

# CURRICULUM

F  
O  
R

## **Marble Polisher**

*(Marble, Granite, Mosaic & Terrazzo Polishing)  
(A Competency Based Short-term Curriculum)*



Council for Technical Education and Vocational Training  
**CURRICULUM DEVELOPMENT DIVISION**  
Sanothimi, Bhaktapur  
2009

## Table of Contents

Introduction .....	3
Aim .....	3
Objectives.....	3
Course Description .....	3
Duration .....	3
Target Group.....	4
Target location.....	4
Group Size.....	4
Medium of Instruction.....	4
Pattern of Attendance .....	4
Focus of Curriculum .....	4
Entry Criteria.....	4
Instructional Media and Materials .....	4
Teaching Learning Methodologies .....	4
Follow up Provision .....	4
Grading System.....	5
Students Evaluation Details .....	5
Trainers' Qualification (Minimum) .....	5
Trainer-Trainees Ratio .....	5
Suggestions for Instruction .....	5
Certificate Requirements.....	6
Skill Testing Provision.....	6
Physical Facilities .....	6
Course Structure of Marble Polisher .....	8
Basic Electricity .....	9
Marble Polishing.....	21
Marble Floor Refinishing.....	48
Minor Maintenance of Polishing Tools & Equipment.....	60
Part: B Common Module.....	72
Sub module:1: Applied Mathematics.....	72
Sub module: 2: Occupational Health and Safety .....	74
Sub module: 3: First Aid .....	76
Sub module:4: HIV/AIDS.....	78
Sub module: 5 : Communication .....	79
Sub module: 6 : Small Enterprise Development .....	84
Reference Books .....	88

### **Introduction**

The competency based and market oriented curriculum for **Marble Polisher** is designed to produce employable workforce equipped with knowledge, skills and attitudes related to the occupation. In this curriculum, the trainees will practice skills of marble and terrazzo grinding and polishing works in the workshop and construction industries. Once the trainees acquired the competencies they will have ample opportunity for employment and self-employment through which they will contribute in the national streamline of poverty reduction in the country. The skills and knowledge included in this curriculum improve their knowledge and skills and make them competent **Marble Polisher** needed for the occupation. *The major feature of the curriculum is to incorporate the drop-out youths who have only primary level schooling experience.*

### **Aim**

The main aim of this program is to produce employable **Marble Polisher** who could provide marble and terrazzo floor polishing and refinishing services in the public and residential buildings in the country and abroad.

### **Objectives**

After completion of training the trainees will be able to:

1. State the concept of electricity
2. Perform current, voltage and resistant calculation
3. Apply electrical instruments for measuring resistance, voltage, current and power
4. State the concept of marble polishing
5. Carryout marble, mosaic, terrazzo and marble grinding works
6. Perform granite and marble molding
7. Perform marble, granite, mosaic and terrazzo polishing
8. Perform maintaining and repairing of existing marble surface
9. Carryout minor maintenance of polishing tools and equipment
10. Be familiar with First Aid and HIV/AIDS
11. Be familiar with occupational health and apply safe working technique
12. Apply Communication and Small Enterprise Development skills

### **Course Description**

This curricular programme is based on the job required to be performed by a **Marble Polisher**. Therefore, this curriculum is designed to provide skills and knowledge focusing on marble, granite, mosaic and terrazzo floor and surface polishing related to the occupation. This course is designed into modules which cover, Basic electricity as a prerequisite and foundation module, Marble polishing, Marble floor refinishing and Minor maintenance of Polishing tools and equipment. *It also includes Applied mathematics, Occupational health and safety, First aid, HIV/AIDS, Communication and Small Enterprise Development as sub modules under common module with the view to impart fundamental skills for livelihood.*

Trainees will practice & learn skills using typical tools, equipment, machines and materials necessary for the program.

It is made mandatory that trainees should be placed in construction industries to gain hands on practice for at least 100 hours

### **Duration**

The total duration of this training program will be of 390 hours including common module of 70 hours.

**Target Group**

The target group for this training program will be all interested individuals with educational prerequisite of minimum class five pass.

**Target location**

The target group for this training program will be all over Nepal.

**Group Size**

The group size of this training program will be maximum 30, provided all necessary resources to practice the tasks/ competencies as specified in this curriculum.

**Medium of Instruction**

The medium of instruction for this program will be Nepali or English or both

**Pattern of Attendance**

Trainee should have 90% attendance during the training period to get the certificate.

**Focus of Curriculum**

This is a competency-based curriculum. This curriculum emphasizes on competency performance. 80% time is allotted for performance and remaining 20% time is for related technical knowledge. So, the main focus will be on performance of the specified competencies in the curriculum.

**Entry Criteria**

Individuals who meet the following criteria will be allowed to enter this curricular program:

- Minimum of five class pass or equivalent
- Physically and mentally fit
- Minimum of 18 years of age
- Should pass entrance examination
- Preference will be given to the individuals of rural, poor, female, Dalit, Janjati, Disadvantaged Groups (DAGs) and conflict affected people.

**Instructional Media and Materials**

The following instructional media and materials are suggested for the effective instruction and demonstration.

- **Printed Media Materials** (Assignment sheets, Case studies, Handouts, Information sheets, Individual training packets, Procedure sheets, Performance Check lists, Textbooks etc.).
- **Non-projected Media Materials** (Display, Models, Flip chart, Poster, Writing board etc.).
- **Projected Media Materials** (Opaque projections, Overhead transparencies, Slides etc.).
- **Audio-Visual Materials** (Audiotapes, Films, Slide-tape programs, Videodiscs, Videotapes etc.).
- **Computer-Based Instructional Materials** (Computer-based training, Interactive video etc.).

**Teaching Learning Methodologies**

The methods of teachings for this program will be a combination of several approaches. Such as Illustrated Lecture, Group Discussion, Demonstration, Simulation, Guided practice, Practical experiences, Fieldwork and Other Independent learning.

- Theory: Lecture, Discussion, Assignment, Group work.
- Practical: Demonstration, Observation, Guided practice and Self-practice.

**Follow up Provision**

**First follow up:** Six months after the completion of the program

**Second follow up:** Six months after the completion of the first follow up

**Follow up cycle:** In a cycle of one year after the completion of the second follow up for five years

### **Grading System**

The trainees will be graded as follows based on the marks in percentage secured by them in tests/ evaluations.

- Distinction: Passed with 80% or above
- First Division: passed with 75% or above
- Second Division: passed with 65% or above
- Third Division: passed with 60% or above

### **Students Evaluation Details**

- Continuous evaluation of the trainees' performance is to be done by the related instructor/ trainer to ensure the proficiency over each competency under each area of the whole course.
- Related technical knowledge learnt by trainees will be evaluated through written or oral tests as per the nature in the institutional phase of training.
- Trainees must secure minimum marks of 60% in an average of both theory and practical evaluations.
- The entrance test will be administered by the concerned training institute.

### **Trainers' Qualification (Minimum)**

- Diploma in civil engineering or equivalent in related field
- Good communicative and instructional skills
- Experience in related field

### **Trainer-Trainees Ratio**

- In theory classes 1(trainer): 20 (trainees)
- In practical classes (in workshop and laboratory) 1(trainer): 10 (trainees)

### **Suggestions for Instruction**

#### **1. Select objectives**

- Write objectives of cognitive domain.
- Write objectives of psychomotor domain.
- Write objectives of affective domain

#### **2. Select Subject matter**

- Study subject matter in detail.
- Select content related to cognitive domain.
- Select content related to psychomotor domain.
- Select content related to affective domain.

#### **3. Select Instructional Methods**

- Teacher centered methods: like lecture, demonstration, question answers inquiry, induction and deduction methods.
- Student initiated methods like experimental, field trip/excursion, discovery, exploration, problem solving, and survey methods.
- Interaction methods like discussion, group/team teaching, microteaching and exhibition.
- Dramatic methods like role play and dramatization

#### **4. Select Instructional method (s) on the basis of objectives of lesson plans and KAS domains.**

#### **5. Select appropriate educational materials and apply at right time and place.**

#### **6. Evaluate the trainees applying various tools to correspond the KAS domains.**

#### **7. Make plans for classroom / field work / workshop organization and management.**

8. Coordinate among objectives, subject matter and instructional methods.
9. Prepare lesson plan for theory and practical classes.
10. Deliver /conduct instruction / program.
11. Evaluate instruction/ program.

**Special suggestion for the performance evaluation of the trainees**

1. Perform task analysis.
2. Develop a detail task performance checklist.
3. Perform continuous evaluation of the trainees by applying the performance checklist.

**Suggestion for skill training**

1. Demonstrate task performance in normal speed.
2. Demonstrate slowly with verbal description of each and every step in the sequence of activity of the task performance using question and answer techniques.
3. Repeat 2 for the clarification on trainees demand if necessary.
4. Perform fast demonstration of the task.

**Provide trainees the opportunities to practice the task performance demonstration**

1. Provide opportunity to trainees to have guided practice.
2. Create environment for practicing the demonstrated task performance.
3. Guide the trainees in each and every step of task performance.
4. Provide trainees to repeat and re-repeat as per the need to be proficient on the given task performance.
5. Switch to another task demonstration if and only trainees developed proficiency in the task performance.

**Other suggestions**

1. Apply principles of skill training.
2. Allocate 20% time for theory classes and 80% time for task performance while delivering instructions.
3. Apply principles of learning relevant to the learners' age group.
4. Apply principles of intrinsic motivation.
5. Facilitate maximum trainees' involvement in learning and task performance activities.
6. Instruct the trainees on the basis of their existing level of knowledge, skills and attitude.

**Certificate Requirements**

The related training institute will provide the certificate of "**Marble Polisher**" to those trainees who successfully complete all the requirements as prescribed by the curriculum.

**Skill Testing Provision**

The graduates who have the completion certificate of "**Marble Polisher**" may sit in the skill testing examination of **Level one (Level- 1)** as provisioned and administered by the National Skill Testing Board.

**Physical Facilities**

The theory class rooms at least should have area of 10 square feet per trainee and in the workshop it should be at least of 30 square feet per trainees. All the rooms and laboratory should be well illuminated and ventilated.

<i>Well equipped workshop with adequate space</i>	<i>1 (No.)</i>
<i>Well furnished class room with adequate space</i>	<i>1 (No.)</i>
<i>Office room equipped with modern facilities</i>	<i>1 (No.)</i>
<i>Principle room equipped with modern facilities</i>	<i>1 (No.)</i>
<i>Reception room equipped with modern facilities</i>	<i>1 (No.)</i>

## List of tools, Equipment and Materials

### 1. For basic electricity

- |                           |                                     |
|---------------------------|-------------------------------------|
| 1. Ampere meter           | 9. Megger                           |
| 2. Chisel                 | 10. Multimeter                      |
| 3. Drill machine and bits | 11. Ohmmeter                        |
| 4. Energy meter           | 12. Phase tester                    |
| 5. Hacksaw                | 13. Pliers                          |
| 6. Hammer                 | 14. Screwdriver( flat and phillips) |
| 7. Insulation tester      | 15. Voltmeter                       |
| 8. Measuring tape         | 16. Wattmeter                       |

### 2. For marble fitting

- |   |  |
|---|--|
| 1. Air blower   | 31. Marble polish                                  |
| 2. Alum   | 32. Marble polish gloss                            |
| 3. Boot   | 33. Marble sealer                                  |
| 4. Bucket   | 34. Marble stripper                                |
| 5. Buffing pad  | 35. Measuring tape                                 |
| 6. Builder square   | 36. Mortar pan                                     |
| 7. Calcined tin powder  | 37. Oxalic acid                                    |
| 8. Carborundum stone ( grinding wheel/blade of different numbers/sizes) | 38. Pipe level                                     |
| 9. Combination plier  | 39. Plastic scrapper                               |
| 10. Compact linen cushion   | 40. Plumb bob                                      |
| 11. Emery and lead Muller   | 41. Pointer hammer                                 |
| 12. Floor buffing machine   | 42. Polishing machine fettled with felt or Hessian |
| 13. Gauge measuring devices   | 43. Polishing pad                                  |
| 14. Gothland stone  | 44. Polishing pad                                  |
| 15. Granite cleaner   | 45. Pumice stone                                   |
| 16. Granite sealer  | 46. Rubber gloves                                  |
| 17. Grinding stone  | 47. Sand paper                                     |
| 18. Grout cleaner   | 48. Screw driver                                   |
| 19. Grout sealer  | 49. Shovel   |
| 20. Hammer  | 50. Spirit level                                   |
| 21. Hand grinder  | 51. Squirts  |
| 22. Helmet  | 52. Steel wood pad                                 |
| 23. Hessian   | 53. Stiff bristle brush                            |
| 24. Impalpable powder   | 54. Straight edge                                  |
| 25. Jet pump( for water blowing)  | 55. Sudsy water                                    |
| 26. Lippage removal disc  | 56. Trowel   |
| 27. Lukewarm water  | 57. Try square                                     |
| 28. Machine grinder   | 58. Wire brush                                     |
| 29. Marble Cleaner  | 59. Wax polish                                     |
| 30. Marble Gloss conditioner  | 60. Wrench set                                     |

## Course Structure of Marble Polisher

### Part A. Specialized modules

S.N.	Modules	Nature	Time (hrs)	Full marks
1	Basic Electricity	T+P	40	30
2	Marble Polishing	T+P	190	150
3	Marble Floor Refinishing	T+P	60	50
4	Minor Maintenance of Polishing Tools & Equipment	T+P	30	20
<b>Total</b>			<b>320</b>	<b>250</b>

### Part B. Common module

S.N.	Sub-modules	Nature	Time (hrs)	Full marks
1	Applied Mathematics	T+P	20	50
2	Occupational Health & Safety	T+P	10	
3	First Aid	T+P	5	
4	HIV/AIDS	T+P	5	
5	Communication	T+P	10	
6	Small Enterprise Development	T+P	20	
<b>Total</b>			<b>70</b>	<b>50</b>
<b>Grand total (Part A &amp;B)</b>			<b>390</b>	<b>300</b>

# Module 1

## Basic Electricity

### Description:

This module as a foundation module intends to provide basic skills and knowledge electricity related to the occupation. This module deals with Concept of electricity, Electrical instruments and their application, Symbols and codes identification, Various calculations and Application of Kirchoff laws.

### Objectives:

After its completion the trainees will able to:

1. Develop the concept of electricity
2. Identify electrical tools and instruments
3. State Ohm's law
4. Apply electrical instruments
5. Apply Kirchoff's laws

### Module Structure (M1)

S.N	Module	Nature	Time (hours)	Full marks
1	M1: Basic Electricity	T+P	40	30

### Tasks:

1. Explain the concept of electricity
2. Follow safety measures
3. Identify/enumerate/handle tools and instruments
4. Apply problem-solving techniques stating the Ohm's law
5. Calculate current/voltage/resistance
6. Measure resistance using Ohmmeter
7. Measure voltage using Voltmeters
8. Measure current using Ampere meter
9. Apply Kirchoff current law (KCL) in a given circuits
10. Apply Kirchoff's Voltage Law (KVL) of a closed loop circuit

## Task Analysis

**TASK NO: 1** Explain the concept of electricity.

Time : 2 hrs

Theory : 2 hrs

Practical: hrs

Performance steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Define electricity</li> <li>2. Enlist nature of electricity</li> <li>3. Define electricity.</li> <li>4. Describe history of electricity</li> <li>5. Enlist importance of electricity.</li> <li>6. Enlist uses of electricity.</li> <li>7. Enlist sources of electricity.</li> <li>8. Explain concept of atom</li> <li>9. Describe atomic particle</li> <li>10. Describe atomic structure</li> <li>11. Describe free electron</li> <li>12. Describe charge body and Coulomb</li> <li>13. Define electronic current and conventional flow</li> <li>14. Define voltage</li> <li>15. Enlist sources of EMF</li> <li>16. Define resistance and conductance.</li> </ol>	<p><b><u>Condition (Given):</u></b> Classroom, textbook, manual, poster etc</p> <p><b><u>Task (What):</u></b> Explain the concept of electricity</p> <p><b><u>Standards (How well):</u></b> The concept of electricity including the terminologies explained in sequential order.</p>	<ul style="list-style-type: none"> <li>➤ Introduction of electricity</li> <li>➤ Importance of electricity</li> <li>➤ Nature of electricity</li> <li>➤ History of electricity</li> <li>➤ Uses of electricity.</li> <li>➤ Enlist sources of electricity</li> <li>➤ Concept of the atom</li> <li>➤ Atomic particles</li> <li>➤ Atomic structure</li> <li>➤ Free electrons</li> <li>➤ Charged body and Coulomb</li> <li>➤ Electric current and conventional flow</li> <li>➤ Voltage – The Electric pressure or electromotive force (EMF)</li> <li>➤ Source of EMF</li> <li>➤ Resistance and conductance</li> </ul>

**Tools/equipment:**

**Safety:**

## Task Analysis

**TASK NO: 2** Follow safety measures.

Time : 4 hrs

Theory : 2 hrs

Practical: 2 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
1 Select personal protective equipment (PPE) as required 2 Wear required safety gears 3 Inspect and maintain safe work area 4 Follow established procedures for the use and care of tools 5 Follow established procedures for the use and care of equipments 6 Follow established procedures for the use and care of power operated equipment 7 Follow established procedures for the use and care of safety equipments 8 Enlist safety signs/notice. 9 Enlist preparation for emergency response. 10 Identify basic first-aid procedures 11 Identify the elements to follow in treating a victim for electrical shock 12 Lift objects and materials in accordance with established procedures.	<p><b><u>Condition (Given):</u></b> Workshop/Classroom, safety tools, poster and equipments</p> <p><b><u>Task (What):</u></b> Follow safety measures.</p> <p><b><u>Standards (How well):</u></b> The safety measures followed in sequential order.</p>	<ul style="list-style-type: none"> <li>➤ Introduction</li> <li>➤ Key Terms (KT's) of safety such as:               <ul style="list-style-type: none"> <li>▪ Artificial Resuscitation</li> <li>▪ Voltage</li> <li>▪ Current</li> <li>▪ Resistance</li> <li>▪ Electrical circuit</li> <li>▪ Fatigue</li> <li>▪ Ground or Earthing</li> <li>▪ Hazards</li> <li>▪ Lunge</li> </ul> </li> <li>➤ Electric Shock</li> <li>➤ Shock intensity</li> <li>➤ General shop rules</li> <li>➤ Personal safety rules</li> <li>➤ Tools and Equipment safety rules</li> </ul>

**Tools/equipment:**

**Safety:**

## Task Analysis

**TASK NO: 3 Identify/enumerate/handle tools and instruments.**

Time : 4 hrs

Theory : 1 hr

Practical: 2 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Obtain instructions.</li> <li>2. Collect necessary tools, instruments and materials.</li> <li>3. Identify tools and instrument used in house wiring system</li> <li>4. Enumerate identified tools and instruments.</li> <li>5. Explain their uses and functions.</li> <li>6. Explain safety and precaution while using them.</li> <li>7. Handle identified and enumerated tools and instruments.</li> <li>8. Explain safety and maintenance of those tools</li> <li>9. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, various tools, equipment and materials needed for wiring</p> <p><b><u>Task (What):</u></b> Identify/enumerate/handle tools and instruments.</p> <p><b><u>Standards (How well):</u></b> All the tools and instruments needed to house wiring identified, enumerated and handled.</p>	<ul style="list-style-type: none"> <li>➤ Identification of different tools and instruments used in carrying basic skills related to electricity</li> <li>➤ Function of different tools and instruments</li> <li>➤ Identification procedure</li> <li>➤ Care and maintenance of tools and instruments</li> <li>➤ Safety and precautions in handling tools and instruments</li> </ul>

**Tools/equipment:** Different tools and instruments

**Safety:** Handle tools and instrument safely.

## Task Analysis

**TASK NO: 4 Identify/draw electrical symbols**

Time : 5 hrs

Theory : 2 hrs

Practical: 3 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
1 Obtain instructions 2 Collect instrumental tools, equipments and materials 3 Comprehend and interpret the real naming of the electrical and electronics symbols and codes. 4 Prepare and interpret drawing and symbols of electrical/electronics systems, 5 Identify and draw general electrical and electronics symbols 6 Identify and draw electrical/electronics symbols for systems 7 Identify, draw and name Single line and Multi-line representation of electrical/electronic equipments 8 Identify, draw and name Single line and Multi-line representation of electrical/electronic Meters and recording instruments 9 Identify, draw and name of electrical/electronic lamps and signaling devices symbols 10 Identify, draw and name of electrical/electronic Fuses and Fuse-switches symbols 11 Identify, draw and name of electrical/electronic switchgear and control gear symbols 12 Identify, draw and name of electrical/electronic wiring and wiring components symbols 13 Identify, draw and name of electrical/electronic connecting devices symbols 14 Keep records.	<p><b><u>Condition (Given):</u></b> Workshop equipped with electrical tools, instruments and required materials</p> <p><b><u>Task (What):</u></b> Identify/draw electrical symbols</p> <p><b><u>Standards (How well):</u></b> Electrical/electronics symbols, appearance, coding and color coding. Identified.</p>	<p>➤ <b>Electrical drawing and wiring symbols</b></p> <ul style="list-style-type: none"> <li>▪ Introduction</li> <li>▪ Importance as technician's language</li> <li>▪ Symbol size</li> <li>▪ Line thickness</li> <li>▪ Connecting and identification of lines</li> <li>▪ Common wiring circuits</li> <li>▪ Single line representation of wiring diagrams</li> </ul>

**Tools/equipment/materials:** Electrical codes of practice, NEA rules and regulations, Electrical specifications, drawing instrument set, drawing board, cello tape.

**Safety:** Handle instrument safely.

## Task Analysis

**TASK NO: 5** Apply problem-solving techniques stating the Ohm's law.

Time : 4 hrs  
Theory : 2 hrs  
Practical: 2 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1 Obtain instructions</li> <li>2 Collect tools, instruments and materials.</li> <li>3 Exhibit the implementation of Ohm's Law into the electrical circuits</li> <li>4 Exhibit the practicing experience of Current Law of Ohm's Law</li> <li>5 Exhibit the practicing experience of Voltage Law of Ohm's Law</li> <li>6 Exhibit the practicing experience of Resistance Law of Ohm's Law</li> <li>7 Drill and apply 20 different exercises of each Law</li> <li>8 Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop equipped with electrical tools, instruments and required materials</p> <p><b><u>Task (What):</u></b> Apply problem-solving techniques stating the Ohm's law.</p> <p><b><u>Standards (How well):</u></b> Ohm's law stated. Relationship among current, voltage and resistance described.</p>	<ul style="list-style-type: none"> <li>➤ Mathematical expression of Ohm's Law as tools for circuit analysis: <ul style="list-style-type: none"> <li>▪ Expressing current Law using pie-shape chart</li> <li>▪ Explaining the opposite effect of voltage and resistance values change ed in the circuits</li> <li>▪ Expressing Voltage Law using pie-shape chart</li> <li>▪ Explaining the opposite effect of current and resistance values change ed in the circuits</li> <li>▪ Expressing Resistance Law using pie-shape chart</li> <li>▪ Explaining the opposite effect of voltage and current values change ed in the circuits</li> </ul> </li> </ul>

**Tools/equipment:**

**Safety:**

## Task Analysis

**TASK NO: 6 Calculate current/voltage/resistance.**

Time : 3 hrs

Theory : 1 hr

Practical: 2 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1 Obtain instructions</li> <li>2 Collect tools, instruments and materials.</li> <li>3 Understand the need for drilling exercise of mathematical problem solving of current, voltage and resistance</li> <li>4 Construct and interpret unknown voltage circuit with the current and resistance values and find voltage</li> <li>5 Comprehend, compute and interpret with fifteen example sets with different values of the same problems</li> <li>6 Construct and interpret unknown current circuit with the voltage and resistance values and find current</li> <li>7 Comprehend, compute and interpret with fifteen example sets with different values of the same problems</li> <li>8 Construct and interpret unknown resistance circuit with the voltage and current values and find resistance</li> <li>9 Comprehend, compute and interpret with fifteen example sets with different values of the same problems</li> <li>9 Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Mathematical problems</p> <p><b><u>Task (What):</u></b> Calculate current/ voltage/ resistance.</p> <p><b><u>Standards (How well):</u></b> The current, voltage and resistance values of the circuits computed and problem solved.</p>	<p>➤ <b>Ohm's Law:</b></p> <ul style="list-style-type: none"> <li>▪ As a old friend of the entire career of electricians and as natural as breathing in the human life</li> <li>▪ Technique of solving the unknown values of current, voltage and resistance in the case of two of these values are given in the circuit parameters</li> </ul>

**Tools/equipment:** Calculator

**Safety:** Use and handle calculator safely.

## Task Analysis

**TASK NO: 7 Measure resistances using Ohmmeter.**

Time : 3 hrs

Theory : 1 hr

Practical: 2 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
1 Obtain instructions 2 Obtain tools equipment & materials. 3 Construct a circuit of resistance with voltage for Tungsten lamp 4 Construct a circuit of resistance with voltage for Carbon filament lamp 5 Ensure the connection of the circuit are safely tight 6 Set the Ohm meter for zero reading scale before connecting it to the supply and circuit 7 Connect the meter to the circuit securely 8 Operate and read Ohm meter. 9 Record read values in the tabulated sheet and tables as instructed 10 Repeat the exercises number of times 10 Keep records.	<p><b><u>Condition (Given):</u></b>            Workshop equipped with electrical tools, instruments and required materials</p> <p><b><u>Task (What):</u></b>            Measure resistances using Ohmmeter.</p> <p><b><u>Standards (How well):</u></b>            Resistance measured using Ohmmeter.            Ohmmeter handled.</p>	<p>➤ Theoretical principles:</p> <ul style="list-style-type: none"> <li>▪ Purpose of the experiment</li> <li>▪ Temperature variation and effects on resistance</li> <li>▪ Relationship between the change of materials and temperature changes</li> </ul> <p>➤ Procedure</p> <p>➤ Safety precautions</p>

**Tools/equipment:** Connecting leads, Ohmmeter/multimeter

**Safety:**

- Apply correct connecting technique of Ohmmeter.
- Handle electrical measuring instrument safely.
- Use first aid, if needed.
- Work safely with live line.

## Task Analysis

**TASK NO: 8 Measure voltages using Voltmeters.**

Time : 3 hrs

Theory : 1 hr

Practical: 2 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Obtain instructions</li> <li>2. Obtain tools equipment &amp; materials.</li> <li>3. Construct a voltage circuits with a values of current and resistance</li> <li>4. Ensure the connection of the circuit are safely tight</li> <li>5. Set the volt meter for zero reading scale before connecting it to the supply and circuit</li> <li>6. Connect the meter to the circuit securely</li> <li>7. Operate and read volt meter.</li> <li>8. Record read values in the tabulated sheet and tables as instructed</li> <li>9. Repeat the exercises number of times</li> <li>10. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop equipped with electrical tools, instruments and required materials</p> <p><b><u>Task (What):</u></b> Measure voltage using Voltmeter</p> <p><b><u>Standards (How well):</u></b> Voltage of the circuit measured using Voltmeter Voltmeter handled.</p>	<p>Introduction:</p> <ul style="list-style-type: none"> <li>▪ Volt meter operation</li> <li>▪ Connection of voltmeter in the circuit</li> <li>▪ Reading of the voltmeter</li> </ul> <ul style="list-style-type: none"> <li>➤ Cause and effect of voltmeter circuit loadings</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:** Connecting leads, Volt meter

**Safety:**

- Apply correct connecting technique of Voltmeter.
- Handle electrical measuring instrument safely.
- Use first aid, if needed.
- Work safely with live line.

## Task Analysis

**TASK NO: 9 Measure current using Ampere meter.**

Time : 3 hrs

Theory : 1 hr

Practical: 2 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Obtain instructions</li> <li>2. Obtain tools equipment &amp; materials.</li> <li>3. Construct a current circuits with a values of voltage and resistance</li> <li>4. Ensure the connection of the circuit are safely tight</li> <li>5. Set the Ampere meter for zero reading scale before connecting it to the supply and circuit</li> <li>6. Connect the meter to the circuit securely</li> <li>7. Operate and read ampere meter.</li> <li>8. Record read values in the tabulated sheet and tables as instructed</li> <li>9. Repeat the exercises number of times</li> <li>10. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Classrooms Workshop equipped with electrical tools, instruments and required materials.</p> <p><b><u>Task (What):</u></b> Measure current using Ampere meter</p> <p><b><u>Standards (How well):</u></b> Current measured using Ampere meter. Ampere meter handled.</p>	<p>➤ <b>Describe the:</b></p> <ul style="list-style-type: none"> <li>▪ Ammeter operation</li> <li>▪ Connection of ammeter in the circuit</li> <li>▪ Reading of the ammeter</li> </ul> <p>➤ Explaining the cause and effect of ammeter circuit loadings</p> <p>➤ Procedure</p> <p>➤ Safety precautions</p>

**Tools/equipment:** Connecting leads, Ampere meter

**Safety:**

- Apply correct connecting technique of Ampere meter.
- Handle electrical measuring instrument safely.
- Use first aid, if needed.
- Work safely with live line.

## Task Analysis

**TASK NO: 10** Apply Kirchhoff's Current law (KCL) in a given Circuits.

Time : 4.5 hrs  
Theory : 1.5 hrs  
Practical: 3 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Obtain instructions</li> <li>2. Obtain tools equipment &amp; materials.</li> <li>3. Construct a circuits connecting with the different instrument and equipment(including 3 rheostat and 3 ammeter) as per the given instruction</li> <li>4. Ensure the connection of the circuit are safely tight</li> <li>5. Set all the three rheostats to the maximum values</li> <li>6. Switch on the supply</li> <li>7. Read and Note down the reading of the three ammeters.</li> <li>8. Change the three rheostats settings to get the different values reading in all three ammeters</li> <li>9. Note down the readings of all ammeters</li> <li>10. Check the sum of reading of two ammeters (entering current) equals to that of third ammeter (leaving current)</li> <li>11. Repeat step 8 for 5 settings of rheostat</li> <li>12. Switch-off the supply</li> <li>13. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Classrooms Workshop equipped with electrical tools, instruments and required materials</p> <p><b><u>Task (What):</u></b> Apply Kirchhoff's Current law (KCL) in a given Circuits.</p> <p><b><u>Standards (How well):</u></b> The Kirchhoff's law of current applied for examining the algebraic sum of all current entering and leaving any point in a circuit make equal zero.</p>	<p>➤ Mathematical expression of Kirchhoff's Current Law</p> <ul style="list-style-type: none"> <li>▪ Drawing a Kirchhoff's current Law circuit diagram</li> <li>▪ Making a verification table of Kirchhoff's current law mentioning ammeter (<math>A_1</math>), ammeter (<math>A_2</math>), ammeter (<math>A_3</math>) and (<math>A_1 + A_2</math>) in amperes</li> </ul> <p>➤ Safety precautions</p>

**Tools/equipment:**

**Safety:**

- Handle electrical measuring instrument safely.
- Use first aid, if needed.
- Work safely with live line.

## Task Analysis

**TASK NO: 11 Apply Kirchhoff's Voltage Law (KVL) of a closed loop circuit.**

Time : 4.5 hrs  
Theory : 1.5 hrs  
Practical: 3 hrs

Performance steps	Terminal Performance Objective	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Obtain instructions</li> <li>2. Obtain tools equipment &amp; materials.</li> <li>3. Construct a circuits connecting with the different instrument and equipment (including one rheostat of 100 ohms, 5A, one ammeter and 3 voltmeters) as per the given instruction</li> <li>4. Ensure the connection of the circuit are safely tight</li> <li>5. Set the rheostats to the required values</li> <li>6. Switch-on the DC source as supply</li> <li>7. Read and Note down the reading of the ammeter and three volt meters</li> <li>8. Change the value of rheostat settings to get the different values reading in all three volt meters</li> <li>9. Note down the readings of all volt meters several times repeatedly</li> <li>10. Check each time and ensure that the ammeter do not read more than 5A current rating of the rheostat</li> <li>11. Repeat step 7 for 5 settings for the same current rating of the rheostat</li> <li>12. Switch-off the supply</li> <li>13. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Classrooms Workshop equipped with electrical tools, instruments and required materials</p> <p><b><u>Task (What):</u></b> Apply Kirchhoff's Voltage Law (KVL) of a closed loop circuit</p> <p><b><u>Standards (How well):</u></b> The Kirchhoff's law of voltage applied for examining the algebraic sum of all current entering and leaving any point in a circuit make equal zero.</p>	<ul style="list-style-type: none"> <li>➤ Defining the term of Closed loop:</li> <li>➤ Defining the Kirchhoff's Voltage Law <ul style="list-style-type: none"> <li>▪ Drawing a Kirchhoff's voltage law circuit diagram or closed loop diagrams</li> <li>▪ Making a verification table of Kirchhoff's voltage law mentioning one ammeter ( A1), three volt meters V1, V2 and V3 for reading voltages in the circuits and V1+V2 voltage drops</li> <li>▪ Explaining why Kirchhoff voltage law became a valuable tool for checking the voltage drop in the circuits</li> </ul> </li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:**

**Safety:**

- Handle electrical measuring instrument safely.
- Use first aid, if needed.
- Work safely with live line.

## Module 2 Marble Polishing

**Description:**

This module intends to provide knowledge and skills on marble floor polishing in general. It includes identification of tools, equipment and materials as well as marble, mosaic, terrazzo and granite grinding and Application of sealer and Application of shining polish.

**Objectives:**

After its completion the trainees will be able to:

1. Identify and handle various tools and equipment
2. Carry out course grinding of marble, terrazzo, mosaic and granite floors
3. Application of sealing and filling materials
4. Carryout fine grinding of marble, terrazzo, mosaic and granite floors
5. Apply polishing materials

### Module Structure (M2)

S.N	Module	Nature	Time (hours)	Full marks
1	M2: Marble Polishing	T+P	190	150

**Tasks:**

1. Identify granites/ marbles/ terrazzo/ mosaic/ tiles
2. Explain the concept of marble/granite/terrazzo/ mosaic polishing
3. Identify/enumerate carborundum stone /blade/ grinding wheels/pumice stone/ polishing materials
4. Identify/enumerate/handle polishing tools
5. Identify/handle hand grinder
6. Identify/handle power grinding machine
7. Identify/handle marble stripper
8. Identify/handle polisher/buffer machine
9. Identify/handle air blower/jet pump (water blowing)
10. Fix grinding wheels/blades onto grinder
11. Differentiate polished/ unpolished marbles
12. Identify patterns of floor/wall polishing
13. Estimate the materials for polishing/calculate cost of polishing materials
14. Apply putty with white cement and with/without adding other colour pigment.
15. Perform marble floor/surface grinding
16. Perform marble edge molding
17. Perform granite/polished marble edge molding
18. Carryout polishing on polished /unpolished marbles using different sand papers/ carborundum stones/glazing liquid
19. Perform polishing on corners/edge/on molding using different grinding equipment
20. Carryout polishing on granites
21. Carryout polishing on Terrazzo with the help of power grinding machine
22. Carryout polishing on Mosaic with the help of power grinding machine
23. Carryout polishing on tiles with dilute oxalic acid
24. Repair/attach marbles parts using adhesive materials
25. Collect the waste mixture of white cement and water with the help of cleaning tools



## Task Analysis

**Task No: 1. Identify granites/ marbles/ terrazzo/ mosaic/ tiles.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Obtain manufacturers' catalogues</li> <li>3. Read/interpret manufacturers' catalogues</li> <li>4. Observe sample pieces of granite, marble, terrazzo, mosaic and tiles</li> <li>5. Identify different types and color of granite</li> <li>6. Identify different types and color of granite(Godawari &amp; Rajesthani marble)</li> <li>7. Identify different color and sizes of terrazzo</li> <li>8. Identify different colour and sizes of mosaic</li> <li>9. Identify different local and branded types of tiles commonly available in the market</li> <li>10. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, sample pieces of granite, marble, terrazzo, mosaic and tiles, &amp; manufacturers' catalogues</p> <p><b><u>Task (What):</u></b> Identify granites/ marbles/ terrazzo/ mosaic/ tiles</p> <p><b><u>Standard (How well):</u></b> Different types and colour of granite, marble, terrazzo, mosaic and tile identified.</p>	<ul style="list-style-type: none"> <li>➤ Different brand and colour of granite, marble, terrazzo, mosaic and tiles commonly available in the market</li> <li>➤ Texture of granite, marble, terrazzo, mosaic and tiles</li> <li>➤ Identification procedure</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:**

**Safety:**

## Task Analysis

**Task No: 2. Explain the concept of marble/granite/terrazzo/mosaic polishing.**

Time: 2 hrs  
Theory: 2 hrs  
Practical:

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Define marble/granite/terrazzo mosaic polishing</li> <li>2. Enlist objectives of marble/granite/terrazzo mosaic polishing</li> <li>3. Define grinding/rubbing</li> <li>4. Define modling</li> <li>5. Define marble sealing</li> <li>6. Define marble resurfacing</li> <li>7. Define marble repairing and maintaining</li> <li>8. Define marble honing</li> <li>9. Enlist tools/equipment and materials required for marble/granite/terrazzo mosaic polishing</li> <li>10. Enlist phases of marble/granite/terrazzo mosaic polishing</li> </ol>	<p><b><u>Condition (Given):</u></b> Classroom, books, manual and catalogues</p> <p><b><u>Task (What):</u></b> Explain the concept of marble/granite/terrazzo/mosaic polishing</p> <p><b><u>Standard (How well):</u></b> The concept of marble, granite, terrazzo and mosaic polishing explained.</p>	<ul style="list-style-type: none"> <li>➤ Defining the terms: <ul style="list-style-type: none"> <li>▪ Marble, granite, terrazzo and mosaic polishing</li> <li>▪ Grinding and rubbing</li> <li>▪ Molding</li> <li>▪ Sealing</li> <li>▪ Repairing</li> <li>▪ Resurfacing</li> <li>▪ Marble honing</li> </ul> </li> <li>➤ Purpose of polishing</li> <li>➤ Different polishing tools, equipment and materials</li> </ul>

**Tools/equipment:**

**Safety:** \* Handle hand grinder safely.

## Task Analysis

**Task No: 3. Identify/enumerate Carborundum stone /blade/ grinding wheels/pumice stone/ polishing materials.**

Time: 4 hrs  
Theory: 1 hr  
Practical: 3 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Identify grinding wheel/pumice stone</li> <li>3. Enumerate different number of grinding wheels and pumice stone</li> <li>4. Identify different sealing and polishing materials</li> <li>5. Enumerate different sealing, polishing and cleaning materials</li> <li>6. Enlist application of different numbers of grinding wheels and pumice stone</li> <li>7. Enlist application of different marble sealing, polishing and cleaning materials</li> <li>8. Explain safety precaution while handling/applying grinding wheels, pumice stone, marble sealing, polishing and cleaning materials</li> <li>9. Handle different polishing/cleaning materials</li> <li>10. Explain the safe storage of the different marble sealing/ polishing/cleaning materials</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, different numbers of Carborundum stone (grinding wheels/blades) and pumice stone different marble sealing, polishing and cleaning materials</p> <p><b><u>Task (What):</u></b> Identify/enumerate Carborundum stone /blade/ grinding wheels/pumice stone/ polishing materials</p> <p><b><u>Standard (How well):</u></b> Different numbers of grinding wheels and pumice stone identified Handle different numbers of grinding wheels and pumice stone Different marble polishing and cleaning tools identified. Different sealing, polishing and cleaning tools handled.</p>	<ul style="list-style-type: none"> <li>➤ Identification of different/sizes of Carborundum stone (numbers of grinding wheels/blades) and pumice stone</li> <li>➤ Identification of different marble sealing, polishing and cleaning materials</li> <li>➤ Uses and application of different number of grinding wheels and pumice stone</li> <li>➤ Uses and application of different sealing, polishing and cleaning materials</li> <li>➤ Safety precautions to be taken while identifying and enumerating different materials</li> <li>➤ Identification procedure</li> <li>➤ Safety precautions</li> </ul>

**Tools/Equipment:** different numbers of grinding wheels, different numbers of pumice stone

**Safety:** \* Be careful with chemicals.

## Task Analysis

**Task No: 4. Identify/enumerate/handle polishing tools.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Identify different marble polishing/cleaning tools</li> <li>3. Enumerate different marble polishing/cleaning tools</li> <li>4. Enlist the function of different marble polishing/cleaning tools</li> <li>5. Explain safety precaution while handling marble polishing/cleaning tools</li> <li>6. Handle different polishing/cleaning tools</li> <li>7. Care/maintain of different polishing/cleaning tools</li> <li>8. Explain the safe storage of the different polishing/cleaning tools</li> <li>9. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, different marble polishing and cleaning tools</p> <p><b><u>Task (What):</u></b> Perform marble floor/surface grinding</p> <p><b><u>Standard (How well):</u></b> Different polishing and cleaning tools identified. Different polishing and tools handled.</p>	<ul style="list-style-type: none"> <li>➤ Identification of different marble polishing tools</li> <li>➤ Different tools uses in marble polishing</li> <li>➤ Uses and application of different tools</li> <li>➤ Safety precautions to be taken while handling different tools</li> <li>➤ Handling procedure</li> <li>➤ Care and maintenance of different tools</li> <li>➤ Safety precautions</li> </ul>

**Tools/Equipment:**

**Safety:** \* Handle different marble polishing and cleaning tools safely

## Task Analysis

**Task No: 5. Identify/handle hand grinder.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Read/ interpret manufacturer's catalogue/operation manual</li> <li>3. Identify hand grinder</li> <li>4. Identify parts of hand grinder</li> <li>5. Enlist the function of different parts</li> <li>6. Enlist the function of hand grinder</li> <li>7. Explain safety precaution while handling hand grinder</li> <li>8. Identify accessories related to hand grinder</li> <li>9. Handle hand grinder</li> <li>10. Care/maintain of hand grinder</li> <li>11. Explain the safe storage of the hand grinder</li> <li>12. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, different types of hand grinders and accessories</p> <p><b><u>Task (What):</u></b> Identify/handle hand grinder</p> <p><b><u>Standard (How well):</u></b> Hand grinder and its parts identified. Hand grinder handled as per manufacturer's instruction</p>	<ul style="list-style-type: none"> <li>➤ Identification of hand grinder</li> <li>➤ Identification of parts of hand grinder</li> <li>➤ Functions of different parts of hand grinder</li> <li>➤ Safety precautions to be taken while handling hand grinder</li> <li>➤ Handling procedure</li> <li>➤ Care and maintenance of hand grinder</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:** Hand grinder with accessories

**Safety:** \* Handle hand grinder safely.

## Task Analysis

**Task No: 6. Identify/handle power grinding machine.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Read/ interpret manufacturer's catalogue/operation manual</li> <li>3. Identify power grinder</li> <li>4. Identify parts of power grinder</li> <li>5. Enlist the function of power grinder</li> <li>6. Enlist the function of different parts</li> <li>7. Be familiar with power supply system</li> <li>8. Explain safety precaution while handling power grinder</li> <li>9. Identify accessories related to power grinder</li> <li>10. Handle power grinder</li> <li>11. Care/maintain of power grinder</li> <li>12. Explain the safe storage of the power grinder</li> <li>13. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, different types of power grinders and accessories</p> <p><b><u>Task (What):</u></b> Identify/handle power grinding machine</p> <p><b><u>Standard (How well):</u></b> Power grinder and its parts identified. Power grinder handled as per manufacturer's instruction</p>	<ul style="list-style-type: none"> <li>➤ Identification of power grinder</li> <li>➤ Identification of parts of grinder</li> <li>➤ Functions of different parts of grinder</li> <li>➤ Power supply system</li> <li>➤ Safety precautions to be taken while handling power grinder</li> <li>➤ Handling procedure</li> <li>➤ Care and maintenance of power grinder</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:** Power grinder and accessories

**Safety:** \* Handle power grinder safely.

## Task Analysis

**Task No: 7. Identify/handle marble stripper.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Read/ interpret manufacturer's catalogue/operation manual</li> <li>3. Identify marble stripper</li> <li>4. Identify parts of marble stripper</li> <li>5. Enlist the function of marble stripper</li> <li>6. Be familiar with power supply system</li> <li>7. Explain safety precaution while handling marble stripper</li> <li>8. Identify accessories relate4d to stripper</li> <li>9. Handle marble stripper</li> <li>10. Care/maintain of marble stripper</li> <li>11. Explain the safe storage of the stripper</li> <li>12. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, different types of marble strippers and accessories</p> <p><b><u>Task (What):</u></b> Identify/handle marble stripper</p> <p><b><u>Standard (How well):</u></b> Marble stripper and its parts identified. Marble stripper handled as per manufacturer's instruction</p>	<ul style="list-style-type: none"> <li>➤ Identification of marble stripper</li> <li>➤ Identification of parts of marble stripper</li> <li>➤ Functions of different parts of marble stripper</li> <li>➤ Power supply system</li> <li>➤ Safety precautions to be taken while marble stripper</li> <li>➤ Handling procedure</li> <li>➤ Care and maintenance of marble stripper</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:** Marble stripper with accessories

**Safety:** \* Handle marble stripper safely

## Task Analysis

**Task No: 8. Identify/handle polisher/buffer machine.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Read/ interpret manufacturer's catalogue/operation manual</li> <li>3. Identify polisher/buffer</li> <li>4. Identify parts of buffer</li> <li>5. Enlist the function of buffer</li> <li>6. Be familiar with power supply system</li> <li>7. Explain safety precaution while handling buffer</li> <li>8. Identify different accessories related to buffer</li> <li>9. Handle buffer</li> <li>10. Care/maintain buffer</li> <li>11. Explain the safe storage of the buffer</li> <li>12. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, different types of marble polisher/buffer machine and accessories</p> <p><b><u>Task (What):</u></b> Identify/handle marble polisher/buffer machine</p> <p><b><u>Standard (How well):</u></b> Marble polisher/buffer and its parts identified. Marble polisher/buffer handled as per manufacturer's instruction</p>	<ul style="list-style-type: none"> <li>➤ Identification of marble polisher/buffer</li> <li>➤ Identification of parts of marble polisher/buffer</li> <li>➤ Functions of different parts of marble polisher/buffer</li> <li>➤ Power supply system</li> <li>➤ Safety precautions to be taken while marble polisher/buffer Handling procedure</li> <li>➤ Care and maintenance of marble polisher/buffer</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:** Marble stripper with accessories

**Safety:** \* Handle marble stripper safely

## Task Analysis

**Task No: 9. Identify/handle air blower/jet pump (water blowing).**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
13. Receive instructions 14. Read/ interpret manufacturer's catalogue/operation manual 15. Identify air blower 16. Identify jet pump (water blowing) 17. Identify parts of air blower/jet pump 18. Enlist the function of different parts of air blower and jet pump 19. Explain safety precaution while handling air blower/jet pump 20. Identify accessories related to air blower/jet pump 21. Handle air blower 22. Handle jet pump 23. Care/maintain of air blower/jet pump 24. Explain the safe storage of the air blower/jet pump 25. Keep records	<p><b>Condition (Given):</b> Workshop, air blower, jet pump (water blowing) and their accessories</p> <p><b>Task (What):</b> Identify/handle air blower/jet pump (water blowing).</p> <p><b>Standard (How well):</b> An air blower and its parts identified. An air blower handled as per manufacturer's instruction Jet pump for water blowing and its parts identified. Jet pump for water blowing handled as per manufacturer's instruction.</p>	<ul style="list-style-type: none"> <li>➤ Identification of air blower and jet pump (water blowing)</li> <li>➤ Identification of parts of air blower and jet pump</li> <li>➤ Functions of different parts of air blower and jet pump</li> <li>➤ Safety precautions to be taken while handling air blower and jet pump</li> <li>➤ Handling procedure</li> <li>➤ Care and maintenance of air blower and jet pump</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:** Hand grinder with accessories

**Safety:** \* Handle hand grinder safely.

## Task Analysis

**Task No: 10. Fix grinding wheels/blades onto grinder.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Read/interpret manufacturer's manual for fixing grinding wheel or blade</li> <li>4. Determine the number of grinding wheel to be installed/set</li> <li>5. Open fitting hardware of hand /power grinder</li> <li>6. Fix required number of grinding wheel</li> <li>7. Tighten fitting hardware of grinder</li> <li>8. Check leveling and tightness of grinding wheel</li> <li>9. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Workshop, grinding wheels, power grinder, power grinder</p> <p><b><u>Task (What):</u></b> Fix grinding wheels/blades onto grinder</p> <p><b><u>Standard (How well):</u></b> Grinding wheels or blades on hand and power grinding machine fixed as per manufacturer's instruction</p>	<ul style="list-style-type: none"> <li>➤ Different types of hand and power grinder</li> <li>➤ Different numbers and sizes of grinding wheels or blades</li> <li>➤ Uses of manufacturers manual for fixing</li> <li>➤ Fixing procedure</li> <li>➤ Safety precautions</li> </ul>

**Tools/equipment:** Hand grinder, power grinder, different numbers of grinding wheels, wrench set, crew driver etc

**Safety:** \* Handle tools and equipments safely

## Task Analysis

**Task No: 11. Differentiate polished/ unpolished marbles.**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Obtain catalogues of polished and unpolished marble</li> <li>3. Identify various types of polished marble</li> <li>4. Enumerate various types of polished marble</li> <li>5. Identify various types of unpolished marble</li> <li>6. Enumerate various types of unpolished marble</li> <li>7. Check the surface of polished and unpolished marbles</li> <li>8. Test the surface of on polished and unpolished marble and find differences</li> <li>9. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Catalogues, various polished and unpolished marble samples</p> <p><b><u>Task (What):</u></b> Differentiate polished/ unpolished marbles</p> <p><b><u>Standard (How well):</u></b> Polished and unpolished marbles identified and enumerated Polished and unpolished marbles differentiated</p>	<ul style="list-style-type: none"> <li>➤ Surface texture of polished marble</li> <li>➤ Surface texture of unpolished marble</li> <li>➤ Uses and application of polished and unpolished marbles</li> <li>➤ Colour of polished and unpolished marble</li> </ul>

**Tools/equipments:** Catalogues

**Safety:** \*

## Task Analysis

**Task No: 12. Identify patterns of floor/wall polishing**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Read/ interpret catalogues/norms/specification of pattern of marble polishing</li> <li>3. Observe different ongoing marble polishing</li> <li>4. Identify patterns of floor polishing on marble/granite/terrazzo/mosaic/tile</li> <li>5. Identify patterns of wall polishing on marble/granite/terrazzo/mosaic/tile</li> <li>6. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Catalogues, norms, specification and marble polishing site</p> <p><b><u>Task (What):</u></b> Identify patterns of floor/wall polishing</p> <p><b><u>Standard (How well):</u></b> The pattern of floor and marble polishing identified. The ongoing marble polishing observed.</p>	<ul style="list-style-type: none"> <li>➤ Reading and interpretation of catalogue of polishing patterns</li> <li>➤ Identification of polishing pattern of marble, granite, terrazzo and mosaic</li> <li>➤ Identification procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:**

**Safety: \***

## Task Analysis

**Task No: 13 Estimate the materials for polishing/calculate cost of polishing materials**

Time: 4 hrs  
Theory: 1 hr  
Practical: 3 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Calculate total area of marble floor /wall</li> <li>3. Calculate total area of granite</li> <li>4. Calculate total area of Terrazzo</li> <li>5. Calculate total area of mosaic</li> <li>6. Calculate total area of tile</li> <li>7. Obtain norms/specifications of polishing items</li> <li>8. Calculate quantities of materials required</li> <li>9. Identify current rate of polishing materials</li> <li>10. Calculate cost of each material</li> <li>11. Add cost of each materials</li> <li>12. Find total cost</li> <li>13. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid area, norms specification, format for estimating and cost calculation and calculator</p> <p><b><u>Task (What):</u></b> Estimate the materials for polishing/calculate cost of polishing materials</p> <p><b><u>Standard (How well):</u></b> The materials required for polishing estimated The cost of materials of polishing item calculated</p>	<ul style="list-style-type: none"> <li>➤ Reading and interpretation norms and specification</li> <li>➤ Standard format for quantity estimation and cost calculation</li> <li>➤ Identification of polishing materials</li> <li>➤ Calculation procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:**

**Safety: \***

## Task Analysis

**Task No: 14 Apply putty with white cement and with/without adding other colour pigment.**

Time: 7 hrs  
Theory: 1 hr  
Practical: 6 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions.</li> <li>2. Read/interpret norms/specification</li> <li>3. Collect necessary tools, equipment and materials.</li> <li>4. Identify the floor where the putty to apply</li> <li>5. Prepare the surface for the application of putty and other materials</li> <li>6. Prepare the mixture of putty with white cement with adding required colour pigments</li> <li>7. Prepare the mixture of putty with white cement without adding required colour pigments</li> <li>8. Apply prepared mixture of putty where necessary</li> <li>9. Remove unnecessary spread mixture</li> <li>10. Clean and restore tools, equipment and remaining materials</li> <li>11. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Unpolished marble floor, necessary tools, materials and specification</p> <p><b><u>Task (What):</u></b> Apply putty with white cement and with/without adding other colour pigment.</p> <p><b><u>Standard (How well):</u></b> Putty with white cement and with/without adding other colour pigment applied as per specification</p>	<ul style="list-style-type: none"> <li>➤ Identification of different color pigments</li> <li>➤ Ratio and proportion of putty, white cement and different colour pigments</li> <li>➤ Mixing and preparation of colour pigments</li> <li>➤ Application procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Pens, pencils, exercise books, calculator.

**Safety:** \*

## Task Analysis

### Task No. 15. Perform marble floor/surface grinding.

Time: 22 hrs  
Theory: 1 hr  
Practical: 21 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the marble edge to be molded</li> <li>4. Read/interpret catalogue/ operation manual</li> <li>5. Fix the 80 no /Carborundum stone blade/wheel ( coarse) onto grinder for initial grinding</li> <li>6. Switch on the grinder and slowly lower wheel of the of the grinder onto the fixed marble</li> <li>7. Move the grinding wheel at the edge from right to left and left to right where necessary</li> <li>8. Continue the grinding process till the requirement</li> <li>9. Apply hand grinder at the area where the power grinder could not move</li> <li>10. Apply pumice stone at very small or narrow area</li> <li>11. Allow marble surface for dry</li> <li>12. Apply grout at the joint of marble where necessary</li> <li>13. Apply white cement solution on the minor cracked and chipped surface if necessary</li> <li>14. Disassemble 80 no grinding wheel from grinder and allow it for dry</li> <li>15. Fix the 120 no blade/wheel ( fine) onto grinder for final grinding</li> <li>16. Repeat above steps nos. 6, 7, 8, 9, 10 &amp; 11</li> <li>17. Wash grinded marble floor with dilute oxalic acid solution</li> <li>18. Allow the grinded marble floor for dry</li> <li>19. Clean the grinding machine/grinding wheels</li> <li>20. Clean and restore tools, equipment and remaining materials</li> <li>21. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid surface, grinder with accessories</p> <p><b><u>Task (What):</u></b> Perform marble floor/surface grinding</p> <p><b><u>Standard (How well):</u></b> Required nos. of grinding wheel fitted on grinder Marble floor grinded as per specification. Grinding machine handled as per manufacturer's instruction</p>	<ul style="list-style-type: none"> <li>➤ Concept of grinding</li> <li>➤ Need of grinding</li> <li>➤ Grinding stages</li> <li>➤ Different numbers' of grinding wheel or blade required for different stages of grinding</li> <li>➤ Commonly available grinding tools, equipment and materials</li> <li>➤ Requirements for grinding</li> <li>➤ Grinding procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Power grinder, hand grinder and pumice stone

**Safety:** Handle machine safely.

## Task Analysis

**Task No. 16. Perform marble edge molding.**

Time: 13 hrs  
Theory: 1 hr  
Practical: 12 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the marble edge to be molded</li> <li>4. Read/interpret grinder catalogue/operation manual</li> <li>5. Fix the diamond blade/wheel onto hand grinder for initial molding</li> <li>6. Switch on the hand grinder and slowly lower wheel of the of the grinder onto the edge of marble</li> <li>7. Move the hand grinding wheel at the edge from backward to forward and left to right where necessary</li> <li>8. Continue the molding process till the requirement</li> <li>9. Clean the marble edge</li> <li>10. Disassemble diamond blade and fix 40-46 no. blade for second stage molding</li> <li>11. Repeat above steps 6, 7 &amp; 8 as required</li> <li>12. Clean the second stage molded edge</li> <li>13. Again, disassemble 40-46 nos. blades and fix 80 no blade onto hand grinder and keep continue the third stage process until the its luster</li> <li>14. Clean molded parts</li> <li>15. Wash the molded parts with oxalic acid solution</li> <li>16. Allow the washed surface for dry</li> <li>17. Apply polish as required</li> <li>18. Clean and restore tools, equipment and remaining materials</li> <li>19. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid surface, grinder with accessories</p> <p><b><u>Task (What):</u></b> Perform marble edge molding</p> <p><b><u>Standard (How well):</u></b> Required nos. of diamond and grinding blades/wheels fixed on grinder Grinding machine handled as per manufacturer's instruction Marble floor edge molded as per requirement</p>	<ul style="list-style-type: none"> <li>➤ Concept of molding</li> <li>➤ Need of molding</li> <li>➤ Types of molding</li> <li>➤ Molding stages in marble</li> <li>➤ Different numbers' of grinding wheel or blade required for different stages of molding</li> <li>➤ Commonly available molding tools, equipment and materials</li> <li>➤ Requirements for molding</li> <li>➤ Molding procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Hand grinder, different number of molding wheel/blade

**Safety:** Handle machine safely.

## Task Analysis

**Task No. 17 Perform granite/polished marble edge molding.**

Time: 19 hrs  
Theory: 1 hr  
Practical: 18 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the granite edge to be molded</li> <li>4. Read/interpret grinder catalogue/operation manual</li> <li>5. Fix the diamond blade/wheel onto hand grinder for initial molding</li> <li>6. Switch on the hand grinder and slowly lower wheel of the of the grinder onto the edge of marble</li> <li>7. Move the hand grinding wheel at the edge from backward to forward where necessary</li> <li>8. Continue the molding process till the requirement</li> <li>9. Clean the granite/polished marble edge</li> <li>10. Disassemble diamond blade from grinder and fix 40-46 no. blade for second stage molding</li> <li>11. Repeat above steps 6, 7 &amp; 8 as required</li> <li>12. Clean the second stage molded edge</li> <li>13. Disassemble 40-46 nos. blades from hand grinder and fix 120 no blade onto hand grinder and keep continue the third stage process as required</li> <li>14. Again, disassemble 120 no blade from hand grinder and fix 300 no molding blade as forth stage molding and keep continue the process as required</li> <li>15. Lastly, disassemble the 300 no molding blade from hand grinder and fix 700 no molding blade as fifth stage molding and keep continue the process as required</li> <li>16. Clean molded parts</li> <li>17. Wash the molded parts with oxalic acid solution</li> <li>18. Allow the washed surface for dry</li> <li>19. Apply polish as required</li> <li>20. Clean and restore tools, equipment and remaining materials</li> <li>21. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Granite/polished marble laid surface, grinder with accessories</p> <p><b><u>Task (What):</u></b> Perform granite/polished marble edge molding</p> <p><b><u>Standard (How well):</u></b> Required nos. of diamond and grinding blades/wheels fixed on grinder Grinding machine handled as per manufacturer's instruction Granite and polished marble edge molded as per requirement.</p>	<ul style="list-style-type: none"> <li>➤ Concept of molding</li> <li>➤ Need of molding</li> <li>➤ Molding stages in granite and polished marble</li> <li>➤ Different numbers' of grinding wheel or blade required for different stages of molding</li> <li>➤ Commonly available molding tools, equipment and materials</li> <li>➤ Requirements for molding</li> <li>➤ Molding procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Molding machine, different number of molding wheel/blade

**Safety:**

- \*Handle machines safely
- \*Wear Personal protective equipment
- \*Be careful with chemical

## Task Analysis

**Task No: 18. Carryout polishing on polished /unpolished marbles using different sand papers/ carborundum stones/glazing liquid.**

Time: 16 hrs  
Theory: 1 hr  
Practical: 15 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools and materials</li> <li>3. Sweep the marble floor</li> <li>4. Wet the marble floor</li> <li>5. Spray thin layer of sand</li> <li>6. Rub the unpolished/polished marble surface as first stage with coarse sand paper as required</li> <li>7. Pour water on the rubbing surface as required</li> <li>8. Sweep the first stage rubbed marble surface</li> <li>9. Rub the unpolished/polished marble surface as second stage with fine sand paper as required</li> <li>10. Rub the second stage polished surface with different number of carborundum stones and keep continue till required degree of shining</li> <li>11. Wash the marble surface with oxalic acid solution and keep it for dry</li> <li>12. Apply glazed liquid over dry surface as required.</li> <li>13. Clean and restore tools, equipment and remaining materials</li> <li>14. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid surface, necessary tools and materials</p> <p><b><u>Task (What):</u></b> Carryout polishing on polished /unpolished marbles using different sand papers/ carborundum stones/glazing liquid</p> <p><b><u>Standard (How well):</u></b> Polishing on polished and unpolished marbles carried out using different sand papers, carborundum stones and glazing liquid as per specification</p>	<ul style="list-style-type: none"> <li>➤ Concept of polishing</li> <li>➤ Need of polishing</li> <li>➤ Polishing stages</li> <li>➤ Commonly available polishing tools, equipment and materials</li> <li>➤ Requirements for polishing of unpolished and polished marble</li> <li>➤ Polishing procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Sand papers, carborundum stones and glazing liquid

**Safety:**

- \*Handle machines safely
- \*Wear Personal protective equipment
- \*Be careful with chemical

## Task Analysis

**Task No: 19. Perform polishing on corners/edge/on molding of marble using different grinding equipment.**

Time: 16 hrs  
Theory: 1 hr  
Practical: 15 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Fix the required no. of grinding blades/wheels into power grinder as required on corner, edge and molding</li> <li>4. Clean the entire granite laid edge where the molding is to be carried out</li> <li>5. Switch on the grinder and slowly lower the blade of the grinder on to the fixed marble surfaces such as corner, edge and molding</li> <li>6. Move the grinding wheel at the edge from right to left and left to right where necessary in all corner, edge and molding</li> <li>7. Perform molding as per required</li> <li>8. Wash away the dust</li> <li>9. Grind the marble surface with 80 no grinding wheel or carborundum stone then after 120 no grinding wheel or carborundum to finish the surface</li> <li>10. Wash the surface with dilute oxalic acid solution, polish the floor by using polishing machine fettled with felt or Hessian till it shines</li> <li>11. Clean and restore tools, equipment and remaining materials</li> <li>12. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid surface, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Carryout polishing on corners/edge/ on molding of marble using different grinding equipment.</p> <p><b><u>Standard (How well):</u></b> Polishing on corners, edge and on molding of marble performed as per specification. Polishing tools and equipment including hand and power grinder handled as per manufacturer's instruction</p>	<ul style="list-style-type: none"> <li>➤ Need of polishing on marble's corner, edge molding</li> <li>➤ Requirements for grinding, molding and polishing</li> <li>➤ Tools, equipment and materials uses in grinding, molding and polishing</li> <li>➤ Polishing procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Hand grinder, power grinder, dilute oxalic acid solution and Hessian

**Safety:**

- \* Handle machines safely
- \*Wear Personal protective equipment
- \*Be careful with chemical

## Task Analysis

**Task No: 20. Carryout polishing on granites.**

Time: 13 hrs  
Theory: 1 hr  
Practical: 12 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools,</li> <li>3. equipment and materials</li> <li>4. Fix the required 80 no. of blade/ grinding wheel into power grinder</li> <li>5. Clean the entire laid granite edge where the molding is to be carried out</li> <li>6. Switch on the grinder and</li> <li>7. slowly lower grinding wheel of the grinder on to the fixed marble</li> <li>8. Move the grinding wheel at the edge from right to left and left to right where necessary</li> <li>9. Continue the grinding process till the requirement of shining</li> <li>10. Disassemble 80 no blade from power grinder and fix 120 no blade</li> <li>11. Repeat the above steps 6, 7, 8 &amp; 9 and keep continue the grinding process until its luster</li> <li>12. Wash grinded granite floor with dilute oxalic acid solution</li> <li>13. Allow the grinded granite floor for dry</li> <li>14. Clean the grinding machine/grinding wheels</li> <li>15. Store grinding machine and accessories</li> <li>16. Clean and restore tools, equipment and remaining materials and</li> <li>17. Allow polished surface for dry</li> <li>18. Clean and restore tools, equipment and remaining materials</li> <li>19. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Granite laid surface, grinder with accessories, polishing machine and materials</p> <p><b><u>Task (What):</u></b> Carryout polishing on granites.</p> <p><b><u>Standard (How well):</u></b> Granite surface grinded as per requirement Grinder, polisher/buffer handled as per manufacturer's instruction Marble surface polished as per requirement Marble surface shined and luster given</p>	<ul style="list-style-type: none"> <li>➤ Concept of grinding of granite</li> <li>➤ Need of grinding</li> <li>➤ Grinding stages</li> <li>➤ Different numbers' of grinding wheels or blades required for different stages of grinding</li> <li>➤ Commonly available grinding tools, equipment and materials</li> <li>➤ Commonly available polishing tools, equipment and materials</li> <li>➤ Requirements for grinding of granite</li> <li>➤ Grinding procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Grinder, polisher, buffer, different nos. of grinder

**Safety:**

- \*Handle machines safely
- \*Wear Personal protective equipment
- \*Be careful with chemical

## Task Analysis

**Task No: 21. Carryout polishing on Terrazzo with the help of power grinding machine.** Time: 13 hrs  
Theory: 1 hr  
Practical: 12 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the terrazzo surface to be grinded and polished</li> <li>4. Read/interpret catalogue/ operation manual</li> <li>5. Fix the 40 no blade/wheel ( coarse) onto grinder for initial grinding</li> <li>6. Switch on the grinder and slowly lower wheel of the of the grinder onto the fixed terrazzo</li> <li>7. Move the grinding wheel at the edge from right to left and left to right where necessary</li> <li>8. Continue the grinding process till the requirement</li> <li>9. Apply hand grinder area where the power grinder could not move</li> <li>10. Apply pumice stone at very small or narrow area</li> <li>11. Wash grinded terrazzo floor with dilute oxalic acid solution</li> <li>12. Allow terrazzo surface for dry</li> <li>13. Apply white cement solution on the minor cracked and chipped surface if necessary</li> <li>14. Disassemble 40 no grinding wheel from grinder</li> <li>15. Fix the 80 no blade/wheel ( fine) onto grinder for final grinding</li> <li>16. Repeat above steps nos. 6, 7, 8, 9, 10 &amp; 11</li> <li>17. Allow the grinded terrazzo floor for dry</li> <li>18. Clean the grinding machine/grinding wheels</li> <li>19. Prepare polishing materials</li> <li>20. Apply polish coat/scaler as per specification through manually/buffer/polisher</li> <li>21. Clean and restore tools, equipment and remaining materials and</li> <li>22. Allow polished surface for dry</li> <li>23. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Terrazzo laid surface, grinder with accessories, polishing machine and materials</p> <p><b><u>Task (What):</u></b> Carryout polishing on Terrazzo with the help of power grinding machine.</p> <p><b><u>Standard (How well):</u></b> Required nos. of grinding wheel fitted on grinder Terrazzo floor grinded as per specification. Grinder, polisher, buffer handled as per manufacturer's instruction Terrazzo surface polished as per requirement Terrazzo surface shined and luster given</p>	<ul style="list-style-type: none"> <li>➤ Concept of terrazzo grinding</li> <li>➤ Need of grinding</li> <li>➤ Grinding stages</li> <li>➤ Different numbers' of grinding wheel or blade required for different stages of grinding</li> <li>➤ Commonly available grinding tools, equipment and materials</li> <li>➤ Commonly available polishing tools, equipment and materials</li> <li>➤ Requirements for grinding</li> <li>➤ Grinding procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Power grinder, polisher, buffer, pumice stone, different nos. of grinder

**Safety:**

- \*Handle machines safely
- \*Wear Personal protective equipment
- \*Be careful with chemical

## Task Analysis

**Task No. 22. Carryout polishing on Mosaic with the help of power grinding machine.**

Time: 13 hrs  
Theory: 1 hr  
Practical: 12 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the mosaic surface to be grinded and polished</li> <li>4. Read/interpret catalogue/ operation manual</li> <li>5. Fix the 40 no blade/wheel ( coarse) onto grinder for initial grinding</li> <li>6. Switch on the grinder and slowly lower wheel of the of the grinder onto the fixed terrazzo</li> <li>7. Move the grinding wheel at the edge from right to left and left to right where necessary</li> <li>8. Continue the grinding process till the requirement</li> <li>9. Apply hand grinder area where the power grinder could not move</li> <li>10. Apply pumice stone at very small or narrow area</li> <li>11. Wash grinded mosaic floor with dilute oxalic acid solution</li> <li>12. Allow mosaic surface for dry</li> <li>13. Apply white cement solution on the minor cracked and chipped surface if necessary</li> <li>14. Disassemble 40 no grinding wheel from grinder</li> <li>15. Fix the 80 no blade/wheel ( fine) onto grinder for final grinding</li> <li>16. Repeat above steps nos. 6, 7, 8, 9, 10 &amp; 11</li> <li>17. Allow the grinded mosaic floor for dry</li> <li>18. Clean the grinding machine/grinding wheels</li> <li>19. Prepare polishing materials</li> <li>20. Apply polish coat/sealer as per specification through manually/buffer/polisher</li> <li>21. Clean and restore tools, equipment and remaining materials and</li> <li>22. Allow polished surface for dry</li> <li>23. Keep records</li> </ol>	<p><b>Condition (Given):</b> Mosaic laid surface, grinder with accessories, polishing machine and materials</p> <p><b>Task (What):</b> Carryout polishing on mosaic with the help of power grinding machine.</p> <p><b>Standard (How well):</b> Required nos. of grinding wheel fitted on grinder Mosaic floor grinded as per specification. Grinder, polisher, buffer handled as per manufacturer's instruction mosaic surface polished as per requirement Mosaic surface shined and luster given</p>	<ul style="list-style-type: none"> <li>➤ Concept of mosaic grinding</li> <li>➤ Need of grinding</li> <li>➤ Grinding stages in mosaic floor</li> <li>➤ Different numbers' of grinding wheel or blade required for different stages of grinding</li> <li>➤ Commonly available grinding tools, equipment and materials</li> <li>➤ Commonly available polishing tools, equipment and materials</li> <li>➤ Requirements for grinding in mosaic floor</li> <li>➤ Grinding procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Power grinder, polisher, buffer, pumice stone, different nos. of grinder

**Safety:**

- \*Handle machines safely
- \*Wear Personal protective equipment
- \*Be careful with chemical

**Task No. 23. Carryout polishing on tiles with dilute oxalic acid.**

Time: 4 hrs  
Theory: 1 hr  
Practical: 3 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Check level and joints of routing in the tile floor/wall</li> <li>4. Fill the grouting in the joint if necessary</li> <li>5. Allow the newly grouted surface for setting and later on cure with water</li> <li>6. Wash the tile surface with clean water</li> <li>7. Mop the tile surface with clean white cloth pad</li> <li>8. Allow the surface for dry</li> <li>9. Apply dilute acid on the prepared surface as required</li> <li>10. Clean and restore tools, equipment and remaining materials</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid surface, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Carryout polishing on tiles with dilute oxalic acid.</p> <p><b><u>Standard (How well):</u></b> The required surface of wall and floor tile prepared for the application of dilute oxalic acid Dilute oxalic acid on floor and wall tile as a polishing material applied as per specification</p>	<ul style="list-style-type: none"> <li>➤ Concept of polishing with dilute acid</li> <li>➤ Need and important of polishing the tile</li> <li>➤ Different polishing tools, equipments and materials</li> <li>➤ Specification of polishing materials</li> <li>➤ Molding procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:**

**Safety:** \* Use safety boot, safety goggles

## Task Analysis

**Task No: 24. Repair/attach marbles parts using adhesive materials.**

Time: 10 hrs

Theory: 1 hr

Practical: 9 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify marble floor where the cracked occurred resulting from grinding</li> <li>4. Determine the repairing to be done</li> <li>5. Make the floor free of dust, dirt, grease or any other coating</li> <li>6. Remove loose and brittle marble or grout from the damaged area and the area being repaired should be brought down to provide a minimum of 1/4" depth</li> <li>7. Wash the prepared surface with clean water</li> <li>8. Apply bristle brush to remove dust from pores</li> <li>9. Repair the parts with adhesive materials where necessary on the identified parts</li> <li>10. Attach marble parts with materials where necessary on the identified parts</li> <li>11. Attach the marble the on the applied adhesive material</li> <li>12. Check the applied adhesive area whether need to be refilled again until smooth</li> <li>13. Clean and restore tools, equipment and remaining materials</li> <li>14. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Repairable marbles, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Repair/attach marbles parts using adhesive materials.</p> <p><b><u>Standard (How well):</u></b> The repairing materials mixed and prepared as per instruction given The marble surface repaired as required. Marble parts attached as required</p>	<ul style="list-style-type: none"> <li>➤ Concept of repairing and attaching the marble parts</li> <li>➤ Need and important of repairing and parts attaching</li> <li>➤ When and why to repair the marble</li> <li>➤ Tools ,equipment and materials uses in repairing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Bristle brush

**Safety:** \* Use hand gloves and safety boots.

## Task Analysis

**Task No: 25 Collect the waste mixture of white cement and water with the help of cleaning tools.**

Time: 4 hrs  
Theory: 1 hr  
Practical: 3 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify waste mixture of white cement and water</li> <li>4. Calculate amount of waste mixture</li> <li>5. Fix the waste mixture collecting place</li> <li>6. Apply cleaning tools from one side of spread area for the collection and continue the process until whole collection</li> <li>7. Dispose debris on the proposed sited site</li> <li>8. Wash the surface with clean water</li> <li>9. Allow the surface for the dry</li> <li>10. Clean the cleaning tools</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble floor with waste mixture of white cement and water, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Collect the waste mixture of white cement and water with the help of cleaning tools.</p> <p><b><u>Standard (How well):</u></b> The waste mixture of white cement and water collected with the help of cleaning tools and disposed in the proposed site.</p>	<ul style="list-style-type: none"> <li>➤ Concept of waste mixture</li> <li>➤ Need and important of collection of waste mixture</li> <li>➤ Tools uses in collection waste mixture</li> <li>➤ Handling and caring of tools</li> <li>➤ Collection procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Waste mixture collecting tools set

**Safety:** \* Use hand gloves and safety boots.

## Module 3 Marble Floor Refinishing

**Description:**

This module intends to provide knowledge and skills on refinishing the existing marble floor or surface.

**Objectives:**

After its completion the trainees will be able to:

1. Identify marble processes of marble floor refinishing
2. Apply different techniques of marble floor refinishing

**Module Structure (M3)**

S.N	Module	Nature	Time (hours)	Full marks
1	M3: Marble Floor Refinishing	T+P	60	50

**Tasks:**

1. Apply marble polish gloss
2. Apply marble gloss conditioner
3. Polish marble surface
4. Clean marble surface
5. Maintain marble
6. Resurface marble
7. Hon the marble
8. Repair marble surface
9. Use epoxy for marble on marble floor
10. Remove lippage from marble floor
11. Seal the marble surface

## Task Analysis

**Task No. 1 Apply marble polish gloss**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Clean marble surface with MARBLELIFE Inter Care Cleaner</li> <li>4. Shake bottle vigorously for 60 seconds to assure solids are loosened from the bottom of the bottle.</li> <li>5. Apply approximately one-half ounce of water to the etched area</li> <li>6. Apply one ounce of MARBLELIFE Marble Polish directly to the etched or dull area.</li> <li>7. Rub vigorously in a circular motion using a damp white buffing</li> <li>8. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Existing marble surface which needs to have polishing, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Apply marble polish gloss</p> <p><b><u>Standard (How well):</u></b> Grinder/buffer machine handled Polish applied as per manufactures instructions</p>	<ul style="list-style-type: none"> <li>➤ Concept of marble refinishing</li> <li>➤ Need and important of refinishing</li> <li>➤ Why and when to carry out marble polishing</li> <li>➤ Requirements for polishing</li> <li>➤ Tools, equipments and materials required for polishing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Buffer machine, marble stripper and stiff bristle brush

**Safety:** \* Use hand gloves and safety boots.

## Task Analysis

**Task No. 2 Apply marble gloss conditioner**

Time: 3 hrs  
Theory: 1 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Clean marble surface with MARBLELIFE Inter Care Cleaner</li> <li>4. Shake bottle vigorously for 60 seconds to assure solids are loosened from the bottom of the bottle</li> <li>5. Using a soft cloth, apply Marble Gloss Conditioner directly to the entire stone surface</li> <li>6. Let set one minute</li> <li>7. Buff with a dry cloth</li> <li>8. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Existing marble surface which needs to have polishing, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Apply marble gloss conditioner</p> <p><b><u>Standard (How well):</u></b> Grinder/buffer machine handled Polish applied as per manufactures instructions</p>	<ul style="list-style-type: none"> <li>➤ Concept of marble refinishing</li> <li>➤ Need and important of refinishing</li> <li>➤ Why and when to carry out marble polishing</li> <li>➤ Requirements for polishing</li> <li>➤ Tools, equipments and materials required for polishing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Buffer machine, marble stripper and stiff bristle brush

**Safety:** \* Use hand gloves and safety boots.

## Task Analysis

### Task No. 3 Polish marble surface

Time: 7 hrs  
Theory: 1 hr  
Practical: 6 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the polishing marble surface</li> <li>4. Apply grinder/buffer to remove all traces of dirt, grits, waxes, sealers from the place where the polishing is to be done</li> <li>5. Apply marble stripper</li> <li>6. Apply stiff bristle brush or plastic scrapper to clean dirty grout</li> <li>7. Rinse the floor twice with clean water and a clean mop</li> <li>8. Allow the floor to dry completely</li> <li>9. Place a clean pad on buffer and apply marble polish to the area to be polished</li> <li>10. Apply polish in 3"x3" section of floor</li> <li>11. Spray a couple of squirts of the marble polish onto the surface using side to side motion</li> <li>12. Buff the floor until dry</li> <li>13. Shift the adjacent area and repeat above steps 10, 11 &amp; 12 for remaining parts</li> <li>14. Work in block of four section until the shine begin to appear</li> <li>15. Next, move to four different section</li> <li>16. Apply three treatments to get desired level of shine</li> <li>17. Buff the corners by hand with small wad of steel wool pad which remove residue and even out the glow</li> <li>18. Sweep and remove polish residue shavings and thro way</li> <li>19. Keep records.</li> </ol>	<p><b><u>Condition (Given):</u></b> Existing marble surface which needs to have polishing, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Polish marble surface</p> <p><b><u>Standard (How well):</u></b> Grinder/buffer machine handled Polish applied as per manufactures instructions</p>	<ul style="list-style-type: none"> <li>➤ Concept of marble refinishing</li> <li>➤ Need and important of refinishing</li> <li>➤ Why and when to carry out marble polishing</li> <li>➤ Requirements for polishing</li> <li>➤ Tools, equipments and materials required for polishing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Buffer machine, marble stripper and stiff bristle brush

**Safety:** \* Use hand gloves and safety boots.

## Task Analysis

Task No. 4 Clean marble floor

Time: 4 hrs  
Theory: 1 hr  
Practical: 3 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> </ol> <p><b>For regular cleaning</b></p> <ol style="list-style-type: none"> <li>4. Wash the marble surface with lukerwarm water</li> <li>5. Wipe marble surface with a damp chamois</li> <li>6. Wipe dry the washed marble floor with a clean cloth</li> </ol> <p><b>Removing of stains</b></p> <ol style="list-style-type: none"> <li>7. Apply poultice soaked with 20% peroxide and few drop of ammonia to remove organic stains such as tea and coffee through spreading on the floor</li> <li>8. Apply ordinary household corn starch to remove oil based stains such as oil from butter and location through spreading on the marble floor and</li> <li>9. let it stand for few hours</li> <li>10. Scrub with a stiff brush and hot sudsy water or wipe with a dampened cloth of ammonia</li> <li>11. Apply commercial rust remover for removing rust stains</li> <li>12. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Existing dirty marble floor, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Clean marble floor</p> <p><b><u>Standard (How well):</u></b> Regular cleaning of existing marble floor cleaned. Different types of stains from marble floor removed.</p>	<ul style="list-style-type: none"> <li>➤ Need of regular cleaning</li> <li>➤ Types of stains</li> <li>➤ Why and when to clean marble floor</li> <li>➤ Procedure of removing stains</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Grinder, polishing machine, clothes for polishing  
**Safety:** \* Handle machine safely.

## Task Analysis

**Task No.5 Maintain marble floor**

Time: 7 hrs  
Theory: 1 hr  
Practical: 6 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Keep the floor clean of dirt</li> <li>4. Place a special mat with rubber water proof backing</li> <li>5. Mop frequently with warm plain water using a cotton string mop</li> <li>6. Carryout periodic polishing to keep significant re soiling and deterioration from ruining the marble application</li> <li>7. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Dirty marble floor, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Maintain marble floor</p> <p><b><u>Standard (How well):</u></b> Marble floor maintained keeping its original luster</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of maintenance</li> <li>➤ Regular maintenance</li> <li>➤ Why and when to maintain marble</li> <li>➤ Maintaining tools, equipment and materials</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Grinder, polishing machine, clothes for polishing  
**Safety:** \* Handle machine safely.

## Task Analysis

### Task No. 6 Resurface marble

Time: 5 hrs  
Theory: 1 hr  
Practical: 4 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Remove dirt, wax, and grit from marble floor</li> <li>4. Pour a cup of ammonia into gallon of water, then mix in a cup of vinegar</li> <li>5. Spread this solution out from the corners inward following the manufacturer's instructions and let it sit for 15 minutes.</li> <li>6. Mop up and repeat until the surface is clean</li> <li>7. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Scatched marble floor, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Resurface marble.</p> <p><b><u>Standard (How well):</u></b> Marble resurfaced as per specification</p>	<ul style="list-style-type: none"> <li>➤ Concept of resurfacing</li> <li>➤ Need and important of resurfacing</li> <li>➤ Why and when to resurface marble</li> <li>➤ Tool, equipment and materials used in resurfacing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Stripper  
**Safety:** \* Wear rubber gloves and mask

## Task Analysis

**Task No. 7 Hone the marble**

Time: 5 hrs  
Theory: 1 hr  
Practical: 4 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the stage of marble surface abrasion, fracturing</li> <li>4. Check scratches, stains, watermarks and signs of ware seen on the floor</li> <li>5. Remove minute amount of materials</li> <li>6. Sharpen/smooth with whetstone</li> <li>7. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble surface containing scratches, stains and signal of ware, of necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Hone the marble</p> <p><b><u>Standard (How well):</u></b> Marble surface containing scratches and stains honed as per specification</p>	<ul style="list-style-type: none"> <li>➤ Concept of honing</li> <li>➤ Need and important honing</li> <li>➤ When and why to hone the marble floor</li> <li>➤ Difference between polishing and honing</li> <li>➤ Tool, equipment and materials used in honing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Whetstone  
**Safety:**

## Task Analysis

### Task No. 8 Repair marble surface

Time: 7 hrs  
Theory: 1 hr  
Practical: 6 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify/check marble surface cracked and chipped</li> <li>4. Check used grouting materials</li> <li>5. Determine the repairing to be done</li> <li>6. Make the floor free of dust, dirt, grease or any other coating</li> <li>7. Remove loose and brittle marble or grout from the damaged area and the area being repaired should be brought down to provide a minimum of 1/4" depth</li> <li>8. Wash the prepared surface with clean water</li> <li>9. Apply bristle brush to remove dust from pores</li> <li>10. Choose the commercial mixes</li> <li>11. Mix repairing materials as per specification and manufacturers instructions as peanut butter consistency</li> <li>12. Apply prepared compound depending on the size of area with trowel of appropriate size</li> <li>13. Check the filled area whether need to be refilled again until smooth</li> <li>14. Cure the repaired area for 24 hours days</li> <li>15. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Reparable marble surface, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Repair marble surface</p> <p><b><u>Standard (How well):</u></b> The chipping and cracking occurred in marble surface identified and checked The repairing materials mixed and prepared as per instruction given The marble surface repaired as required.</p>	<ul style="list-style-type: none"> <li>➤ Concept of repairing</li> <li>➤ Need and important of repairing</li> <li>➤ Scope of repairing</li> <li>➤ When and why to repair the marble floor</li> <li>➤ Chipping and cracking repairing</li> <li>➤ Tools ,equipment and materials uses in repairing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Bristle brush

**Safety:** \* Wear glove while working with cementing materials

## Task Analysis

**Task No. 9** Apply epoxy glue on marble floor

Time: 7 hrs  
Theory: 1 hr  
Practical: 6 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify cracks and chips on the marble surface</li> <li>4. Identify seamless appearances</li> <li>5. Locate place where the actual pieces of marble have broken away</li> <li>6. Wipe down the edge with an acetone</li> <li>7. Take epoxy glue which match the colour of existing marble surface</li> <li>8. Spray epoxy glue on the cracks</li> <li>9. Fill the area with epoxy glue</li> <li>10. Apply sufficient pressure for a long enough period of time to ensure a perfect joining</li> <li>11. Cure the epoxy glue for 24 hours</li> <li>12. Allow to sand down epoxy glue filled surface to the original surface of marble</li> <li>13. Apply finer grit until it gets a nice finis</li> <li>14. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Repairable marble surface, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Apply epoxy glue on marble floor .</p> <p><b><u>Standard (How well):</u></b> Epoxy glue identified and applied as per manufactures instruction Type of repairing detected which suits to apply epoxy glue.</p>	<ul style="list-style-type: none"> <li>➤ Concept repairing through epoxy glue</li> <li>➤ Need and important of epoxy glue</li> <li>➤ Function of epoxy glue</li> <li>➤ When and why to apply epoxy glue on the marble floor</li> <li>➤ Tremendous porosity, marble chipped and cracks</li> <li>➤ Tools ,equipment and materials uses applying epoxy glue</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Finger grit

**Safety:**

\* Wear glove while working with epoxy glue.

\* Do not place excess glue on the surface

## Task Analysis

### Task No.10 Remove lippage from marble floor

Time: 7 hrs  
Theory: 1 hr  
Practical: 6 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify lippage of on the laid marble surface</li> <li>4. Gauge the thickness of dime through placing the gauge into the edge of one marble slab/tile lying next to the other</li> <li>5. Determine whether lippage exist or not</li> <li>6. Grind high spots to level the marble floor</li> <li>7. Remove the rough ledges from the marble surface applying lippage removal disc which flatten every things back to one smooth level</li> <li>8. Check the flatness of the marble</li> <li>9. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid surface, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Remove lippage from marble floor</p> <p><b><u>Standard (How well):</u></b> Lippage on the marble floor identified. Lippage gauged Lippage removed and the marble surface flattened as well as seen smooth</p>	<ul style="list-style-type: none"> <li>➤ Definition of lippage</li> <li>➤ Concept of flattening the stone</li> <li>➤ Need and important of removing lippage</li> <li>➤ When and why to remove lippage from marble</li> <li>➤ Tools and equipment uses in removing lippage</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Lippage removal disc, gauge measuring device and grinder  
**Safety:** \* Handle machine safely.

## Task Analysis

**Task No. 11 Seal the marble surface**

Time: 5 hrs  
Theory: 1 hr  
Practical: 4 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Identify the marble surface where the sealing is to be carried out</li> <li>4. Test the marble surface whether the sealing needs to be carried out or not</li> <li>5. Apply commonly available sealing materials here it is necessary. In case of old marble sealing is carried out after repairing and cleaning</li> <li>6. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Marble laid surface, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Seal the marble surface</p> <p><b><u>Standard (How well):</u></b> The marble surface which needs to apply sealing identified and tested The sealing material applied as per specification.</p>	<ul style="list-style-type: none"> <li>➤ Concept of sealing the marble surface</li> <li>➤ Need and important of sealing</li> <li>➤ When and why to remove lippage from marble</li> <li>➤ Different sealing materials</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:**

**Safety:** \* Do not apply harsh chemical which can easily damaged the marble.

## Module 4

### Minor Maintenance of Polishing Tools & Equipment

**Description:**

This module intends to provide knowledge and skills on minor maintenance and repairing of polishing tools, equipment and machines. It especially imparts on knowledge and skills on grinder.

**Objectives:**

After its completion the trainees will be able to:

1. Maintain polishing tools, equipment and machines
2. Replace common parts of polishing equipment and machines

**Module Structure (M4)**

S.N	Module	Nature	Time (hours)	Full marks
1	M4: Minor Maintenance of Polishing Tools & Equipment	T+P	30	20

**Tasks:**

1. Adjust/tighten loosen nuts and bolts
2. Apply grease/lubricant on bearing/gear
3. Replace grinder gear
4. Replace operation switch
5. Replace grinder bearing
6. Repair/replace grinder housing
7. Replace carbon
8. Replace fuel coil
9. Replace armature
10. Repair bearing house
11. Repair/replace wheel adjusting shaft

## Task Analysis

### Task No. 1 Adjust/tighten loosen nuts and bolts

Time: 2.5 hrs  
Theory: 0.5 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble different tools and equipment if necessary</li> <li>5. Identify loosen nuts and bolts of different tools and equipments</li> <li>6. Adjust the nuts and bolts</li> <li>7. Tighten the loosen nuts and bolts</li> <li>8. Reassemble the tools and equipment if necessary</li> <li>9. Test the functioning of adjusted and tightened tools, equipment and machines</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Different nuts and bolts loosen tools and equipment and adjusting and tightening tools</p> <p><b><u>Task (What):</u></b> Adjust/tighten loosen nuts and bolts.</p> <p><b><u>Standard (How well):</u></b> Different nuts and bolts loosen tools and equipment adjusted and tightened. The adjusted and tightened nuts and bolts tested for functioning.</p>	<ul style="list-style-type: none"> <li>➤ Concept of maintaining tools and equipments</li> <li>➤ Need and importance of maintenance</li> <li>➤ Concept of adjusting and tightening loosen nuts and bolts</li> <li>➤ Identification of loosen nuts and bolts of different tools and equipments</li> <li>➤ Interpretation of service manual for different equipment and machine</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set

**Safety:** \* Handle tools and equipment safely

## Task Analysis

**Task No. 2 Apply grease/lubricant on bearing/gear**

Time: 2.5 hrs  
Theory: 0.5 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble different tools and equipment if necessary</li> <li>5. Identify bearing and gear to be greased of different machines and equipments such as grinder, buffer and other polishing machines</li> <li>6. Apply grease on bearing</li> <li>7. Apply grease on gear</li> <li>8. Reassemble the tools and equipment if necessary</li> <li>9. Test the functioning of greased bearing and gear</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Lubricant needed bearing and gear and necessary tools and equipment</p> <p><b><u>Task (What):</u></b> Apply grease/lubricant on bearing/gear</p> <p><b><u>Standard (How well):</u></b> Grease and lubricant on bearing and gear applied The grease or lubricant applied bearing and gear tested for functioning.</p>	<ul style="list-style-type: none"> <li>➤ Concept of lubricating on different parts</li> <li>➤ Function of grease and different lubricants</li> <li>➤ Identification of different parts of machines which need grease or lubricant</li> <li>➤ Interpretation of service manual for greasing or lubricating</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set

**Safety:**

- \* Handle tools and equipment safely
- \* Do not pour lubricant on floor

## Task Analysis

**Task No. 3 Replace grinder gear**

Time: 3 hrs  
Theory: 0.5 hr  
Practical: 2.5 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify the damaged gear of grinder</li> <li>6. Remove the damaged gear of grinder</li> <li>7. Replace the new gear of grinder</li> <li>8. Reassemble the grinder</li> <li>9. Test the functioning of the grinder</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> The grinder with damaged gear, necessary tools, equipment and materials</p> <p><b><u>Task (What):</u></b> Replace grinder gear</p> <p><b><u>Standard (How well):</u></b> The gear of grinder replaced The grinder assembled and resembled The replaced gear tested for functioning.</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of gear</li> <li>➤ Concept of replacing grinder gear</li> <li>➤ Identification of grinder gear</li> <li>➤ Interpretation of service manual for replacing grinder gear</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set

**Safety:** \* Handle tools and equipment safely

## Task Analysis

### Task No. 4 Replace operation switch of grinder

Time: 2.5 hrs  
Theory: 0.5 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify damaged operation switch</li> <li>6. Remove damaged operation switch</li> <li>7. Replace new operation switch</li> <li>8. Reassemble the grinder</li> <li>9. Test the functioning of operation switch</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged operation switch, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Replace operation switch of grinder</p> <p><b><u>Standard (How well):</u></b> The operation switch replaced as per service manual The grinder assembled and resembled The replaced operation switch .tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of operation switch</li> <li>➤ Concept of replacing operation switch</li> <li>➤ Identification of operation switch</li> <li>➤ Interpretation of service manual for replacing operation switch</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set  
**Safety:** \* Handle tools and equipment safely

## Task Analysis

### Task No. 5 Replace grinder bearing

Time: 3 hrs  
Theory: 0.5 hr  
Practical: 2.5 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder</li> <li>5. Identify damaged bearing of grinder</li> <li>6. Remove damaged bearing of grinder</li> <li>7. Replace new bearing</li> <li>8. Reassemble the grinder</li> <li>9. Test the functioning of bearing of grinder</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged bearing, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Replace grinder bearing</p> <p><b><u>Standard (How well):</u></b> The bearing replaced as per service manual The grinder assembled and resembled The replaced bearing tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of bearing</li> <li>➤ Concept of replacing bearing</li> <li>➤ Identification of bearing</li> <li>➤ Interpretation of service manual for replacing bearing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set  
**Safety:** \* Handle tools and equipment safely

## Task Analysis

### Task No. 6 Repair/replace grinder housing

Time: 3 hrs  
Theory: 0.5 hr  
Practical: 2.5 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify damaged housing of grinder</li> <li>6. Remove damaged housing of grinder</li> <li>7. Repair damaged housing</li> <li>8. Replace new housing</li> <li>9. Reassemble the grinder</li> <li>10. Test the functioning of housing of grinder</li> <li>11. Clean and restore tools and equipment</li> <li>12. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged housing, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Repair/replace grinder housing</p> <p><b><u>Standard (How well):</u></b> The housing repaired as per service manual The housing replaced as per service manual The grinder assembled and resembled The replaced housing tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of bearing of housing</li> <li>➤ Concept of repairing and replacing housing</li> <li>➤ Identification of housing</li> <li>➤ Interpretation of service manual for repairing and replacing housing</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set

**Safety:** \* Handle tools and equipment safely

## Task Analysis

### Task No. 7 Replace carbon

Time: 3 hrs  
Theory: 0.5 hr  
Practical: 2.5 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify damaged carbon of grinder</li> <li>6. Remove damaged carbon of grinder</li> <li>7. Replace new carbon</li> <li>8. Reassemble the grinder</li> <li>9. Test the functioning of carbon of grinder</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged carbon, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Replace carbon</p> <p><b><u>Standard (How well):</u></b> The carbon replaced as per service manual The grinder assembled and resembled The replaced housing tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of carbon of grinder</li> <li>➤ Concept of replacing carbon</li> <li>➤ Identification of carbon</li> <li>➤ Interpretation of service manual for replacing carbon</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set  
**Safety:** \* Handle tools and equipment safely

## Task Analysis

**Task No. 8 Replace fuel coil**

Time: 2.5 hrs  
Theory: 0.5 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify damaged fuel coil</li> <li>6. Remove damaged fuel coil of grinder</li> <li>7. Replace new fuel coil</li> <li>8. Reassemble the grinder</li> <li>9. Test the functioning of fuel coil of grinder</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged fuel coil, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Replace carbon</p> <p><b><u>Standard (How well):</u></b> The fuel coil replaced as per service manual The grinder assembled and resembled The replaced fuel coil tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of fuel coil of grinder</li> <li>➤ Concept of replacing fuel coil</li> <li>➤ Identification of fuel coil</li> <li>➤ Interpretation of service manual for replacing fuel coil</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set

**Safety:** \* Handle tools and equipment safely

## Task Analysis

**Task No. 9 Replace armature**

Time: 2.5 hrs  
Theory: 0.5 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify damaged armature</li> <li>6. Remove damaged armature of grinder</li> <li>7. Replace new armature</li> <li>8. Reassemble the grinder</li> <li>9. Test the functioning of armature of grinder</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged armature, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Replace armature</p> <p><b><u>Standard (How well):</u></b> The armature replaced as per service manual The grinder assembled and resembled The replaced armature tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of armature of grinder</li> <li>➤ Concept of replacing armature</li> <li>➤ Identification of armature</li> <li>➤ Interpretation of service manual for replacing armature</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set

**Safety:** \* Handle tools and equipment safely

## Task Analysis

**Task No. 10 Repair bearing house**

Time: 2.5 hrs  
Theory: 0.5 hr  
Practical: 2 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify damaged bearing house</li> <li>6. Remove damaged bearing house of grinder</li> <li>7. Repair bearing house</li> <li>8. Reassemble the grinder</li> <li>9. Test the functioning of bearing house of grinder</li> <li>10. Clean and restore tools and equipment</li> <li>11. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged bearing house, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Repair bearing house</p> <p><b><u>Standard (How well):</u></b> The bearing house repaired as per service manual The grinder assembled and resembled The repaired bearing house tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of bearing house of grinder</li> <li>➤ Concept of bearing house repairing</li> <li>➤ Identification of bearing house</li> <li>➤ Interpretation of service manual for repairing bearing house</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set  
**Safety:** \* Handle tools and equipment safely

## Task Analysis

**Task No. 11 Repair/replace wheel adjusting shaft**

Time: 3 hrs  
Theory: 0.5 hr  
Practical: 2.5 hrs

Performance Steps	Terminal Performance Objectives	Related Technical Knowledge
<ol style="list-style-type: none"> <li>1. Receive instructions</li> <li>2. Collect necessary tools, equipment and materials</li> <li>3. Interpret service manual</li> <li>4. Disassemble the grinder if necessary</li> <li>5. Identify damaged adjusting shaft</li> <li>6. Remove damaged adjusting shaft of grinder</li> <li>7. Repair adjusting shaft</li> <li>8. Replace adjusting shaft</li> <li>9. Reassemble the grinder</li> <li>10. Test the functioning of adjusting shaft grinder</li> <li>11. Clean and restore tools and equipment</li> <li>12. Keep records</li> </ol>	<p><b><u>Condition (Given):</u></b> Grinder with damaged adjusting shaft, necessary tools equipment and materials</p> <p><b><u>Task (What):</u></b> Repair/replace wheel adjusting shaft</p> <p><b><u>Standard (How well):</u></b> The adjusting shaft repaired as per service manual Adjusting shaft replaced as per service manual The grinder assembled and resembled The replaced or repaired adjusting shaft tested for functioning</p>	<ul style="list-style-type: none"> <li>➤ Need and importance of adjusting shaft of grinder</li> <li>➤ Concept of repairing and replacing adjusting shaft</li> <li>➤ Identification of adjusting shaft</li> <li>➤ Interpretation of service manual for repairing and replacing adjusting shaft</li> <li>➤ Procedure</li> <li>➤ Safety precautions</li> </ul>

**Required tools/equipment:** Screw driver set, phase tester and wrench set

**Safety:**

\* Handle tools and equipment safely

<b>Part: B Common Module</b>					
<b>Description:</b> This module consists of skills and knowledge related to applied math, occupational health and safety, HIV/AIDS, first aid, communication, and small business management applicable in the related job performances.					
<b>Objectives:</b> <ul style="list-style-type: none"> <li>• Carry out simple mathematical calculations related to the occupation</li> <li>• Be familiar with hazards related to this occupation</li> <li>• Apply preventive measures for occupational health and safety</li> <li>• Apply first aid measures</li> <li>• Apply preventive measures for HIV/AIDS</li> <li>• Communicate with others</li> <li>• Apply skills of small business management</li> </ul>					
Sub modules: <ol style="list-style-type: none"> <li>1. Applied math</li> <li>2. Occupational health and safety</li> <li>3. First aid</li> <li>4. HIV/AIDS</li> <li>5. Communication</li> <li>6. Small business management</li> </ol>					
<b>Sub module:1: Applied Mathematics</b>					
<b>Description:</b> It consists of skills and knowledge related to mathematical calculations applicable in the related occupational performances.					
<b>Objective:</b> <ul style="list-style-type: none"> <li>• To carry out simple mathematical calculations that must be done for the effective performance in the occupational job.</li> </ul>					
<b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks/skills/steps together with their related technical knowledge:					
Th.(4 hrs) + Pr.( 16hrs) = Tot.( 20 hrs)				Time( hrs )	
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
1.	Carry out simple addition applicable in job situation	<u>Addition:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Simple calculations</li> <li>➤ Application in the occupation</li> </ul>	0.2	0.8	1
2.	Carry out simple subtraction applicable in job situation	<u>Subtraction:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Simple calculations</li> <li>➤ Application in the occupation</li> </ul>	0.2	0.8	1
3.	Carry out simple multiplication applicable in job situation	<u>Multiplication</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Simple calculations</li> <li>➤ Application in the occupation</li> </ul>	0.2	0.8	1
4.	Carry out simple division applicable in job situation	<u>Division:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Simple calculations</li> </ul>	0.2	0.8	1

		➤ Application in the occupation			
5.	Carry out measurements	<u>Measurement:</u> ➤ Concept ➤ Application in the occupation	0.2	0.8	1
6.	Convert units of measurement	<u>Units of measurement:</u> ➤ Concept ➤ Units of measurement ➤ Unit conversion ➤ application	0.2	0.8	1
7.	Convert units of measuring temperature	<u>Units of measuring temperature:</u> ➤ Concept ➤ Units of temperature measurement ➤ Unit conversion ➤ application	0.2	0.8	1
8.	Calculate area	<u>Area:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
9.	Calculate volume	<u>Volume:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
10.	Calculate weight	<u>Weight:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
11.	Calculate percentage	<u>Percentage:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
12.	Calculate ratio and proportions	<u>Ratio and proportions:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
13.	Apply Pythagoras formula	<u>Pythagoras formula:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
14.	Apply unitary method	<u>Unitary method:</u> ➤ Concept ➤ Calculation ➤ Application	0.2	0.8	1

15.	Calculate simple interest	<u>Simple interest:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
16.	Calculate unit cost	<u>Unit cost:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
17.	Calculate per unit income	<u>Per unit income:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
18.	Calculate profit and loss	<u>Profit and loss:</u> ➤ Concept ➤ Formula ➤ Calculation ➤ Application	0.2	0.8	1
19.	Perform billing	<u>Billing:</u> ➤ Concept ➤ Calculation ➤ Bill format ➤ Procedure ➤ Application	0.2	0.8	1
20.	Prepare simple balance sheet	<u>Balance sheet:</u> ➤ Concept ➤ Format ➤ Procedure ➤ Application	0.2	0.8	1
<b>Total:</b>			<b>4</b>	<b>16</b>	<b>20</b>
<b>Sub module: 2: Occupational Health and Safety</b>					
<b>Description:</b> It consists of skills and knowledge related to occupational health and safety applicable in the related occupational performances					
<b>Objectives:</b> <ul style="list-style-type: none"> <li>• To be familiar with hazards related to this occupation</li> <li>• To apply preventive measures for occupational health and safety</li> </ul>					
<b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks/skills/steps together with their related technical knowledge:					
			Th.(2 hrs) + Pr.( 8hrs) = Tot.( 10 hrs)		
			Time( hrs )		
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
Be familiar with hazards related to this occupation					
1.	Be familiar with accident hazards	<u>Accident hazards:</u> ➤ Concept ➤ Causes ➤ Procedures for managing this hazard	0.2	0.8	1
2.	Be familiar with physical	<u>Physical hazards:</u>	0.2	0.8	1

	hazards	<ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Causes</li> <li>➤ Procedures for managing this hazard</li> </ul>			
3.	Be familiar with chemical hazards	<u>Chemical hazards:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Causes</li> <li>➤ Procedures for managing this hazard</li> </ul>	0.2	0.8	1
4.	Be familiar with biological hazards	<u>Biological hazards:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Causes</li> <li>➤ Procedures for managing this hazard</li> </ul>	0.2	0.8	1
5.	Be familiar with ergonomic/psychological / organizational factors:	<u>Ergonomic /psychological / organizational factors:</u> <ul style="list-style-type: none"> <li>➤ Concept of : <ul style="list-style-type: none"> <li>▪ Ergonomic factors</li> <li>▪ Psychological factors</li> <li>▪ organizational factors</li> </ul> </li> <li>➤ Procedures for managing hazards caused by these factors</li> </ul>	0.2	0.8	1
Sub total:			<b>1</b>	<b>4</b>	<b>4</b>
<b>Apply preventive measures for occupational health and safety</b>					
1.	Wear safety wares	<u>Safety wares:</u> <ul style="list-style-type: none"> <li>➤ Identification</li> <li>➤ Needs</li> <li>➤ Wearing procedures</li> </ul>	0.2	0.5	0.7
2.	Inspect workplace before working	<u>Workplace inspection:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Principle and procedures</li> <li>➤ Records keeping</li> </ul>	0.2	0.5	0.7
3.	Inspect tools/materials/equipment before use	<u>Inspection of tools/materials/equipment:</u> <ul style="list-style-type: none"> <li>➤ Concept and identification</li> <li>➤ Principle and procedures</li> <li>➤ Records keeping</li> </ul>	0.1	0.5	0.6
4.	Be prevented from accident hazards	<u>Prevention of accident hazards:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Being prevented from accident hazards</li> <li>➤ Records keeping</li> </ul>	0.1	0.5	0.6
5.	Be prevented from physical hazards	<u>Prevention of physical hazards:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Being prevented from physical hazards</li> <li>➤ Records keeping</li> </ul>	0.1	0.5	0.6
6.	Be prevented from chemical	<u>Prevention of chemical hazards:</u>	0.1	0.5	0.6

	hazards	<ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Being prevented from chemical hazards</li> <li>➤ Records keeping</li> </ul>			
7.	Be prevented from biological hazards	<u>Prevention of biological hazards:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Being prevented from biological hazards</li> <li>➤ Records keeping</li> </ul>	0.1	0.5	0.6
8.	Be prevented from ergonomic/psychological / organizational factors that create problems/hazards.	<u>Prevention of ergonomic/psychological / organizational factors that create problems/hazards:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Being prevented from ergonomic/psychological / organizational factors that create problems/hazards</li> <li>➤ Records keeping</li> </ul>	0.1	0.5	0.6
	Sub total:		<b>1</b>	<b>4</b>	<b>5</b>
	<b>Total:</b>		<b>2</b>	<b>8</b>	<b>10</b>
<b>Sub module: 3: First Aid</b>					
	<b>Description:</b> It consists of skills and knowledge related to first aid measures applicable in the related occupational performances.				
	<b>Objective:</b> • To apply first aid measures				
	<b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks/skills/steps together with their related technical knowledge:				
	Th.(1 hrs) + Pr.( 4hrs) = Tot.( 5 hrs)			Time( hrs )	
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
1.	Carryout simple dressings	<u>Carryout simple dressings:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Needs</li> <li>➤ Procedures</li> <li>➤ Precautions</li> <li>➤ Recording</li> </ul>	0.10	0.40	0.5
2.	Apply simple bandages	<u>Apply simple bandages:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Needs</li> <li>➤ Procedures</li> <li>➤ Precautions</li> <li>➤ Recording</li> </ul>	0.10	0.40	0.5
3.	Apply first aid for simple wounds	<u>Apply first aid for simple wounds:</u> <ul style="list-style-type: none"> <li>➤ Concept</li> <li>➤ Needs</li> <li>➤ Procedures</li> <li>➤ Precautions</li> <li>➤ Recording</li> </ul>	0.10	0.40	0.5

4.	Apply first aid for heat /chemical burns	<u>Apply first aid for heat /chemical burns:</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.10	0.40	0.5
5.	Apply first aid for injuries/cuts	<u>Apply first aid for injuries/cuts:</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.10	0.40	0.5
6.	Apply first aid for fracture	<u>Apply first aid for fracture:</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.10	0.40	0.5
7.	Apply first aid for simple bleeding	<u>Apply first aid for simple bleeding:</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.10	0.40	0.5
8.	Apply first aid for insect bites	<u>Apply first aid for insect bites:</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.05	0.20	0.25
9.	Apply first aid for animal bites	<u>Apply first aid for animal bites:</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.05	0.20	0.25
10.	Apply first aid for frost bite	<u>Apply first aid for frost bite :</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.05	0.20	0.25
11.	Apply first aid for simple poisoning	<u>Apply first aid for simple poisoning:</u> ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.05	0.20	0.25

12.	Apply first aid for electrical shock	Apply first aid for electrical shock: ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.05	0.20	0.25
13.	Apply first aid for choking/drowning	Apply first aid for choking/drowning: ➤ Concept ➤ Needs ➤ Procedures ➤ Precautions ➤ Recording	0.05	0.20	0.25
<b>Total:</b>			<b>1</b>	<b>4</b>	<b>5</b>
<b>Sub module:4: HIV/AIDS</b>					
<b>Description:</b> It consists of skills and knowledge related to safety measures to be followed for the prevention of HIV/AIDS including its management.					
<b>Objectives:</b> • To state the concept of HIV/AIDS • To apply safety measures for prevention of HIV/AIDS					
<b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks/skills/steps together with their related technical knowledge:					
Th.(1 hrs) + Pr.( 4hrs) = Tot.( 5 hrs)			Time( hrs )		
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
1.	<b>State the concept of HIV/AIDS</b> 1. Define HIV 2. Enlist modes of transmission of HIV 3. Enlist signs and symptoms of HIV infected person 4. Enlist stages of HIV 5. Define AIDS 6. Enlist signs and symptoms of AIDS 7. Enlist current status of global HIV/AIDS 8. Enlist difference between HIV/AIDS	<b>State the concept of HIV/AIDS:</b> <b>HIV:</b> ➤ Definition of HIV: ➤ Modes of transmission of HIV ➤ Signs and symptoms of HIV infected person ➤ Stages of HIV <b>AIDS:</b> ➤ Definition of AIDS ➤ Signs and symptoms of AIDS ➤ Current status of global HIV/AIDS ➤ Difference between HIV and AIDS	0.5	2	2.5
2.	Apply safety measures for prevention of <b>HIV/AIDS:</b> 1. Keep touch with single partner for sexual intercourse 2. Ensure safe intercourse 3. Use condom carefully and	<u>Apply safety measures for prevention of <b>HIV/AIDS:</b></u> ➤ Keeping touch with single partner for sexual intercourse ➤ Ensuring safe intercourse ➤ Using condom carefully and	0.5	2	2.5

	consistently during each act of sexual intercourse in case of other than single sex partner	consistently during each act of sexual intercourse in case of other than single sex partner			
	4. Keep away from sharing syringes, needles and other skin piercing instrument with HIV infected people	➤ Keeping away from sharing syringes, needles and other skin piercing instrument with HIV infected people			
	5. Keep away from sharing toothbrushes, blade razors or other instruments that could become contaminated from blood	➤ Keeping away from sharing toothbrushes, blade razors or other instruments that could become contaminated from blood			
	6. Keep away from handling clothes or cloths that are visibly contaminated with blood	➤ Keeping away from handling clothes or cloths that are visibly contaminated with blood			
	7. Follow positive health behavior	➤ Positive health behavior			
	8. Get blood be tested to ensure HIV negative/positive	➤ Getting blood be tested to ensure HIV negative/positive			
	<b>Total:</b>		1	4	5
<b>Sub module: 5 : Communication</b>					
<b>Description:</b> It consists of the skills and knowledge related to communication in the related occupation. Each task consists of its steps, related technical knowledge and hour distribution.					
<b>Objectives:</b> After its completion the trainees will be able:					
	<ul style="list-style-type: none"> <li>• To handle telephone calls</li> <li>• To handle fax</li> <li>• To handle mail</li> <li>• To write letters</li> <li>• To write memos / tips / notes / notice</li> <li>• To perform internal communication</li> <li>• To perform external communication</li> <li>• To perform oral communication</li> <li>• To perform written communication</li> </ul>	<ul style="list-style-type: none"> <li>• To communicate with donors To communicate with financial institutes</li> <li>• To link with media</li> <li>• To disseminate information</li> <li>• Write job application</li> <li>• Prepare Resume.</li> <li>• Communicate with senior.</li> <li>• Communicate with juniors.</li> <li>• Deal with customers</li> <li>• Request / purchase tool, supplies, materials and equipment.</li> <li>• Fill up leave requisition form.</li> </ul>			
<b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks/skills/steps together with their related technical knowledge:					
			Th.(2 hrs) + Pr.( 8hrs) = Tot.( 10 hrs)		
			Time( hrs )		
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
1.	Handle telephone calls	<u>Handling telephone calls:</u> ➤ Concept, need, and	0.1	0.4	0.5

		<ul style="list-style-type: none"> <li>importance</li> <li>➤ Operating principles and procedures</li> <li>➤ Care and maintenance</li> <li>➤ Safety precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>			
2.	Handle fax	<u>Handling fax:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Operating principles and procedures</li> <li>➤ Care and maintenance</li> <li>➤ Safety precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
3.	Handle mail	<u>Handling mail:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Operating principles and procedures</li> <li>➤ Care and maintenance</li> <li>➤ Safety precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
4.	Write letters	<u>Writing letters:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Types of letter</li> <li>➤ Component parts of each type of letter</li> <li>➤ Format of each type of letter</li> <li>➤ Writing letters</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
5.	Write memos / tips / notes / notice	<u>Writing memos / tips / notes / notice :</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts of memos / tips / notes / notice</li> <li>➤ Format of memos / tips / notes / notice</li> <li>➤ Writing memos / tips / notes / notice</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5

6.	Prepare simple report	<u>Preparing simple report:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts of a report</li> <li>➤ Format of a report</li> <li>➤ Writing a report</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
7.	Prepare simple proposal	<u>Preparing simple proposal:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts of a proposal</li> <li>➤ Format of a proposal</li> <li>➤ Writing a proposal</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
8.	Perform internal/ external communication	<u>Performing internal/ external communication:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Performing internal/ external communication</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
9.	Perform horizontal/vertical communication	<u>Performing horizontal/vertical communication:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Performing horizontal/vertical communication</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
10.	Perform oral/ written communication	<u>Performing oral/ written communication:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Performing oral/ written communication</li> </ul>	0.1	0.4	0.5

		<ul style="list-style-type: none"> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>			
11.	Communicate with financial institutes	<u>Communicating with financial institutes:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Communicating with financial institutes</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
12.	Link with media	<u>Linking with media:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Linking with media</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
13.	Disseminate information	<u>Disseminating information:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Disseminating information</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
14.	Write job application	<u>Writing job application:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts of job application</li> <li>➤ Format of job application</li> <li>➤ Writing job applications</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
15.	Prepare resume	<u>Preparing resume:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts of a resume</li> <li>➤ Format of a resume</li> <li>➤ Writing resume</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5

16.	Communicate with senior.	<u>Communicating with senior:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Communicating with senior</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
17.	Communicate with juniors.	<u>Communicating with juniors:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
18.	Deal with customers/stake holders	<u>Dealing with customers/stake holders:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Communicating with juniors</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
19.	Request / purchase tool, supplies, materials and equipment.	<u>Requesting / purchasing tool, supplies, materials and equipment:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Requesting / purchasing tool, supplies, materials and equipment</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
20.	Fill up leave requisition form	<u>Filling up leave requisition form:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles, procedures, and application</li> <li>➤ Filling up leave requisition form</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
<b>Total:</b>			<b>2</b>	<b>8</b>	<b>10</b>

<b>Sub module: 6 : Small Enterprise Development</b>					
	<b>Description:</b> It consists of the skills and knowledge related to small enterprise development in the related occupation. Each task consists of its steps, related technical knowledge and hour distribution.				
	<b>Objectives:</b> After its completion the trainees will be able: <ul style="list-style-type: none"> <li>• To be familiar with entrepreneurship development</li> <li>• To prepare a business plan</li> </ul>				
	<b>Tasks:</b> To fulfill the objective the trainees are expected to get proficiency on the following tasks/skills/steps together with their related technical knowledge:				
	Th.(4 hrs) + Pr.( 16 hrs) = Tot.( 20 hrs)			Time( hrs )	
SN	Tasks or skills/ steps	Related technical knowledge	Th.	Pr.	Tot.
	<b><u>Entrepreneurship development:</u></b>	<b><u>Entrepreneurship development:</u></b>			
1.	Be familiar with business / entrepreneurship	<u>Business / entrepreneurship:</u> <ul style="list-style-type: none"> <li>➤ Concept, definitions, need, and importance</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
2.	Develop qualities of a successful entrepreneur	<u>Qualities of a successful entrepreneur:</u> <ul style="list-style-type: none"> <li>➤ Concept and needs</li> <li>➤ Qualities of a successful entrepreneur</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
3.	Follow professional ethics	<u>Professional ethics:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Professional ethics</li> <li>➤ Interpretation</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
4.	Analyze prevailing rules / regulations/ laws /acts related to the profession	<u>Prevailing rules / regulations/ laws /acts related to the profession:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Prevailing rules / regulations/ laws /acts related to the profession</li> <li>➤ Interpretation</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity records</li> </ul>	0.1	0.4	0.5
5.	Develop skills of good governance	<u>Good governance:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles and procedures of</li> </ul>	0.1	0.4	0.5

		<ul style="list-style-type: none"> <li>good governance</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping activity re</li> </ul>			
6.	Be familiar with entrepreneurship development/factors affecting the growth of entrepreneurship	<u>Entrepreneurship development/factors affecting the growth of entrepreneurship:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Entrepreneurship development</li> <li>➤ Factors affecting the growth of entrepreneurship</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.1	0.4	0.5
7.	Develop an entrepreneurship competency development [ECD] program	<u>Entrepreneurship competency development [ECD] program:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Entrepreneurship competency development [ECD]</li> <li>➤ ECD program development</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.1	0.4	0.5
8.	<p>Be familiar with identification / selection/appraising/gaining instructional a support of a project</p> <ul style="list-style-type: none"> <li>• Be familiar with identification of a project</li> <li>• Be familiar with selection of a project</li> <li>• Be familiar with appraising of a project</li> <li>• Be familiar with gaining instructional a support of a project</li> </ul>	<u>Identification / selection/appraising/gaining instructional a support of a project:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Identification of a project</li> <li>➤ Selection of a project</li> <li>➤ Appraising of a project</li> <li>➤ Gaining instructional a support of a project</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.1	0.4	0.5
9.	Be familiar with the preparation of a comprehensive business plan for starting / acquiring /running a business	<u>Be familiar with the preparation of a comprehensive business plan for starting / acquiring /running a business:</u> <ul style="list-style-type: none"> <li>➤ Preparation of a comprehensive business plan for starting a business</li> <li>➤ Preparation of a comprehensive business plan for acquiring a business</li> <li>➤ Preparation of a comprehensive business plan for running a business</li> </ul>	0.1	0.4	0.5

		<ul style="list-style-type: none"> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>			
10.	Be familiar with marketing of products	<u>Be familiar with marketing of products:</u> <ul style="list-style-type: none"> <li>➤ concept of product, price, place, promotion</li> <li>➤ marketing of products</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.1	0.4	0.5
		Sub total:	<b>1</b>	<b>4</b>	<b>5</b>
	<b><u>Business plan:</u></b>	<b><u>Business plan:</u></b>			
11.	Collect related information / data	<u>Collecting related information / data:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance of data and information</li> <li>➤ Difference between data and information</li> <li>➤ Principles and procedures for collecting related information / data</li> <li>➤ Collecting related information / data</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.4	1.6	2
12.	Prepare production plan	<u>Preparing production plan:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts</li> <li>➤ Format</li> <li>➤ Principles and procedures</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.4	1.6	2
13.	Prepare cost plan	<u>Preparing cost plan:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts</li> <li>➤ Format</li> <li>➤ Principles and procedures</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.4	1.6	2
14.	Prepare financial plan	<u>Preparing financial plan:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts</li> <li>➤ Format</li> <li>➤ Principles and procedures</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.4	1.6	2
15.	Prepare marketing plan	<u>Preparing marketing plan:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and</li> </ul>	0.4	1.6	2

		<ul style="list-style-type: none"> <li>importance</li> <li>➤ Component parts</li> <li>➤ Format</li> <li>➤ Principles and procedures</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>			
16.	Prepare a business plan	<u>Preparing a business plan:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Component parts</li> <li>➤ Format</li> <li>➤ Principles and procedures</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.6	2.4	3
17.	Appraise business plan	<u>Appraising business plan:</u> <ul style="list-style-type: none"> <li>➤ Concept, need, and importance</li> <li>➤ Principles and procedures</li> <li>➤ Precautions to be taken</li> <li>➤ Keeping records</li> </ul>	0.4	1.6	2
		<b>Sub total:</b>	<b>3</b>	<b>12</b>	<b>15</b>
		<b>Total:</b>	<b>4</b>	<b>16</b>	<b>20</b>
		<b>Common module total:</b>	<b>14</b>	<b>56</b>	<b>70</b>

**Reference Books**

Recently available related books, manuals are suggested as reference books