

# BAMBOO WORKS

**NSQF LEVEL- 5**



**SECTOR- HANDICRAFTS & CARPETS**

**COMPETENCY BASED CURRICULUM  
CRAFT INSTRUCTOR TRAINING SCHEME (CITS)**



**GOVERNMENT OF INDIA**

Ministry of Skill Development & Entrepreneurship  
Directorate General of Training

**CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE**  
EN-81, Sector-V, Salt Lake City, Kolkata – 700091

# **BAMBOO WORKS**

**(Non-Engineering Trade)**

**SECTOR – HANDICRAFTS & CARPET**

**(Revised in 2023)**

**Version 2.0**

**CRAFT INSTRUCTOR TRAINING SCHEME (CITS)**

**NSQF LEVEL – 5**

Developed By

Government of India  
Ministry of Skill Development and Entrepreneurship

Directorate General of Training  
**CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE**

EN-81, Sector-V, Salt Lake City,  
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## 1. COURSEOVERVIEW

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The Craft Instructor Training Scheme is operational since inception of the Craftsmen Training Scheme. The first Craft Instructors' Training Institute was established in 1948. Subsequently, 6 more institutes namely, Central Training Institute for Instructors (now called as National Skill Training Institute (NSTI)), NSTI at Ludhiana, Kanpur, Howrah, Mumbai, Chennai and Hyderabad were established in 1960's by DGT. Since then the CITS course is successfully running in all the NSTIs across India as well as in DGT affiliated institutes viz. Institutes for Training of Trainers (IToT). This is a competency-based course of one year duration. "Bamboo Works" CITS trade is applicable for Instructors of "Bamboo Works" Trade under CTS.

The main objective of Craft Instructor training Programme is to enable Instructors explore different aspects of the techniques in pedagogy and transferring of hands-on skills so as to develop a pool of skilled manpower for industries, also leading to their career growth & benefiting society at large. Thus promoting a holistic learning experience where trainee acquires specialized knowledge, skills & develops attitude towards learning & contributing in vocational training ecosystem.

This course also enables the instructors to develop instructional skills for mentoring the trainees, engaging all trainees in learning process and managing effective utilization of resources. It emphasizes on the importance of collaborative learning & innovative ways of doing things. All trainees will be able to understand and interpret the course content in right perspective, so that they are engaged in & empowered by their learning experiences and above all, ensure quality delivery.

## 2. TRAINING SYSTEM

### 2.1 GENERAL

CITS courses are delivered in National Skill Training Institutes (NSTIs) & DGT affiliated institutes viz., Institutes for Training of Trainers (IToT). For detailed guidelines regarding admission on CITS, instructions issued by DGT from time to time are to be observed. Further complete admission details are made available on NIMI web portal <http://www.nimionlineadmission.in>. The course is of one-year duration. It consists of Trade Technology (Professional skills and Professional knowledge), Training Methodology and Engineering Technology/ Soft skills. After successful completion of the training programme, the trainees appear in All India Trade Test for Craft Instructor. The successful trainee is awarded NCIC certificate by DGT.

### 2.2 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one year:

S No.	Course Element	Notional Training Hours
1.	<b>Trade Technology</b>	
	Professional Skill (Trade Practical)	480
	Professional Knowledge (Trade Theory)	270
2.	<b>Training Methodology</b>	
	TM Practical	270
	TM Theory	180
	<b>Total</b>	<b>1200</b>

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

3	On the Job Training (OJT)/ Group Project	150
4	Optional Courses	240

CITS Trainees of optional courses of up to 240 hours in each year short term courses.

### 2.3 PROGRESSION PATHWAYS

- Can join as an Instructor in vocational training Institute/ technical Institute.
- Can join as a supervisor in Industries.

## 2.4 ASSESSMENT & CERTIFICATION

The CITS trainee will be assessed for his/her Instructional skills, knowledge and attitude towards learning throughout the course span and also at the end of the training program.

a) The Continuous Assessment (Internal) during the period of training will be done by **Formative Assessment Method** to test competency of instructor with respect to assessment criteria set against each learning outcomes. The training institute has to maintain an individual trainee portfolio in line with assessment guidelines. The marks of internal assessment will be as per the formative assessment template provided on [www.bharatskills.gov.in](http://www.bharatskills.gov.in)

b) The **Final Assessment** will be in the form of **Summative Assessment Method**. The All India Trade Test for awarding National Craft Instructor Certificate will be conducted by DGT as per the guidelines of DGT. The learning outcome and assessment criteria will be the basis for setting question papers for final assessment. The external examiner during final examination will also check the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

### 2.4.1 PASS CRITERIA

#### Allotment of Marks among the subjects for Examination:

The minimum pass percent for Trade Practical, TM Practical, Soft Skill Practical Examinations and Formative assessment is 60% & for all other subjects is 40%. There will be no Grace marks.

### 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. While assessing; the major factors to be considered are approaches to generate solutions to specific problems by involving standard/non-standard practices.

Due consideration should also 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 of the following:

- Demonstration of Instructional Skills (Lesson Plan, Demonstration

Plan)

- Record book/daily diary
- Assessment Sheet
- Progress chart
- Video Recording
- Attendance and punctuality
- Viva-voce
- Practical work done/Models
- Assignments
- Project work

Evidences and records 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) Weightage in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programmes and assess learners which demonstrates attainment of an <b>acceptable standard</b> of crafts instructorship with <b>occasional guidance</b> and engage students by demonstrating good attributes of a trainer.	<ul style="list-style-type: none"> <li>• Demonstration of <b>fairly good</b> skill to establish a rapport with the audience, presentation in orderly manner, and establish as an expert in the field.</li> <li>• Average engagement of students for learning and achievement of goals while undertaking the training on specific topic.</li> <li>• A fairly good level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson.</li> <li>• Occasional support in imparting effective training.</li> </ul>
(b) Weightage in the range of 75%-90% to be allotted during assessment	
For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a <b>reasonable standard</b> of crafts instructorship with <b>little guidance</b> and engage students by demonstrating good attributes of a trainer.	<ul style="list-style-type: none"> <li>• Demonstration of <b>good</b> skill to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field.</li> <li>• Above average engagement of students for learning and achievement of goals while undertaking the training on specific topic.</li> <li>• A <b>good</b> level of competency in expressing each concept in terms the student can</li> </ul>

	<p>relate, draw analogy and summarize the entire lesson.</p> <ul style="list-style-type: none"> <li>• Little support in imparting effective training.</li> </ul>
(c) Weightage in the range of more than 90% to be allotted during assessment	
<p>For performance in this grade, the candidate should be well versed with instructional design, implement learning programme and assess learners which demonstrates attainment of a <b>high standard</b> of crafts instructorship with <b>minimal or no support</b> and engage students by demonstrating good attributes of a trainer.</p>	<ul style="list-style-type: none"> <li>• Demonstration of <b>high</b> skill level to establish a rapport with audience, presentation in orderly manner and establish as an expert in the field.</li> <li>• Good engagement of students for learning and achievement of goals while undertaking the training on specific topic.</li> <li>• A <b>high</b> level of competency in expressing each concept in terms the student can relate, draw analogy and summarize the entire lesson.</li> <li>• Minimal or no support in imparting effective training.</li> </ul>



### 3. GENERAL INFORMATION

<b>Name of the Trade</b>	<b>BAMBOO WORKS (CITS)</b>
<b>Trade code</b>	DGT/4040
<b>NCO – 2015</b>	2356.0100, 2359.0100, 7317.0800, 7317.0300, 7317.0700, 7317.1100, 7317.1200
<b>NOS Covered</b>	HCS/N9401, HCS/N9403, HCS/N9404, HCS/N9405, HCS/N9406, HCS/N9407, HCS/N9410, HCS/N9411, HCS/N9412, HCS/N9413, HCS/N9414, HCS/N9415, HCS/N9427, HCS/N9428, HCS/N9429, HCS/N9430, HCS/N9431, HCS/N9432, HCS/N9433, MEP/N9446
<b>NSQF Level</b>	Level-5
<b>Duration of Craft Instructor Training</b>	One Year
<b>Unit Strength (No. Of Student)</b>	25
<b>Entry Qualification</b>	<p>Degree in Bamboo Technology/ Bamboo Studies from recognized board/university.</p> <p style="text-align: center;">OR</p> <p>03 yrs. diploma in Bamboo Technology/ Bamboo Studies after class 10th from recognized board/ University*.</p> <p style="text-align: center;">OR</p> <p>Ex-serviceman from Indian Armed forces with 15 years of service in related field as per equivalency through DGR.</p> <p style="text-align: center;">OR</p> <p>10th class with 01 year NTC/NAC passed in the trade of Bamboo Works + 2 years of relevant experience.</p> <p>*Wherever diploma is of 2 yr. duration, 1 yr. experience will be required.</p>
<b>Minimum Age</b>	18 years as on first day of academic session.
<b>Space Norms</b>	120 Sq. m
<b>Power Norms</b>	11 KW
<b>Instructor's Qualification for</b>	
<b>1. Bamboo Works (CITS) Trade</b>	<p>B.Voc/Degree in Bamboo Technology/ Bamboo Studies from AICTE/ UGC recognized university with two years' experience in the relevant field.</p> <p style="text-align: center;"><b>OR</b></p> <p>Diploma (Minimum 2 Years) in Bamboo Technology / Bamboo Studies from a recognized board of education or relevant Advanced Diploma (Vocational) from DGT with five years' experience in the relevant field.</p> <p style="text-align: center;"><b>OR</b></p>

	<p>Ex-serviceman from Indian Armed forces with 15 years of service in related field as per equivalency through DGR. Candidate should have undergone methods of instruction course or minimum 02 years of experience in technical training institute of Indian Armed forces.</p> <p style="text-align: center;"><b>OR</b></p> <p>NTC/NAC passed in “Bamboo Works” trade with seven years’ experience in the relevant field.</p> <p><b>Essential Qualification:</b> National Craft Instructor Certificate (NCIC) in Bamboo works, in any of the variants under DGT.</p>
<b>2. Soft skills</b>	<p>MBA/ BBA / Any Graduate/ Diploma in any discipline from AICTE/ UGC recognized College/ university with Three years’ experience and short term ToT Course in Soft Skills from DGT institutes. (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above).</p>
<b>3. Training Methodology</b>	<p>B.Voc/ Degree in any discipline from AICTE/ UGC recognized College/ university with two years’ experience in training/ teaching field.</p> <p style="text-align: center;"><b>OR</b></p> <p>Diploma in any discipline from recognized board / University with five years’ experience in training/teaching field.</p> <p style="text-align: center;"><b>OR</b></p> <p>NTC/ NAC passed in any trade with seven years’ experience in training/ teaching field.</p> <p><b>Essential Qualification:</b> National Craft Instructor Certificate (NCIC) in any of the variants under DGT / B.Ed /ToT from NITTTR or equivalent.</p>
<b>4. Minimum Age for Instructor</b>	21 Years

## 4. JOB ROLE

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### Brief Description of Job Roles:

**Manual Training Teacher/Craft Instructor;** instructs students in ITIs/Vocational Training Institutes in respective trades as per defined job role. Imparts theoretical instructions for the use of tools& equipment of related trades and related subjects. Demonstrate process and operations related to the trade in the workshop; supervises, assesses and evaluates students in their practical work. Ensures availability & proper functioning of equipment and tools in stores.

**Handwork Teacher;** Handicraft Teacher imparts training to school students in handwork and handicraft. Teaches and develops, in students, sense of colour combinations, forms and shapes and three-dimension visualisation. Instructs in handicrafts such as modelling, fret work, clay work, cutting forms and shapes in card boards, paper and plywood toy making, designing simple artistic and decorative pieces. May also instruct in drawing and in art subjects.

**Mat Weaver, Bamboo;** makes mats of seasoned and coloured bamboo strips according to pattern or design. Soaks precut bamboo stakes in water to soften and bleach them; removes stakes from bath when soft, cuts and removes splints and splits them into strips of desired size and thickness; dresses bamboo strips to remove sharpness; colours strips according to desired pattern and weaves them into mat, cutting off and concealing or weaving together loose ends to finish edges; weaves thicker strips and ornamental borders on edge or end of mat. May make own designs. May weave window and door screens. May make fans, fruit baskets etc.

**Furniture Maker, Bamboo;** makes bamboo furniture by sizing and dressing bamboo pieces, drilling holes, building frames and body with strengthening pieces. Studies pattern, size or design of furniture to be made; collects seasoned bamboo stakes (rods) them and soaks in water; removes stakes from bath when soft and cuts and removes thin splints and splits them into strips of desired size and thickness with selects cut bamboo into specific sizes, drills holes where necessary and sets them into required pattern; completes object by weaving seat, back and other parts as necessary and fastening ends either with bamboo or cane strips. May specialize in a particular article such as Table, Chair, Sofa set, etc. May also undertake repair work.

**Basket Maker;** makes baskets of specified size and shape by interlacing willow, rattan or other materials. Forms bottom of basket by interlacing strips of bamboo or similar material with framework of bamboo ribs; inserts ribs around edge of bottom and between woven sections of bottom to serve as framework of sides; bends ribs perpendicular to bottom and secures to hold them in position for weaving of sides; weaves strips through ribs until sides are completed; tapers or points ends of protruding ribs, and bends and inserts them into spaces in top edge of woven sides. May make solid bottom boards, using band saw, drill press, and carpenters' hand tools. May interlace reeds through stakes (rods), secured in

screw blocks, to form parts of basket, such as woven bottom. May design baskets. May be designated according to type of basket woven as Hamper Maker; Market-Basket Maker; or according to material used as Rattan Worker; Willow Worker.

**Chick Maker;** makes reed or bamboo chicks by sizing and dressing reeds or bamboo wickers and fastening together by twine. Collects material, cuts and sizes them into thin strips according to design; assembles and fastens strips together with thin rope or twine to form into mat of desired size; trims edges and fixes cloth piping on four sides. May stitch coloured cloth over chicks.

**KhasThatti Maker;** makes KhasThatties; (screens made with Khas) a type of aromatic grass roots used for keeping room cool from summer heat when cold water is sprinkled on them. Collects dry khas roots; prepares bamboo frames of required size; spreads layers of khas roots to make bed of required thickness and fastens it into bamboo frame with bamboo splinters to support on both sides and binds them with thin rope or sutli; trims edges to complete screen.

**Reference NCO-2015:**

- a) 2356.0100-Manual Training Teacher/Craft Instructor.
- b) 2359.0100- Handwork Teacher/Teacher, Artand Craft
- c) 7317.0800 - Mat Weaver, Bamboo
- d) 7317.0300 - Furniture Maker, Bamboo
- e) 7317.0700 - Basket Maker
- f) 7317.1100 - Chick Maker
- g) 7317.1200 –KhasThatti Maker
- h) Bamboo Artwork Maker

**Reference NOS:**

I. HCS/N9401	VIII. HCS/N9411	XV. HCS/N9429
II. HCS/N9403	IX. HCS/N9412	XVI. HCS/N9430
III. HCS/N9404	X. HCS/N9413	XVII. HCS/N9431
IV. HCS/N9405	XI. HCS/N9414	XVIII. HCS/N9432
V. HCS/N9406	XII. HCS/N9415	XIX. HCS/N9433
VI. HCS/N9407	XIII. HCS/N9427	XX. MEP/N9446
VII. HCS/N9410	XIV. HCS/N9428	

## 5. LEARNING OUTCOMES

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

### 5.1 TRADE TECHNOLOGY

1. Plan and prepare various cultivation techniques, types of propagation methods, treatment and preservation of bamboo. (NOS: HCS/N9401)
2. Demonstrate safe working practice on various hand tools and machine tools. (NOS: HCS/N9403)
3. Demonstrate and then evaluate the process of performing on different types of joints, bending of Bamboo strips, slivers, bamboo pole using blow lamp. (NOS: HCS/N9404)
4. Adopt suitable method of practice on cross cutting machine, removing nodes of bamboo using various splitting machine. (NOS: HCS/N9405)
5. Appraise the steps to be followed for safe operation of Round Stick Making Machine & Polishing Machine. (NOS: HCS/N9406)
6. Demonstrate the operation and maintenance of 2 side/4 side machine planer, Hydraulic press, and Resin Applicator machine. (NOS: HCS/N9407)
7. Test and troubleshoot the faults that occur during operation of Glue mixing machine, DD Saw machines and weaving machine. (NOS: HCS/N9410)
8. Demonstrate the maintenance procedure of different machines used in Bamboo works. (NOS: HCS/N9411)
9. Illustrate the use of bamboo and other necessary tools in production of different types of furniture. (NOS: HCS/N9412)
10. Choose appropriate bamboo species for different industrial Handicraft products. (NOS: HCS/N9413)
11. Design handicrafts of different varieties by free hand drawing. (NOS: HCS/N9414)
12. Monitor operation and booting of basic functions of computer. (NOS: HCS/N9415)
13. Demonstrate on AutoCAD software to prepare different shapes and design of the bamboo products. (NOS: HCS/N9427)
14. Adapt different techniques and process of making various kinds of bamboo Jewelleries, bags, models, mats, Blinds, domestic accessories. (NOS: HCS/N9428)
15. Demonstrate and assess the method of using Jigs & fixture to make uniform size & reduce production cost. (NOS: HCS/N9429)
16. Develop finishing technique by using different methods of finishing of bamboo products. (NOS: HCS/N9430)
17. Ensure quality of products as per market demand; observe production as per requirement and estimate the cost. (NOS: HCS/N9431)

18. Plan for proper packing, storing, delivery and transportation of finished goods. (NOS: HCS/N9432)
19. Develop business relation and communication skills by visiting various shops, markets, showrooms etc. (NOS: MEP/N9433)
20. Exhibit effective communication skills with logical reasoning ability and quantitative aptitude to maximize efficiency in work. (NOS: MEP/N9446)

## 6. COURSE CONTENT

SYLLABUS FOR BAMBOO WORKS – CITSTRADE			
TRADE TECHNOLOGY			
Duration	Reference Learning Outcome	Professional Skills (Trade Practical)	Professional Knowledge (Trade Theory)
Practical 24Hrs  Theory 10Hrs	Plan and prepare various cultivation techniques, types of propagation methods, treatment and preservation of bamboo.	<b>Utilization of Bamboo</b> 1. Demonstrate different bamboo items, its modern utilization by showing visual aids. 2. Demonstrate cultivation of Bamboo through field visit and Nursery Practice.	<ul style="list-style-type: none"> <li>Anatomy of Bamboo &amp; History of bamboo utilization.</li> <li>Traditional and modern utilization of Bamboo. Various bamboo species available in India.</li> <li>Knowledge of various Bamboo cultivation Techniques, type of propagation methods &amp; practice in India.</li> <li>Diseases of Bamboo &amp; its remedies.</li> </ul>
		<b>Treatment &amp; Preservation of Bamboo</b> 3. Traditional practice on Bamboo treatment. 4. Perform Chemical treatment. 5. Perform Smoke treatment. 6. Perform of dyeing utilizing various chemical & vegetative dyes.	<ul style="list-style-type: none"> <li>Explain various techniques of Treatment, Preservation &amp; Seasoning of Bamboo (Through ancient/traditional and modern methods).</li> <li>Discuss Colouring/Dyeing of Bamboo strips/slivers/bamboo pole.</li> </ul>
Practical 12Hrs  Theory 05Hrs	Demonstrate safe working practice on various hand tools and machine tools.	<b>Application of Tools</b> 7. Safe practice on various hand tools like hammer, chisel, dao, file, planner, hand saw etc. 8. Identify various parts of tools and its application in practical field. Safe practice on different machine tools, like Drill, portable sander, jig saw, sabre saw etc.	<ul style="list-style-type: none"> <li>Description of various hand tools and machine tools used in Bamboo technology.</li> </ul>

Practical 25Hrs  Theory 10Hrs	Demonstrate and then evaluate the process of performing on different types of joints, bending of Bamboo strips, slivers, bamboo pole using blow lamp.	<b>Perform on Joints</b> 9. Perform on tongue joint. 10. Perform on Butt Joint. 11. Perform on Overlapping joint. 12. Perform on Horizontal joint.	<ul style="list-style-type: none"> <li>• Description of various joints and their uses in different section like furniture, Handicraft &amp; Housing etc.</li> </ul>
		<b>Perform Bending of Bamboo</b> 13. Safe practice of bending bamboo strips, Slivers & bamboo pole using blowlamp. 14. Make natural black colour on surface of bamboo pole by blow lamp.	<ul style="list-style-type: none"> <li>• Different parts of Blow Lamp.</li> <li>• Application of blow lamp in Bamboo activities.</li> <li>• Various process of bending.</li> </ul>
Practical 25Hrs  Theory 10Hrs	Adopt suitable method of practice on cross cutting machine, removing nodes of bamboo using various splitting machine.	<b>Perform Bamboo Cross Cutting Machine</b> 15. Perform Cross Cutting machine, oiling and lubrication of machine. 16. Cut bamboo as per desire length. 17. Perform on sharpening the saw blade. 18. Perform different primary processing machineries.	<ul style="list-style-type: none"> <li>• Brief description of cross cutting machine and how to operate, trouble shooting of this machine.</li> <li>• Introduction of Bamboo Primary processing Machineries and its uses.</li> </ul>
		<b>Perform Splitting Machine &amp; Node removing machine</b> 19. Splitting of bamboo by Radial splitting Machine. 20. Splitting of Bamboo by parallel Splitting Machine. 21. Make Bamboo Strips after removing inside node & outside node.	<ul style="list-style-type: none"> <li>• Detailed specification of Radial Splitting Machine &amp; Parallel Splitting Machine.</li> <li>• Description of various parts and its uses.</li> <li>• Discussion on Procedures of safe operation of splitting machine and rectify troubleshooting.</li> <li>• Brief description of knot removing machine and how to operate, troubleshoot the machine.</li> </ul>
Practical 12Hrs  Theory	Appraise the steps to be followed for safe operation of Round Stick Making	<b>Perform working on Round Stick Making machine &amp; Polishing Machine</b> 22. Make round sticks of various	<ul style="list-style-type: none"> <li>• Brief description of Round sticks making machine.</li> <li>• Brief description of polishing machine.</li> </ul>



05Hrs	Machine& Polishing Machine.	<p>diameters.</p> <p>23. Perform safe operation in Round Stick Making Machine.</p> <p>24. Perform operation in manual slivering machine, oiling and lubrication of machine.</p> <p>25. Perform operation in Polishing Machine oiling and lubrication of machine.</p> <p>26. Identify the faults in machine and rectify after troubleshooting.</p>	<ul style="list-style-type: none"> <li>• Brief description of manual slivering machine.</li> <li>• Various steps follow for safe operation of Round Stick Making Machine, Polishing Machine.</li> <li>• Procedures to change cutter &amp; make various diameter of stick.</li> <li>• Discussion on Proper adjustment of various parts of Machine for making stick.</li> </ul>
Practical 25Hrs  Theory 10Hrs	Demonstrate the operation and maintenance of 2 side/4 side machine planer, Hydraulic press and Resign Applicator machine.	<p><b>Perform operation in Bamboo 2/4 Side planer&amp; Electrical Stand Drill machine</b></p> <p>27. Perform operation in electric drill machine, oiling and lubrication of machine.</p> <p>28. Perform operation in 2 side/4 side machine planer, oiling and lubrication of machine including preventive maintenance.</p>	<ul style="list-style-type: none"> <li>• Brief description of Hydraulic Press Machine and its operation &amp; maintenance and also trouble shooting of this machine.</li> <li>• Brief description of Resign Applicator and Its operation&amp; maintenance and also trouble shooting of this machine.</li> </ul>
		<p><b>Perform operation in Hydraulic Press Machine&amp; Resign Applicator</b></p> <p>29. Perform operation in Hydraulic Press Machine.</p> <p>30. Perform operation in Resign Applicator machine.</p> <p>31. Perform operation in making 4mm bamboo mat board.</p>	<ul style="list-style-type: none"> <li>• Brief description of Hydraulic Press Machine and its operation &amp; maintenance and also trouble shooting of this machine.</li> <li>• Brief description of Resign Applicator and Its operation&amp; maintenance and also trouble shooting of this machine.</li> </ul>
Practical 12Hrs  Theory 05Hrs	Test and troubleshoot the faults that occur during operation of Glue mixing machine, DD Saw machines and weaving	<p><b>Process of Glue Mixing and Automatic Weaving Machine</b></p> <p>32. Make window blinds with the help of Automatic weaving machine.</p> <p>33. Practice on Glue Mixing machine and DD Saw</p>	<ul style="list-style-type: none"> <li>• Brief description of Glue Mixing Machine &amp; DD Saw machine.</li> <li>• Specification in detail of Automatic Weaving machine.</li> <li>• Safe operation of Glue Mixing &amp; Automatic Weaving</li> </ul>

	machine.	machine. 34. Practice on weaving Machine. 35. Identify the problems arise during operation and rectify it.	Machine.
Practical 25Hrs  Theory 10Hrs	Demonstrate the maintenance procedure of different machines used in Bamboo works.	<b>Maintenance of Machines used in bamboo processing</b> 36. Demonstrate troubleshooting, Lubricating and oiling of machines and rectifying the faults. 37. Select the tools required for maintenance of the machine at different working places. 38. Illustrate by hand the overall maintenance process of all related equipment used in production of Bamboo works. 39. Identify the movable parts of all machines. Monitor lubrication of movable parts with grease and/or specific lubricants. 40. Procedures followed to open saw blades, cutter, Knives etc. for re-sharpening. 41. Demonstrate the procedure followed during adjustment(tight/loose/up/down)of different parts for safe machine operation.	<ul style="list-style-type: none"> <li>• Explain what precaution should be observed in operating bamboo processing machine and proper maintenance of machine.</li> <li>• Explain application of lubrication of all movable parts with grease &amp; specific lubricant.</li> <li>• Explain the Procedures followed to adjust(tight/loose/up/down) all parts in proper place for safe machine operation.</li> </ul>
Practical 75Hrs  Theory 25Hrs	Illustrate the use of bamboo and other necessary tools in production of different types of furniture.	42. Demonstrate various tools required for making various types of furniture. 43. Demonstrate the process of making various furniture for households. 44. Perform dimension checking and preparation of Furniture as per given Dimension.	<ul style="list-style-type: none"> <li>• Discuss the types of furniture required in different location.</li> <li>• Prepare the nomenclature with physical dimensions of different bamboo furniture.</li> <li>• Describe the advantages of various furniture making.</li> <li>• Various techniques used to make furniture.</li> </ul>

		<p>45. Prepare furniture like: Round Bamboo Furniture, Folded Bamboo Furniture, Moulded Bamboo Furniture, Split Bamboo Furniture.</p> <p>46. Demonstrate use of Raw materials in Furniture making.</p> <p>47. Use of Jigs&amp; fixture to make uniform size.</p>	<ul style="list-style-type: none"> <li>• Explain the use of various tools &amp; Machines used to make furniture.</li> <li>• Explain utility of cane in joining of bamboo furniture.</li> <li>• Knowledge on Bamboo, Cane, Wood, Nail, Adhesive, Binding wire, Plastic Rope, Nut-bolt etc.</li> <li>• Discuss Various fixtures used in furniture making process.</li> <li>• Discuss about the materials required for production of Furniture &amp; how to reduce production cost.</li> </ul>
		<p>48. Perform Furniture making-</p> <ul style="list-style-type: none"> <li>• Sofa set- Domestic/ Commercial</li> <li>• Chair- Domestic/ Commercial</li> <li>• Table- Domestic/ Commercial</li> <li>• Bed-Single/Double.</li> </ul>	<ul style="list-style-type: none"> <li>• Discuss the utility of various furniture viz. – <ul style="list-style-type: none"> <li>- Sofa set- Domestic/ Commercial</li> <li>- Chair- Domestic/ Commercial</li> <li>- Table- Domestic/ Commercial</li> <li>- Bed-Single/Double.</li> </ul> </li> </ul>
<p>Practical 12Hrs</p> <p>Theory 06Hrs</p>	<p>Choose appropriate bamboo species for different industrial Handicraft products.</p>	<p><b>Selection of Bamboo as per Job</b></p> <p>49. Identification of bamboo as per job requirement at the field.</p> <p>50. Identify species &amp; select material for different jobs for primary processing.</p>	<ul style="list-style-type: none"> <li>• Discussion on various kinds of bamboo species like Lucky Bamboo, Bambusa Vulgaries, Bambusa Bambos Etc.</li> <li>• Method of selection of bamboo as per job specification.</li> </ul>
<p>Practical 12Hrs</p> <p>Theory 06Hrs</p>	<p>Design handicrafts of different varieties by free hand drawing.</p>	<p><b>Perform hand drawing of products</b></p> <p>51. Perform free hand drawing of various handicraft items.</p> <p>52. Perform drawing of various gift items, stationery Items.</p> <p>53. Free hand drawing of various furniture, ornaments, accessories etc.</p> <p>54. Free hand sketching of</p>	<ul style="list-style-type: none"> <li>• Uses of drawing instrument.</li> <li>• Drawing various lines with setsquare.</li> <li>• What is Design?</li> <li>• Construction of triangle, quadrilaterals, polygons.</li> </ul>

		circle & arcs. 55. Drawing of conventional lines. 56. Perform Lettering.	
Practical 25Hrs  Theory 10Hrs	Monitor operation and booting of basic functions of computer.	<b>Basics of Computer</b> 57. Construct different peripheral of the computer and boot the computer system. 58. Create folders, use my documents, use start menu for opening an application, change control panel settings for display, Familiarize with Key Board and Keys. <b>MS Office/ Internet</b> 59. Practice on MSWord & Excel 60. Practice on Internet surfing for different uses.	<ul style="list-style-type: none"> <li>• Introduction to computer fundamentals and its parts.</li> <li>• Familiarizing with Drives, Booting of a Computer system, Using the mouse, right click, left click and use of operating systems like Windows OS, menu system, Toolbars.</li> <li>• Use of word processing software.</li> <li>• Discuss the use of Internet.</li> </ul>
Practical 45Hrs  Theory 18Hrs	Demonstrate on AutoCAD software to prepare different shapes and design of the bamboo products.	61. <b>Perform basic drawing in AutoCAD</b> <ul style="list-style-type: none"> <li>• Menubar,</li> <li>• AutoCAD pull down menu,</li> <li>• Standard Toolbar,</li> <li>• User Coordinate System Icon,</li> <li>• CommandLine,</li> <li>• Command windows.</li> </ul> <b>Design different items on AutoCAD</b> 62. Practice on Drawing of various gift items, stationery Item.	<ul style="list-style-type: none"> <li>• Introduction to AutoCAD software.</li> <li>• What is Auto CAD &amp; its purpose?</li> <li>• Description on handling of AutoCAD software for preparation of different shapes and design.</li> </ul>
Practical 45Hrs  Theory 18Hrs	Adapt different techniques and process of making various kinds of bamboo Jewelleries, bags, models, mats, Blinds, domestic	<b>Prepare Bamboo Gift items and Bamboo ornaments</b> 63. Perform dyeing & colouring. 64. Perform making of thin slivers for ornament. 65. Perform different weaving techniques.	<ul style="list-style-type: none"> <li>• Natural &amp; Synthetic dyeing of slivers.</li> <li>• Use of bamboo ornaments and various gift items.</li> <li>• Explain the process of designing of various Handicraft items.</li> </ul>

	accessories.	<p>66. Make a design of Gift item, &amp;bamboo jewelries/ornaments.</p> <p><b>Making of Bamboo bags</b></p> <p>67. Making some products like tray, tea coaster, bamboo bags etc in workshop with the help of machines and hand tools.</p> <p><b>Making of Bamboo Models</b></p> <p>68. Perform making of models &amp; domestic accessories.</p> <p><b>Making of Bamboo Mats and Blinds</b></p> <p>69. Perform mat weaving.</p> <p>70. Perform making of blinds by automatic weaving machine.</p> <p>71. Perform making of blinds manually.</p>	<ul style="list-style-type: none"> <li>• Identification of suitable products as per market demand like tea coaster, bamboo bags, place mat etc.</li> <li>• Make a process lay-out of all individual products.</li> <li>• Discuss how to make model &amp; mockup.</li> <li>• Selection of Marketable Product.</li> <li>• Different weaving techniques for mat weaving.</li> <li>• Process layout of Weaving Bamboo Mats.</li> <li>• Process layout of making Bamboo Blinds.</li> <li>• Different patterns of Mat and Blind.</li> </ul>
<p>Practical 12Hrs</p> <p>Theory 06Hrs</p>	Demonstrate and Assess the method of using Jigs & fixture to make uniform size & reduce production cost.	<p><b>Make Jigs and Fixtures for Bamboo works</b></p> <p>72. Make various jigs &amp; fixtures as per requirement and make different products.</p> <p>73. Make various moulds for making moulded products.</p> <p>74. Perform on bamboo moulded furniture.</p>	<ul style="list-style-type: none"> <li>• What are jig and fixtures?</li> <li>• Explain the advantages of Jigs &amp; fixtures. When we use Jig&amp; Fixtures?</li> <li>• Materials used to make jigs &amp; fixtures.</li> <li>• Discussion on the tools &amp; equipment required to make Jigs &amp; fixtures.</li> </ul>
<p>Practical 12Hrs</p> <p>Theory 06Hrs</p>	Develop finishing technique by using different methods of finishing of bamboo products.	<p><b>Demonstration on Finishing Technique</b></p> <p>75. Insert filling material on bamboo products.</p> <p>76. Perform sanding, polishing &amp; buffing.</p> <p>77. Demonstrate final touch on the products using finishing materials.</p> <p>78. Perform melamine finishing.</p> <p>79. Perform PU finishing.</p>	<ul style="list-style-type: none"> <li>• Various methods of finishing techniques.</li> <li>• Various finishing materials &amp; there uses.</li> </ul>
Practical 12Hrs	Ensure quality of products as per	<p><b>Knowledge on Quality Concern</b></p> <p>80. Take random samples</p>	<ul style="list-style-type: none"> <li>• Explain the Quality concerns.</li> <li>• Sample and assess Bamboo</li> </ul>

Theory 06Hrs	market demand; observe production as per requirement and estimate the cost.	according to Company sampling procedures. 81. Measure Samples as per specific parameters according to company's technical specifications.	production according to company technical specifications. • Range of parameters to be specified.
Practical 35Hrs  Theory 12Hrs	Plan for proper packing, storing, delivery and transportation of finished goods.	<b>Packaging and Storing</b> 82. Practice on packaging & storing of different types of finished Bamboo products.	• Knowledge of various packaging as per sample products. • Discuss the Method of proper packaging of finished products & proper storing.
		<b>Knowledge on Transportation and Delivery</b> 83. Survey the Bamboo market. 84. Arrange the Transport service. 85. Arrange delivery of finished products.	• Knowledge of transportation & marketing. • Discuss the method of calculation of cost of finished Bamboo products.
Practical 35Hrs  Theory 12Hrs	Develop business relation and communication skills by visiting various shops, markets, showrooms etc.	86. Plan to visit various shops and various exhibitions. 87. Develop Market survey for different bamboo ornaments, bags, decorative etc. in some cities. 88. Sell simple bamboo products on local market. 89. Participate at various Exhibition, Seminar, Trade fair etc. 90. <b>Perform making of following items for selling purpose:</b> • Moulded Bamboo Chair • Relaxing Chair (Bamboo) • Centre Table (Bamboo) • Folding chair (Bamboo)	• Provide customer relation & estimate job. • Develop business skills for simple product unit. • Importance of communication skills that are useful to customer service are identified in accordance with enterprise requirements. (Speaking, giving information, active listening).
<b>SOFT SKILLS: 80 Hrs.</b>			
Professional Knowledge	Exhibit effective communication skills with logical reasoning	<b>COMMUNICATION SKILLS:</b> Oral communication Skills, Voice, accent, Voice modulation, pace, Intonation, etc.	

<p>e Soft Skills- 80 Hrs.</p>	<p>ability and quantitative aptitude to maximize efficiency in work.</p>	<p>Study of different pictorial expressions of non-verbal communication and its analysis.          Demo on Strengths and Weaknesses          Demo on Motivation, Positive attitude.          Practice personal appearance, Dressing Manners &amp; Etiquettes.          Practice attending mock interviews of different types. Listening &amp; doubt clarifying etc.          Case studies on Interview sessions.</p> <p><b><u>Communication &amp; Listening Skills</u></b> Components of effective communication, Types of communication- Oral, Written, Reading &amp; body language, Handling of communication, Barriers of communication, Listening Tools &amp; Speaking Tools, Non-verbal communication and its importance.</p> <p><b><u>Self-Management &amp; Personality Development</u></b> Self-Management, SWOT analysis, self-learning and management.          Motivation and Image building Techniques</p> <p><b><u>Personal Grooming &amp; Hygiene</u></b> Presentation of Self, Formal &amp; Informal Dressing, Dressing for Occasions.</p> <p><b><u>Techniques of Attending Interviews</u></b> Interview &amp; its types.          Preparation for the interview, stages of interview. Do's &amp; Don'ts in an interview.</p> <p><b>BASIC MATHEMATICAL CALCULATION:</b>          Conversions of different units viz. length, area, mass etc. Simple Problems on Perimeter and area of a triangle, a circle, a square, rectangle, semicircle etc. Simple Problems on Comparing quantities, weight, speed, height, age, ratio, percentage, and price, etc. Simple calculation on profit and loss statement, discount calculations of products. Demonstration of utilization of mobile apps for financial transactions. Exercises on aptitude/puzzles</p> <p>Practice on Types of Charts and Graphs          Introduction to units and dimensions of different objects. Perimeter, Area of regular shapes, viz. Triangle, Square, and Circle, rectangle, semicircle etc.</p> <p><b><u>Quantitative Aptitude</u></b> Introduction, Comparing quantities viz.          Speed, age, height, ratio, percentage, weight, and price, etc.          Introduction to cost price, sale price, profit, loss and discounts of products. Introduction to online internet banking mechanisms, various modes of payments, cash transactions and associated mobile apps. Concept of insurance and taxes and types. Personal saving and</p>
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		<p>investment mechanism.</p> <p><b>Logical reasoning</b> Introduction to logical reasoning. Types of logical reasoning. Principles of logical reasoning with examples on numbers and sequences, arrangement and relations,</p> <p><b>Data Interpretation</b> Data analysis and interpretation. Types of variables for different applications. Basic graph types (Bar, Line, PIE Charts).</p> <p><b>ENERGY &amp; ENVIRONMENT:</b></p> <p>Video demo on different types of energy resources. Conventional &amp; Non-Conventional Energy Resources. Fossil Fuel, Biomass, Bio-Gas, Solar, etc. Public awareness on Energy conservation and use of clean energy.</p> <p><b>ENGLISH LITERACY:</b></p> <p>Pronunciation of simple words, Diction (use of word and speech) Transformation of sentences, Spellings. Reading and understanding simple sentences about self, work and environment. Construction of simple sentences Writing simple English, Speaking with preparation on self, on family, on friends/ classmates, on work. Role-playing and discussions on current affairs. Job description. Practice of Taking messages, passing on instructions. Practice making Resumes or curriculum vita. Letters of application &amp; referencing to previous communication.</p>
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**SYLLABUS FOR CORE SKILLS**

1. Training Methodology (Common for all trades) (270Hrs + 180Hrs)

Learning outcomes, assessment criteria, syllabus and Tool List of above Core Skills subjects which is common for a group of trades, provided separately in [www.bharatskills.gov.in](http://www.bharatskills.gov.in)

## 7. ASSESSMENT CRITERIA

LEARNING OUTCOME	ASSESSMENT CRITERIA
<b>TRADE TECHNOLOGY</b>	
1. Plan and prepare various cultivation techniques, types of propagation methods, treatment and preservation of bamboo. (NOS: HCS/N9401)	Explain identification method different types of bamboo items.
	Demonstrate modern utilization of Bamboo items by showing visual aids.
	Demonstrate Bamboo cultivation Techniques.
	Assess the Propagation method in Bamboo field.
	Explain the reason of Disease of Bamboo and its remedies.
	Examine various techniques of Treatment Preservation & Seasoning of Bamboo.
	Demonstrate Colouring/Dyeing of Bamboo strips/ slivers/bamboo pole.
Monitor Various Bamboo treatment process.	
2. Demonstrate safe working practice on various hand tools and machine tools. (NOS: HCS/N9403)	Choose various kinds of hand tools/machine tools used in bamboo works industry.
	Demonstrate maintenance of hand tools/machine tools while production following the safety /precautionary guidelines.
	Plan and select material and machine for drill holes to make observing safety points.
	Monitor safe practice on machine tools like Drill, portable sander, jig saw, sabre saw.
3. Demonstrate and then evaluate the process of performing on different types of joints, bending of Bamboo strips, slivers, bamboo pole using blow lamp. (NOS: HCS/N9404)	Choose exact type of joint to employ and arrange materials, tools and equipments to perform the operation
	Construct tongue and groove/ male and female joint/ Bolt fastening joint/Overlapping joint/U-shape joint/ Horizontal joint/ Vertical joint etc.
	Demonstrate Bending bamboo strips, Slivers & bamboo pole using blow lamp.
	Test Coloring method on Surface of Bamboo pole by blow lamp.
4. Adopt suitable method of practice on cross cutting machine, removing nodes of bamboo using various splitting machine. (NOS: HCS/N9405)	Plan and select the job and set up machine accessories at position to perform desired operation.
	Test the desired operation by checking proper adjustment of table, guide, fence and blade guard.
	Demonstrate operation of Cross Cutting machine with proper oiling/ lubrication including preventive maintenance of the machine.
	Monitor the performance on Radial splitting Machine/ Parallel splitting Machine
	Prepare Bamboo Strips after removing inside node& outside

	node.
5. Appraise the steps to be followed for safe operation of Round Stick Making Machine & Polishing Machine. (NOS: HCS/N9406)	<p>Demonstrate the process of Polishing /oiling /lubricating different machines like manual slivering machine/ round stick machine for proper functioning.</p> <p>Explain how to make round sticks of various diameter.</p> <p>Justify the reason of faults in Machine and rectify the machine by troubleshooting.</p>
6. Demonstrate the operation and maintenance of 2 side/4 side machine planer, Hydraulic press, and Resign Applicator machine. (NOS: HCS/N9407)	<p>Monitor Operation &amp; maintenance of electric drill machine/ 2 side / 4 side machine planer.</p> <p>Demonstrate Operation &amp; maintenance of Hydraulic Press Machine.</p> <p>Troubleshoot Resign Applicator Machine to execute different bamboo works.</p> <p>Plan and prepare 4mm bamboo mat board using hydraulic machine and resign applicator.</p>
7. Test and troubleshoot the faults that occur during operation of Glue mixing machine, DD Saw machines and weaving machine. (NOS: HCS/N9410)	<p>Evaluate Operation &amp; maintenance of the Glue Mixing machine</p> <p>Test and troubleshoot disputes in DD Saw machine</p> <p>Appraise Operation &amp; maintenance of weaving Machine</p> <p>Reduce waste and plan for reuse/ dispose of the unused items.</p> <p>Plan to make window blinds using automatic weaving machine.</p>
8. Demonstrate the maintenance procedure of different machines used in Bamboo works. (NOS: HCS/N9411)	<p>Demonstrate cleaning &amp; maintenance machine parts by oiling/greasing/Lubricating</p> <p>Select proper tools required for maintenance of machine.</p> <p>Explain different procedures of maintenance of machines.</p> <p>Monitor the procedure to be followed to open saw blades, cutter, Knives etc. for re-sharpening</p> <p>Check the method of lubrication of movable parts with grease and/or specific lubricants.</p>
9. Illustrate the use of bamboo and other necessary tools in production of different types of furniture. (NOS: HCS/N9412)	<p>Demonstrate the process of making various furniture for households.</p> <p>Explain the advantages of furniture making and various tools used for furniture making.</p> <p>Check the dimension to prepare Furniture as per given data.</p> <p>Check material to be used for furniture making.</p> <p>Plan and prepare sofa set, Round Bamboo Furniture, Folded Bamboo Furniture by using Bamboo material.</p> <p>Demonstrate preparation of Domestic/ Commercial Chair, Table,</p>

	Single Bed.
10. Choose appropriate bamboo species for different industrial Handicraft products. (NOS: HCS/N9413)	<p>Choose bamboo species as per job requirement at practical field.</p> <p>Pick appropriate bamboo species as per requirement of the bamboo product.</p> <p>Construct different bamboo handicrafts using various bamboo species.</p>
11. Design handicrafts of different varieties by free hand drawing. (NOS: HCS/N9414)	<p>Demonstrate free hand drawing &amp; mark layout as per drawing.</p> <p>Design various gift items/stationery Item by hand drawing.</p> <p>Plan required steps of operation to produce the gift/stationary item.</p> <p>Design hand drawing of various furniture of different location.</p>
12. Monitor operation and booting of basic functions of computer. (NOS: HCS/N9415)	<p>Demonstrate the process of Booting the Computer/OpenWindows/ menus/use mouse.</p> <p>Create a directory in Windows.</p> <p>Create a File/ Folder</p> <p>Use my documents.</p> <p>Use start menu for opening an application.</p> <p>Change control panel settings for display</p> <p>Familiarize with Key Board and other computer components.</p> <p>Explain use of MS word for official purpose</p> <p>Demonstrate the use of internet.</p>
13. Demonstrate on AutoCAD software to prepare different shapes and design of the bamboo products. (NOS: HCS/N9427)	<p>Explain Installion process of AutoCad Software.</p> <p>Choose various tools of Menu bar for application.</p> <p>Plan and design Drawing of various gift items, stationery Item</p>
14. Adapt different techniques and process of making various kinds of bamboo Jewelleries, bags, models, mats, Blinds, domestic accessories. (NOS: HCS/N9428)	<p>Design intervention on new innovative products.</p> <p>Make different gift items/stationery Item.</p> <p>Make Bamboo Models / Prototype/ mock.</p> <p>Select Marketable Product.</p> <p>Demonstrate Production of tray, tea coaster, bamboo bags etc.</p> <p>Adapt different weaving techniques in production of Mat Weaving.</p> <p>Design layout of weaving Bamboo mat, Bamboo Blinds.</p> <p>Discuss on blinds Making process by automatic weaving machine and Manually</p> <p>Evaluate different techniques to make domestic accessories.</p>
15. Demonstrate and assess the method of using Jigs & fixture to make uniform size & reduce production cost.	<p>Choose proper materials for making jigs &amp; fixtures.</p> <p>Demonstrate Making various jig &amp; fixtures as per Requirement.</p> <p>Check various mould for making moulded Products.</p> <p>Monitor the workmanship on bamboo moulded furniture.</p>

(NOS: HCS/N9429)	
16. Develop finishing technique by using different methods of finishing of bamboo products. (NOS: HCS/N9430)	<p>Explain the process of Identifying&amp; selecting finishing Tools/materials.</p> <p>Demonstrate the method of filling material on Bamboo Products.</p> <p>Discuss the process of sanding, polishing&amp; buffing</p> <p>Check the final touch on the products using finishing materials.</p>
17. Ensure quality of products as per market demand; observe production as per requirement and estimate the cost. (NOS: HCS/N9431)	<p>Select sample according to Company sampling procedures.</p> <p>Measure samples for specified parameters according to company technical specifications.</p> <p>Estimate cost of production.</p> <p>Assess the process of finishing in PU and Melamine</p>
18. Plan for proper packing, storing, delivery and transportation of finished goods. (NOS: HCS/N9432)	<p>Demonstrate the methods of various packaging process of finished products.</p> <p>Monitor practice on packaging and storing.</p> <p>Compile the survey report of Bamboo Market for further Study.</p> <p>Discuss on the process of Transportation, its utility, calculation methods of Transportation as well as cost of finished products.</p> <p>Monitor the transport service and delivery of finished products.</p>
19. Develop business relation and communication skills by visiting various shops, markets, showrooms etc. (NOS: MEP/N9433)	<p>Estimate the cost of Raw material and finished goods in Market.</p> <p>Check method of communication to customer at visiting place.</p> <p>Discuss importance of communication skills that are useful to customer service.</p> <p>Assess the practice on technique of different furniture making process like: i) Moulded Bamboo Chair ,      ii) Relaxing Chair, iii) Centre Table ,      iv) Folding Chair</p>
20. Exhibit effective communication skills with logical reasoning ability and quantitative aptitude to maximize efficiency in work. (NOS: MEP/N9446)	<p>Demonstrate reasonable quantitative aptitude and interpret data in the field of work</p> <p>Demonstrate effective communication skills with logical reasoning ability.</p> <p>Describe method of energy conservation and day-to- day contribution to work for optimum utilization of resources.</p> <p>Demonstrate English language fluency while carrying out official work.</p>

## 8. INFRASTRUCTURE

LIST OF TOOLS AND EQUIPMENT - "BAMBOO WORKS (CITS)"			
(for batch of 25 candidates)			
S No.	Name of the Tools & Equipment	Specification	Quantity
<b>A. TRAINEES TOOL KIT</b>			
1.	Combination pliers	200 mm insulated	25+1 Nos.
2.	Screw driver	100mm, 200mm	25+1 Nos
3.	Neon Tester	500 V pencil bit type	05 Nos.
4.	Electrician knife		05 Nos.
5.	Hammer ball pen	250gm	25+1 Nos.
6.	Half Round File	12"	25+1 Nos.
7.	Half Round Chisel	10"	25+1 Nos.
8.	Hammer ball pin	500gm	05 Nos.
9.	Center punch	100 mm	25+1 Nos.
10.	Steel measuring tape	20 mts.	5 Sets
11.	Allen keys set		05 Sets
12.	Spanner double ended set	(6-37mm)	13 Sets
13.	Adjustable Spanner	8",10" 12",14" (each 2pcs)	8 Nos.
14.	Steel rule	300 mm	25 Nos.
15.	Electric soldering iron	35 w	02 Nos.
<b>B. LIST OF TOOLS &amp; EQUIPMENT</b>			
16.	Megger		1 No.
17.	Multimeter	0-5,100,200,500 mA,0-100-1000-10000 Ohms, 0-150,300,600 VAC/DC	02 Nos.
18.	Desktop 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.	13 Nos.
19.	UPS		As required
20.	LASER PRINTER		1 No.
21.	Scanner		1 No.
22.	Plotter		1 No.
23.	WINDOWS /OPERATING SYSTEM LATEST		13 Nos.

24.	MS OFFICE LATEST		13 Nos.
25.	Latest version of AutoCAD Software		13 Nos.
26.	Common Hacksaw		25 Nos.
27.	Adjustable Hacksaw		25 Nos.
28.	Hand saw	(450 mm)	5 Nos.
29.	Round Knife		25 Nos.
30.	Radial Hand splitter	(4.8.12.16 blades)	2 Nos.
31.	Dao	8"and 12" each 20pcs	40Nos.
32.	Pruning Scissor		25 Nos.
33.	Hand drill		25 Nos.
34.	Electric Hand drill		4 Nos.
35.	IDC Gauge		13 Nos.
<b>C. MACHINERY</b>			
36.	Bamboo crosscut machine, heavy duty including 2 H.P. Motor, starter and carbide tipped circular saw 16" X 3 mm X 120 Teeth	<ul style="list-style-type: none"> <li>• Maximum diameter of Bamboo to be cut : 200mm(8")</li> <li>• Dimensions of the Machine (including Front &amp; backguider) : 17'X4'X2.5' Power consumption : 2 H.P</li> <li>• Spindle Speed : 2800 rpm</li> </ul>	1 No.
37.	Bamboo portable crosscut machine, including 2 h.p. Motor, starter and carbide tipped circular saw 14" X 3 mm X 120 Teeth	<ul style="list-style-type: none"> <li>• Maximum diameter of Bamboo to be cut : 150mm(6")powerconsumption : 2 H.P</li> <li>• Spindle Speed : 2800 rpm</li> </ul>	1 No.
38.	Bamboo Radial Splitter (Chain Type) Including various grill for different diameter of bamboo	<ul style="list-style-type: none"> <li>• Dimension of the Machine</li> <li>• Power consumption</li> <li>• Max. length of bamboo that can be split: 8 feet Max. diameter of bamboo to split :8"</li> </ul>	1 No.
39.	Bamboo Round Stick Making Machine	<ul style="list-style-type: none"> <li>• Dimension of the Machine</li> <li>• Net Weight</li> <li>• Power consumption</li> <li>• Max. width of the bamboo strip : 25 mm</li> <li>• Specification of cutters</li> <li>• Carbide Tipped Planner Cutters1No.</li> <li>• Carbide Tipped Stick Making cutters,2 Nos. : 78x25.4x25x12 teeth (1.5mm &amp;3mm)</li> </ul>	1 No.
40.	Bamboo Square Stick Making Machine	<ul style="list-style-type: none"> <li>• Dimensions:18"x22"x8"Power Consumption</li> </ul>	1 No.
41.	Bamboo Stick Polishing Machine	<ul style="list-style-type: none"> <li>• Dimensions of the machine</li> </ul>	1 No.

		(in metre) : 3.8 x 1 x1.3 Power Consumption: 2 H.P Maximum length of sticks: 18"	
42.	Bamboo Inside Node Removing cum Slicing Machine (Heavy Duty)	<ul style="list-style-type: none"> <li>• Dimensions of the machine(in metre) 1.2 x 1 x1.3PowerConsumption</li> <li>• Minimum thickness of strips can be produced : 1.5mm Maximum thickness of strips can be produced : 10mm</li> </ul>	2 Nos.
43.	Bamboo Stick Sizing Machine	Maximum height of the bamboo lump :100mm Dimension of the machines, in meter :1.2 X 1.2 X1.5 Power Consumption : 2H.P Carbide Tipp Circular Saw : 400X25.4X120 Teeth (2.2 Thickness)	1 No.
44.	Bamboo Double Side Cutting Machine, Parallel Splitter Maximum Diameter of bamboo to be split :	<ul style="list-style-type: none"> <li>• 8"Dimension of the machine, in meter : 2.3 X1.3 X 1.3 Maximum diameter of circular : 14" X2.5mm X80-100 Teeth</li> <li>• Power consumption : 3 H.P X 2</li> <li>• Spindle speed, in revolution per minute :2700 r.p.m</li> </ul>	1 No.
45.	Bamboo Two Side Planning cum Sizing Machine	Maximum Width of bamboo to be plane : 35mm Dimension of the machine : 74"X22"X41" Power consumption : 8 H.P	1 No.
46.	Bamboo Four Side Planning Machine	Maximum width of bamboo: 35mm Dimension of the machine, in meter : 1.5x1.2x1.6 Maximum thickness of bamboo : 20 mm Power consumption : 7 H.P	1 No.
47.	Bamboo Treatment Tank Outside dimensions of the Treatment Plant :	<ul style="list-style-type: none"> <li>• 9'x2'x3'</li> <li>• Maximum temperature for bamboo seasoning unit : 120 degree C. Chemical recommended : Boric/Borax acid</li> <li>• Metal Sheet (thickness 2mm) : Stainless Steel</li> </ul>	1 No.
48.	Bamboo Dyeing Tank Outside dimensions of the Treatment	<ul style="list-style-type: none"> <li>• 2'x2'x1.5' Maximum temperature for bamboo</li> </ul>	1 No.



	Plant :	seasoning unit: 120 degree C. <ul style="list-style-type: none"> <li>• Chemical recommended: synthetic or natural chemical</li> </ul> Metal Sheet (thickness 2mm) : Stainless Steel	
49.	Bamboo outside knot removing machine Power consumption.	<ul style="list-style-type: none"> <li>• 1 H.P Height of the table</li> </ul>	1 No.
50.	Manual Slivering machine		4 No.
51.	<b>Wood related machine</b> a) Universal Grinding machine b) Table grinding machine c) Hand Gloves		1 No. 1 Nos. 25Nos.
52.	Portable sanding machine		1 No.
53.	Spray Gun		5 Nos.
54.	Drying Chamber		1 No.
55.	Resign Applicator		1 No.
56.	Glue mixing machine		1 No.
57.	Hydraulic Press Machine	<ul style="list-style-type: none"> <li>• (4'X2')with thermic fluid heater</li> <li>• (Maximum pressure required 45 kg/cm<sup>2</sup>)</li> </ul>	1 No.
58.	DD Saw		1 No.
59.	Half Round Chisel	1/2"	13 No.
60.	Ladder aluminum	30m	1 No.
61.	Bench vice		5 Nos.
62.	C. Clamp		1 No.
63.	Gloves Canvas		13 No.
64.	Portable Grinding machine with various polishing stones		2 No.
65.	Brush for painting		13No.
66.	Drawing board with facility of parallel bar		13 No.
67.	Mini drafter		25Nos.
68.	Automatic weaving machine (Single design)		1 No.
69.	Pneumatic Nailer		1 No.
70.	Gas torch		13No.
71.	Wood turning lathe (6')		2 Nos.
72.	Table Grinding machine (8")		2 Nos.
73.	Industrial Sewing Machine		4 Nos.
74.	Bamboo Tool kit boxes including 24 nos. various kits		25 Nos.
75.	Clamps for holding or tightening the jobs		13 Nos.
76.	Manual press machine		2 Nos.
77.	Sizing machine for window blinds		1 No

78.	Compressor (300lbs)		2 Nos.
79.	Automatic Slivering Machine		2 Nos.
80.	Portable Planner		2 Nos.
81.	Various Mould for making moulded Furniture		Lots
82.	Portable rip saw		4 Nos.
83.	Mitre saw		2 Nos.
84.	Universal Planner		1 Nos.
85.	Portable Jig saw		4 Nos.
86.	Stand Drill machine	1"	2 Nos.
<b>D. WORKSHOP FURNITURE</b>			
87.	Work Tables ,Size:	8' X 4' X 3', Frame should be made by Iron Angle of 4"X4".Top will be Wood plank of 2" thickness	4 Nos.
88.	Stools		25 Nos.
89.	Discussion Table		1 Nos.
90.	Tool Cabinet		2 nos.
91.	Trainees locker with 16 boxes		2 Nos.
92.	Firefighting equipment, first aid box etc.		5 Nos.
93.	Book Shelf(Glass panel)		1 No.
94.	Storage Rack		2 Nos.
95.	Storage Shelf		2 Nos.
96.	Suitable Computer Tables		13 Nos.
97.	Computer Chairs		25 Nos.
98.	Tool Cabinet		2 Nos.
99.	Trainees Locker with 16 boxes.		2 Nos.
100.	Book Shelf (Glass panel)		1 No.
101.	Shoes Rack		2 Nos.
102.	Vacuum cleaner		1 No.
<b>E. FURNITURE FOR CLASSROOM</b>			
103.	Class Room Chairs (armless) / Dual desk may also be allowed		25 Nos.
104.	Class Room Tables	(3ft X 2ft) / Dual desk may also be allowed	25 Nos.
105.	Chair for Trainer (armed) movable		01 No.
106.	Table for Trainer	(4 ½ ft X 2 ½ ft) with Drawer and cupboard	01 No.
107.	LCD Projector		01 No.
108.	Multimedia Computer System with all accessories with UPS (.5 KVA)	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	01 set

		Inch. Licensed Operating System and Antivirus compatible with trade related software.	
109.	UPS		As required
110.	Computer Table		01 No.
111.	White Board	(6ft X 4 ft.)	01 No.
112.	LCD Projector Screen		01 No.
113.	Air Conditioner		As required
114.	Wall Clock		01 No.
115.	Wall charts, Transparencies and DVDs related to the trade		As required
116.	Document Camera / Visualizer		01 No.
117.	Smart Board / Inter Active Board		01 No.
118.	Over Head Projector		01 No.
119.	Video Camera with stand		01 No.
120.	Printer cum Scanner		01 No.
121.	Laptop with all latest OS		01 No.

