enterprise
- e) The causes of failure and identification of entrepreneurship abilities through self assessment and other technique
- f) Types of business in different trades and the importance of skill
- g) Understanding the consumer, market through consumer behavior, market survey scope and influence publicity and advertisement, consumer Action forum.
- h) SWOT
- i) Self Analysis
- j) Competition Analysis
- k) Creativity and Idea Generation
- l) Project Formation, Feasibility, Viability, Profitable study
- m) Investment Procedure – Loan Procurement-Agencies – Banking Process
- n) Accounting and Analysis – Bank Operation i.e. Debit and Credit Book Keeping, Financial Software packages, invoicing and challans .