



## **National Vocational Certificate level 2 to 4, in Marble Sector (Marble Technician)**



### **Competency Standards**

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



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## 1. TITLE OF QUALIFICATION

National Vocational Certificate level 2 to 4, in Marble Sector “(Marble Technician)”

## 2. INTRODUCTION

Marble and onyx mines of Pakistan are mainly located in Baluchistan (Chaghi, Lasblea, Loralai, Mastong, and Naal), Khyber Pakhtunkhwa (Bunair, Mardan, Mohamand, Swat), Chitral, and Sindh (Dadu, johi range). The major marble processing clusters are concentrated in specific areas of Gujranwala, Islamabad/Rawalpindi, Karachi, Lasbela, Lahore, Peshawar, and Nowshehra/Risalpur. About 50% to 60% of the marble processors of Baluchistan and Khyber Pakhtunkhwa prefer to produce Gutka/Sheet and Slabs for which they need blocks from quarries. Slabs and Gutka is sold to the small scale Tile Manufacturing Units of distant locations, as these small units don't have blocks cutting machines. They only need resize the slabs as per end user requirement. Large scale processing units located at Islamabad, Buner, Peshawar, Karachi and quetta need blocks from quarries for primary cutting, hence the project may sale blocks to these processing units.

Marble is key natural resource of Pakistan, although Pakistan has huge number of young peoples in the country but marble sector is facing acute shortage of skilled and trained human resources, there are very limited training institute who are providing skills to the youth regarding different aspects of the marble sector. Value addition in marble sector has great potential such as marble cutting and polishing.

In order to build the capacity of technical and vocational training institutes in Pakistan through provision of demand driven competencies based trainings in Marble Sector the NAVTTC, KP-TEVTA and GIZ have joined hands together to develop qualifications for Marble 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 arose from All Pakistan Marble Industries Association (APMIA) and Local Jahangira Khairabad Marble Industries Association (JEKMIA) for the development of Marble Cutting and Polishing Trainings under Marble Technician.

Based upon this demand of industry these competency-based qualifications for Marble Technician are developed under National Vocational Qualification Framework (Level 2 to 4). 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 (NAVTTTC) 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 pace 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 (Marble Sector) “Marble Technician”**
  - Maintain Safety
  - Maintain Tools & Equipment.
  - Develop Basic Literacy & Numeracy Skills
- **National Vocational Certificate level 3, in (Marble Sector) “Marble Technician”**
  - Prepare Workplace
  - Cut Marble
  - Maintain Marble Machines.
  - Perform basic electrical operations
- **National Vocational Certificate level 4, in (Marble Sector) “Marble Technician”**
  - Perform Polishing of Marble
  - Ensure Quality
  - Develop Professionalism

### 3. PURPOSE OF THE QUALIFICATION

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

The core purpose of this qualification is to produce employable Marble technicians who could perform marble cutting and polishing according to national standards. In addition this qualification will prepare unemployable youth to employ in marble sector or as an entrepreneur.

### 4. MAIN OBJECTIVES OF THE QUALIFICATION



The Marble Technician qualifications level 2-4 consists of theoretical and practical details required for the marble cutting and polishing techniques. The main objectives of the qualification are as follows:

1. Maintain Safety
2. Maintain Tools & Equipment.
3. Prepare Workplace
4. Cut Marble
5. Perform basic electrical operations
6. Develop Basic Literacy & Numeracy Skills
7. Maintain Marble Machines.
8. Perform Polishing of Marble
9. Develop Professionalism
10. Ensure Quality

## 5. DATE OF VALIDATION

The level 2-4 of national vocational qualification on Marble Technician has been validated by the Qualifications Development Committee (QDC) members on July 19-20, 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 Marble Technician level 2-4	
Code	Description
	National Vocational Certificate level 2, in (Marble Sector) "Marble Technician"
	National Vocational Certificate level 3, in (Marble Sector) "Marble Technician"
0713E&E13	National Vocational Certificate level 4, in (Marble Sector) "Marble Technician"

## 7. MEMBERS OF QUALIFICATIONS DEVELOPMENT COMMITTEE



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

Name	Designation	Organization	Email	Contact
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## 8. ENTRY REQUIREMENTS

The entry for National Vocational Certificate level 2-4, in (Marble Sector) “Marble Technician” are given below:

Title	Entry requirements
National Vocational Certificate level 2, in (Marble Sector) “Marble Technician”	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 (Marble Sector) “Marble Technician”	Entry for assessment for this qualification is open. However entry into formal training institute for this qualification is person having National Vocational Certificate level 2, in (Marble Sector) “Marble Technician”.
National Vocational Certificate level 4, in (Marble Sector) “Marble Technician”	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 (Marble Sector) “Marble Technician”. In addition to this he/she must be computer literate and have knowledge of basic concepts of marketing and sales.

## 9. IMPORTANT LINKS

- Prime Minister’s Office [www.pmo.gov.pk](http://www.pmo.gov.pk)
- Pakistan Stone Development Company [www.pasdec.org.pk](http://www.pasdec.org.pk)
- 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	10	Functional
	Maintain Tools & Equipment.		7	Technical
	Develop Basic Literacy & Numeracy Skills		13	Functional
	Prepare Workplace	3	5	Technical
	Cut Marble		15	Technical
	Perform basic electrical Installation		5	Technical
	Maintain Marble Machines.		5	Technical
	Perform Polishing of Marble	4	6	Technical
	Develop Basic Professional skills		18	Generic
	Ensure Quality		6	Generic
<b>TOTAL</b>			<b>90</b>	<b>1 Year</b>



## 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
A1. Ensure Personal safety	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Arrange PPEs as per requirements  <b>P2.</b> Wear proper PPE as per nature of job  <b>P3.</b> Store PPEs at appropriate place after use</p>
A2. Ensure workplace safety.	<p><b>Trainee will be able to:</b></p> <p><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</p>
A3. Ensure safety of tools and equipment	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Ensure insulation of tools and equipment  <b>P2.</b> Store safely tools and equipment  <b>P3.</b> Clean tools on a regular basis as per schedule</p>
A4. Maintain First aid Box	<p><b>P1.</b> Ensure availability of first aid box  <b>P2.</b> Check first aid box for Emergency Medicines.  <b>P3.</b> Check Expiry date of the Medicines  <b>P4.</b> Perform first aid treatment against electric shock  <b>P5.</b> Perform first aid treatment/bandages against minor injury.</p>
A5. Ensure Machines Safety	<p><b>P1.</b> Check belts of Machine  <b>P2.</b> Check blades of machines  <b>P3.</b> Check Machine for short circuit  <b>P4.</b> Perform test operation on Machine</p>
A6. Interpret Environmental Regulation	<p><b>P1.</b> Ensure work friendly environment.  <b>P2.</b> Adopt environmental regulation</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 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



## Physical Hazards



## Health Hazards





## Competency Standard B: Maintain Tools & Equipment.

**Overview:** This competency standard covers the skills and knowledge required to Arrange Tools and Equipment, Maintain tool Box and Calibrate measuring tools.

Competency Units	Performance Criteria
<b>B1.</b> Arrange Tools and Equipment	<p><b>Trainee will be able to:</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 tool Box	<p><b>Trainee will be able to:</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>Trainee will be able to:</b></p> <p><b>P1.</b> Check calibration status of the measuring tools  <b>P2.</b> Perform calibration of measuring tools as per standards  <b>P3.</b> Record Calibration test results</p>
<b>B4.</b> Manage Inventory of tools and equipment	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Check number of tools and equipment as per record.  <b>P2.</b> Report for faulty 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. Uses of different Tools
- K2. Types and uses of equipment
- K3. Calibration techniques
- K4. Importance of calibration
- K5. Inventory Management
- K6. Preventive and corrective measures for tools and equipment



### 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)

### Important points

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

### Competency Standard C: Develop Basic Literacy and Numeracy Skills

Competency Units	Performance Criteria
<b>C1.</b> Apply basic Literacy skills	<b>Trainee will be able to:</b> <b>P1.</b> Apply basic reading skills <b>P2.</b> Apply basic writing skills <b>P3.</b> Apply speaking skills
<b>C2.</b> Apply basic Numeracy skills	<b>P1.</b> Apply basic principles of addition <b>P2.</b> Apply basic principles of subtraction <b>P3.</b> Apply basic principles of multiplication <b>P4.</b> Apply basic principles of division
<b>C3.</b> Perform Measurement	<b>Trainee will be able to:</b> <b>P1.</b> Collect appropriate measuring tools. <b>P2.</b> Estimate the required length of stone/slab. <b>P3.</b> Measure slab/Tile vertically <b>P4.</b> Measure slab/Tile horizontally
<b>C4.</b> Perform basic mathematical calculations	<b>Trainee will be able to:</b> <b>P1.</b> Perform addition <b>P2.</b> Perform subtraction <b>P3.</b> Perform multiplication <b>P4.</b> Perform division <b>P5.</b> perform inter conversion of Measuring units



	<b>P6. Record the results.</b>
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### 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 Alphabets
- K2. Preparation of words from Alphabets
- K3. Meanings of words
- K4. Preparation of sentences from words
- K5. Writing of simple sentences
- K6. Basic speaking skills
- K7. Knowledge of basic principles of addition, subtraction, multiplication and division
- K8. Knowledge of measuring tools
- K9. Knowledge of Basic measuring units and its inter conversion

### Critical Evidence(s) Required

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

- Read a text
- Write a text
- Speak
- *Perform addition*
- *Perform subtraction*
- *Perform multiplication*
- *Perform division*
- *Record the results*
- *Inter convert measuring units.*

### Important points

- 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:
- Apply basic reading skills



- Apply basic writing skills
- Apply speaking skills
- Knowledge of basic principles of addition, subtraction, multiplication and division

### Competency Standard D: Prepare Workplace / Housekeeping

**Overview:** This competency standard covers the skills and knowledge required to arrange stones, Arrange drainage of polluted water, Identify location for dumping marble waste, Prepare log sheet for general maintenance, Treat damaged stone, Maintain Inventory, Ensure clear travel path, Store slabs (size, color, grade), and Load Marble Slabs.

Competency Units	Performance Criteria
<b>D1.</b> Arrange Stones (Color, Size, Grade)	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Clean work place.</p> <p><b>P2.</b> Arrange safe Unloading of Marble Stone.</p> <p><b>P3.</b> Mark stone as per</p> <ul style="list-style-type: none"> <li>○ color,</li> <li>○ size and</li> <li>○ grade</li> </ul>
<b>D2.</b> Arrange drainage of polluted water	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Check condition of water tanks.</p> <p><b>P2.</b> Ensure regulated flow of polluted water to the tank.</p> <p><b>P3.</b> Ensure disposing off of the marble waste from the water tank</p> <p><b>P4.</b> Dispose of the marble waste from work place</p>
<b>D3.</b> Identify location for dumping marble waste	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Estimate quantity of marble waste.</p> <p><b>P2.</b> Arrange location for dumping of marble scrape.</p>
<b>D4.</b> Prepare log sheet for general maintenance	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Prepare schedule of routine maintenance</p> <p><b>P2.</b> Identify the activities for conducting routine maintenance</p> <p><b>P3.</b> Prepare list of tools for routine maintenance</p>
<b>D5.</b> Treat damaged stone	<p><b><i>Trainee will be able to:</i></b></p> <p><b>P1.</b> Identify the apparently damaged stone</p> <p><b>P2.</b> Mark the damaged stone</p> <p><b>P3.</b> Unload the explosive affected damaged stone.</p> <p><b>P4.</b> Dispose off the explosive affected stone.</p>



Competency Units	Performance Criteria
D6. Maintain Inventory	<b><i>Trainee will be able to:</i></b> P1. Perform Calculation of raw materials and finished stock. P2. Maintain record of all blades P3. Maintain stock register.
D7. Ensure clear travel path	<b><i>Trainee will be able to:</i></b> P1. Assess the width of travel path. P2. Maintain clear path.
D8. Store slabs (size, color, grade )	<b><i>Trainee will be able to:</i></b> P1. Assess the storage capacity of work place. P2. Arrange space for storage of marble tiles. P3. Store the marble tiles according to color, size and grade
D9. Load Marble Slabs	<b><i>Trainee will be able to:</i></b> P1. Assess loading capacity of the vehicle. P2. Ensure safe loading of marble Tiles.

### 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 stocking various items
- K2. Cleaning Techniques
- K3. Types and categories of stones
- K4. Harms of polluted water
- K5. Importance of inventory management
- K6. Loading and Unloading techniques of Marbles / Slabs
- K7. Importance of clear travel path

### Critical Evidence(s) Required

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
- Identify the apparently damaged stone
- Estimate quantity of marble waste.
- Arrange location for dumping of marble scrape



- Maintain clear travel path
- Check condition of water tanks.
- Ensure regulated flow of polluted water to the tank

### Important points

- Mark the damaged stone
- Techniques of safe loading/unloading of marble stones, slabs and Tiles
- Assess the width of travel path
- Ensure disposing off of the marble waste from the water tank

### Competency Standard E: Cut Marble

**Overview:** This competency standard covers the skills and knowledge required to perform load/unload by crane, prepare machine for cutting marble, perform vertical cutting, perform cutting with Gang saw, Perform bridge, cutting, perform cross cutting, perform section cutting, perform cutting with resizing machine and to perform table cutting.

Competency Units	Performance Criteria
<b>E1.</b> Perform load/unload by Crane	<b>Trainee will be able to:</b> <b>P1.</b> Load stone. <b>P2.</b> Balance the stone <b>P3.</b> Unload the stone safely.
<b>E2.</b> Prepare Machine for cutting Marble	<b>Trainee will be able to:</b> <b>P1.</b> Load Marble stone. <b>P2.</b> Adjust vertical cutting Machine <b>P3.</b> Regulate flow of water. <b>P4.</b> Adopt personal safety (Gloves, Boots, and apron).
<b>E3.</b> Perform vertical cutting	<b>Trainee will be able to:</b> <b>P1.</b> Perform cutting with vertical cutting machine as per standard. <b>P2.</b> Transport cut slabs for cross cutting <b>P3.</b> Remove scrap.
<b>E4.</b> Perform cutting with Gang saw	<b>Trainee will be able to:</b> <b>P1.</b> Load block/stone on trolley. <b>P2.</b> Operate Gang saw. <b>P3.</b> Fasten slabs for safe handling. <b>P4.</b> Perform punching on the base line of slabs with chisel <b>P5.</b> Shift slabs to the other trolley. <b>P6.</b> Remove waste materials.



Competency Units	Performance Criteria
E5. Perform bridge Cutting.	<b>Trainee will be able to:</b> P1. Adjust stone on trolley. P2. Perform cutting with Bridge cutter as per standard. P3. Transport cut slabs to cross cutting/table cutter. P4. Remove scrap.
E6. Perform cross cutting	<b>Trainee will be able to:</b> P1. Prepare machine for cutting. P2. Perform cross cutting as per standard. P3. Transport slabs to the section cutter.
E7. Perform section cutting	<b>Trainee will be able to:</b> P1. Adjust the guide for standard thickness. P2. Perform section cutting.
E8. Perform cutting with resizing machine.	<b>Trainee will be able to:</b> P1. Adjust both the cutter for the required size of slabs. P2. Perform cutting to get the slabs in square/rectangle shape.
E9. Perform Table Cutting	<b>Trainee will be able to:</b> P1. Place slabs on Table. P2. Perform cutting with table cutter to get the slabs in shape as required.

### 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. Types of Marble cutting machines
- K2. Operations of cutting machines
- K3. Types and uses of cutting materials
- K4. Techniques of cutting marbles
- K5. Types of Stones and their properties (Marble/Granite)
- K6. Capacity of cutting machines
- K7. Measuring tools and techniques
- K8. Sizes and uses of cutting blades
- K9. Capacity of trolley/table
- K10. Weighing techniques
- K11. Specifications as per requirements



K12.Loading capacity of cranes

K13.Rope tensions capacity.

### Critical Evidence(s) Required

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

- Load stone.
- Balance the stone
- . Unload the stone safely
- Adjust vertical cutting Machine
- Operate Gang saw.
- Adjust stone on trolley
- Adjust the guide for standard thickness
- Fasten slabs for safe handling
- Perform Marble cutting on various types of Machines
- Fasten slabs for safe handling.
- .Perform punching on the base line of slabs with chisel

### Important points

- Operate various types of Marble Cutting Machines.
- Ensure personal, co-workers and machine safety.
- Understand Capacity of trolley/table.
- Understand Loading capacity of cranes
- Understand Rope tensions capacity
- Understand Operations of Marble cutting machines
- Techniques of Marble cutting
- Balancing of slabs during Gang saw operation for safe handling

### Competency Standard F: Perform Basic Electric Installation

**Overview:** This competency standard covers the skills and knowledge required to install / uninstall electric motor, lay cables, perform various joints and conduct electrical tests for smooth and safe electrical operations.



Competency Units	Performance Criteria
<b>F1:</b> Install / Uninstall Electric Motors	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Connect Electric Motor <b>P2.</b> Disconnect Electric Motor <b>P3.</b> Install Electric Motor <b>P4.</b> Uninstall Electric Motor
<b>F2:</b> Lay Cables	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Interpret requirements <b>P2.</b> Identify Cables <b>P3.</b> Lay cables <b>P4.</b> Perform Earthing
<b>F3:</b> Perform Basic Electrical Wiring	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Measure Gages of cable <b>P2.</b> Perform joints <b>P3.</b> Insulate Joints <b>P4.</b> Connect cables
<b>F4:</b> Conduct Wiring Tests	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Operate Measuring instruments <b>P2.</b> Perform continuity test <b>P3.</b> Perform polarity test <b>P4.</b> Perform Earthing test <b>P5.</b> Perform insulation test <b>P6.</b> Record test results

### 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. Types of motors
- K2. Types of wires
- K3. Sizes of wires
- K4. Color scheme
- K5. Types of wiring joints
- K6. Types of insulating materials
- K7. Wiring tools and their uses
- K8. Techniques of Earthing



- K9. Safety precautions
- K10. Uses of PPE
- K11. Various types of wiring tests
- K12. Basic electricity
- K13. Basic electronics

### 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

- install Electric Motor
- Uninstall Electric Motor
- .Identify Cables
- Lay cables
- Perform Earthing
- Measure Gages of cable
- Perform joints
- Insulate Joints
- Connect cables
- Insulate Joints
- Connect cables
- Perform continuity test
- Perform polarity test
- Perform Earthing test
- Perform insulation test

### Important points

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:

- Differentiate between various sizes of cables
- Prepare a list of wiring materials, for a given circuit diagram
- Use of Multi meter
- Make any one of the following joint as decided by assessor
  - “Tee – joint” and insolate it as per standard
  - “Married – joint” and insolate it as per standard
  - “Britannia – joint” and insolate it as per standard
  - Western Union – Joint and insolate it as per standard



- Straight Joint and insolate it as per standard
- Colour scheme
- Record test results

### Competency Standard G: Maintain Marble Machines

**Overview:** This competency standard covers the skills and knowledge required to Replace Belts, Replace cutting Blades, Replace bearings and shaft, Replace Pulleys, Replace electrical Motor and Replace trolley ropes.

Competency Units	Performance Criteria
<b>G1.</b> Replace Belts	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Change the belt. <b>P2.</b> Adjust the belt.
<b>G2.</b> Replace cutting Blades	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Assess the shaft and central bore of the cutter. <b>P2.</b> Replace the cutting blades. <b>P3.</b> Ensure tightness of nut and flange.
<b>G3.</b> Replace bearings and shaft.	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Remove the faulty bearing. <b>P2.</b> Mount the new bearing. <b>P3.</b> Remove the faulty shaft. <b>P4.</b> Replace the repaired/new shaft
<b>G4.</b> Replace Pulleys.	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Remove damaged pulley. <b>P2.</b> Mount new pulley. <b>P3.</b> Perform alignment of pulleys.
<b>G5.</b> Replace trolley ropes.	<b><i>Trainee will be able to:</i></b> <b>P1.</b> Dismantle trolley ropes. <b>P2.</b> Install trolley ropes. <b>P3.</b> Adjust and Align trolley ropes.

### 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. Specifications (shape, types and sizes) of belts
- K2. Replacement techniques of bearings
- K3. Specifications (Number) of bearings and their uses
- K4. Sizes and uses of blades
- K5. Replacement techniques of blades
- K6. Nature of cutting materials
- K7. Types / shapes of pulleys
- K8. Alignment/adjustment techniques of pulleys
- K9. Alignment /adjustment techniques of motors

### Critical Evidence(s) Required

- The candidate needs to produce following critical evidence(s) in order to be competent in this competency standard:
  - Change the belt.
  - Adjust the belt
  - Replace the cutting blades
  - Remove the faulty bearing.
  - Mount the new bearing.
  - Remove the faulty shaft.
  - Replace the repaired/new shaft
  - Remove damaged pulley.
  - Mount new pulley.
  - Perform alignment of pulleys
  - Dismantle trolley ropes.
  - Install trolley ropes.
  - .Adjust and Align trolley ropes

### Important points

- 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:
- Specifications of belts, bearings, blades, pulleys and shafts



- Replacement techniques of cutting blades belts, bearings, pulleys and shafts
- Alignment/adjustment techniques of pulleys and trolley ropes.

### Competency Standard H: Perform Polishing

**Overview:** This competency standard covers the skills and knowledge required to identify polishing tools & equipment, Apply polishing pads, Apply sand paper and Apply Buff for Shining.

Competency Units	Performance Criteria
<b>H1.</b> Identify polishing tools & equipment	<b>Trainee will be able to:</b> <b>P1.</b> Identify polishing tools/materials <b>P2.</b> Ensure safe handling of polishing tools/equipment
<b>H2.</b> Apply polishing pads	<b>Trainee will be able to:</b> <b>P1.</b> Segregate tiles for polishing. <b>P2.</b> Place big tiles on machine /Table <b>P3.</b> Fix small tiles on fixture
<b>H3.</b> Apply sand paper	<b>Trainee will be able to:</b> <b>P1.</b> Perform grinding with grinding disc. <b>P2.</b> Apply polishing materials. <b>P3.</b> Apply sand paper.
<b>H4.</b> Apply Buff for Shining.	<b>Trainee will be able to:</b> <b>P1.</b> Apply Buff for shining. <b>P2.</b> Assess surface finishing of tiles

### 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. Polishing tools
- K2. Polishing materials
- K3. Polishing techniques
- K4. Uses of polishing materials
- K5. Buffing methods
- K6. Use of Auto Polishing machine
- K7. Types of Buffs



### K8. Buffing materials and uses

#### Critical Evidence(s)

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

- Segregate tiles for polishing
- Place big tiles on machine /Table
- Fix small tiles on fixture
- Perform grinding with grinding disc.
- Apply polishing materials.
- Apply sand paper
- Apply Buff for shining.

#### Important points

- Identification of polishing tools/materials
- Polishing techniques
- Buffing methods
- Assess surface finishing of tiles
- Ensure safe handling of polishing tools/equipment

#### Competency Standard I: Develop basic professional skills

**Overview:** This competency standard covers the skills and knowledge required to develop basic computer operating skills, develop basic communication skills, and develop basic marketing skills.

Competency Units	Performance Criteria
I1. Develop basic computer operating skills	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Perform Microsoft basic commands in MS word</p> <ul style="list-style-type: none"> <li>a. Open File</li> <li>b. Format a file               <ul style="list-style-type: none"> <li>i. Font (Type/size/bold/Italic)</li> <li>ii. Header Footer</li> <li>iii. Page number</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>iv. Insert pics / table/hyperlink</li> <li>c. Save a File</li> <li>d. Save a folder</li> </ul> <p><b>P2.</b> Perform basic commands in Microsoft MS Excel</p> <ul style="list-style-type: none"> <li>a. Open a worksheet</li> <li>b. Sum functions</li> <li>c. If functions</li> <li>d. Basic calculations</li> <li>e. Table and graphs</li> <li>f. Save a worksheet/folder</li> </ul> <p><b>P3.</b> Prepare Microsoft power point presentation by using basic commands</p> <ul style="list-style-type: none"> <li>a. Make a power point file</li> <li>b. Insert pics/table/hyperlink</li> <li>c. Design a theme for slides</li> <li>d. Save a power point file</li> </ul> <p><b>P4.</b> Perform browsing on the internet as per needs</p> <p><b>P5.</b> Perform research online on new trends in the market with the help of internet</p>
<p><b>I2.</b> Develop basic communication skills.</p>	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li><b>P1.</b> Negotiate with a client to understand the demand</li> <li><b>P2.</b> Plan product supply as per clients requirements</li> <li><b>P3.</b> Set price(s) according to clients requirements</li> <li><b>P4.</b> Communicate the plan to the client</li> <li><b>P5.</b> Take feedback from client on understanding of the exact job with timeline and cost</li> </ul>
<p><b>I3.</b> Develop basic marketing skills</p>	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li><b>P1.</b> Present a design to the client as per requirement</li> <li><b>P2.</b> Finalize the business deal</li> <li><b>P3.</b> Purchase the equipment/tools and consumables as per agreed design</li> <li><b>P4.</b> Adopt correct means of transportation</li> <li><b>P5.</b> Select promotional means, according to target needs of clients</li> </ul>
<p><b>I4.</b> Identify needs of the market.</p>	<p><b><i>Trainee will be able to:</i></b></p> <ul style="list-style-type: none"> <li><b>P1.</b> Analyse upcoming market trends.</li> <li><b>P2.</b> Develop Professional network.</li> <li><b>P3.</b> Demonstrate behavioural skills.</li> </ul>



	<p><b>P4.</b> Develop sound interpersonal skills</p> <p><b>P5.</b> Develop new designs.</p>
<p><b>I5.</b> Follow Environmental, Health and Safety standards.</p>	<p><b>Trainee will be able to:</b></p> <p><b>P1.</b> Follow Health and Safety Rules</p> <p><b>P2.</b> Ensure environmental safety</p> <p><b>P3.</b> Ensure compliance of net metering policy</p> <p><b>P4.</b> Ensure workplace safety by following safety standards</p> <p><b>P5.</b> Ensure safety while operating wires and electricity.</p> <p><b>P6.</b> Store all tools and equipment properly in a safe area.</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. Basic computers
- K2. Importance and uses of MS Word
- K3. Importance and uses of MS Excel
- K4. Importance and uses of MS Power Point
- K5. Basic concepts of communication
- K6. Seven Cs in communication
- K7. Basic concepts of marketing
- K8. Trends of markets (Demand and supply etc.)
- K9. Knowledge of 4Ps
  - Product
  - Price
  - Promotion
  - Placement
- K10. Importance of trends and market research.

### Critical Evidence(s) Required

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



- 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

### 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

### Competency Standard J: Ensure Quality

**Overview:** This competency standard covers the skills and knowledge required to ensure quality of marble on receiving, cutting, polishing and dispatching.

Competency Units	Performance Criteria
<b>J1.</b> Check quality of marble on receiving	<b>Trainee will be able to:</b> <b>P1.</b> Pay visit to the storing place <b>P2.</b> Check physical condition of Marbles <b>P3.</b> Segregate the damaged marbles
<b>J2.</b> Check quality of cutting	<b>Trainee will be able to:</b> <b>P1.</b> Enlist specification as per demand <b>P2.</b> Match length and width of marble with specification <b>P3.</b> Inspect edges of marble
<b>J3.</b> Ensure Quality of Polishing	<b>Trainee will be able to:</b> <b>P1.</b> Check smoothness of marbles surface <b>P2.</b> Check shine of marble <b>P3.</b> Check quality of polishing materials
<b>J4.</b> Ensure quality at dispatching	<b>Trainee will be able to:</b> <b>P1.</b> Ensure segregation of damaged marbles <b>P2.</b> Ensure safe handling of marbles during dispatch



## 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. Knowing about specification
- K2. Checking techniques of marble
- K3. Use of polishing materials
- K4. Techniques of safe handling of marble
- K5. Knowing about Quality standards
- K6. Understand Market demand
- K7. Buffing materials and uses

## Critical Evidence(s)

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

- Check physical condition of Marbles
- Segregate the damaged marbles
- Enlist specification as per demand
- Match length and width of marble with specification
- Inspect edges of marble
- Check shine of marble
- Check quality of polishing materials

## Important points

- Quality standards
- Quality Assurance techniques
- Understanding specification of marble

## COMPLETE LIST OF TOOLS AND EQUIPMENT

### List of Machines and Tools

Sr. #	Description
1.	Bridge Cutter



Sr. #	Description
2.	Buff pad
3.	Cross cutting machine
4.	Cutting tools, blades
5.	Drill Machine with Diamond bits
6.	Gang Saw cutting machine
7.	Grinder (Handy / Pedestal)
8.	Hand Trolley
9.	Spade
10.	Marble block / slab
11.	Grinding machine
12.	Measurement tape
13.	Overhead Crane
14.	Auto Polish machine
15.	File set
16.	Section Cutting machine
17.	Sizing Machine
18.	Tester
19.	Tripod stand with pulley
20.	Vertical cutting machine
21.	Volt meter / Ampere meter
22.	Water pump
23.	Wrench set
24.	Grip pliers
25.	Hack saw
26.	Hammer set
27.	Screw driver set
28.	Hand electrical drill Machine
29.	Hand electrical grinder
30.	Hydraulic Jack
31.	Puller
32.	Socket set (T-Type)
33.	Spinner set
34.	Torque Wrench
35.	Pipe Wrench
36.	Adjustable Wrench
37.	Tri Squair
38.	L-in Keys
39.	Lever (Steel Rod)



### List of Consumables

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

### List of Personal Protective Equipment

Sr. #	Description
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.	Colours
9.	White charts
10.	Brown sheets
11.	White board markers
12.	Permanent markers
13.	File cover and files