



National Vocational Qualifications Level 2&3 for Carpentry Sector -Cabinet Maker



## **National Vocational Certificate level 2& 4, in Carpentry Sector (Cabinet Maker)**



**National Vocational and Technical Training Commission (NAVTTTC)  
Government of Pakistan**



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## 1. TITLE OF QUALIFICATION

National Vocational Certificate level 2& 3, in Carpentry sector “(Cabinet Maker)”

## 2. INTRODUCTION

**Cabinet Making** refers to movable objects intended to support various human activities such as seating (e.g., chairs, stools, and sofas), eating (tables), and sleeping (e.g., beds). Cabinet Making is also used to hold objects at a convenient height for work (as horizontal surfaces above the ground, such as tables and desks), or to store things (e.g., cupboards and shelves). Cabinet Making can be a product of design and is considered a form of decorative art. In addition to furniture's functional role, it can serve a symbolic or religious purpose as well.

In order to build the capacity of technical and vocational training Institutes in Pakistan through provision of demand driven competencies based trainings in Carpentry Sector the NAVTTC, KP-TEVTA and GIZ have joined hands together to develop qualifications for Carpentry Sector . These qualifications will not only build the capacity of existing workers of this sector but also support the youth to acquire skills best fit for this sector. The benefits and impact of development of these qualifications will be on both demand and supply side. Under this the demand arises from All Pakistan Furniture Industries.

Based upon this demand of industry these competency-based qualifications for Cabinet Maker are developed under National Vocational Qualification Framework (Level 2 & 3). The qualifications mainly cover competencies along with related knowledge and professional attitude which is essential for getting a job or self-employed.

The qualifications are also in line with the vision of Pakistan’s National Skills Strategy (NSS), National TVET Policy and National Vocational Qualification Framework (NVQF). This provides policy directions, support and an enabling environment to the public and private sectors to impart training for skills development to enhance social and economic profile. The National Vocational & Technical Training Commission (NAVTTC) has approved the Qualification Development Committee (QDC).The QDC consists experts from the relevant industries from different geographical locations across Pakistan and academicians who were consulted during the development process to ensure input and ownership of all the stakeholders. The National Competency Standards could be used as a referral document for the development of curricula to be used by training Institutions.

Under CBT the traditional role of a trainer changes and shifts towards the facilitation of training. A trainer encourages and assists trainees to learn for themselves. Trainees are likely to work in groups (pairs) and all doing something different. Some are doing practical tasks in the workshop, some writing, some not even in the classroom or workshop but in



another part of the building using specialist equipment, working on computers doing research on the Internet or the library. As trainees learn at different place they might well be at different stages in their learning, thus learning must be tailored to suit individual needs. The following facilitation methods (teaching strategies) are generally employed:

- **Direct Instruction Method:** This might be effective when introducing a new topic to a larger group of trainees in a relative short span of time. In most of the cases this method relies on one-way communication, hence there are limited opportunities to get feedback on the trainee's understanding.
- **Discussion Method:** This allows trainees to actively participate in sharing knowledge and ideas. It will help the trainer to determine whether trainees understand the content of the topic. On the other hand, there is a possibility of straying off topic under discussion and some trainees dominating others on their views.
- **Small Group Method:** Pairing trainees to help and learn from each other often results in faster knowledge/skill transfer than with the whole class. The physical arrangement of the classroom/workshop and individual assessment may be challenging. Analogy method should be in corporate.
- **Problem Solving Method:** This is a very popular teaching strategy for the training. Trainees are challenged and are usually highly motivated when they gain new knowledge and skills by solving problems (Contingency skills). Trainees develop critical thinking skills and the ability to adapt to new learning situations (Transfer skills). It might be time consuming and because trainees sometimes work individually, they may not learn all the things that they are expected to learn.
- **Research Method:** This is used for workshops and laboratory tasks, field experiments, and case studies. It encourages trainees to investigate and find answers for themselves and to critically evaluate information. It however requires a lot of time and careful planning of research projects for the trainee.

The detail of the competency standards included in this qualifications given below:

- **National Vocational Certificate level 2, in (Carpentry Sector) “Cabinet Maker”**
  - Maintain Safety
  - Maintain Tools & Equipment.
  - Prepare Work place
  - Interpret Basic Drawing & Design
  - Maintain Machine



- **National Vocational Certificate level 3, in (Carpentry Sector) “Cabinet Maker”**
  - Perform cutting
  - Perform planing
  - Prepare Job
  - Assemble Job
  - Perform Polishing
  
- **National Vocational Certificate level 4, in (Carpentry Sector) “Cabinet Maker”**
  - Supervise Work Place
  - Estimate Budget
  - Perform CAD/CAM Operations
  - Develop Professionalism

### 3. PURPOSE OF THE QUALIFICATION

The purpose of the training is to provide skilled manpower to improve the existing Carpentry Sector. This training will provide the basic skills to the trainees in the field of Carpentry handling, cutting, planing, job preparation, job assembling and then value addition to it in the shape of polishing. It will enable the participants to meet the challenges in the field of furniture industry. Further, to improve the skill level of the workers and prepare them for the furniture industry to meet the market competition.

The core purpose of this qualification is to produce employable Cabinet Maker who could perform wood cutting, planning and surface finishing according to national standards. In addition this qualification will prepare unemployable youth to employee in Carpentry Sector or as an entrepreneur.

### 4. MAIN OBJECTIVES OF THE QUALIFICATION

The *Cabinet Maker qualifications* level 2, 3 & 4 consists of theoretical and practical details required for the wood cutting and polishing techniques. The main objectives of the qualification are as follows:

- Maintain Safety
- Maintain Tools & Equipment.
- Prepare Workplace/ Housekeeping
- Interpret Basic Drawing & Design
- Perform Cutting
- Perform Planning
- Prepare Job



- Assemble Job
- Perform Polishing
- Maintain Machine
- Supervise Work Place
- Estimate Budget
- Perform CAD/CAM Operations
- Develop Professionalism

## 5. DATE OF VALIDATION

The level 2, 3 & 4 of national vocational qualification on Cabinet Maker has been validated by the Qualifications Development Committee (QDC) members on **September 24-28, 2018** and will remain in currency until June 2021

## 6. CODES OF QUALIFICATIONS

The International Standard Classification of Education (ISCED) is a framework for assembling, compiling and analyzing cross-nationally comparable statistics on education and training. ISCED codes for these qualifications are assigned as follows:

ISCED Classification for level 2, 3 & 4 "Cabinet Maker"	
Code	Description
0722	National Vocational Certificate level 2, in (Carpentry sector) "Cabinet Maker"
0722	National Vocational Certificate level 3, in (Carpentry sector) "Cabinet Maker"
0722	National Vocational Certificate level 4, in (Carpentry sector) "Cabinet Maker"

## 7. MEMBERS OF QUALIFICATIONS DEVELOPMENT COMMITTEE

The following members participated in the qualifications development and validation of these qualifications:

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## 8. ENTRY REQUIREMENTS

The entry for National Vocational Certificate level 2, 3 & 4, in **(Cabinet Making)** “Cabinet maker” are given below:

Title	Entry requirements
National Vocational Certificate level 2, in (Cabinet making)	Entry for assessment for this qualification is open. However, entry into formal training institutes, based on this qualification may require skills and knowledge equivalent to middle (Grade 8) with some working knowledge of this field.
National Vocational Certificate level 3, in (Cabinet making)	Entry for assessment for this qualification is open. However entry into formal training institute for this



Title	Entry requirements
	qualification is person having National Vocational Certificate level 2, in ( <b>Cabinet making</b> )
National Vocational Certificate level 4, in (Cabinet making)	Entry for assessment for this qualification is open. However entry into formal training institute for this qualification is person having National Vocational Certificate level 3, in ( <b>Cabinet making</b> )

## 9. IMPORTANT LINKS

- Prime Minister's Office [www.pmo.gov.pk](http://www.pmo.gov.pk)
- <https://www.cabinetmakers.org/>
- Small & Medium Enterprises Development Authority
- National Bank of Pakistan (NBP) [www.nbp.com.pk](http://www.nbp.com.pk)
- First Women Bank Limited (FWBL) [www.fwbl.com.pk](http://www.fwbl.com.pk)
- Government of Pakistan [www.pakistan.gov.pk](http://www.pakistan.gov.pk)
- Ministry of Industries & Production [www.moip.gov.pk](http://www.moip.gov.pk)
- Government of Punjab [www.punjab.gov.pk](http://www.punjab.gov.pk)
- Government of Sindh [www.sindh.gov.pk](http://www.sindh.gov.pk)
- Government of Khyber Pakhtoonkhwa [www.khyberpakhtunkhwa.gov.pk](http://www.khyberpakhtunkhwa.gov.pk)
- Government of Balochistan [www.balochistan.gov.pk](http://www.balochistan.gov.pk)
- Government of Gilgit Baltistan [www.gilgitbaltistan.gov.pk](http://www.gilgitbaltistan.gov.pk)
- Government of Azad Jamu Kashmir [www.ajk.gov.pk](http://www.ajk.gov.pk)
- Trade Development Authority of Pakistan (TDAP) [www.tdap.gov.pk](http://www.tdap.gov.pk)
- Security Commission of Pakistan (SECP) [www.secp.gov.pk](http://www.secp.gov.pk)
- Federation of Pakistan Chambers of Commerce and Industry (FPCCI) [www.fpcci.com.pk](http://www.fpcci.com.pk)
- State Bank of Pakistan (SBP) [www.sbp.org.pk](http://www.sbp.org.pk)



## 10. SUMMARY OF COMPETENCY STANDARDS

Code	Competency Standards	Level	Credits	Category
	Maintain Safety	2		Functional
	Maintain Tools & Equipment.	2		Technical
	Prepare Workplace	2		Functional
	Interpret Basic Drawing & Design	2		Technical
	Perform Cutting	3		Technical
	Perform Planning	3		Technical
	Prepare Job	3		Technical
	Assemble job	3		Technical
	Perform Polishing	3		Technical
	Maintain Machines.	2		Technical
	Develop Professionalism	4		Generic
	Supervise Work Place	4		Technical
	Estimate Budget	4		Technical
	Perform CAD/CAM Operations	4		Technical
	<b>TOTAL</b>			<b>24 months</b>



Level 2 ( Hrs)	Level 3 ( Hrs)	Level 4 (Hrs)	Allocated CreditHrs)	
Maintain Safety	Perform Wood Cutting			
Maintain Tool & Equipment	Perform Wood Planning	Supervise Work Place	Recommended to be decided in the validation workshop	
Prepare Workplace	Prepare Job	Estimate Budget		
Interpret Basic Drawing & Design	Assemble Job	Perform CAD/CAM Operations		
Prepare Joints Manually	Perform Polishing			
		Develop Professionalism		

### Competency Standard A: Maintain Safety

**Overview:** This competency standard covers the skills and knowledge required to protect from all security threats by ensuring personal safety, workplace safety Machines/tools and equipment safety, interpret environmental regulation preparation and safety of all tools and equipment.

Competency Units	Performance Criteria
<b>A1.</b> Ensure Personal safety	<b>Trainee will be able to:</b> <b>P1.</b> Arrange PPE as per requirements <b>P2.</b> Wear proper PPE as per nature of job <b>P3.</b> Store PPEs at appropriate place after use
<b>A2.</b> Ensure workplace safety.	<b>Trainee will be able to:</b> <b>P1.</b> Ensure cleaning of workplace properly <b>P2.</b> Avoid hazardous (electric / chemical) by adopting safety precautions <b>P3.</b> Ensure availability of emergency exit <b>P4.</b> Ensure lighting and ventilation <b>P5.</b> Ensure availability of Firefighting equipment <b>P6.</b> Report to the concerned immediately in case of emergency <b>P7.</b> Ensure safe access to the system <b>P8.</b> Ensure installation of dust collector
<b>A3.</b> Ensure safety of tools and equipment	<b>Trainee will be able to:</b> <b>P1.</b> Ensure insulation of tools and equipment <b>P2.</b> Ensure safe storing of tools and equipment <b>P3.</b> Perform Cleaning of tools and equipment on regular basis.



	<b>P4.</b> Ensure use of specific tool as per requirement of job
A4. Maintain First aid Box	<b>P1.</b> Ensure availability of first aid box <b>P2.</b> <i>Check first aid box for Emergency Medicines.</i> <b>P3.</b> <i>Check Expiry date of the Medicines</i> <b>P4.</b> Perform first aid treatment/bandages against minor injury. <b>P5.</b> Ensure availability of emergency/Rescue numbers
A5. Ensure Machines Safety	<i>P1.Check belts of Machine</i> <i>P2. Check cutters of machines</i> <i>P3.Chek Machine for short circuit</i> <i>P4.Perform test operation on Machine</i> <i>P5.Ensure smooth functioning</i>
A6. Interpret Environmental Regulation	<i>P1.Ensure work friendly environment.</i> <i>P2.Adopt environmental regulation</i>

### Knowledge & Understanding

The candidate must be able to demonstrate the underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Types of physical hazards
- K2. Types of chemical hazards
- K3. Types of electrical hazards
- K4. Differentiate between physical, chemical and electrical hazards
- K5. Treatments of various hazards
- K6. Types and use of PPEs
- K7. Types of Risks
- K8. Risk Management
- K9. Risk assessment
- K10. Monitor and risk control measures
- K11. Understanding of First Aid Treatment
- K12. Use of safety equipment
- K13. Importance of/machines/ tools safety
- K14. Reporting risks and hazards

### Critical Evidence(s) Required



The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Prepare a list of PPEs
- Demonstrate the use of at least one of the PPEs in front of assessor as per assessors directions
- Perform first aid treatment against electric shock/minor injury.
- Explain safety procedure at workplace
- Differentiate between safe and unsafe tools

### Important points

- Focus on personal tasks
- Personal Safety first
- Ensure safety of co-workers
- Health of PPEs must be ensured





## Competency Standard B: Maintain Tools & Equipment.

**Overview:** This competency standard covers the skills and knowledge required to Arrange Tools and Equipment, Maintain tool Cabinet, Calibrate measuring tools, Prepare tools for job, Perform Cleaning of Tools / equipment's and Manage Inventory of tools.

Competency Units	Performance Criteria
<b>B1.</b> Arrange tool &Equipment	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Identify Tools and Equipment  <b>P2.</b> Interpret job card  <b>P3.</b> Prepare list of tools and equipment as per demand  <b>P4.</b> Collect tools and equipment from store</p>
<b>B2.</b> Maintain tools Cabinet	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Check Physical Condition of Tools &amp; Equipment before use  <b>P2.</b> Perform preventive maintenance as per standards  <b>P3.</b> Perform corrective maintenance (If required)  <b>P4.</b> Clean Tools and equipment after use  <b>P5.</b> Place tools and equipment at appropriate place</p>
<b>B3.</b> Calibrate measuring tools	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P6.</b> Check calibration status of the measuring tools  <b>P7.</b> Perform calibration of measuring tools as per standards  <b>P8.</b> Record Calibration test results</p>
<b>B4</b> Prepare tools for job	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Collect the required tool as per job demand  P2. Check condition of tools.  P3. Prepare/design tools for job  P4. Sharp the tools</p>
<b>B5.</b> Perform Cleaning of Tools / equipment's	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Collect the tools  P2. Check condition of tools.  P3. Clean the tools  P4. Lubricate the tools/ equipment's if required</p>
<b>B6.</b> Manage Inventory of tools and equipment	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Ensure availability of tools/equipment as per list.  <b>P2.</b> Report for faulty/unserviceable tools and equipment.  <b>P3.</b> Generate demand for deficit tools and equipment  <b>P4.</b> Maintain record of all tools and equipment</p>



## Knowledge & Understanding

The candidate must be able to demonstrate the underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Types of different Tools
- K2. Uses of tools and equipment
- K3. Calibration techniques
- K4. Importance of calibration
- K5. Inventory Management
- K6. Preventive and corrective measures for tools and equipment
- K7. Cleaning techniques of various tools and equipment.
- K8. Preparation of tools for job.

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify Tools and Equipment
- Check Physical Condition of Tools & Equipment before use
- Perform preventive maintenance as per standards
- Perform corrective maintenance (If required)
- Maintain record of all tools and equipment

## Important points

- Prepare list of the required tools
- Uses of different Tools
- Storing of tools and equipment at appropriate place
- Interpret job card.
- Cleaning techniques of various tools and equipment



### Competency Standard C: Prepare Workplace / Housekeeping

**Overview:** This competency standard covers the skills and knowledge required to arrange location for dumping logs, Dump Logs, Ensure clear passage, ensure safe Storing of allied materials and Maintain Inventory of.

Competency Units	Performance Criteria
<b>C1.</b> Arrange location for dumping logs	<p><b>Trainee will be able to:</b></p> <p><b>P1. Select location for dumping logs</b></p> <p><b>P2. Clean</b> work place.</p> <p><b>P2.</b> Arrange safe unloading of logs.</p>
<b>C2.</b> Dump Logs	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Segregate logs according to:</p> <ul style="list-style-type: none"> <li>○ Type</li> <li>○ Grade</li> <li>○ Size</li> <li>○ Shape</li> </ul> <p><b>P2.</b> Dump the Logs</p> <p><b>P3.</b> Update Inventory</p>
<b>C3.</b> Ensure clear passage	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Ensure safe/proper dumping of logs in lines</p> <p><b>P2.</b> Remove waste material from the passage</p> <p><b>P3.</b> Mark the passage with yellow colour strip.</p> <p><b>P4.</b> Ensure safe transfer of logs to trolley.</p>
<b>C4.</b> Ensure safe Storing of allied materials	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Identify location for storage of allied material.</p> <p><b>P2..</b> Ensure safe unloading of allied materials.</p> <p><b>P3.</b> Segregate allied material according to:</p> <ul style="list-style-type: none"> <li>○ Type</li> <li>○ Color</li> <li>○ Size</li> </ul> <p><b>P4.</b> Ensure safe storage of allied material.</p> <p><b>P5.</b> Ensure easy access to allied material,</p>
<b>C5.</b> Maintain Inventory	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Check Inventory.</p> <p><b>P2.</b> Update Inventory.</p> <p><b>P3.</b> Maintain stock register.</p>



## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Locations of dumping of logs/bark
- K2. Cleaning Techniques of workplace
- K3. Types and categories of logs
- K4. Harms of dust
- K5. Hazards of noise.
- K6. Importance of clear passage
- K7. Types of allied materials
- K8. Techniques for safe storage of allied materials & hardware
- K9. Importance of inventory management
- K10. Safe loading/Unloading techniques of Logs/allied material/hardware

## Critical Evidence(s) Required

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
  - Identify the various types of logs
  - Identify the defective logs
  - Calculate volume of log.
  - Arrange location for dumping of log
  - Ensure safe transfer of logs to trolley
  - Maintain clear passage in the workplace
  - Maintain inventory

## Important points

- Mark the defective logs
- Techniques of safe loading/unloading of logs/allied materials/hardware
- Assess the width of travel path
- Ensure disposing off of the waste material of log
- Calculate volume of log



### Competency Standard C: Interpret Basic Drawing & Design

**Overview:** This competency standard covers the skills and knowledge required to perform interpret drawing/ design, Interpret Scale, Interpret drawing symbols, Take Measurement, interpret hatching.

Competency Units	Performance Criteria
<b>D1.</b> Interpret drawing/design	<p><b>Trainee will be able to:</b></p> <p>P1. Collect the drawing/ design/cutting list/material list</p> <p>P2. Interpret the drawing/design</p> <p>P3. Follow the drawing/ design</p> <p>P4. Interpret various drawing views</p> <p>P5. Interpret cutting list</p>
<b>D2.</b> Interpret Scale	<p><b>Trainee will be able to:</b></p> <p>P1. Interpret scales.</p> <p>P2. Perform inter conversion of measuring units</p> <ul style="list-style-type: none"> <li>○ Full</li> <li>○ Enlarge</li> <li>○ Reduce</li> </ul>
<b>D3.</b> Interpret drawing symbols	<p><b>Trainee will be able to:</b></p> <p>P1. Identify various drawing symbols</p> <p>P2. Follow the drawing symbols</p>
<b>D4.</b> Take Measurement	<p><b>Trainee will be able to:</b></p> <p>P1. Identify measuring tools</p> <p>P2. Collect the required measuring tools</p> <p>P3. Perform measurement as per drawing</p> <p>P4. Mark the job as per drawing</p>
<b>D5.</b> Interpret hatching	<p><b>Trainee will be able to:</b></p> <p>P1. Interpret section drawing</p> <p>P2. Identify hatching symbols</p> <p>P3. Select the required materials for job</p>



Competency Units	Performance Criteria
D6. Draw Multiview Sketches	<b><i>Trainee will be able to:</i></b> P1. Identify the required instruments/papers. P2. Collect the required instruments/papers. P3. Ensure Fixing of paper on drawing board at right angle. P4. Set Scale P5. Draw boundary line &Title Strip P6. Draw the desired sketch

### Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Size/type of drawing paper
- K2. Understand drawing symbols
- K3. Understand drawing tools/ equipment's
- K4. Understand Scales and its interconversion.
- K5. Understand measurement tools
- K6. Understand the hatching symbols/pattern
- K7. Elaborate different views of drawing
- K8. Elaborate cutting list
- K9. Elaborate Multiview Sketches

### Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify measuring tools
- Perform measurement
- Identify the paper sizes/types
- Identify the various drawing symbols
- Identify the drawing tools/equipment
- Interpret drawing & design



- Interpret hatching
- Interpret cutting list
- Interpret Multiview sketching
- Draw Multiview Sketches

### Important points

- Perform measurement
- Describe the various paper sizes/types
- Interpret drawing symbols
- Interpret hatching
- Interpret cutting list
- Interpret Multiview Sketches
- Draw Multiview sketches

### Competency Standard D: Prepare Joints Manually

**Overview:** This competency standard covers the skills and knowledge required to perform load/unload by crane, Load log for cutting (by crane/manual), Set Machine for cutting log, Perform cutting with log band saw, Stack planks for seasoning, perform cross cutting of seasoned planks, perform pattern cutting on Band saw, perform ripping of planks and Perform board cutting.

Competency Units	Performance Criteria
<b>D1. Perform Ripping</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Identify the required tools for cutting by hand</li> <li>P2. Collect the desired type of hand saw</li> <li>P3. Hold/Fix wood in the woodworking vise</li> <li>P4. Cut the wood along the grain</li> </ul>
<b>D2. Perform Cross Cutting</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Identify the required tools for cutting by hand</li> <li>P2. Collect the desired type of hand saw</li> <li>P3. Hold/Fix wood in the woodworking vise</li> <li>P4. Cut the wood across the grain</li> </ul>
<b>D3. Perform Curve Cutting</b>	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Identify the required tools for cutting by hand</li> <li>P2. Collect the desired type of hand saw</li> </ul>



Competency Units	Performance Criteria
	<p>P3. Hold/Fix wood in the woodworking vise</p> <p>P4. Cut the wood as per design/ line</p>
<b>D4. Perform Surface Planing</b>	<p><b>Trainee will be able to:</b></p> <p>P1. Identify the planing tools</p> <p>P2. Select planer as per job.</p> <p>P2. Hold/Fix wood in the woodworking vise</p> <p>P3. Plane the surface</p>
<b>D5. Perform Edge Planing</b>	<p><b>Trainee will be able to:</b></p> <p>P1. Identify the planing tools</p> <p>P2. Select planer as per job.</p> <p>P2. Hold/Fix wood in the woodworking vise</p> <p>P4. Plane the Edge at right angle</p>
<b>D6. Perform Size Planing</b>	<p><b>Trainee will be able to:</b></p> <p>P1. Identify the planing tools</p> <p>P2. Select planer as per job.</p> <p>P2. Hold/Fix wood in the woodworking vise</p> <p>P4. Plain the surface for the desired thickness</p> <p>P5. Plain the edge for the desired width</p>
<b>D7. Make Joints</b>	<p><b>Trainee will be able to:</b></p> <p>P1. Mark the job</p> <p>P2. Identify the required tools</p> <p>P3. Arrange the required tools</p> <p>P3. Hold/Fix wood in the woodworking vice</p> <p>P4. Cut the job as per joint requirement</p> <p>P5. Perform chiseling as per joint requirement</p> <p>P6. Perform boring as per joint requirement</p> <p>P7. Perform grooving as per joint requirement</p> <p>P5. Fix parts of the required joint</p>

### Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Kinds of Saws
- K2. Kinds of Plains



- K3. Basics of Measuring & Measuring Tools
- K4. Knowledge of Marking & Layout Tools
- K5. Sharpening techniques of Hand Saw
- K6. Sharpening techniques of Hand plain blade, chisel
- K7. Knowledge of Wooden files & rasps
- K8. Knowledge of boring tools
- K9. Knowledge of Mallets & Hammers
- K10. Types of Woods
- K11. Wood Defects & Abnormalities
- K12. Types of allied material
- K13. Knowledge of Holding & clamping devices
- K14. Knowledge of chisels
- K15. Kinds of Joints
  - ✓ Lap Joints
  - ✓ Mortise & Tenon Joints
  - ✓ Dovetail Joints
  - ✓ Pin Joints
  - ✓ Dado joints
  - ✓ Tongue & Groove Joints
  - ✓ Knock Down Joints
  - ✓ Biscuit Joint
  - ✓ Dowel Joint
  - ✓ Domino Joint
  - ✓ Cross Bar Joint
  - ✓ Rabbet Joint

### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- K1. Follow the cutting list
- K2. Differentiate Kinds of Saws
- K3. Differentiate Kinds of Plains
- K4. Perform Measuring as per job
- K5. Mark the job
- K6. Sharpen the hand saw
- K7. Sharpen the Hand plain blade, chisel
- K8. Perform boring of job as per drawing
- K9. Detect defects in wood



- K10. Perform chiseling
- K11. Clamp the job as per requirement
- K12. Identify types of Joints
  - ✓ Lap Joints
  - ✓ Mortise & Tenon Joints
  - ✓ Dovetail Joints
  - ✓ Pin Joints
  - ✓ Dado joints
  - ✓ Tongue & Groove Joints
  - ✓ Knock Down Joints
  - ✓ Biscuit Joint
  - ✓ Dowel Joint
  - ✓ Domino Joint
  - ✓ Cross Bar Joint
  - ✓ Rabbet Joint

### Important points

- Sharpening techniques of hand saws
- Sharpening techniques of hand planes & chisels
- Sawing of wood
- Kinds of wood
- Kinds of joints
- Kinds of boring tools
- Kinds of holding & clamping devices
- Measuring, Marking & Layout tools



## Competency Standard E: Perform Wood Cutting

**Overview:** This competency standard covers the skills and knowledge required to perform load/unload by crane, Load log for cutting (by crane/manual), Set Machine for cutting log, Perform cutting with log band saw, Stack planks for seasoning, Perform cross cutting of seasoned planks, Perform Pattern Cutting on Band Saw, Perform ripping of planks and Perform board cutting.

Competency Units	Performance Criteria
<b>E1.</b> Load log for cutting (by crane/manual)	<b><i>Trainee will be able to:</i></b> P1. Check log for metal/stone pieces P2. Load log. P2. Balance the log P3. Unload the log safely. P4. Adjust log on trolley
<b>E2.</b> Set Machine for cutting log	<b><i>Trainee will be able to:</i></b> P1. Follow the cutting list P2. Adjust Machine for slab cut P3. Perform slab cut
<b>E3.</b> Perform cutting with log band saw	<b><i>Trainee will be able to:</i></b> P1. Adjust machine for desired cutting. P2. Perform a test cut. P3. Ensure the required thickness P4. Perform log cutting as per requirement P5. Remove the final slab.
<b>E4.</b> Stack planks for seasoning	<b><i>Trainee will be able to:</i></b> P1. Identify location for planks stacking P2. Collect the planks. P3. Stack the planks for seasoning.
<b>E5.</b> Perform cross cutting of seasoned planks	<b><i>Trainee will be able to:</i></b> P1. Collect planks for cross cutting. P2. Perform first cut in right angle. P3. Adjust stopper for the desired length. P4. Perform cross cutting.
<b>E6.</b> Perform Pattern Cutting on Band Saw	<b><i>Trainee will be able to:</i></b> P1. Collect planks for pattern cutting. P2. Mark the piece as per pattern.



Competency Units	Performance Criteria
	P3. Select the required band saw blade. P4. Mount the blade. P5. Adjust tension of the blade. P6. Adjust tracking of the blade. P7. Adjust the Thrust bearing. P8. Perform pattern cutting.
<b>E7.</b> Perform ripping of planks	<b>Trainee will be able to:</b> P1. Collect planks for ripping. P2. Perform first cut for edge straightening. P3. Adjust fence for the desired width. P4. Perform ripping. P5. Shift the timber to the planning section
<b>E8.</b> Perform board cutting	<b>Trainee will be able to:</b> P1. Collect board for cutting P2. Perform first cut for edge straightening. P3. Adjust fence for the desired width. P4. Perform ripping. P5. Shift the timber to the planning section

### Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Checking of logs for existence of metal or stone pieces.
- K2. Loading/unloading techniques
- K3. Balancing techniques of log
- K4. Machine adjustment techniques for safe cutting of log
- K5. Understanding of stacking techniques
- K6. Types of seasoning;
  - a) Air Seasoning
  - b) Kiln Seasoning
- K7. Knowledge of cross cutting machine
- K8. Knowledge of ripping machine
- K9. Function and adjustment techniques of fence/stopper.
- K10. Knowledge of cutting blades
- K11. Types of allied material
- K12. Safe Use of band saw



### Critical Evidence(s) Required

The candidate needs to produce the following critical evidence(s) in order to be competent in this competency standard:

- Follow the cutting list
- Adjust Machine for slab cut
- Perform slab cut
- identify location for planks stacking
- Perform first cut in right angle.
- Adjust stopper for the desired length.
- Perform cross cutting.
- Mark the piece as per pattern.
- Select the required band saw blade.
- Mount the blade.
- Adjust tension of the blade.
- Adjust tracking of the blade.
- Adjust the Thrust bearing.
- Perform pattern cutting.
- Perform first cut for edge straightening.
- Adjust fence for the desired width.
- Perform ripping.

### Important points

- Interpretation of cutting list
- Adjustment of Machine for slab cut
- Perform slab cut
- Stopper adjustment for the desired length.
- Mark the piece as per pattern.
- Mounting of the blade.
- Adjustment of tension of blade.
- Tracking Adjustment of blade.
- Adjustment of the Thrust bearing.
- Pattern cutting.
- Adjustment of fence for the desired width.
- Perform ripping.



### Competency Standard F: Perform Wood Planing

**Overview:** This competency standard covers the skills and knowledge required to Perform surface planing, perform edge planing, and perform planing for desired thickness and Cut to size (cross cutting),

Competency Units	Performance Criteria
F1. Perform surface planing	<p><b>Trainee will be able to:</b></p> <p>P1. Select planer as per job.</p> <p>P2. Adjust the out feed table according to cutting edge of the cutter.</p> <p>P3. Set the required cut of in feed table.</p> <p>P4. Feed the piece manually or by feeder.</p> <p>P5. Plane the surface.</p>
F2. Perform edge planing	<p><b>Trainee will be able to:</b></p> <p>P1. Select the required machine as per job.</p> <p>P2. Adjust fence at required angle.</p> <p>P3. Ensure adjustment of fence at the required angle.</p> <p>P4. Adjust the in feed table for required cut.</p> <p>P5. Plane the Edge.</p>
F3. Perform planing for desired thickness	<p><b>Trainee will be able to:</b></p> <p>P1. Select the required machine as per job.</p> <p>P2. Adjust table for the desired thickness of cut.</p> <p>P3. Adjust the required feeding speed.</p> <p>P4. Plane job for desired thickness.</p>
F4. Perform planing for desired width	<p><b>Trainee will be able to:</b></p> <p>P1. Select the required machine as per job.</p> <p>P2. Adjust table for the desired width of cut.</p> <p>P3. Adjust the required feeding speed.</p> <p>P4. Plane job for desired width.</p>
F5. Cut to size (cross cutting )	<p><b>Trainee will be able to:</b></p> <p>P1. Select the required machine as per job.</p> <p>P2. Set the fence at required angle</p> <p>P3. Adjust the blade for required height.</p> <p>P4. Perform first end cut in required angle.</p> <p>P5. Set stopper for the required length.</p> <p>P6. Cut the job as per desired length.</p>



## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Understanding of jointer
- K2. jointer operations
- K3. Knowledge of blades
- K4. Setting for safe use of jointer
- K5. Setting of Thickness planer
- K6. Sharpening of blades
- K7. Operations of thickness planer
- K8. Use of fence/stopper
- K9. Feeding Speed
- K10. Feeding of piece manually or by feeder
- K11. Table adjustment techniques for the desired width of cut
- K12. Table adjustment techniques for the desired thickness of cut
- K13. Adjustment techniques of their feed table for the required cut

## Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Install Electric Motor
- Set the jointer for various operations
- Replace blades
- Set the thickness planer
- Set the feed speed
- Sharp the blades
- Operate thickness planer
- Use stopper
- Adjust feeding speed
- Adjust in feed table for the desired cut.

## Important points

- Setting parameter of jointer
- Operation of jointer
- Setting of thickness planer
- Blade replacement
- Cutting blades sharpening techniques



- Setting feed speed
- Using stopper

### Competency Standard G: Prepare Job

**Overview:** This competency standard covers the skills and knowledge required to perform. Identify job as per drawing, Make Joints, Perform Boring, Perform Profiling/shaping/ Turning, Perform Wood Turning on Lathe, Perform Lipping, Perform Sanding and Install Hardware.

Competency Units	Performance Criteria
<b>G1.</b> Identify job as per drawing	<b><i>Trainee will be able to:</i></b> P1. Collect the drawing/cutting list P2. Interpret drawing/cutting list P3. Collect the required items. P4. Mark the items as per requirement of job. P5. Shift the items for further processing.
<b>G2.</b> Make Joints	<b><i>Trainee will be able to:</i></b> P1. Mark the job P2. Select the machine P3. Install the require accessories (Cutters/Jigs/Fixtures) P4. Set machine as per the desired operation. P5. Make the required Joint
<b>G3.</b> Perform Boring	<b><i>Trainee will be able to:</i></b> P1. Mark canter point of the job for boring P2. Select the machine/hand tools P3. Install the required Bit. P4. Set machine as per operation. P5. Ensure center marking on the job P6. Perform boring
<b>G4.</b> Perform Profiling/shaping/ Turning	<b><i>Trainee will be able to:</i></b> P1. Mark the job for profile/shape P2. Select the machine. P3. Install the required accessories (Cutters/Jigs/Fixtures) P4. Set machine as per operation. P5. Perform test cut. P6. Perform profiling/shaping/turning
<b>G5.</b> Perform Wood Turning on Lathe	<b><i>Trainee will be able to:</i></b> P1. Select the machine/tools P3. Mark the job as per drawing.



	<p>P4. Adjust the turning speed. P5. Mount the piece. P5. Set machine as per operation. P5. Perform lathe work as per drawing.</p>
<b>G6. Perform Lipping</b>	<p><b>Trainee will be able to:</b> P1. Select the machine/manual P3. Select the required lipping. P4. Adjust the feeding speed. P5. Set machine as per operation. P5. Add adhesive/lipping material P6. Perform Lipping. P7. Ensure uniformity of lipping.</p>
<b>G7. Perform Sanding</b>	<p><b>Trainee will be able to:</b> P1. Select the required machine for sanding P3. Install the required sand paper. P4. Set machine as per operation. P5. Perform sanding of job</p>
<b>G8. Install Hardware</b>	<p><b>Trainee will be able to:</b> P1. Identify the required hardware P2. Collect the specified hardware. P3. Mark the job for fitting of hardware P4. Select the machine/tool P5. Set machine/tool for hardware installation. P5. Install the hardware.</p>

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Understanding of various joints
  - a) Lap Joint
  - b) Mortise & tenon joint
  - c) Haunch Mortise & tenon joint
  - d) Key Wedge Mortise & Tenon Joint
  - e) Dowel Joint
  - f) Mitre Joint
  - g) Open Dovetail Joint
  - h) Pin/Finger Joint
  - i) Biscuit Joint



j) Tongue & groove Joint

k) Dado Joint

l) Workbench

m) Tool Cabinets

K2. Understanding/Setting of the following Machines

a) Circular Saw

b) Spindle molder

c) Wood Turning Lathe

d) Lipping Machine

e) Universal Sanding

f) Drum Sanding

g) Edge Sanding

h) Disc Sander

i) Drill Press

J) Boring Machine

k) Double end cutting

l) High Speed router

m) Tool Grinding machine

n) Jig saw

o) Portable circular saw

p) Plunge router

q) Portable drill machine

r) Portable sander

s) Pneumatic screwdriver

t) Pneumatic nailer

u) Portable grinder

K3. Identification and use of the following tools

a) Measuring Tools

b) Squaring Tools

c) Marking Tools

d) Fixing & Holding Tools

e) Boring Bits

f) Hand Saws

g) Hand Planes

h) Chisels & Gouges

i) Hammers

j) Mallets

k) Screwdrivers

l) Rivet gun

l) Sharpening stones



#### K4. Understanding of the Hardware

- a) Nails
- b) Screws
- c) Hinges
- d) Locks
- e) Casters
- f) Knock down Fittings
- g) Edging Profiles
- h) Adhesives
- i) Sanding Papers

K5. Knowledge of blades

K6. Knowledge of jigs/fixtures

K7. Setting/adjustment of tools

### Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Make the following joints
  - a) Lap Joint
  - b) Mortise & tenon joint
  - c) Haunch Mortise & tenon joint
  - d) Dowel Joint
  - e) Mitre Joint
  - f) Dovetail Joint
  - g) Pin Joint
  - h) Biscuit Joint
  - i) Tongue & groove Joint
  - j) Work bench
  - l) Tools cabinet
- Perform setting of the following Machines
  - a) Table Saw
  - b) Spindle molder
  - c) Lathe
  - d) Lipping Machine
  - e) Universal Sanding
  - f) Drum Sanding
  - g) Edge Sanding
  - h) Drill Press
  - i) Boring Machine



- Identify the following tools
  - a) Measuring Tools
  - b) Squaring Tools
  - c) Marking Tools
  - d) Fixing & Holding Tools
  - e) Boring Bits
  - f) Hand Saws
  - g) Hand Planes
  - h) Chisels & Gouges
  - i) Hammers
  - j) Mallets
  - k) Screwdrivers
  - l) Sharpening stones
  
- Identify the following Hardware
  - a) Nails
  - b) Screws
  - c) Hinges
  - d) Locks
  - e) Casters
  - f) Knock down Fittings
  - g) Edging Profiles
  - h) Adhesives
  - i) Sanding Papers
  - J) Runners
  
- Perform sharpening of blades
- Jigs & fixtures

### Important points

- Understanding of various joints
  - a) Lap Joint
  - b) Mortise & tenon joint
  - c) Haunch Mortise & tenon joint
  - d) Dowel Joint
  - e) Mitre Joint
  - f) Dovetail Joint
  - g) Pin Joint
  - h) Biscuit Joint
  - i) Tongue & groove Joint



- Setting of the Machines
  - a) Table Saw
  - b) Spindle molder
  - c) Lathe
  - d) Lipping Machine
  - e) Universal Sanding
  - f) Drum Sanding
  - g) Edge Sanding
  - h) Drill Press
  - i) Boring Machine
- Identification of the following tools
  - a) Measuring Tools
  - b) Squaring Tools
  - c) Marking Tools
  - d) Fixing & Holding Tools
  - e) Boring Bits
  - f) Hand Saws
  - g) Hand Planes
  - h) Chisels & Gouges
  - i) Hammers
  - j) Mallets
  - k) Screwdrivers
  - l) Sharpening stones
- Identification of the following Hardware
  - a) Nails
  - b) Screws
  - c) Hinges
  - d) Locks
  - e) Casters
  - f) Knock down Fittings
  - g) Edging Profiles
  - h) Adhesives
  - i) Sand Papers



## Competency Standard H: Assemble the Job

**Overview:** This competency standard covers the skills and knowledge required to Arrange the clamp, Perform Pre-assembly of job, Perform Final Assembly & accuracy of assembled job, Ensure Firmness of Joints.

Competency Units	Performance Criteria
<b>H1.</b> Arrange the clamp	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Identify the clamp as per job demand</p> <p>P2. Collect the required clamp</p>
<b>H2.</b> Perform Pre-assembly of job	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Collect the parts for pre assembling</p> <p>P2. Arrange the parts in Sequence.</p> <p>P3. Pre-assemble the job to ensure accuracy.</p> <p>P4. Adjust the clamps according to job.</p>
<b>H3.</b> Perform Final Assembling of job	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Dismantle the pre-assembled job.</p> <p>P2. Apply adhesive to the joints.</p> <p>P3. Assemble the job.</p> <p>P4. Clamp the Job for firm fixing.</p> <p>P5. Remove the additional adhesive.</p>
<b>H4.</b> Ensure accuracy of the assembled job	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Check job for accuracy of the required angle</p> <p>P2. Re-adjust the clamps if required.</p> <p>P3. Ensure flatness of the job</p>
<b>H5.</b> Ensure Firmness of Joints	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Identify the required fastener</p> <p>P2. Collect the fastener</p> <p>P3. Mount fastener to enhance firmness.</p> <p>P4. Remove the clamps after adhesive setting.</p>



## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- J1. Types of clamps
  - a) F clamp
  - b) C clamp
  - c) Bar clamp
  - d) Quick Action Clamp
  - e) Mitre Clamps
  - f) Improvised Clamps
- J2. Understanding of Carcass Press
- J3. Setting of Carcass Press
- J4. Assembling Procedures
- J5. Alignment/adjustment for Assembling
- J6. Types of reinforcing fasteners
- J7. Clamping techniques of job

## Critical Evidence(s) Required

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
- Arrange parts of the job in sequence
- Adjust clamp according to the job
- Clamp the job
- Assemble the job.
- Identify the required fastener
- Apply adhesive to the joints
- Check job for accuracy of the required angle
- Set the Carcass Press

## Important points

- Arrange parts of the job in sequence
- Identify various types of clamps
  - a) F clamp
  - b) C clamp



- c) Bar clamp
- d) Quick Action Clamp
- e) Mitre Clamps
- f) Improvised Clamps
- o Understanding of Carcass Press
- o Setting of Carcass Press
- o Assembling Procedures
- o Alignment/adjustment for Assembling
- o Types of reinforcing fasteners

### Competency Standard I: Perform Polishing

**Overview:** This competency standard covers the skills and knowledge required to perform surface finishing, Arrange polishing tools & material, Perform different finishing including the lacquer polishing, Staining, Spirit/French Polishing, Paint Finishing, Varnish and Perform High Gloss Finishing.

Competency Units	Performance Criteria
<b>11.</b> Perform Surface Finishing	<p><b>Trainee will be able to:</b></p> <p>P1. Identify the required tools for surface preparation.</p> <p>P2. Collect the required tools</p> <p>P3. Punch the nails for surface smoothing.</p> <p>P4. Check for surface dents</p> <p>P5 Fill up the cracks/minute holes</p> <p>P6. Remove the extra adhesive.</p> <p>P7. Apply sand paper for edge/surface smoothing.</p>
<b>12.</b> Arrange Polishing tools & Material	<p><b>Trainee will be able to:</b></p> <p>P1. Identify polishing tools &amp; materials</p> <p>P2. Collect the required polishing tools &amp; materials</p> <p>P3. Attach spray gun to the compressor outlet.</p> <p>P4. Set the spray gun for polishing.</p>
<b>13.</b> Perform Lacquer Polishing	<p><b>Trainee will be able to:</b></p> <p>P1. Collect the desired material (sealer/ lacquer/ thinner) for lacquer polishing.</p> <p>P2. Prepare solution (sealer &amp; thinner) to apply first coat</p> <p>P3. Spray the sealer.</p>



	<p>P4. Match the colour if required.  P5. Apply sand paper to the product.  P6. Prepare solution (lacquer &amp; thinner) to apply first coat.  P7. Apply the required number of lacquer coats.  P8. Apply sand paper to the product if required.</p>
<b>14. Perform Staining</b>	<p><b>Trainee will be able to:</b>  P1. Identify the required staining material.  P2. Collect the required staining material.  P3. Prepare solution (Stain &amp; thinner) to apply first coat to the product.  P4. Apply the required number of stain coats.  P5. Apply sand paper to the product if required.  P6. Apply lacquer coat for final finishing of the product.</p>
<b>15. Perform Spirit/French Polishing</b>	<p><b>Trainee will be able to:</b>  P1. Identify the required shellac material.  P2. Collect the required shellac material.  P3. Apply the powder coat to the product.  P4. Sand the product.  P5. Prepare solution (Shellac &amp; Spirit) to apply first coat to the product.  P6. Apply the required number of shellac coats.  P7. Apply sand paper to the product if required.</p>
<b>16. Perform Paint Finishing</b>	<p><b>Trainee will be able to:</b>  P1. Identify the required paint material.  P2. Collect the desired material (undercoat/paint/thinner) for paint finishing.  P2. Prepare solution (undercoat &amp; thinner) to apply first coat  P3. Spray the undercoat to the product.  P4. Apply sand paper to the product.  P6. Prepare solution (paint&amp; thinner) to apply first coat.  P7. Apply the required number of paint coats.  P8. Apply sand paper to the product if required.  P9. Apply lacquer coat for final finishing of the product.</p>
<b>17. Perform Varnish Finishing</b>	<p><b>Trainee will be able to:</b>  P1. Identify the required varnish material.  P2. Collect the desired material (Varnish/ thinner) for lacquer polishing.  P3. Prepare solution (varnish &amp; thinner) to apply first coat  P4. Spray varnish coat to the product.  P5. Perform colour matching if required.  P6. Apply sand paper to the product.</p>



	P7. Apply the required number of varnish coat.
<b>18. Perform High Gloss Finishing</b>	<b><i>Trainee will be able to:</i></b> P1. Identify the high gloss finishing material. P2. Collect the desired material (hardener/sealer/ lacquer/ thinner) for lacquer polishing. P3. Prepare solution (sealer & thinner) to apply first coat P4. Spray the sealer. P5. Perform colour matching P6. Apply sand paper to the product. P7. Prepare solution (lacquer, hardener & thinner) to apply first coat. P8. Apply the required number of high gloss finish coats to the product.

### Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

11. Identification of Polishing tools
12. Preparation & Use of polishing materials
13. Use of Polishing tools
14. Nail punching techniques
15. Dent removing techniques
16. Surface preparation techniques for smoothing
17. Preparation & use of Filling materials
18. Types of Sand Papers (grits) & its use
19. Types & setting techniques of spray guns
110. Spraying technique for surface finishing
111. Application technique of Polishing material (Brush, cloth pad)
112. Staining Technique (color matching)
113. Preparation of wood grains technique



### Critical Evidence(s)

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Identify the required tools for surface preparation.
- Punch the nails for surface finishing.
- Remove the dents
- Fill up the cracks/minute holes
- Remove the extra adhesive.
- Identify polishing materials
- Set the spray gun for polishing.
- Apply sand paper for edge/surface smoothing.
- Prepare solution (sealer & thinner) to apply first coat
- Match the colour if required.
- Identify the required staining material.
- Apply the powder coat to the product.
- Apply finishing material by brush
- Apply finishing material by cloth pad
- Apply lacquer coat for final finishing of the product.

### Important points

- Identification of surface finishing tools & materials
- Surface preparation of product
- Polishing techniques
- Sanding procedure & technique for surface finishing
- Spraying techniques
- Staining techniques



## Competency Standard J: Maintain Machines

**Overview:** This competency standard covers the skills and knowledge required to Replace Machine Belts/ chains, Perform sharpening of cutting Blades, Perform Lubrication of Machine's parts, Replace drill/boring bits and replace profile Cutters.

Competency Units	Performance Criteria
<b>J1.</b> Replace Machine Belts/chains	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Disconnect power supply of machine.</li> <li>P2. Remove the safety covers</li> <li>P3. Check condition of the belt/chain.</li> <li>P4. Unmount the belt/chain</li> <li>P5. Replace the belt/chain as per specification.</li> <li>P6. Adjust tension of the belt/chain.</li> <li>P7. Connect the Power supply.</li> <li>P8. Carry out test runs of the machine.</li> <li>P9. Mount the Safety covers.</li> </ul>
<b>J2.</b> Perform Sharpening of Cutting Blades	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Disconnect power supply of machine.</li> <li>P2. Check condition of the cutting blade</li> <li>P3. Lock the spindle.</li> <li>P4. Unmount the safety covers/jigs/fixtures</li> <li>P5. Remove the blade.</li> <li>P6. Identify the required sharpening machine.</li> <li>P6. Remove the slag</li> <li>P7. Sharp the blade</li> <li>P8. Remount the blade.</li> <li>P9. Unlock the spindle.</li> <li>P10. Adjust tension of the blade if required.</li> <li>P11. Connect the Power supply.</li> <li>P11. Carry out test run of the machine.</li> <li>P12. Mount the Safety covers.</li> </ul>
<b>J3.</b> Perform Lubrication of machine parts.	<p><b>Trainee will be able to:</b></p> <ul style="list-style-type: none"> <li>P1. Identify the lubricating tools &amp; material.</li> <li>P2. Observe noise of the machine for smooth functioning.</li> <li>P3. Perform lubrication of the machine parts.</li> </ul>
<b>J4.</b> Replace Drilling/	<p><b>Trainee will be able to:</b></p>



boring bits	P1. Identify types of drilling/boring bits P2. Check condition of drilling/boring bits P3. Identify the required tools for the replacement of drilling/boring bits. P4. Replace the faulty drilling/boring bit.
<b>J5. Replace Profile Cutters</b>	<b><i>Trainee will be able to:</i></b> P1. Identify the profiling cutter. P2. Disconnect power supply of machine. P3. Check condition of the cutting blade P4. Lock the spindle. P5. Unmount the safety covers/jigs/fixtures P6. Remove the profile cutters P7. Remount the desired profile in the cutter head. P8. Remount the safety covers/jigs/fixtures. P9. Unlock the Spindle. P10. Connect the power supply. P11. Carry out test run. P12. Perform operations.

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- J1. Specifications (shape, types and sizes) of belts/ chains
- J2. Replacement techniques of belt/ chain
- J3. Specifications (Number/size) of belt/ chain
- J4. Types and uses of blades
- J5. Replacement techniques of blades
- J6. Nature of cutting materials
- J7. Types of Sharpening machines
- J8. Types / shapes of profile cutters /bits
- J9. Alignment/adjustment techniques of profile cutters/ bits
- J10. Alignment /adjustment techniques of jigs & fixture
- J11. Importance of lubrication of Machines
- J12. Lubrication techniques of Machine's parts
- J13. Noise observation machine for smooth functioning
- J14. Importance of safety covers.
- J15. Importance of carrying out test run of the machine



J16. Importance of Locking/unlocking of spindle

**Critical Evidence(s) Required**

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
- Change/replace the belt.
- Adjust tension of the belt/chain.
- Replace the cutting blades
- Remove the faulty profile cutter/bits.
- Install profile cutters/bits
- Install jigs & fixtures
- Sharp the blade.
- Lubricate Machine’s parts
- Mount the Safety covers.
- Carry out test run of the machine
- Perform locking/unlocking of spindle

**Important points**

- Specifications of belts/chain, blades, profile cutters, bits.
- Replacement techniques of cutting blades, belts, Profile cutters, bits
- Sharpening/alignment techniques of blades, profile cutter, bits.
- Drilling/boring techniques.
- Noise observation machine for smooth functioning
- Carry out test run of the machine
- Mount the Safety covers.

**Competency Standard K: Supervise Work Place**

**Overview:** This competency standard covers the skills and knowledge required to ensure Availability of work force, Materials, Smooth Operations of Machinery, Management of inventory, Clients, Time and ensure quality.

Competency Units	Performance Criteria
<b>K1.</b> Ensure Availability of Required Work Force	<b>Trainee will be able to:</b> P1. Analyse the workforce requirement as per work load P2. Prepare Job descriptions as per job P3. Assign work load as per job description



<p><b>K2. Ensure Availability of Materials</b></p>	<p><b>Trainee will be able to:</b>  P1. Forecast the material requirement as per demand of jobs  P2. Identify the material suppliers  P3. Ensure timely delivery of the materials  P4. Store the material at specified place  P5. Update Inventory</p>
<p><b>K3. Ensure Smooth Operations of Machinery/ Equipment/ Tools</b></p>	<p><b>Trainee will be able to:</b>  P1. Perform routine inspection of the machines/ tool/ equipment  P2. Diagnose &amp; Tag out the faulty machines  P3. Arrange repair of machine  P4. Ensure availability of spares/ consumables  P5. Ensure safe storage of tools/ equipment's</p>
<p><b>K4. Ensure Time Management</b></p>	<p><b>Trainee will be able to:</b>  P1. Ensure workers check in/ check out on time  P2. Manage casual absence of workers  P3. Manage routine breaks in work  P4. Manage shift transfer timing  P5. Ensure in time job completion  P6. Ensure in time delivery to the clients</p>
<p><b>K5. Manage Inventory</b></p>	<p><b>Trainee will be able to:</b>  P1. Forecast material requirement  P2. Manage spares/ consumables  P3. Maintain Inventory</p>
<p><b>K6. Manage Clients</b></p>	<p><b>Trainee will be able to:</b>  P1. Showcase the products  P2. Collect demand from the client  P3. Collect down payment from the client  P4. Forecast time for task completion  P5. Ensure in time delivery to the client</p>
<p><b>K7. Ensure Quality</b></p>	<p><b>Trainee will be able to:</b>  P1. Ensure Product specification  P2. Inspect the product before polishing  P3. Inspect the product for hardware installation  P4. Mark the faults  P5. Transfer the jobs to concerned section/ person for rectification  P6. Check quality of finished product  P7. Ensure safe packing of product for delivery</p>



## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- K1. Describe the nature of job
- K2. Identify the workforce skills required for job
- K3. Describe kind of raw materials
- K4. Types & uses of spares/tools/ equipment
- K5. Knowledge of machine maintenance & operations (Noise observation)
- K6. Describe the required time for various jobs
- K7. Knowledge about record keeping
- K8. Importance of dealing with clients
- K9. Describe quality in process flow
- K10. Knowledge of hardware
- K11. Describe kinds of finishes
- K12. Importance of machine safety covers.
- K13. Importance of test run of machines

## Critical Evidence(s) Required

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
- Analyse the workforce requirement as per work load
- Prepare Job descriptions as per job
- Assign work load as per job description
- Ensure task completion on specified time
- Estimate material requirement as per demand of jobs
- Maintain Inventory
- Diagnose the faults & Tag out the faulty machines
- Ensure in time delivery to the clients
- Inspect the product before polishing
- Inspect the product for hardware installation
- Detect the faults
- Ensure rectification of fault
- Ensure safe packing of product for delivery
- Ensure Client's satisfaction

## Important points



- Ensure workforce, time & material management
- Ensure smooth operations of machine
- Ensure Quality of products
- Ensure client's satisfaction

### Competency Standard L: Estimate Budget

**Overview:** This competency standard covers the skills and knowledge required to Prepare Material List, Cost calculation, Estimation of Utility Bills, Labor Cost, Overheads and Calculate Profit Margins.

Competency Units	Performance Criteria
<b>L1.</b> Prepare Material List	<b><i>Trainee will be able to:</i></b> P1. Analyse detailed drawing of the specified job P2. Record the respective sizes of the job parts P3. Prepare list of materials as per drawing
<b>L2.</b> Calculate Cost of Material	<b><i>Trainee will be able to:</i></b> P1. Collect list of required materials as per job P2. Estimate material wastage while performing the job P3. Calculate the cost of required material
<b>L3.</b> Estimate Utility Bills	<b><i>Trainee will be able to:</i></b> P1. Calculate the machining time as per job P2. Estimate the electricity charges for the required job P3. Estimate the monthly I.T. resources expenditure P4. Calculate the monthly fuel charges for generator etc. P5. Estimate the accumulative utility expenditure
<b>L4.</b> Estimate Labor Cost	<b><i>Trainee will be able to:</i></b> P1. Analyze the no. of labor required for specific job. P2. Analyze the labor days/ time for specific job P3. Estimate cost of the labor required for the job
<b>L5.</b> Estimate Overheads	<b><i>Trainee will be able to:</i></b> P1. Estimate machines overhead cost P2. Estimate infrastructure overhead cost P3. Estimate transportation cost P4. Calculate accumulative overhead cost.
<b>L6.</b> Calculate Profit Margins	<b><i>Trainee will be able to:</i></b> P1. Calculate accumulative expenditure P2. Add profit margin on the job P3. Fix sale price of the product



## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- L1. Contents of Material List
- L2. Structure of material list
- L3. Describe formulas to calculate cost
- L4. Knowledge of taxes
- L5. Describe the installed load
- L6. Knowledge of overheads
- L7. Understanding of adding profit margins
- L8. Importance of budget estimation
- L9. Understanding of budget preparation

## Critical Evidence(s) Required

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
  - Analyse detailed drawing of the specified job
  - Estimate material wastage while performing the job
  - Calculate the cost of required material
  - Calculate the machining time as per job
  - Calculate the accumulative utility expenditure
  - Estimate cost of the labour required for the job
  - Calculate accumulative overhead cost.
  - Add profit margin on the job

## Important points

- Analyse detailed drawing of the specified job
- Estimate material wastage while performing the job
- Estimate Budget



## Competency Standard M: Perform CAD/CAM Operations

**Overview:** This competency standard covers the skills, knowledge and attitude required to Interpret & Draw Drawing & Design using CAD, desired tool selection, Simulation, Material loading and CAM operations.

Competency Units	Performance Criteria
<b>M1.</b> Interpret Drawing & Design using CAD	<b>Trainee will be able to:</b> P1. Collect the desired drawing & design P2. Transfer the desired drawing & design to the concerned section/ person P3. Perform supervision of the job as per drawing
<b>M2.</b> Draw & Design the job using CAD	<b>Trainee will be able to:</b> P1. Consult catalogue as per client demand P2. Set Interface in CAD software P3. Make Multiview drawing & design of the job P3. Make 3D drawing & design of the job/ part P4. Render the job as per client's demand P5. Plot/ print the job
<b>M3.</b> Load the desired Tools	<b>Trainee will be able to:</b> P1. Identify the required tools as per process P2. Select the tools in the CAD/CAM software P3. Load the tools in CAD/CAM software
<b>M4.</b> Perform Simulation	<b>Trainee will be able to:</b> P1. Convert CAD to CAM codes using the software P2. Run Simulation to check accuracy of process
<b>M5.</b> Perform Material Loading	<b>Trainee will be able to:</b> P1. Identify required parts of the job P2. Set the clamping/ vacuum sucking units as per parts of the job P3. Load the job parts on the machine bed
<b>M6.</b> Perform CAM Operations	<b>Trainee will be able to:</b> P1. Ensure the loading of desired tools/ bits in ATC. P2. Calibrate the machine. P3. Execute the machine to complete the process P4. Take out the completed part

## Knowledge & Understanding



The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard. This includes the knowledge of:

- M1. Understanding of CAD software
- M2. Describe the tools/ Commands for drawing in CAD software
- M3. Knowledge of specific bits/ cutters/ aggregates of CNC machine
- M4. Knowledge of various CAM software
- M5. Understanding of various CAM operations
- M6. Describe the vacuum system
- M7. Describe the automatic tool changer

### Critical Evidence(s) Required

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
  - Set Interface in CAD software
  - Make Multi-view drawing & design of the job
  - Make 3D drawing & design of the job/ part
  - Render the job as per client's demand
  - Plot/ print the job
  - Select the required tools as per process
  - Select the tools in the CAD/ CAM software
  - Identify required parts of the job
  - Set the clamping/ vacuum sucking units as per parts of the job
  - Load the job parts on the machine bed
  - Calibrate the machine.
  - Execute the machine to complete the process

### Important points

- Interface setting in CAD software
- Making of Multiview drawing & design of the job
- Making of 3D drawing & design of the job/ part
- Rendering the job as per client's demand
- Selection of the tools in the CAD/ CAM software
- Identification of job parts
- Set the clamping/ vacuum sucking units as per parts of the job
- Loading the job parts on the machine bed
- Calibration of machine



## Competency Standard N: Develop Professionalism

**Overview:** This competency standard covers the skills and knowledge required to perform basic arithmetic operation, develop basic computer operating skills, develop basic communication & marketing skills, Identify needs of the market and Follow Environmental, Health and Safety standards.

Competency Units	Performance Criteria
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<p>N1. Perform basic Arithmetic operation</p>	<p><b>Trainee will be able to:</b>  P1. Perform addition  P2. Perform subtraction  P3. Perform Multiplication  P4. Perform division  P5. Perform measurement  P6. Interconvert measuring units  P7. Record the data</p>
<p>N2. Develop basic computer operating skills</p>	<p><b>Trainee will be able to:</b>  P1. Perform Microsoft basic commands in MS word  a. Open File  b. Format a file  i. Font (Type/size/bold/Italic)  ii. Header Footer  iii. Page number  iv. Insert pics / table/hyperlink  c. Save a File  d. Save a folder  P2. Perform basic commands in Microsoft MS Excel  a. Open a worksheet  b. Sum functions  c. If functions  d. Basic calculations  e. Table and graphs  f. Save a worksheet/folder  P3. Prepare Microsoft power point presentation by using basic commands  a. Make a power point file  b. Insert pics/table/hyperlink  c. Design a theme for slides  d. Save a power point file  P4. Perform browsing on the internet as per needs  P5. Perform research online on new trends in the market with the help of internet</p>
<p>N3. Develop basic communication skills</p>	<p><b>Trainee will be able to:</b>  P1. Negotiate with a client to understand the demand  P2. Plan product supply as per clients requirements  P3. Set price(s) according to clients requirements  P4. Communicate the plan to the client  P5. Take feedback from client on understanding of the exact job with timeline and cost</p>
<p>N4. Develop basic marketing</p>	<p><b>Trainee will be able to:</b></p>



skills	<p>P9. Present a design to the client as per requirement</p> <p>P10. Finalize the business deal</p> <p>P11. Purchase the equipment/tools and consumables as per agreed design</p> <p>P12. Adopt correct means of transportation</p> <p>P13. Select promotional means, according to target needs of clients</p>
<b>N5.</b> Identify needs of the market.	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Analyse upcoming market trends.</p> <p>P2. Develop Professional network.</p> <p>P3. Demonstrate behavioural skills.</p> <p>P4. Develop sound interpersonal skills</p> <p>P5. Develop new designs.</p>
<b>N6.</b> Follow Environmental, Health and Safety standards.	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Follow Health and Safety Rules</p> <p>P2. Ensure environmental safety</p> <p>P3. Ensure compliance of net metering policy</p> <p>P4. Ensure workplace safety by following safety standards</p> <p>P5. Ensure safety while operating wires and electricity.</p> <p>P6. Store all tools and equipment properly in a safe area.</p>
<b>N7.</b> Upgrade Knowledge & Skill as per Future Trends	<p><b><i>Trainee will be able to:</i></b></p> <p>P1. Perform market visits</p> <p>P2. Read books/catalogues/ brochures'</p> <p>P3. Surf internet</p> <p>P4. Attend seminars/ workshops/ exhibitions / symposiums</p>

## Knowledge & Understanding

The candidate must be able to demonstrate underpinning knowledge and understanding required to carry out the tasks covered in this competency standard.

This includes the knowledge of:

- N1. Basic Literacy and numeracy
- N2. Basic Arithmetic (addition, subtraction, multiplication and division) operation
- N3. Interconversion of measurement units
- N4. Data Recording
- N5. Basic computers
- N6. Importance and uses of MS Word
- N7. Importance and uses of MS Excel
- N8. Importance and uses of MS Power Point
- N9. Basic concepts of communication



- N10. Seven Cs in communication
- N11. Basic concepts of marketing
- N12. Trends of markets (Demand and supply etc.)
- N13. Knowledge of 4Ps
  - Product
  - Price
  - Promotion
  - Placement
- N14. Importance of trends and market research.
- N15. Reading of books/ information material / internet
- N16. Importance of visits/ knowledge & skill updation

### Critical Evidence(s) Required

The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:

- Perform Basic arithmetic operations.
- Perform role playing properly as Buyer and Seller and they will negotiate to finalize a realistic business deal
- Write note on key features of Pakistan's renewable power policy and regulatory frameworks
- Make a list of material which can catch fire
- Explain the importance of health and safety
- Brief about types of hazards at workplace
- Adaptation of latest market trends

### Important points

- Must be conscious about health and safety measures at work place
- Can communicate professionally with outsiders and within organisation
- Can download new laws and policies from internet



## COMPLETE LIST OF TOOLS AND EQUIPMENT

### Tools/Equipment

#### 1. Measuring Tool

- a. Steel tape
- b. Steel rule
- c. zigzag rule
- d. Vernier caliper
- e. Carpenter Tri square
- f. miter square
- g. Framing square
- h. Combination square
- i. Spirit level
- j. marking /mortise gauge
- k. Sliding bevel
- l. Scriber
- m. marking awl
- n. Nail punch

#### 2. Cutting tools

- a. hand saw
- b. Hack saw
- c. Key hole saw
- d. Compass saw
- e. Bow saw
- f. Coping saw
- g. Fret saw
- h. Miter saw
- i. Back saw
- j. Veneer saw
- k. Firmer Chisel set
- l. Mortis chisel set

#### 3. Fixing & Holding devices

- a. G Clamp
  - b. C Clamp
  - c. Sash Bar Clamp
  - d. Miter Clamp
  - e. Corner/Edge Clamp
  - f.
  - g.
4. Arc welding machine
  5. Chisel set
  6. File set
  7. Grip pliers
  8. Hammer set
  9. Hand electrical drill machine
  10. Hand electrical grinder

#### 11. Jack



12. Measuring tape
13. Pliers set
14. Pressure jack
15. Puller
16. Safety shoes, goggles, gloves, helmet,
17. Screw driver tool kit
18. Socket set
19. Socket set T-Type
20. Spanner set
21. Torque wrench
22. G&C clamp
23. Adjustable Wrench
24. Sash bar clamp
25. Corner clamp
26. Wheel dresser
27. Blind Rivet gun

#### List of Consumables

Sr. #	Description
1.	Box board sheet
2.	Lubricating oil
3.	Plastic Pipe
4.	PVC Pipe
5.	Paper tape 1 inch.
6.	Wood Log
7.	Polish
8.	Water
9.	Cloths
10.	Bearings
11.	Pulleys
12.	Belts
13.	Grease
14.	Kerosene oil
15.	Sand Paper
16.	Steal Ropes
17.	Cotton Ropes
18.	Brushes
19.	Nuts
20.	Bolts

#### List of Personal Protective Equipment

Sr. #	Description
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1.	First AID Box
2.	Fire Extinguisher Cylinder
3.	Fire Blanket
4.	Fire Bucket
5.	Safety Gloves
6.	Ear Protector
7.	safety goggles
8.	Safety Helmet
9.	Safety Helmet
10.	Safety mask
11.	Formal Uniform For Work
12.	Safety Shoes
13.	Safety Belt

### List of Stationary

Sr. #	Description
1.	Handbooks
2.	Design books
3.	Pencils
4.	Rubber
5.	Sharpeners
6.	Paper Cutter
7.	Seizers
8.	Colors
9.	White charts
10.	Brown sheets
11.	White board markers
12.	Permanent markers
13.	File cover and files