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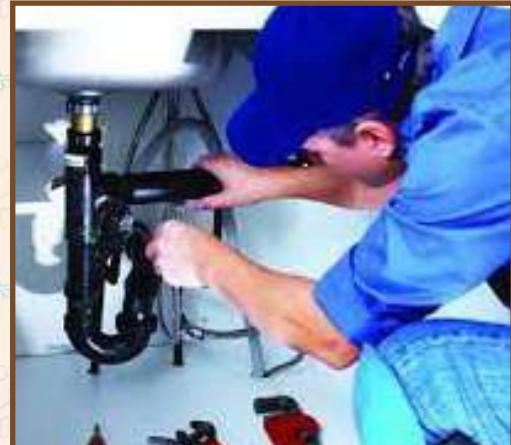
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GOVERNMENT OF INDIA
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WATER
MANAGEMENT
AND PLUMBING
SKILL COUNCIL

Facilitator Guide



Sector
Plumbing

Plumber General

Sub-Sector
Industrial / Non-Industrial
Plumbing

Occupation
Plumbing Systems Installation and
Maintenance



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Unit-606 & 609, DLF Prime Tower,

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Phone: 01141513580

E-mail: wmpsc@wmpsc.in

Website: www.wmpsc.in

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Okhla, Phase-1

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Phone: 01141513580

E-mail: wmpsc@wmpsc.in

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“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”

Shri Narendra Modi

Prime Minister of India

Acknowledgements

Water management and plumbing skill council would like to express gratitude to all the individuals, subject matter experts and institutions who have contributed in different ways toward the preparation of this “Facilitator Guide”.

Without their contribution, it could not have been completed. Special thanks are extended to those who collaborated in the preparation of its different modules and thanks to those who have contributed a tremendous role to translate it from the English language to the Hindi language also. Sincere appreciation is also extended to all who provided peer reviews for these modules.

The preparation of this manual would not have been possible without the water management and plumbing industries' support. Plumbing industries' feedback has been extremely encouraging from inception to conclusion and it is with their input that we have tried to bridge the skill gap existing today in the industries.

Finally, we would like to express our gratitude to our master trainers, trainers and water management and plumbing skill council's management as they provided us with their valuable input to complete this “Facilitator Guide”.

This participant manual is dedicated to aspiring youth who desire to achieve special skills which will be a lifelong asset for their future endeavours.

Preface

The basic idea for the preparation of this book has come from the challenges faced by the trainers during the skilling of trainees who are learning the skill through the trainers.

The information contained herein has been obtained from reliable sources of the water management and plumbing skill council (WMPSC). The water management and plumbing skill council disclaim all warranties to the accuracy, completeness or adequacy of such information. Water management and plumbing skill council shall have no liability for error, omission and inadequacy, in the information contained herein or for the interpretation thereof. Every effort has been made to trace the written material included in this book.

The water management and plumbing skill council faced so many challenges to complete the facilitator book, which required collecting information about every assembly, Indian standard of measurement and new technology initiated by the industry.

We have also faced challenges to incorporate the diagrams, design and practical layout of the installation of the fixtures and other water management amenities.

About this Book

This Qualification pack is developed by Water Management and Plumbing Skill Council. This course encompasses all 8 National Occupational Standards (NOS).

Each unit starts with learning objectives, followed by relevant activities and corresponding training methodology. Upon successful completion of this course, the participant will be able to:

1. PSC/N0130: Prepare for Plumbing Installations and Maintenance
2. PSC/N0131: Install Water Supply Systems
3. PSC/N0132: Install Drainage Systems
4. PSC/N0133: Install Plumbing Fixtures
5. PSC/N0142: Perform Troubleshooting and Maintenance for Domestic Plumbing Fixtures and Systems
6. PSC/N0136: Apply Health and Safety Practices at the Workplace
7. PSC/N0137: Work Effectively with Others
8. DGT/VSQ/N0102: Employability Skills (60 Hours)

This book is designed considering the technical demand and educational background of the participants. Thus, special effort has been made to explain the concepts required for the job mostly through graphics and illustrations.

Symbols Used

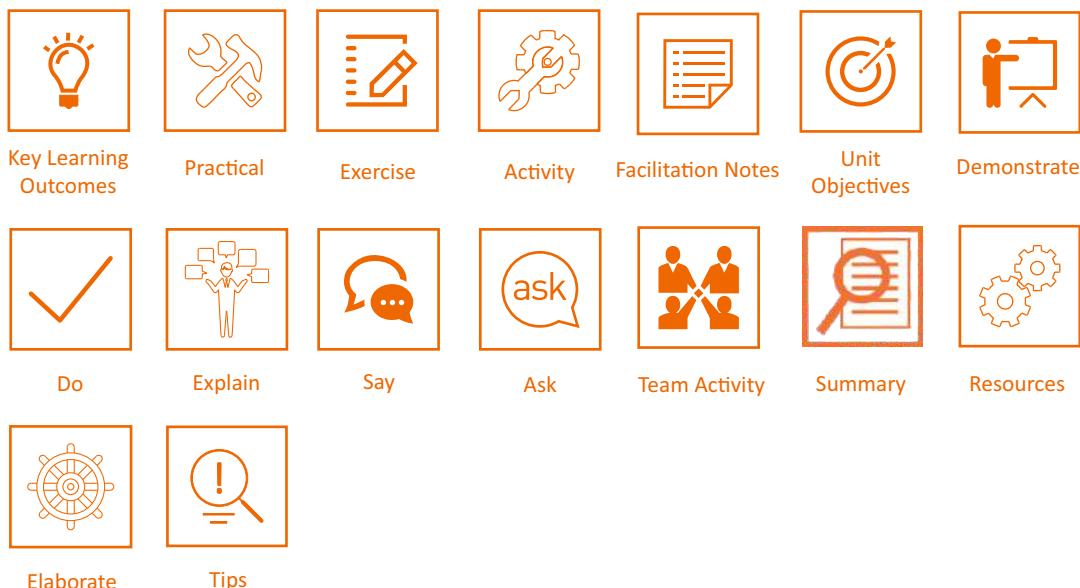


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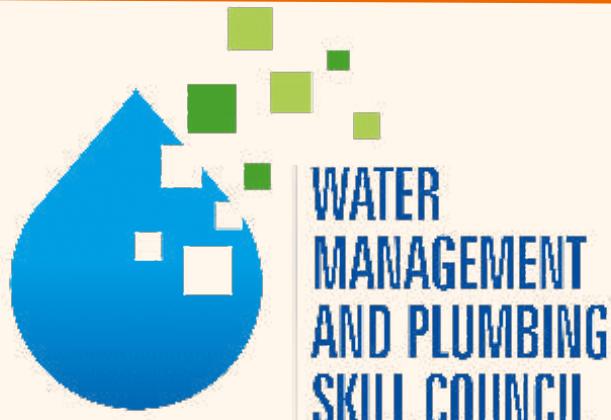




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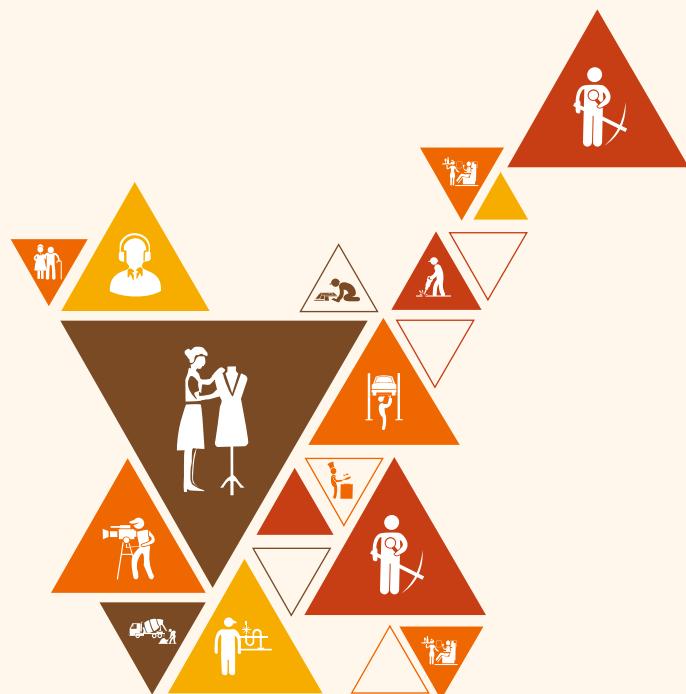
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1. Introduction to the sector and the job role

Unit 1.1 - Plumbing Industry- An Introduction

Unit 1.2 - Water Flow Process



PSC/N0130

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Explain the importance of plumbing industry
2. Describe the key responsibilities of a plumber general

Unit 1.1 Plumbing Industry-An Introduction

Unit Objectives



At the end of this unit, the participant will be able to:

1. Outline the overview of the plumbing industry
2. Discuss the scope of employment in the contracting segment of the industry
3. List the key responsibilities of a plumber general

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- Start the class by saying, "This training program is developed to impart specific knowledge and skills relevant to the job required to be performed as a "Technical Support Executive-Voice", in the "IT-ITeS Sector/Industry."
- Talk about the Qualification Pack (QP), and National Occupational Standards (NOS).
- List the compulsory NOSs to the QP "Technical Support Executive-Voice".
- Say, "Before we start the program let's play a small game".

Group Activity



Objective	The purpose of this activity is to build rapport with the course mates
Materials required	Parcel (for passing)
Steps/procedure	<ul style="list-style-type: none"> • This is an ice breaker activity. • Welcome the new participants by giving their own introduction. • Ask the participants to stand in a circle, close enough to the person on each side of them so that they can pass the parcel quickly. • Say 'Stop' when it is least expected. At that time, the trainee holding the parcel introduces himself/herself while saying his/her name and giving thoughts on the plumbing industry. • The winner of the game should stand and introduce himself/herself at the end of the game. • At last, thank the participants for their participation.
Conclusion / what has been achieved	This activity helps the participants to know each other, allows them to feel comfortable and also help them to connect.

Explain



- Explain the following topics:
 - Overview of the plumbing industry
 - Scope of employment in the contracting segment
 - Plumbing industry sub-sectors (Fig 1.1)

Elaborate



- Elaborate on the following topics:
 - Key responsibilities of a plumber general (Fig 1.2)
 - Key competencies of plumber general (Fig 1.3)

Ask



- What is the future of the plumbing sector?
- List three roles and responsibilities of a plumber general.
- Name any two sub-sectors of the plumbing industry.

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 1.2 Water Flow Process

Unit Objectives



At the end of this unit, the participant will be able to:

1. Describe the process of water flow in domestic households and commercial setups
2. Discuss the application of various types of plumbing systems in residential and commercial setups

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Ask



- Start the class by asking a few questions on the plumbing sector and its subsector and give participants the chance to guess before revealing the correct answer.

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Say



- "This unit will help you understand the process of water flow in domestic households and commercial setups. Let's start this session with the plumbing cycle."
- "A plumbing cycle is a system for collecting water from a source, distributing it to consumers, and then collecting and properly treating wastewater before returning it to the source."
- "Let's understand in detail."

Explain



- Explain the following topic:
 - Plumbing cycle (Fig 1.4)
 - Water flow process
 - Various types of plumbing systems used in residential and commercial setups (Fig 1.5)

Ask



- What are the primary sources of water?
- List different types of plumbing systems used in residential and commercial setups.
- What is a potable water system?
- What are the common signs of malfunctioning gutters?

Notes for Facilitation



- Write down the responses of the students on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 1.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answer to Question I:

1. Reference given in 1.1.1
2. Reference given in 1.1.4
3. Reference given in 1.2.1
4. Reference given in 1.2.2
5. Reference given in 1.2.3

QR Code

Scan the QR Code to watch the related video



<https://youtu.be/Rfz1zVu8VaQ>
Overview of the Plumbing Industry



<https://youtu.be/Fq7FlsuNCQI>
Scope of Employment in the Contracting Segment



<https://youtu.be/-bvZCdMecEo>
Plumbing Cycle



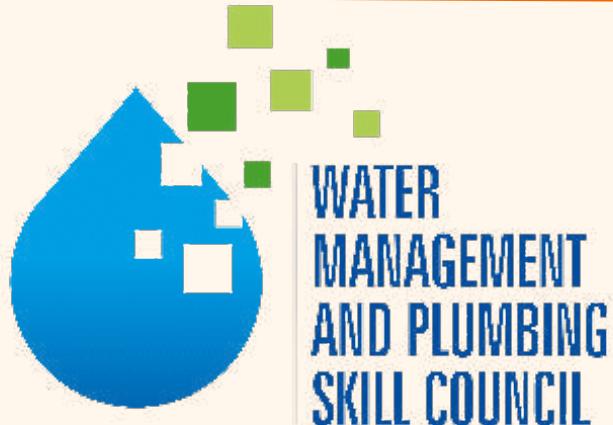
https://youtu.be/8jxRn-T_LCs
Various Types of Plumbing Systems in Residential
and Commercial Setups



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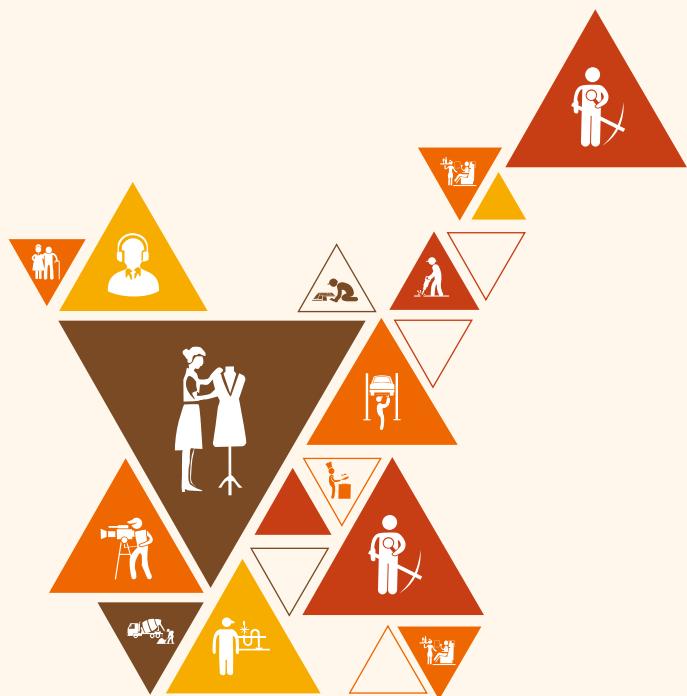
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2. Basics of Plumbing

- Unit 2.1-Introduction to Plumbing
- Unit 2.2-Plumbing Materials
- Unit 2.3-Plumbing Tools and Equipment
- Unit 2.4-Properties of Water



PSC/N0130

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Identify the various plumbing related systems, materials, tools and equipment
2. Recognise the common terms, symbols and jargons used by plumbers

Unit 2.1 Introduction to Plumbing

Unit Objectives



At the end of this unit, the participant will be able to:

1. Recall the various types of symbols and terminologies and titles used in plumbing installation
2. Describe the standards applicable (such as ISI) to piping installations in the plumbing industry
3. State the importance of accuracy in measurements and calculations with respect to plumbing work

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Welcome and greet the students.
- Begin the session with a brief recapitulation of the previous session.

Say



- Start the class by saying, "This unit will help you to understand the various types of symbols and terminologies and titles used in plumbing installation and the standards applicable (such as ISI) to piping installations in the plumbing industry."

Explain



- Explain the following topics:
 - Plumbing system
 - Plumbing symbols – refer PH fig 2.1, 2.2 and 2.3
 - Plumbing terminologies – refer PH table 2.1
 - Plumbing standards -

Activity

Objective	The purpose of this activity is to gain knowledge about plumbing symbols.
Materials required	Whiteboard
Steps/procedure	<ul style="list-style-type: none"> • This is a skill practice activity. • Draw different symbols of plumbing on the board. • Ask the participants to recognize the symbols. • Ask one by one and give them 1-2 minutes to share their answers. • Appreciate the participants who give correct answers.
Conclusion / what has been achieved	This activity will help them to learn about plumbing symbols.

Ask

- What do you understand by plumbing system?
- Discuss different plumbing terminologies.
- Name various plumbing standards.

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Elaborate

- Elaborate on the plumbing measurements and calculations:
 - Measurement of Length (Table 2.2)
 - Measurement of Weight (Table 2.3)
 - Measurement of Volume (Table 2.4)
 - Measurement of Density (Table 2.5)
 - Measurement of Pressure (Table 2.6)

Activity

Objective	The purpose of this activity is to understand the plumbing measurements and calculations.
Materials required	Whiteboard
Steps / procedure	<ul style="list-style-type: none"> Use the Whiteboard to ask a few questions on simple conversions of units. Share a number in a particular unit and ask the participants to convert it into another unit. Call the participants one by one to the board.
Conclusion / what has been achieved	This activity enables to understand the plumbing measurements and calculations.

Ask

- Which types of tools are used for measuring length in the plumbing industry?
- Name the measurement units of weight and volume.
- How many kilograms are in 1 quintal?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Explain

- Explain the following topics:
 - Comprehensive conversion table – refer PH table 2.7
 - Measurement tips

Ask

- What are the different plumbing measurements and calculations?
- Discuss a few measurement tips.

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 2.2 Plumbing Materials

Unit Objectives



At the end of this unit, the participant will be able to:

1. State the names, grades, characteristics and applications of different pipes, pipe fittings, fixture supports, fastening hardware and materials such as sealants, adhesives, plumber's putty, marking materials and cement used in plumbing

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- Say that, "So, let's start today's session. In this unit, we are going to discuss plumbing materials."
- "The plumbing system in a building distributes water for drinking, heating, and washing, as well as for the removal of waterborne wastes. It consists of pipes, drain fittings, valves, valve assemblies, and devices."
- "Let's find it in detail."

Explain



- Explain the following topics:
 - Pipe materials
 - Pipe types
 - Different types of pipe fittings
 - Types of pipe joints

Ask

- What do you understand by pipe materials
- What are the different types of pipe?
- What are the different types of pipe fittings?
- What are the types of pipe joints?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Elaborate

- Elaborate on the following topics:
 - Valves and its types
 - Fixtures and its different types
 - Fastener and its types

Ask

- What do you understand by valves and what are their types?
- What do you understand by fixtures and what are their types?
- What do you mean by the fastener and what are its types?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 2.3 Plumbing Tools and Equipment

Unit Objectives



At the end of this unit, the participant will be able to:

1. Identify various plumbing tools and equipment correctly
2. List the lifting/load shifting equipment including ladders, height scaffolding, elevated work platforms, hand trolleys, hoists and jacks used at plumbing installation sites

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- Say that, "So, let's start today's session by discussing various tools and equipment used in plumbing work."

Explain



- Explain the following tools and equipment used in plumbing work:
 - Holding tools
 - Fitting tools
 - Cutting tools
 - Pipe bending tools
 - Other tools

Activity

Objective	The purpose of this activity is to understand the different tools and equipment used in plumbing work.
Materials required	Laptop/computer
Steps / procedure	<ul style="list-style-type: none"> • This is a skill practice activity. • Show the image of tools and equipment used in plumbing work through a presentation/projector screen. • Ask the participants to recognize the respective tools and equipment and explain their uses in plumbing work. • Ask one by one and give them 1-2 minutes to share their answers. • Appreciate the participants who give correct answers.
Conclusion / what has been achieved	This activity will help them to learn the different tools and equipment used in plumbing work.

Ask

- What do you understand by holding tools?
- What do "fitting tools" mean to you?
- What is the purpose of cutting tools?
- What are pipe-bending tools?
- What are the other tools which can be used in plumbing work?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 2.4 Properties of Water

Unit Objectives



At the end of this unit, the participant will be able to:

1. Explain the properties of water, including pressure and flow rates.
2. Describe processes such as capillary action and thermal expansion in plumbing.

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- “In the last session, we discussed the different types of tools and equipment used in plumbing work.”
- “In today's session, we will cover the properties of water, including pressure and flow rates and processes such as capillary action and thermal expansion in plumbing.”

Explain



- Explain the following topics:
 - Various properties of water – refer PH fig 2.94
 - Capillary action
 - Thermal expansion

Ask



- What are the various properties of water?
- What do you understand by capillary action?
- What do you understand by thermal expansion?

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 2.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

- 1, a) 90° Elbow
 b) Straight Tee
 c) Sanitary Tee
 d) P-Trap
 e) Gate Valve
2. Reference given in 2.1.2
3. Reference given in 2.2.1
4. Reference given in 2.2.3
5. Reference given in 2.3.1

Notes



QR Code

Scan the QR Code to watch the related video



<https://youtu.be/wpQD4XzjKDM>

Process of Mains Supply of
Water and Drainage



https://youtu.be/1YQ9dpa6_lw

Pipe Materials



<https://youtu.be/GfNUaVFmxaY>

Different Types of Plumbing
Tools and Equipment



<https://youtu.be/q33WAVm0K5o>

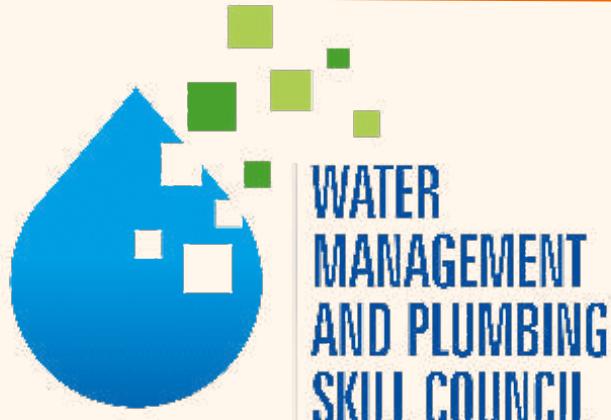
Various Pipe Fit-Off Processes



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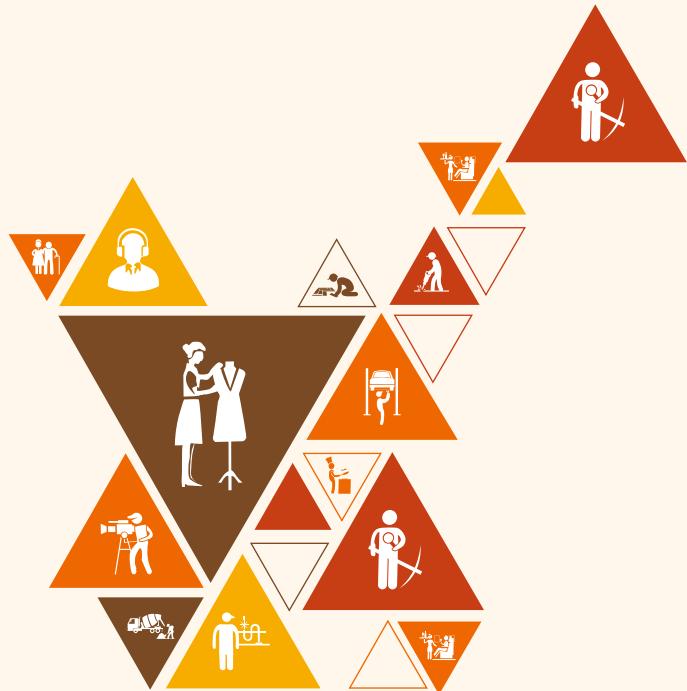
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3. Preparation for plumbing installations and maintenance

Unit 3.1-Plumbing Drawings

Unit 3.2-Handling of Plumbing Materials



PSC/N0130

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Perform the steps involved in planning and preparation of plumbing work

Unit 3.1 Plumbing Drawings

Unit Objectives



At the end of this unit, the participant will be able to:

1. Explain the types and purpose of plumbing drawings
2. Discuss the purpose of work schedules, work plans, charts, work bulletins, memos and the work-related information that can be obtained from them
3. Describe the steps involved in collection of plumbing materials as per type, size and quantities based on specifications from drawings and plans

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Welcome and greet the students.
- Begin the session with a brief recapitulation of the previous session.

Say



- "In the last unit, we gained an understanding of the properties of water, including pressure and flow rates and processes such as capillary action and thermal expansion in plumbing."
- "In today's session, we will discuss types and purpose of plumbing drawings, the purpose of work schedules, work plans, charts, work bulletins, and memos."
- "We will also learn the steps involved in collection of plumbing materials as per type, size and quantities based on specifications from drawings and plans."

Explain



- Explain the following topics:
 - Introduction and purpose of Plumbing Drawings – refer PH fig 3.1
 - Different types of plumbing drawings – refer PH fig 3.2

Elaborate

- Elaborate on the following topics:
 - Work Schedules
 - Steps involved in the collection of plumbing materials – refer PH fig 3.6

Group Activity

Objective	The purpose of this activity is to revise the session.
Materials required	Pen and paper
Steps/procedure	<ul style="list-style-type: none"> • This is a skill practice activity. • Divide the whole class into 4 groups. • Each group will be given four different plumbing drawings, on which they have to provide a detailed report. • The first group will be writing about the water supply system drawings. • The second group will be writing about the drainage system drawings. • The third group will be writing about the storm- water system drawings. • The fourth group will be writing about the irrigation system drawings. • It is important that the trainees present their report not only rich in information but also supported by hand-drawn diagrams. • To complete this activity each group will be given 30 minutes. • The group with the best detailed presentation will be awarded appreciation and accolades.
Conclusion / what has been achieved	This activity will assist participants to gain knowledge of the different types of plumbing drawings.

Ask

- What do you mean by plumbing drawings?
- What are the different types of plumbing drawings?
- What do you understand by memo?
- What is work plan?

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 3.2 Handling of Plumbing Materials

Unit Objectives



At the end of this unit, the participant will be able to:

1. Explain the factors to be kept in mind for safe handling, storage and transport of various plumbing materials
2. List measures to avoid air and water contamination, erosion and sedimentation
3. Discuss the risk and impact of not following defined procedures/work instructions
4. Outline the process of reporting and handling hazards at the workplace

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- "In the last module, we discussed types and purpose of plumbing drawings, the purpose of work schedules, work plans, charts, work bulletins, and memos."
- "Today, we are going to understand how to handle plumbing material."
- "As a plumber, it is necessary to use our plumbing tools, equipment, and plumbing material properly in a workplace and storage unit. These materials should be kept in an organized way and in a safe and secure location. This means that they should be away from any areas where they could be damaged or contaminated. Second, one should ensure that the materials are easily accessible. Materials should be kept on shelves. Similarly, shelves and racks should be sturdy and in good condition. Stacking of all materials should be done on a flat base. heavier objects should be placed closer to the floor and lighter/smaller objects at a higher level."
- "Let's study in detail."

Explain



- Explain the following topics:
 - Safe handling, storage, and transport of plumbing materials
 - Safe use of plumbing tools - refer PH fig 3.10
 - Different types of contamination in plumbing
 - Safety measures to avoid contamination - refer PH fig 3.10

Ask

- What are the consequences of not following work instructions?
- How can you report and handle hazards at the workplace?
- List a few hazards in the workplace.

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Elaborate

- Elaborate on the following topics:
- Consequences of not following work instructions (Fig 3.11)
- Reporting and handling hazards at the workplace (Fig 3.12)
- Hazards in the workplace (Fig 3.13)

Ask

- What do you mean by safe handling, storage, and transport of plumbing materials?
- What do you mean by safe use of plumbing tools?
- What are the different types of contamination in plumbing?
- What are the safety measures to avoid contamination?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 3.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

1. Reference given in 3.1.1
2. Reference given in 3.1.1
3. Reference given in 3.1.2
4. Reference given in 3.1.1
5. Reference given in 3.2.3

QR Code

Scan the QR Code to watch the related video



<https://youtu.be/AI9Yly-86v8>

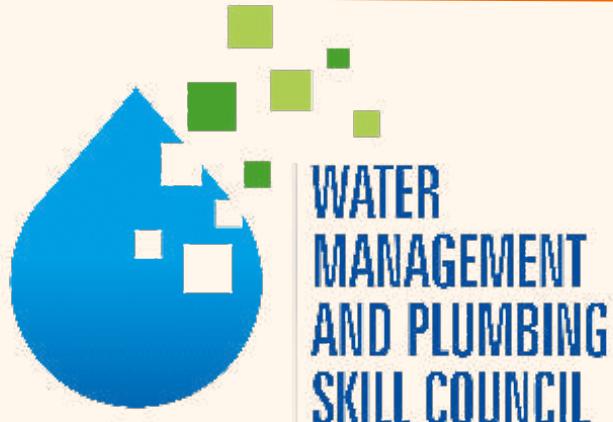
Safe use of Plumbing Tools



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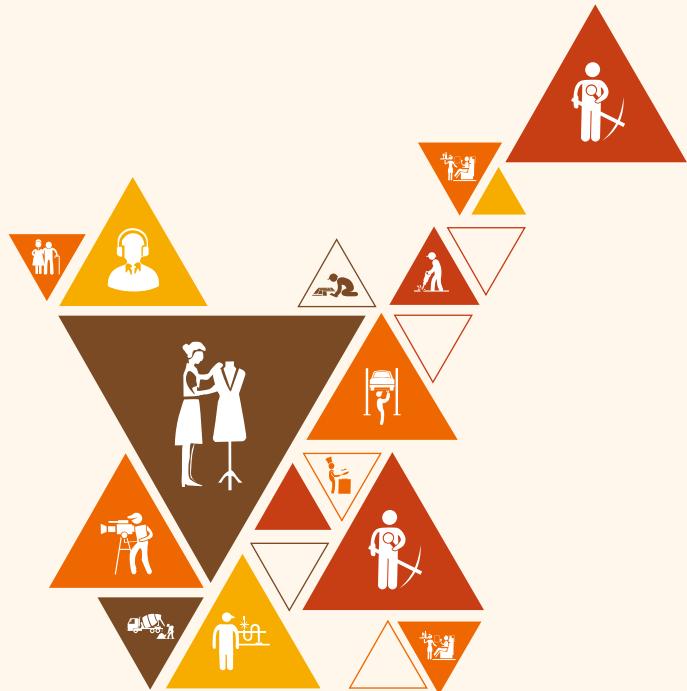


4. Installation of Water Supply Systems

Unit 4.1- Water Distribution System

Unit 4.2- Installation Process

Unit 4.3- Testing Procedures



PSC/N0131

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Demonstrate the process of cutting, bending and assembling various types of water supply pipes
2. Perform the installation of the assembled pipes, fittings and other water supply components
3. Perform post-installation activities

Unit 4.1 Water Distribution System

Unit Objectives



At the end of this unit, the participant will be able to:

1. Explain the process of water distribution in municipal, residential, and private setups
2. List the process and various components of a water supply and distribution system
3. State the piping system layouts for various types of water supply systems

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Notes for Facilitation



- Welcome and greet the students.
- Begin the session with a brief recapitulation of the previous session.

Say



- "In the previous session, we gained knowledge about how to handle plumbing material."
- "In today's session, we will discuss about water distribution system."

Explain



- Explain the following topics:
 - Introduction to water distribution system
 - Water distribution system in a residential building – refer PH fig 4.2
 - Municipal water system
 - Fundamentals of water supply and distribution system

Elaborate

- Elaborate on the following topics:
 - Different types of water distribution system (Fig 4.4)
 - Various components of water supply and distribution system (Fig 4.9)
 - Piping system layouts

Activity

Objective	The purpose of this activity is to understand the water distribution system in a residential building,
Materials required	Pen and paper
Steps /procedure	<ul style="list-style-type: none"> • This is a skill practice activity. • Ask the participants to draw the water distribution system of a residential building in the notebook. • Participants can take the help from Participant Handbook (refer fig 4.2). • Give 5-10 minutes to complete the activity. • Ask the participants to show their answers to the class.
Conclusion / what has been achieved	This activity will help them to learn the water distribution system in a residential building.

Ask

- What is a water distribution system?
- Which types of material are used in service pipes?
- List all fundamentals of water supply and distribution systems.
- What do you understand by a pressure relief valve?

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 4.2 Installation Process

Unit Objectives



At the end of this unit, the participant will be able to:

1. Outline the installation process of pipes and fittings for various plumbing applications
2. Describe the various techniques of installing the water piping system in a building such as over ground piping, underground piping, piping embedded in concrete, concealed piping, wall mounted piping.
3. Explain the properties of the different types of supports, hangers and restraints used in water supply plumbing systems
4. List the characteristics of metal used in various plumbing materials and the fabrication methods compatible with them
5. Explain the process of electrolysis and problems associated with the use of dissimilar metals
6. State the impact of accurate marking on the fabrication process work time and finished work quality
7. Describe the measuring and marking out processes for fabrication of pipe
8. List standard measuring procedures such as center-to-center, end-to-center, and end-to-end
9. State the allowances to be considered in measurements and markings during the fabrication of pipes
10. List the types, characteristics and the application of different pipe fittings and fixture supports
11. Discuss the various fixing and jointing techniques for water supply piping installations
12. Explain the principles underlying various fit-off processes
13. State the importance of ensuring alignment and balance in piping installations

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- Say that, "So, let's start today's session. In this unit, we are going to discuss installation process of pipes and fittings for various plumbing applications."
- "Let's understand in detail."

Explain



- Explain the following topics:
 - Installation process of pipes and fittings
 - Various techniques of installing the water piping – refer PH fig 4.21
 - Different types of supports, hangers, and restraints
 - Metal used in various plumbing materials
 - Electrolysis process – refer PH fig 4.26

Elaborate



- Elaborate on the following topics:
 - Impact of accurate marking on the fabrication process
 - Measuring and marking out processes
 - Different measuring instruments used in plumbing
 - Standard measuring procedures
 - Measurement allowance

Do/Demonstrate



- Demonstrate measuring tool used in plumbing work with the help of YouTube link –
<https://www.youtube.com/watch?v=b16XNDefwms>

Ask



- What are the various techniques for installing the water piping system?
- What is a pipe restraint?
- Which type of metal is used in various plumbing materials?
- What do you understand by Electrolysis Process?
- How does Accurate Marking Impact the Fabrication Process?
- List five measuring equipment used in plumbing work.
- Name standard measuring procedures

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Say



- "We have already discussed different types of pipe fittings and joints in module 2."
- "Can anyone tell me three different types of pipe fittings and joints?"

Explain



- Explain the importance of alignment and balance.

Ask



- List three misalignment issues in pipe fitting.

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 4.3 Testing Procedures

Unit Objectives



At the end of this unit, the participant will be able to:

1. Describe the test procedures to check proper functioning of the pipework installed
2. Describe the checks and procedures to be conducted before commissioning
3. Explain the importance of reporting any difficulties as soon as they arise

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- “In previous session, we have discussed installation process of pipes and fittings for various plumbing applications. Today, we will start with the test procedures to check proper functioning of the pipework installed.”

Explain



- Explain the following topics:
 - Testing of pipeline
 - Pipe inspection, testing & marking
 - Pipeline pre-commissioning procedures checklist – refer PH fig 4.37
 - Importance of reporting

Ask

- What do you understand by metallurgical tests?
- What is the difference between hydrostatic tests and magnetic flux tests?
- What is the pre-commissioning procedure?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise

- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 4.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

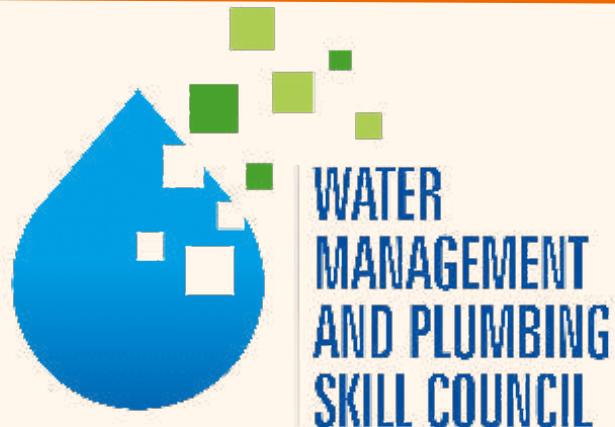
1. Reference given in 4.1.2
2. Reference given in 4.1.6
3. Reference given in 4.2.1
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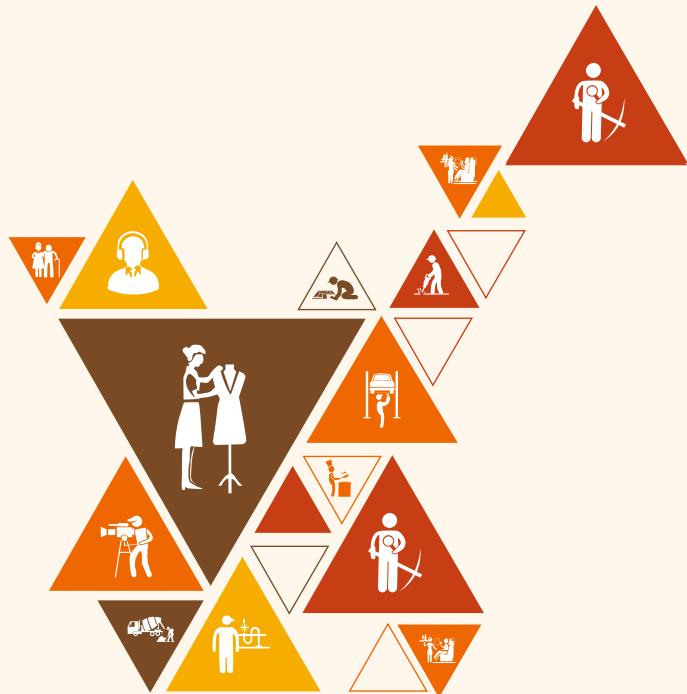
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5. Installation of the Drainage Systems

Unit 5.1- Drainage System



PSC/N0132

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Demonstrate the cutting, bending and assembling of various types of drainage pipes
2. Perform installation of drainage systems
3. Perform the various post-installation activities

Unit 5.1 Drainage System

Unit Objectives



At the end of this unit, the participant will be able to:

1. Discuss the process of wastewater drainage — from a fixture to the drain and then to the environment — across various residential and commercial setups
2. Describe the functions of the components of drainage systems
3. Describe the various types of drainage piping systems and the pipes and fittings used in them
4. Discuss the type of drainage piping systems and its components used in various types of building
5. Explain the characteristics and the application of different pipe fittings, fixture supports and fastening hardware
6. Discuss the fit off, fixing and jointing techniques applicable for drainage pipes
7. Explain the allowances to be made for spring-back, distortion and assembly during marking for fabrication of pipes
8. Explain the procedure of installing various types of drainage systems such as sewage, sullage, stormwater, sub-soil drainage system, drainage for fixtures, etc
9. Identify the trap to be installed as per the type of drainage system
10. List different types of pumps used in sanitary and drainage systems and their applications
11. Discuss the characteristics of the flooring used for installation and levelling of drainage system
12. Explain the importance of conducting post-installation and pre-commissioning tests and checks
13. Describe the various post installation and pre-commissioning tests and checks
14. List the signages to be put up at the site after the plumbing task has been completed

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Welcome and greet the students.
- Begin the session with a brief recapitulation of the previous session.

Say

- "In the last module, we discussed the test procedures to check proper functioning of the pipework installed, the checks and procedures to be conducted before commissioning and the importance of reporting any difficulties as soon as they arise."
- "Today, we are going to learn about drainage system."
- "The drainage system is a well-organized network of drainage pipes that is utilized to dispose of human waste. Copper, CPVC, and HDPE pipes are commonly utilized in drainage systems. Because they are composed of plastic, they are rust-free and lightweight. They require little upkeep and are simple to install. These pipes are inexpensive and practical."

Explain

- Explain the following topics:
 - Introduction to a drainage system – refer PH fig 5.1
 - Different types of drainage systems – refer PH fig 5.2
 - Benefits of drainage system – refer PH fig 5.7
 - Drainage system components – refer PH fig 5.8
 - Various types of drainage piping systems

Elaborate

- Elaborate on the following topics:
 - Types of drainage piping systems and their components
 - Principle of drainage system
 - Drainage system components used in various houses/buildings
 - Characteristics and the application of different pipe fittings, fixture supports and fastening hardware
 - Jointing techniques

Ask



- What is a drainage system?
- List different types of drainage systems.
- What are the benefits of a drainage system?
- List three types of pipes used in the drainage system.
- Name two types of sanitary fittings used in the building.
- What are the principles of a drainage system?
- What do you understand by vent Pipe and waste pipe?
- Where do you use coupling in pipe fitting?
- List three tools used for fastening.
- What are the most common methods of joining pipes?

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Explain



- Explain the following topics:
 - Allowances for fabrication of pipes
 - Installation procedure of various types of drainage systems – refer PH fig 5.33
 - Identification of traps
 - Merits and demerits of intercepting traps
 - Different types of pumps used in sanitary and drainage systems

Elaborate



- Elaborate on the following topics:
 - Characteristics of the flooring used for the installation and levelling of a drainage system – refer PH table 5.1
 - Importance of conducting post- installation and pre-commissioning tests
 - Health and safety signs – refer PH fig 5.39 and table 5.2
 - Maintenance checklist of plumbing – refer PH fig 5.40

Do/Demonstrate

- Demonstrate the drainage system of a building with the help of YouTube link –
<https://www.youtube.com/watch?v=AYYd6-qNIYc>

Ask

- What do you understand by spring back and bend allowance?
- What is the procedure for designing and constructing sewage lines?
- What is traps?
- List two merits and demerits of intercepting traps.
- List two different types of pumps used in sanitary and drainage systems.
- What are the characteristics of good flooring?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 5.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

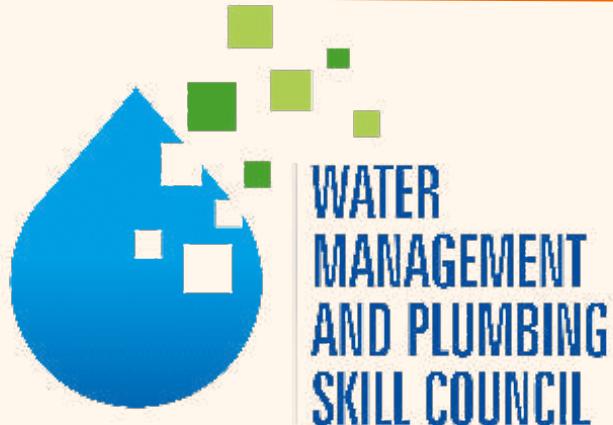
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3. Reference given in 5.1.14
4. Reference given in 5.1.16
5. Reference given in 5.1.19



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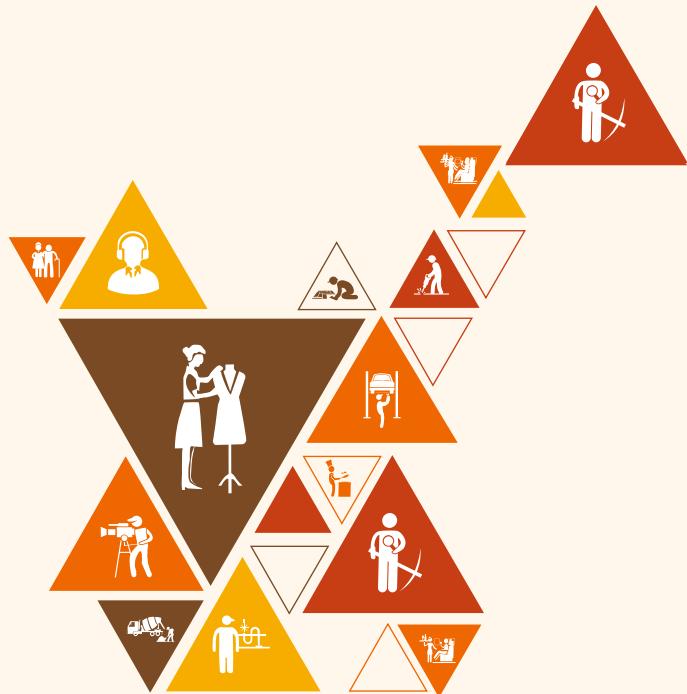
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6. Install Plumbing Fixtures

- Unit 6.1- Types of Plumbing Fixtures
- Unit 6.2- Plumbing Fixtures Installation
- Unit 6.3-Plumbing Standards



PSC/N0133

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Perform the installation of sanitary fixtures, support and related accessories

Unit 6.1 Types of Plumbing Fixtures

Unit Objectives



At the end of this unit, the participant will be able to:

1. Describe the types, characteristics, materials, finishes, uses, limitations, working principle and performance measures of various plumbing related fixtures
2. List the accessories, supports and fasteners required for installing various types of wash basin, sinks, water closet, urinals, bathtubs and showers
3. List the sensor types of fittings and fixtures
4. Explain the basic working principal of sensor faucet and the principles of solenoid ball valves and sensors in touchless system

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Welcome and greet the students.
- Discuss the important topics from the previous two modules.

Say



- Say that, "So, let's start today's session. In this module, we are going to discuss different types of plumbing fixtures."
- "Plumbing fixtures are devices used to disperse cold or hot water or gas in bathroom or kitchen or a specific place. Fixtures are fitted at the place of use in plumbing line. A plumbing fixture may be temporary or permanent, and it need not necessarily be connected to a source of water. All plumbing fixtures are made of a smooth, non-corrosive, non-absorbent materials. These materials are anti-microbial and can be easily cleaned. It may be concluded that fixture is a part that is connected to a plumbing system and carries water in it."
- "Let's find it in detail."

Explain

- Explain the following topics:
 - Introduction to plumbing fixtures
 - Different types of plumbing fixtures – refer PH fig 6.2

Elaborate

- Elaborate on the following topics:
 - Plumbing accessories
 - Sensor types of fittings and fixtures
 - Sensor Tap
 - Solenoid Valve (Fig 6.22)

Activity

Objective	The purpose of this activity is to understand the different types of plumbing fixtures.
Materials required	Laptop/computer
Steps/procedure	<ul style="list-style-type: none"> • This is a skill practice activity. • Show the image of different types of plumbing fixtures through the presentation. • Ask the participants to recognize the plumbing fixture and explain it in two or three lines. • Ask one by one and give them 1-2 minutes to share their answers. • Appreciate the participants who give correct answers.
Conclusion / what has been achieved	This activity will help them to learn the different types of plumbing fixtures.

Ask

- What is a plumbing fixture?
- List three types of plumbing fixtures.
- What is a sensor tap?
- What is the Working Principle of a solenoid valve?

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 6.2 Plumbing Fixtures Installation

Unit Objectives



At the end of this unit, the participant will be able to:

1. Describe the correct practices for installing plumbing fixtures
2. Explain the importance of traps for the sanitary fittings, both deep seal traps and low seal traps
3. Explain the working and use of conservancy, water carriage and the combination system
4. Discuss alignment and elevation techniques used in plumbing systems

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- Say that, "So, let's start today's session. In this unit, we are going to discuss the plumbing fixtures installation."

Explain



- Explain the following topics:
 - Correct practices for installing plumbing fixtures
 - Importance of traps
 - Working and use of conservancy, water carriage and the combination system
 - Alignment and elevation techniques

Ask

- Name two types of water closets.
- Which urinal is used commonly?
- What is the difference between a deep seal trap and a low seal trap?
- What is a conservancy system

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Unit 6.3 Plumbing Standards

Unit Objectives



At the end of this unit, the participant will be able to:

1. List the codes, standards and regulations applicable for the installation of plumbing fixtures

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- Say that, "So, let's start today's session. In this unit, we are going to discuss the plumbing fixtures installation."

Explain



- Explain the following topics:
 - Standards and regulations of plumbing
 - Advantages of working with code and standards

Ask



- List five Indian standards of plumbing.
- What are the advantages of working with code and standards for plumbing?

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 6.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

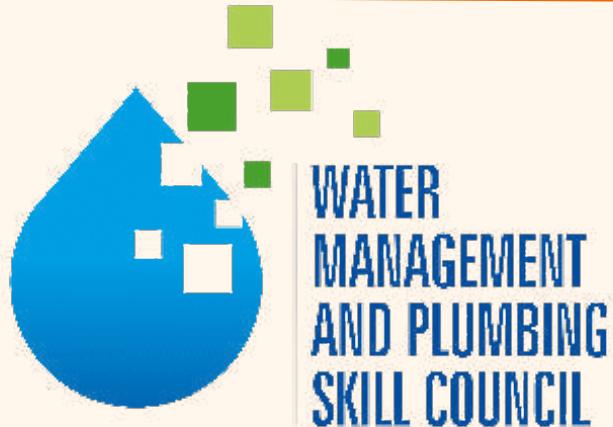
1. Reference given in 6.1.1
2. Reference given in 6.1.4
3. Reference given in 6.1.2
4. Reference given in 6.1.2
5. Reference given in 6.3.1



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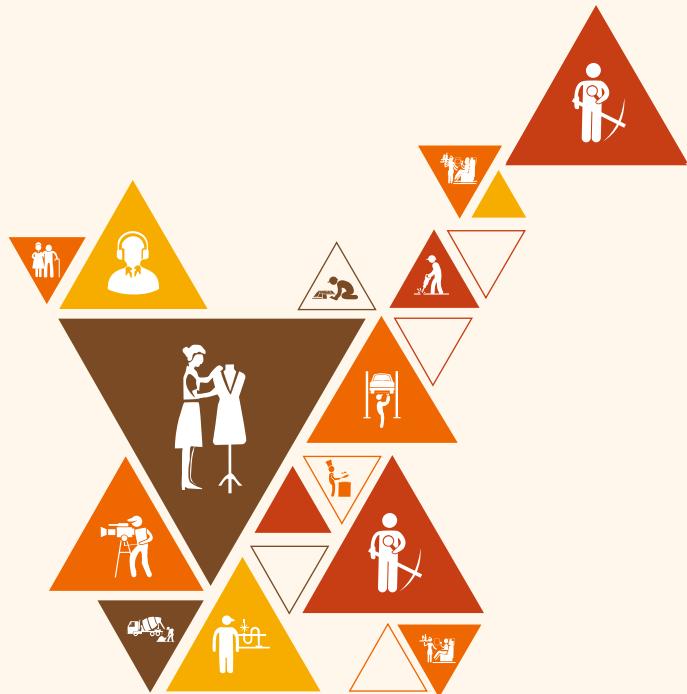
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7. Troubleshooting and Maintenance for Plumbing

Unit 7.1- Plumbing Systems Troubleshooting and Maintenance



PSC/N0142

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Monitor and rectify various editorial issues related to document creation, including deviation, errors, formatting, etc.
2. Evaluate various types of business and technical requirements for code development

Unit 7.1 Plumbing Systems Troubleshooting and Maintenance

Unit Objectives



At the end of this unit, the participant will be able to:

1. List the various types of faults (such as leakages, improper joints, broken sewer; dripping faucets and water lines, etc.) associated with plumbing systems (such as aerators, septic systems etc.)
2. List the testing procedures to be performed to check proper functioning of the fixtures and pipework installed
3. State the remedial and preventive measures for common plumbing problems with respect to fixtures, pipes and fittings
4. Discuss correct practices for troubleshooting and maintenance for plumbing fixtures and systems
5. Explain the application of mechanical and hydraulic principles for clearing blockages
6. List the methods of corrosion protection such as coatings and tape
7. Discuss common organisational policies related to costing, scheduling, procurement and documentation for plumbing maintenance and repair work

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Begin the session with a brief recapitulation of the previous session.

Say

- “In the previous session, we discussed about the codes, standards and regulations applicable to the installation of plumbing fixtures. In today's session, we will cover troubleshooting and maintenance of plumbing systems.”
- “Plumbing troubleshooting is an important first step to making successful repairs. If the right reason hasn't been found, you can waste time and money on futile initiatives. Plumbing issues come in all sorts of shapes and sizes. This can range from minor and inexpensive works such as dripping faucet to enlarged issues such as major pipe leak etc. As said, Prevention is better than cure, so one can minimize the chances of problems from occurring.”
- “Let's understand in detail.”

Explain

- Explain the following topics:
 - Introduction to troubleshooting – refer PH fig 7.1
 - Testing procedures -
 - DWV in plumbing
 - Testing of pipe line

Elaborate

- Elaborate on the following topics:
 - Remedial and preventive measures for common plumbing problems
 - Correct practices for troubleshooting and maintenance
 - Application of mechanical and hydraulic principles for clearing blockages
 - Corrosion protection methods
 - Common organizational policies

Ask



- List four common plumbing faults.
- What is Pneumatic Pressure Test?
- Name three testing methods of pipe line.
- What are the causes and remedial action of Low Water Pressure?
- What are the points to be kept in check for proper maintenance of the pipe?
- What is Hydraulic Cleaning Methods?
- List five common organizational policies for plumbing maintenance and repairs work

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 7.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

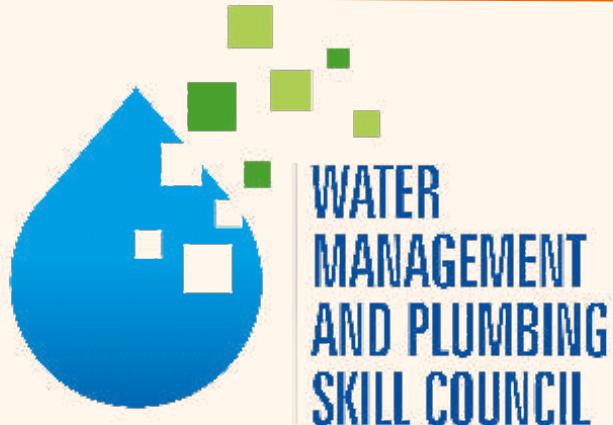
1. Reference given in 7.1.1
2. Reference given in 7.1.2
3. Reference given in 7.1.5
4. Reference given in 7.1.5
5. Reference given in 7.1.6



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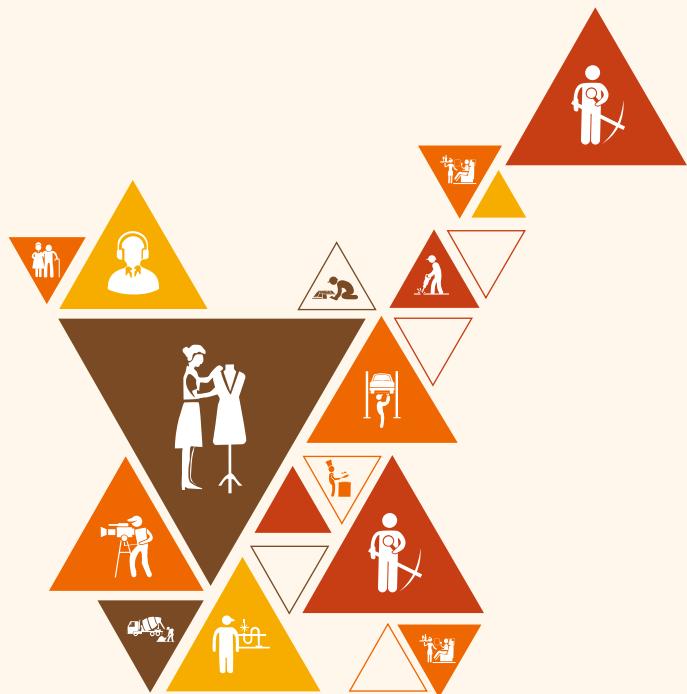


8. Health and safety

Unit 8.1- Dealing with workplace Hazards & Risks

Unit 8.2- Fire Safety Practices

Unit 8.3- First-aid Practices



PSC/N0136

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Describe the various risks and hazards at the workplace and their preventive and corrective measures
2. Employ preventive and corrective measures to protect self and others from common workplace hazards and risk

Unit 8.1 Dealing with Workplace Hazards & Risks

Unit Objectives



At the end of this unit, the participant will be able to:

1. Differentiate between risks and hazards.
2. Discuss the specific safety and health-related problems faced in domestic, commercial and institutional setups.
3. List the various types of hazards (such as physical, fire, chemical compounds and electrical) that could affect the work process.
4. List the various hazardous environments and common hazards that can occur during plumbing installation and maintenance along with their precautions and remedial measures.
5. Discuss the importance of various types of personal protective equipment (PPE).
6. Discuss where the general health and safety equipment commonly is kept at the workplace.
7. Explain the various types of safety signs and their significance in the work process.

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Begin the session with a brief recapitulation of the previous session.

Say



- “In the previous session, we learned troubleshooting and maintenance of plumbing systems. Next, we shall understand how to deal with workplace hazards and risks.”

Explain



- Explain the following topics:
 - Safety hazards and risks – refer PH fig 8.1
 - Difference between hazard and risk – refer PH table 8.1
 - Types of hazards – refer PH fig 8.2
 - Common hazards at the workplace – refer PH fig 8.3
 - Remedial action procedure

Elaborate



- Elaborate on the topics below:
 - Safety and health-related problems – refer PH fig 8.4
 - Personal protective equipment and its types – refer PH fig 8.6
 - Health and safety equipment
 - Maintaining PPE – refer PH fig 8.14
 - Warning and safety signages – refer PH table 8.2

Notes for Facilitation



- Conduct a team activity to let the participants identify hazards at the workplace and prepare a safety checklist

Team Activity



Objective	The purpose of this activity is to identify different workplace hazards and prepare a safety checklist
Materials required	Cards/Thick paper, pencil, pen, Whiteboard, Exhibits on workplace hazards
Steps/procedure	<ul style="list-style-type: none"> Divide the participants into groups of two. Ask the participants to refer to exhibits on workplace hazards and develop a safety checklist to prevent those hazards. Give them enough time to come up with a list. Instruct the groups to choose one representative to come to the board and present the list.
Conclusion / what has been achieved	This activity helps the participants to understand the different hazards and their safety measures.

Ask



- What is the difference between hazard and risk?
- List common hazards at the workplace.
- Name three safety and health-related problems.
- List three types of PPE.
- What is the use of earmuffs?

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in unit 8.1.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

1. Hint - Refer to section 8.1.1
2. Hint - Refer to section 8.1.6
3. Hint - Refer to section 8.1.5
4. Hint - Refer to section 8.1.7

Answers to Questions II.

1. Hazards
2. workplace safety sign
3. Employers
4. noise

Answers to Questions III.

1. Safety
2. All of the above
3. Face Shield

Unit 8.2 Fire Safety Practices

Unit Objectives



At the end of this unit, the participant will be able to:

1. Discuss various causes of fire and precautionary activities to prevent the fire accident.
2. List the different techniques that employ various methods (such as using extinguishers, water hose, sprinklers, sand bucket, wet blanket, etc.) and materials such as water, powder, foam, CO₂, fire extinguishing chemical, sand, blanket, etc. used for extinguishing fire as per the type (as per class A, B, C and D).
3. Describe rescue techniques applied during a fire hazard or electrocution.

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- "In the last unit, we have discussed how to deal with workplace hazards and risks."
- "Now, we will try to understand fire safety practices."
- "Due to the number of individuals in the workplace and the various elements that could enhance the risk of a fire, the proper precautions must be taken to lower these risks."

Explain



- Explain the following topics:
 - Causes and prevention of fire - refer PH fig 8.15 and 8.16
 - Do's and don'ts of preventing fire - refer PH table 8.3
 - Types of fire and fire extinguishers - refer PH fig 8.17 and 8.18
 - Fire safety

Ask



- List any two do's and don'ts to prevent the fire.
- Which type of fire and fire extinguisher was used in class -B fire?
- Name three types of fire extinguishers.
- What is fire safety?

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in unit 8.2.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:

Answers to Questions I.

1. Electrical fires
2. everyone
3. Follow the emergency instruction
4. any doubts about fighting

Answers to Questions II.

1. Hint - Refer to section 8.2.2
2. Hint - Refer to section 8.2.2
3. Hint - Refer to section 8.2.1
4. Hint - Refer to section 8.2.2
5. Hint - Refer to section 8.2.1

Unit 8.3 First-aid Practices

Unit Objectives



At the end of this unit, the participant will be able to:

1. Discuss appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, minor burns, poisoning, eye injuries, etc.
2. Discuss potential injuries and health problems associated with incorrect handling of tools and equipment.

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- "In the last unit, we discussed fire safety practices."
- "Now, we will try to understand first-aid practices."
- "First aid is the assistance given to a person experiencing an unexpected illness or injury to save a life, prevent the condition from worsening, or promote recovery."

Explain



- Explain the following topics:
 - First-aid and its different procedures - refer PH table 8.4
 - Safety and health issues while handling tools and equipment - refer PH fig 8.20

Say



- "Let us now participate in another activity to understand the concept of first aid and medical assistance."

Team Activity



Objective	The purpose of this activity is to learn the concept of first aid and medical assistance.
Materials required	Whiteboard, Marker for scores
Steps/procedure	<ul style="list-style-type: none"> This activity will be in the form of “Role Play”. The trainer will ask the trainees to form pairs. Each pair will take part in the role play. In the first round, one participant from each group will play the role of an injured worker and the other participant will help him/ her with medical assistance. The person playing the role of the medical assistant will follow the proper procedure of summoning medical help and applying first aid. He/ she should document the incident and prepare a report to produce to the supervisor. In the next round, the roles of the participants will be swapped. The participant who played the patient will become an employee who will provide medical assistance. The other set of participants will become the injured in need of medical assistances.
Conclusion / what has been achieved	This activity helps the participants to perform first-aid and medical assistance during emergency situations.

Notes for Facilitation



- Jot down the crucial points on the whiteboard as the students speak.
- Share your inputs and insight, to encourage the students and add onto what they talk about.
- Ensure that all students participate in the class.

Ask



- What do you understand by first-aid?
- What is the first-aid procedure for bleeding?
- List five safety and health issues while handling tools and equipment.

Notes for Facilitation



- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize



- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



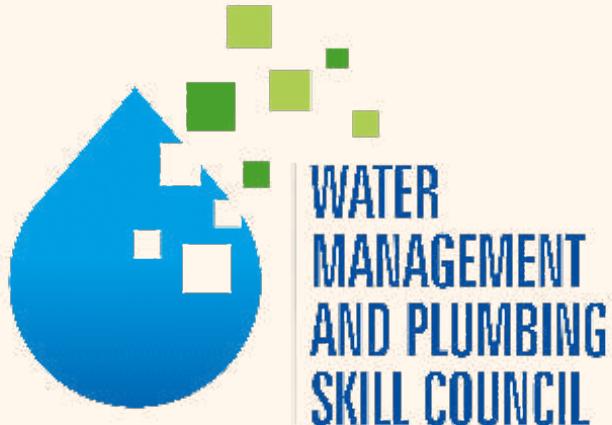
- Instruct the trainees to open their Participant Handbook and complete the exercise given in unit 8.3.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:
 - Answers to Questions I.
 1. Hint - Refer to section 8.3.1
 2. Hint - Refer to section 8.3.2



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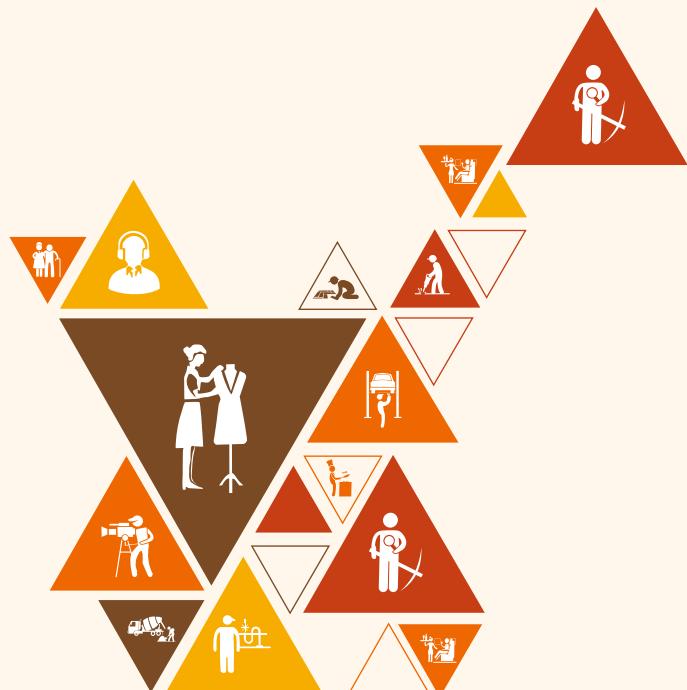


9. Working Effectively with Others

Unit 9.1- Work and Communicate Effectively at Workplace

Unit 9.2- Fire Safety Practices

Unit 9.3- Uphold Social Diversity at the Workplace



PSC/N0137

Key Learning Outcomes



At the end of this module, the participant will be able to:

1. Apply effective communication techniques
2. Demonstrate teamwork and a positive attitude
3. Demonstrate responsible and disciplined behaviour

UNIT 9.1 Work and Communicate Effectively at Workplace

Unit Objectives



At the end of this unit, the participant will be able to:

1. State the importance of effective communication in the workplace.
2. Describe the typical organisational hierarchy and the various categories of people that one is required to communicate and coordinate with.
3. List various components of effective communication.
4. State the importance of using inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive.
5. State the importance of teamwork and developing effective working relationships for professional success.
6. Discuss the importance and ways of managing interpersonal conflict effectively.
7. Discuss how to express and address grievances appropriately and effectively.
8. State the importance of ethics and discipline for professional success.
9. Explain what constitutes disciplined behaviour and integrity for a working professional.
10. Discuss the legislation, standards, policies, and procedures relevant to own employment and performance conditions.
11. Discuss importance of dress code in organisations.

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Begin the session with a brief recapitulation of the previous session.

Say

- “In the previous session we discussed the basic first-aid practices. Let us now understand the importance of effective communication.”

Say

- “It is equally important to keep a healthy relationship with colleagues and co-workers. A relationship built on trust, excellent, clear communication, polite language, and appropriate behavior helps you succeed at work.”
- “Today, we will discuss effective ways of communicating with colleagues.”
- “Let start with a group activity.”

Explain

- Explain the following topics:
 - Significance of effective communication - refer PH fig 9.1
 - Communication process - refer PH fig 9.2
 - Elements of effective communication - refer PH fig 9.3
 - Communication barriers – refer PH table 9.1
 - Inclusive languages – refer PH fig 9.4
 - Organizational structure and its types – refer PH fig 9.5

Group Activity**Objective**

The purpose of this activity is to help the trainees understand the need for effective communication

Materials required

Paper, Pen

Objective	The purpose of this activity is to help the trainees understand the need for effective communication
Materials required	Paper, Pen
Steps / procedure	<ul style="list-style-type: none"> Divide the class into teams of 4 or 5. Participants in each team should sit in a circle, facing each other. A member from each team is given the folded sheet with a message written on it. The member with the sheet is asked to whisper and pass the message written on the sheet into the person's ear on their right. This process is repeated, and the last person in the circle has to write down what he has heard on the blank piece of paper, fold it and hold on to it. At the end of the activity, the last person will say it loud, and the final message is compared to the original.
Conclusion / what has been achieved	This activity will highlight how communication can be distorted, or some elements can be lost in the process of communication.

Ask

- How accurate was the final message in the end?
- Did you confirm before whispering and check the accuracy of the message?
- How easy is it to misinterpret or change the meaning of a piece of information?

Notes for Facilitation

- Note down the responses on the whiteboard given by the students.

Notes for Facilitation



- Note down the responses on the whiteboard given by the students.

Elaborate



- Elaborate on the following topics:
 - Significance of effective communication with team members (Fig 9.6 and 9.7)
 - Managing and coordinating with the team (Fig 9.8)
 - Individual and team goals and benefits (Fig 9.9)

Group Activity



Objective	The purpose of this activity is to understand the need for effective communication with colleagues.
Materials required	Ball, bag, or any object and cloth to blindfold
Steps / procedure	<ul style="list-style-type: none"> • Divide the participants into groups of 2. • Place objects like balls or bags on the ground and then have one person in each pair put on a blindfold. • The other person must lead their partner to the object using only verbal instructions. • The person who is blindfolded isn't allowed to speak. • To make it even more complicated, the number of instructions should be limited to four or five.
Conclusion / what has been achieved	This activity will highlight the need for clarity, listening capability, and interpreting what is said, trusting a colleague, and following instructions - properly in the process of communication.

Say

- “To work effectively and efficiently, building trust with colleagues is essential.”
- “Correct communication and following rules always help to maintain a healthy relationship with co-workers.”
- “A trustworthy relationship can be built on good and clear communication, polite language, appropriate behavior.”

Ask

- What is effective communication?
- List all elements of effective communication.
- How do psychological barriers affect communication in the workplace?
- Name two types of organizational structure.
- What do you understand by individual and team goals?

Notes for Facilitation

- Note down the responses on the whiteboard given by the students.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in Module 6.1.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:
 - Answers to Questions I.
 - a. Effective communication
 - b. Trust, clear communication and appropriate behavior
 - c. Communication
 - d. Communication
 - e. Coordination
 - f. Communication policies, productivity
 - g. Etiquette
 - h. Socio-Cultural Barriers
 - i. Feedback
 - j. Behavior
 - Answers to Questions II.
 - 1. Specific, measurable, actionable, realistic, and timely
 - 2. Customer–friend
 - 3. Irrelevant
 - 4. Hint - Refer to section 9.1.7
 - 5. Hint - Refer to section 9.1.1
 - 6. Hint - Refer to section 6.1.3
 - 7. Hint - Refer to section 6.1.5

UNIT 9.2 Work in a Disciplined and Ethical Manner

Unit Objectives



At the end of this unit, the participant will be able to:

1. Discuss the importance and ways of managing interpersonal conflict effectively.
2. Discuss how to express and address grievances appropriately and effectively.
3. State the importance of ethics and discipline for professional success.
4. Explain what constitutes disciplined behaviour and integrity for a working professional.
5. Discuss the legislation, standards, policies, and procedures relevant to own employment and performance conditions.
6. Discuss importance of dress code in organisations.

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Do



- Begin the session with a brief recapitulation of the previous session.

Say



- “In the previous session, we learned about the importance of effective communication at work place.”
- “Let’s discuss the importance of understanding how to work in a disciplined and ethical manner.”

Explain

- Explain the following topics:
 - Importance of work ethics and discipline – refer PH fig 9.10
 - Tips for maintaining discipline at the workplace – refer PH fig 9.11
 - Managing conflicts at the workplace – refer PH fig 9.12
 - Grievance management

Elaborate

- Elaborate on the topics below:
 - Disciplined behaviour and integrity (Fig 9.14)
 - Character traits related to integrity (Fig 9.15)
 - Importance of dress code (Fig 9.16)

Ask

- What is a grievance?
- Why dress code is so important in an organization?
- List five tips to manage conflicts.
- What do you understand by professional code?

Notes for Facilitation

- Note down the responses on the whiteboard given by the students.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in unit 9.2.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:
 - Answers to Questions I.
 1. Hint - Refer to section 9.2.1
 2. Hint - Refer to section 9.2.1
 3. Hint - Refer to section 9.2.2
 4. Confidentiality is important for legal and reputational reasons, but it is also important because future employment may be contingent on it.
 5. Hint - Refer to section 9.1.3

UNIT 9.3 Work and Communicate Effectively at Workplace

Unit Objectives



At the end of this unit, the participant will be able to:

1. Explain the impact of gender, disability, cultural and age-related biases, stereotyping at the workplace and in society.
2. List the different types of disabilities and the challenges faced by persons with disability (PWD).
3. State the laws, acts, provisions and schemes defined for PwD by the Government bodies.
4. Discuss gender, disability and cultural biases, stereotypes and impact on others
5. Discuss basic gender concepts such as gender power relations, gender roles, access and control, gender sensitivity, gender equity and equality.
6. Discuss the importance of gender sensitivity and equality.
7. List the indicators of harassment and discrimination based on gender, disability, caste, religion or culture that occurs at a typical workplace.
8. State general organisational norms and procedures applied to protect against harassment and discrimination.
9. Discuss the importance of reporting incidents of harassment and discrimination to appropriate authority.

Resources to be Used



- Participant Handbook
- Paper, Pens, Notepad, Chart paper
- Computer, Projector
- Whiteboard, Marker, and Duster

Say



- "In the previous unit, we gained an understanding of how to work in a disciplined and ethical manner."
- "In today's session, we will discuss about uphold social diversity at the workplace."

Explain



- Explain the following topics:
 - Sensitivity for a person with disability
 - Communicating and interacting with PwD – refer PH fig 9.17
 - Gender-based issues in the workplace – refer PH fig 9.18
 - Gender sensitivity

Elaborate



- Elaborate on the topics below:
 - Rights and duties at the workplace (Fig 9.19)
 - Different types of disabilities and challenges faced by PwD (Fig 9.20 and 9.21)
 - PwD policies (Fig 9.22)

Group Activity



Objective	The purpose of this activity is to learn the laws and regulations related to PWD issued by the government.
Materials required	N/A
Steps / procedure	<ul style="list-style-type: none"> • This activity is in the form of an “elocution session.” • The Trainer will divide the class into 4 groups. • Each group will be assigned one law related to PWD compliance issued by the government of India (as discussed in the unit). • The groups will come in front of the class one by one and explain the key features and advantages of the law assigned to them. • The Trainer will supervise the session. • The best group will be appreciated by the class.
Conclusion / what has been achieved	This activity helps the participants to understand the laws and regulations related to PWD compliance issued by the government of India.

Ask

- How do you communicate and interact with PwD?
- List five general-based issues at the workplace.
- What is gender sensitivity?
- List rights and duties at the workplace for the PwD.
- Mention different types of disabilities.
- Name 3 policies of PwD.

Notes for Facilitation

- Allow one or two students to answer the questions.
- Write down the correct answer on the board.

Summarize

- Summarize the session.
- Prepare a list of participant's doubts if they have any. Encourage them to ask questions.
- Answer their queries.

Exercise



- Instruct the trainees to open their Participant Handbook and complete the exercise given in unit 9.3.
- Ensure that the participants have opened the correct page for the activity.
- Give them 20 minutes to complete the exercise.
- Exercise Hints:
 - Answers to Questions I.
 1. a) Hint - Refer to section 9.2.3
 - b) Hint - Refer to section 9.3.3
 - c) Hint - Refer to section 9.3.1
 - d) Hint - Refer to section 9.3.2
 - e) Hint - Refer to section 9.2.3
 - 2. i) Disparity in promotions
 - ii) While talking with people having difficulty speaking
 - iii) Equal access to benefits
 - iv) With hearing disability person to get his attention
 - v) Gender-specific social groups

QR Code

Scan the QR Code to watch the related video



<https://www.youtube.com/watch?v=QGHBq5OEsbM>

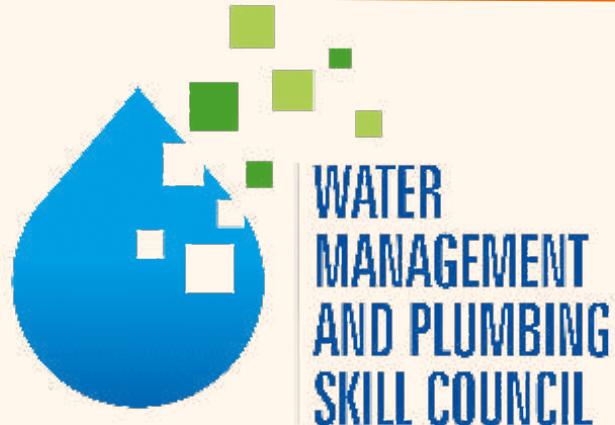
Effective communication at workplace



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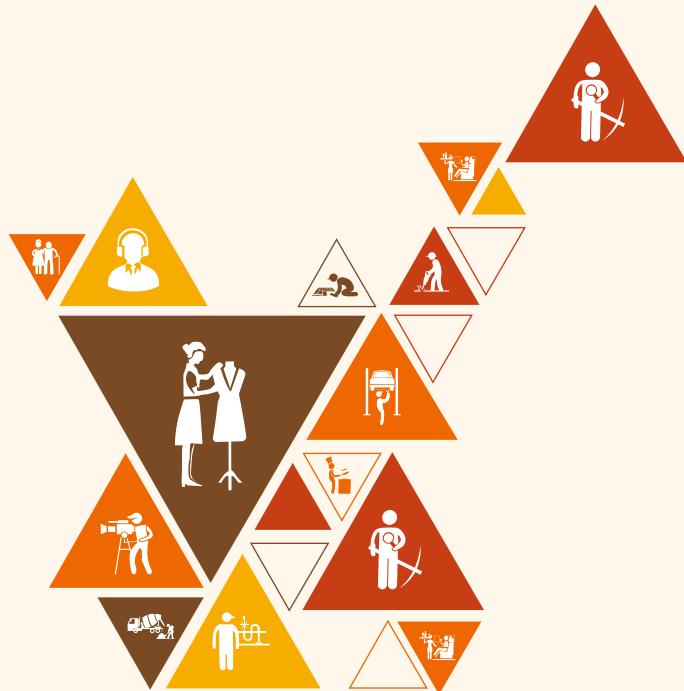
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10. Employability Skills



<https://eskillingindia.org/NewEmployability>



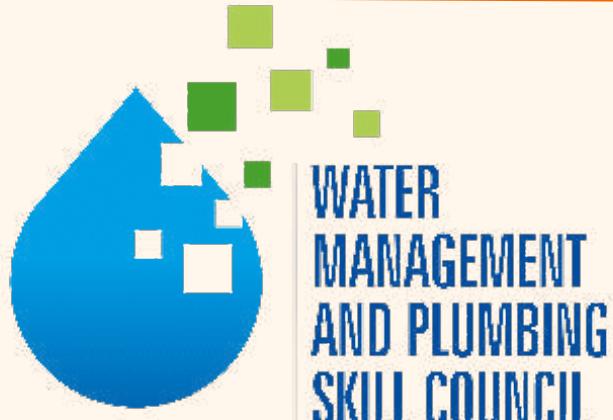
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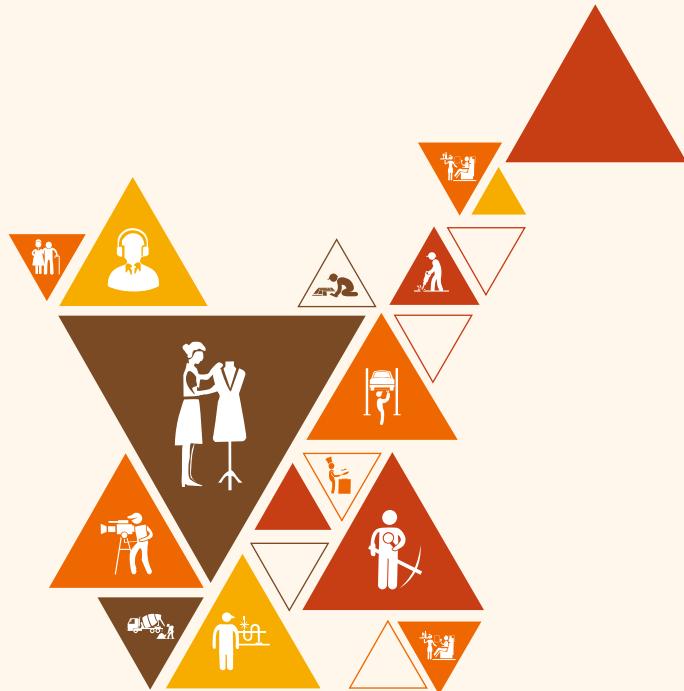


11. Annexure

Annexure I - QR Codes

Annexure II - Training Delivery plan

Annexure III - Assessment Criteria



Annexure I - QR Code

Serial No.	Module No.	Unit Number	Topic Name	Page No.	URL	QR Code
1.	Introduction to the sector and the job role	Unit 1.1 Plumbing Industry-An Introduction	Overview of the Plumbing Industry	8	https://youtu.be/Rfz1zVu8VaQ	
			Scope of Employment in the Contracting Segment		https://youtu.be/Fq7FlsuNCQI	
		Unit 1.2 - Water Flow Process	Plumbing Cycle		https://youtu.be/-bvZCdMecEo	
			Various Types of Plumbing Systems in Residential and Commercial Setups		https://youtu.be/8jxRn-T_LCs	
2.	Basics of Plumbing	Unit 2.1 Introduction to Plumbing	Process of Mains Supply of Water and Drainage	21	https://youtu.be/wpQD4XzjKDM	
		Unit 2.2 Plumbing Materials	Pipe Materials		https://youtu.be/1YQ9dpa6_lw	
			.Various Pipe Fit-Off Processes		https://youtu.be/q33WAVmOK5o	

Annexure I - QR Code

Serial No.	Module No.	Unit Number	Topic Name	Page No.	URL	QR Code
		Unit 2.3 Plumbing Tools and Equipment	Different Types of Plumbing Tools and Equipment	21	https://youtu.be/GfNUaVFmxaY	
3.	Basic Tasks to Facilitate Plumbing Work	Unit 3.2 - Handling of Plumbing Materials	Safe use of Plumbing Tools	29	https://youtu.be/AI9Yly-86v8	
9.	Working Effectively With Others	Unit 9.1 - Work and Communicate Effectively at Workplace	Effective communication at workplace	86	https://www.youtube.com/watch?v=QGHBq5OEsbM	

Annexure II

Training Delivery Plan

Training Delivery Plan			
Program Name	Plumber - General		
Qualification Pack, Name and Reference ID	Plumber - General, PSC/Q0104; v4.0		
Version No.	4.0	Version Update Date	27/05/2021
Minimum Educational Qualification and Experience	<p>12th grade Pass OR Pursuing 3rd year of 3-year diploma after 10th OR 10th grade pass with 1-year NTC plus CITS (or NAC) OR 8th grade pass with 2-year NTC plus 1-year NAC plus 1-year CITS OR Previous relevant Qualification of NSQF Level (3 as Assistant Plumber – General with 8th Grade Pass) with 2 Years of experience Relevant</p>		
Pre-requisites to Training (If any)	NA		
Training Outcome	<p>After completing this programme, trainee will be able to:</p> <ol style="list-style-type: none"> 1. Prepare the work area and piping materials for plumbing. 2. Install water supply system, drainage pipes, fittings and components, and plumbing fixtures. 3. Identify and resolve faults in domestic/commercial plumbing systems and fixtures. 4. Adhere to health and safety practices at the workplace 5. Work in an effective manner 6. Optimize resource utilization at the workplace 		

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodology	Training Tools/Aids	Duration in Hours
1.	Introduction to the sector and the job role	Plumbing Industry-An Introduction	1. Outline the overview of the plumbing industry 2. Discuss the scope of employment in the contracting segment of the industry 3. List the key responsibilities of a plumber general 4. List the key responsibilities of a plumber general	PSC/N0 130	Interactive Lecture in the Class, Activity	Participant handbook, Projector, Whiteboard , Marker, and Duster	T: 2 P: 0
2.	Basics of Plumbing	Introduction to Plumbing	1. Recall the various types of symbols and terminologies and titles used in plumbing installation 2. Describe the standards applicable (such as ISI) to piping installations in the plumbing industry 3. State the importance of accuracy in measurements and calculations with respect to plumbing work	PSC/N0 130	Interactive Lecture in the Class, Activity	Participant handbook, Projector, Whiteboard , Marker, and Duster	T: 1 P: 0

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
		Plumbing Materials	1.State the names, grades, characteristics and applications of different pipes, pipe fittings, fixture supports, fastening hardware and materials such as sealants, adhesives, plumber's putty, marking materials and cement used in plumbing		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 0
		Plumbing Tools and Equipment	1.Identify various plumbing tools and equipment correctly 2.List the lifting/load shifting equipment including ladders, height scaffolding, elevated work platforms, hand trolleys, hoists and jacks used at plumbing installation sites		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 0

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodology	Training Tools/Aids	Durati on in Hours
		Properties of Water	1.Explain the properties of water, including pressure and flow rates. Describe processes such as capillary action and thermal expansion in plumbing.		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 0
3	Prepare for Plumbing Installations and Maintenance	Plumbing Drawings	1.Explain the types and purpose of plumbing drawings	PSC/ N0130	Interactive Lecture in the Class, Activity	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 2.5
		Plumbing Drawings (Contd.)	2.Discuss the purpose of work schedules, work plans, charts, work bulletins, memos and the work-related information that can be obtained from them		Interactive Lecture in the Class, Activity	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 5
		Plumbing Drawings (Contd.)	3.Describe the steps involved in collection of plumbing materials as per type, size and quantities based on specifications from drawings and plans		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 5

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
		Handling of Plumbing Materials	1. Explain the factors to be kept in mind for safe handling, storage and transport of various plumbing materials		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 5
		Handling of Plumbing Materials (Contd.)	2. List measures to avoid air and water contamination, erosion and sedimentation		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T:0.5 P:2.5
		Handling of Plumbing Materials (Contd.)	3. Discuss the risk and impact of not following defined procedures/work instructions		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 5
		Handling of Plumbing Materials (Contd.)	4. Outline the process of reporting and handling hazards at the workplace		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 5

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolo gy	Training Tools/Aids	Durati on in Hours
		Installation Process (Contd.)	<p>1.Explain the properties of the different types of supports, hangers and restraints used in water supply plumbing systems</p> <p>2.List the characteristics of metal used in various plumbing materials and the fabrication methods compatible with them</p> <p>3. Explain the process of electrolysis and problems associated with the use of dissimilar metals</p> <p>4.State the impact of accurate marking on the fabrication process work time and finished work quality</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Installation Process (Contd.)	<p>1. Describe the measuring and marking out processes for fabrication of pipe</p> <p>2. List standard measuring procedures such as center-to-center, end-to-center, and end-to-end</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
4	Installation of water supply systems	Water Distribution System	<p>1.Explain the process of water distribution in municipal, residential, and private setups</p> <p>2.List the process and various components of a water supply and distribution system</p> <p>3.State the piping system layouts for various types of water supply systems</p>	PSC/ N013 1	Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Installation Process	<p>1.Outline the installation process of pipes and fittings for various plumbing applications</p> <p>2.Describe the various techniques of installing the water piping system in a building such as over ground piping, underground piping, piping embedded in concrete, concealed piping, wall mounted</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
		Installation Process (Contd.)	<p>1.State the allowances to be considered in measurements and markings during the fabrication of pipes</p> <p>2.List the types, characteristics and the application of different pipe fittings and fixture supports</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Installation Process (Contd.)	<p>1.Discuss the various fixing and jointing techniques for water supply piping installations</p> <p>2.Explain the principles underlying various fit-off processes</p> <p>3.State the importance of ensuring alignment and balance in piping installations</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Testing Procedures	1.Describe the test procedures to check proper functioning of the pipework installed		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolo gy	Training Tools/Aids	Durati on in Hours
		Testing Procedures (Contd.)	2.Describe the checks and procedures to be conducted before commissioning		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard , Marker, and Duster	T: 2 P: 6
		Testing Procedures (Contd.)	3.Explain the importance of reporting any difficulties as soon as they arise		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard , Marker, and Duster	T: 2 P: 6
5	Installation of the Drainage Systems	Drainage System	1.Discuss the process of wastewater drainage — from a fixture to the drain and then to the environment — across various residential and commercial setups 2.Describe the functions of the components of drainage systems	PSC/ N013 2	Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard , Marker, and Duster	T: 2 P: 6
		Drainage System (Contd.)	1.Describe the various types of drainage piping systems and the pipes and fittings used in them 2.Discuss the type of drainage piping systems and its components used in various types of building		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard , Marker, and Duster	T: 2 P: 6

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolo gy	Training Tools/Aids	Durati on in Hours
		Drainage System (Contd.)	1.Explain the characteristics and the application of different pipe fittings, fixture supports and fastening hardware 2.Discuss the fit off, fixing and jointing techniques applicable for drainage pipes		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Drainage System (Contd.)	1.Explain the allowances to be made for spring-back, distortion and assembly during marking for fabrication of pipes		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Drainage System (Contd.)	1.Explain the procedure of installing various types of drainage systems such as sewage, sullage, stormwater, sub-soil drainage system, drainage for fixtures, etc		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Drainage System (Contd.)	1.Identify the trap to be installed as per the type of drainage system and their applications		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Drainage System (Contd.)	1.List different types of pumps used in sanitary and drainage systems		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
		Drainage System (Contd.)	1.Discuss the characteristics of the flooring using for installation and levelling of drainage system		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Drainage System (Contd.)	1.Explain the importance of conducting post-installation and pre-commissioning tests and checks		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
		Drainage System (Contd.)	1.Describe the various post installation and pre-commissioning tests and checks 2.List the signages to be put up at the site after the plumbing task has been completed		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 6
6	Installation of the Plumbing Fixtures	Types of Plumbing Fixtures	1.Describe the types, characteristics, materials, finishes, uses, limitations, working principle and performance measures of various plumbing related fixtures	PSC/N0133	Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 4

Sl. No.	Module Name	Session Name	Session Objectives	NOS Ref.	Methodology	Training Tools/Aids	Duration in Hours
		Types of Plumbing Fixtures (Contd.)	1. List the accessories, supports and fasteners required for installing various types of wash basin, sinks, water closet, urinals, bathtubs and showers		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 5
		Types of Plumbing Fixtures (Contd.)	1. List the sensor types of fittings and fixtures		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 4
		Types of Plumbing Fixtures (Contd.)	1. Explain the basic working principal of sensor faucet and the principles of solenoid ball valves and sensors in touchless system		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 5
		Plumbing Fixtures Installation	1. Describe the correct practices for installing plumbing fixtures		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 5
		Plumbing Fixtures Installation (Contd.)	1. Explain the importance of traps for the sanitary fittings, both deep seal traps and low seal traps		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 4

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolo gy	Training Tools/Aids	Durati on in Hours
		Plumbing Fixtures Installation (Contd.)	1.Explain the working and use of conservancy, water carriage and the combination		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 5
		Plumbing Fixtures Installation (Contd.)	1. Discuss alignment and elevation techniques used in plumbing systems		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 4
		Plumbing Standards	1.List the codes, standards and regulations applicable for the installation of plumbing fixtures		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 4
7	Troubleshooting and Maintenance for Plumbing	Plumbing Systems Troubleshooting and Maintenance	1.List the various types of faults (such as leakages, improper joints, broken sewer; dripping faucets and water lines, etc.) associated with plumbing systems (such as aerators, septic systems etc.)	PSC/N 0142	Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 5
		Plumbing Systems Troubleshooting and Maintenance (Contd.)	1.List the testing procedures to be performed to check proper functioning of the fixtures and pipework installed		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 5

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
		Plumbing Systems Troubleshooting and Maintenance (Contd.)	1.State the remedial and preventive measures for common plumbing problems with respect to fixtures, pipes and fittings		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 5
		Plumbing Systems Troubleshooting and Maintenance (Contd.)	1. Discuss correct practices for troubleshooting and maintenance for plumbing fixtures and systems		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 5
		Plumbing Systems Troubleshooting and Maintenance (Contd.)	1.Explain the application of mechanical and hydraulic principles for clearing blockages		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 5
		Plumbing Systems Troubleshooting and Maintenance (Contd.)	1.List the methods of corrosion protection such as coatings and tape		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 7.5
		Plumbing Systems Troubleshooting and Maintenance (Contd.)	1.Discuss common organisational policies related to costing, scheduling, procurement and documentation for plumbing maintenance and repair work		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 7.5

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
8	Apply Health and Safety Practices at the Workplace	Dealing with Workplace Hazards & Risks	<p>1.Differentiate between risks and hazards.</p> <p>2.Discuss the specific safety and health-related problems faced in domestic, commercial and institutional setups.</p> <p>3.List the various types of hazards (such as physical, fire, chemical compounds and electrical) that could affect the work process.</p> <p>4.List the various hazardous environments and common hazards that can occur during plumbing installation and maintenance along with their precautions and remedial measures.</p>	PSC/ N013 6	Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 4 P:1.25

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolog y	Training Tools/Aids	Durati on in Hours
		Dealing with Workplace Hazards & Risks (Contd.)	<p>1. Discuss the importance of various types of personal protective equipment (PPE).</p> <p>2. Discuss where the general health and safety equipment commonly is kept at the workplace.</p> <p>3. Explain the various types of safety signs and their significance in the work process.</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P:1.25
		Fire Safety Practices	<p>1. Discuss various causes of fire and precautionary activities to prevent the fire accident.</p> <p>2. List the different techniques that employ various methods (such as using extinguishers, water hose, sprinklers, sand bucket, wet blanket, etc.) and materials such as water, powder, foam, CO₂, fire extinguishing chemical, sand, blanket, etc. used for extinguishing fire as per the type (as per class A, B, C and D).</p> <p>3. Describe rescue techniques applied during a fire hazard or electrocution.</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P:1.25

Sl. No .	Module Name	Session Name	Session Objectives	NO S	Methodology	Training Tools/Aids	Durati on in Hours
		First-aid Practices	<p>1. Discuss appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, minor burns, poisoning, eye injuries, etc.</p> <p>2. Discuss potential injuries and health problems associated with incorrect handling of tools and equipment.</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P:1.25
9	Work Effectively With Others	Work and Communicate Effectively at Workplace	<p>1. State the importance of effective communication in the workplace.</p> <p>2. Describe the typical organisational hierarchy and the various categories of people that one is required to communicate and coordinate with.</p> <p>3. List various components of effective communication.</p> <p>4. State the importance of using inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive.</p> <p>5. State the importance of teamwork and developing effective working relationships for professional success.</p> <p>6. Discuss the importance and ways of managing interpersonal conflict effectively.</p> <p>7. Discuss how to express and address grievances appropriately and effectively.</p> <p>8. State the importance of ethics and discipline for professional success.</p>	PSC /NO 137	Interactive Lecture in the Class, Activity	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 5 P: 2

Sl. No	Module Name	Session Name	Session Objectives	NOS Ref.	Methodology	Training Tools/Aids	Duration in
		Work and Communicate Effectively at Workplace (Contd.)	<p>9.Explain what constitutes disciplined behaviour and integrity for a working professional.</p> <p>10.Discuss the legislation, standards, policies, and procedures relevant to own employment and performance conditions.</p> <p>11.Discuss importance of dress code in organisations.</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 3
		Work in a Disciplined and Ethical Manner	<p>1.Discuss the importance and ways of managing interpersonal conflict effectively.</p> <p>2.Discuss how to express and address grievances appropriately and effectively.</p> <p>3.State the importance of ethics and discipline for professional success.</p> <p>4.Explain what constitutes disciplined behaviour and integrity for a working professional.</p> <p>5.Discuss the legislation, standards, policies, and procedures relevant to own employment and performance conditions.</p> <p>6.Discuss importance of dress code in organisations.</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2.5 P: 1.5

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Methodolo gy	Training Tools/Aids	Durati on in Hours
		Uphold social diversity at the workplace	<p>1.Explain the impact of genderdisability, cultural , and age-related biases, stereotyping at the workplace and in society.</p> <p>2.List the different types of disabilities and the challenges faced by persons with disability (PWD).</p> <p>3.State the laws, acts, provisions and schemes defined for PwD by the Government bodies.</p> <p>4.Discuss gender, disability and cultural biases, stereotypes and impact on others</p> <p>5.Discuss basic gender concepts such as gender power relations, gender roles, access and control, gender sensitivity, gender equity and equality.</p> <p>6.Discuss the importance of gender sensitivity and equality.</p> <p>7.List the indicators of harassment and discrimination based on gender, disability, caste, religion or culture that occurs at a typical workplace.</p> <p>8.State general organisational norms and procedures applied to protect against harassment and discrimination.</p> <p>9.Discuss the importance of reporting incidents of harassment and discrimination to appropriate authority.</p>			Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2.5 P: 1.5

Sl. N o.	Module Name	Session Name	Session Objectives	NOS Ref.	Methodology	Training Tools/Aids	Durati on in Hours
10	Employability Skills (60 hours)	Introduction to Employability Skills	1.Discuss the importance of Employability Skills in meeting the job requirements	SGJ/N1702	Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 1.0
		Constitutional values - Citizenship	1.Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0.5 P: 1.0
		Becoming a Professional in the 21st Century	1.Discuss 21st century skills. 2.Describe the benefits of continuous learning		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1.0 P: 1.5
		Basic English Skills	1.Describe basic communication skills		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 4 P:4
		Basic English Skills (Contd..)	2.Discuss ways to read and interpret text written in basic English		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0 P: 2
		Career Development & Goal Setting	1.Discuss need of career development plan		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P:1

Sl. N o.	Module Name	Session Name	Session Objectives	NOS Ref.	Methodology	Training Tools/Aids	Durati on in Hours
		Career Development & Goal Setting	1.Discuss need of career development plan		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P: 1
		Communication Skills	1.Explain the importance of active listening for effective communication 2.Discuss the significance of working collaboratively with others in a team		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 3
		Diversity & Inclusion	1.Discuss the significance of reporting sexual harassment issues in time		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 1 P:1.5
		Financial and Legal Literacy	1.List the common components of salary and compute income, expenditure, taxes, investments etc. 2.Discuss the legal rights, laws, and aids		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 3
		Essential Digital Skills	1.Describe the role of digital technology in today's life		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 4 P:2
		Essential Digital Skills (Contd...)	2.Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 0 P: 2

Sl. N o.	Module Name	Session Name	Session Objectives	NOS Ref.	Methodology	Training Tools/Aids	Durati on in Hours
		Entrepreneurship	<p>1.Explain the types of entrepreneurship and enterprises</p> <p>2.Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan</p> <p>3.Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 3 P: 4
		Customer Service	<p>1.Explain the significance of identifying customer needs and addressing them.</p> <p>2.Explain the significance of identifying customer needs and responding to them in a professional manner</p> <p>3.Discuss the significance of maintaining hygiene and dressing appropriately.</p>		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 2 P: 3

Sl. No .	Module Name	Session Name	Session Objectives	NOS Ref.	Method ology	Training Tools/Aids	Durati on in Hours
		Getting ready for apprenticeship & Jobs	1.Discuss the significance of maintaining hygiene and confidence during an interview 2.List the steps for searching and registering for apprenticeship opportunities		Interactive Lecture in the Class	Participant handbook, Projector, Whiteboard, Marker, and Duster	T: 3 P:5
Total (In Hours)					Theory	120	
					Practical	270	
					On the Job Training	60	
					Grand Total (in Hours)*	450 hours	

Annexure III

Assessment Criteria

CRITERIA FOR ASSESSMENT OF TRAINEES

Assessment Criteria for Technical Support	
Job Role	Assistant Plumber - General
Qualification Pack	PSC/Q0104, v4.0
Sector Skill Council	Plumbing

Sr. No.	Guidelines for Assessment
1.	Criteria for assessment for each Qualifications File will be approved by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element / PC.
2.	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3.	Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/ option NOS/ Set of NOS.
4.	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
5.	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criteria.
6.	To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % 70 aggregate for the QP.
7.	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Total Marks: 900		Compulsory NOS	Marks Allocation			
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
1. PSC/N0130: Prepare for Plumbing Installations and Maintenance	PC1. collect plumbing material as per type, size and quantities based on specifications from drawings and plans	100	6	9	3	2
	PC2. check if the tools and equipment are functioning properly and inform relevant authority in case of any issues		6	9	3	2
	PC3. clear the area of hazardous substances, debris and waste as per organisational norms		5	7	2	0.5
	PC4. store collected materials to be used in a secure manner ensuring there is no spillage or cross-contamination		5	9	2	1
	PC5. place signages and barricades as required to ensure safety and security of work area, workers and visitors		4	7	2	0.5
	PC6. plan tasks in agreement with others while adhering to time commitments.		4	8	2	1
	Total		30	49	14	7

Total Marks: 900	Compulsory NOS	Marks Allocation				
		Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
Assessment outcomes	Assessment Criteria for outcomes					
2. PSC/N0131: Install Water Supply Systems	PC1. determine the fitting requirements to install the pipes	100	1	3	1	0.5
	PC2. measure and mark dimensions for fabrication on the pipes and fittings making allowances for spring-back, distortion and assembly		1	3	1	0.5
	PC3. cut various types of pipes to the length determined		2	5	1	0.5
	PC4. cut threads on metal pipe ends to the appropriate length		1	2	1	0.2
	PC5. bend and form the pipes to specified angle and offsets		2	3	1	0.5
	PC6. prepare pipe ends using techniques such as reaming, leveling, filing and grinding		2	3	1	0.5
	Pc7. join different types of pipes using fittings and relevant techniques		2	3	1	0.5
	Pc8. ensure the assembled pipe meets the required specifications		1	2	1	0.3
	PC9. report any difficulties that may arise		1	1	-	-
	PC10. carry out the corrective actions		1	1	-	-
	PC11. identify the area and route where the assembled pipes are to be installed		2	3	1	0.5
	PC12. perform chase cutting, drilling and nailing on a range of building material such as brickwork, concrete, block work, timber etc.		4	6	1	1
	PC13. install pipes and other water supply components according to given specifications and site requirements without damage or interference to the surrounding structures		2	3	1	0.5

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
	Pc14. repair the cut area of the wall after installing pipes and other water supply components		-	-	-	-
	PC15. check if all the water supply system installations are properly aligned, sized, supported and functioning properly		3	4	1	0.5
	Pc16. identify and rectify faults that are within limits of expertise and authority and escalate others to authorized personnel		3	4	1	0.5
	PC17. clear the work area and dispose, reuse or recycle left over materials according to regulations and, codes of practice		1	2	0.5	-
	PC18. clean and store tools and equipment according to manufacturer's recommendations and workplace procedures		1	1	0.5	0.5
	Total		30	49	14	7

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
3. PSC/N0132: Install Drainage Systems	Pc1. identify the type of drainage piping systems and its components to be installed as appropriate for the type of building	100	2.5	3	-	0.5
	PC2. use plumbing project plans to determine the location of various drainage components and the route of the water drainage piping and traps		1	3	1	0.5
	PC3. calculate quantity, dimensions and type of materials required from design drawings/specifications		3	3	1	0.5
	Pc4. construct chambers to accommodate drainage systems		1	2	1	0.5
	PC5. determine fitting requirements for installing various types of drainage pipes according to given specifications and site requirements		2.5	4	1	-
	PC6. check if the area is prepared for laying the pipes for underground, above ground and overhead piping systems		1	2	1	0.5
	PC7. install the various components of drainage system such as various pipes and their fittings, manholes, traps, cleanouts, catch basins, inspection chamber, soak pit etc.		3	7	1	1
	Pc8. perform fitting activities on various types of pipes such as stoneware (SW) pipes, polyvinyl chloride (PVC) pipes etc.		3	7	1	0.5

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
	Pc9. install stormwater and sub-soil drainage System		2	4	1	0.5
	PC10. install different types of pumps used in sanitary and drainage systems such as submersible water pumps, dewatering pumps (for rainwater piping) etc.		2	4	1	0.5
	PC11. install pipework for water and sewage treatment plant		1	2	1	-
	PC12. test the installations for proper functioning		2	2	1	-
	Pc13. repair faulty drainage pipes and traps		1	1.5	1	0.5
	Pc14. ensure that all inspection openings and covers are fitted according to relevant standards and job specifications		1	2	1	0.5
	PC15. backfill excavated areas to secure the installation		1	1	1	0.5
	PC16. put required signages at the site after the plumbing task has been completed		1	0.5	-	-
	PC17. clear the work area and dispose, reuse or recycle left over materials according to legislation, regulations, codes of practice and job specification		1	0.5	-	-
	Pc18. clean and store tools and equipment according to manufacturer's recommendations and workplace procedures		1	0.5	-	0.5
	Total		30	49	14	7

Total Marks: 900	Compulsory NOS	Marks Allocation				
		Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
Assessment outcomes	Assessment Criteria for outcomes					
4. PSC/N0133: Install Plumbing Fixtures	PC1. tally the count and quality of fixtures, parts, support material provided in the packing with the manufacturer's list or order form	100	2	3	1	0.5
	PC2. select size, type and quantity of fixture and trim for specific application according to given specifications		3	4	1	0.5
	PC3. locate and mark the position of fixtures and fixture supports in structures		3	5	1	1
	PC4. cut the physical structures such as walls, concrete in line with correct markings and specifications for performing internal pipe installations		3	6	1	-
	Pc5. install supports for plumbing piping using appropriate fasteners to ensure grade, spacing and alignment		3	6	1	1
	PC6. install fixtures as per specifications without damage to fixture, pipework, the surrounding environment etc.		3	6	1	1
	PC7. Install and secure the sensor for touchless fittings and fixtures in the slot provided slot.		2	2	1	0.5
	PC8. insert batteries for sensor-based fittings and fixtures safely and in compliance to manufacturer's specifications		2	2	1	-
	Pc9. connect fixture to water supply, drainage and electricity supply ensuring proper functioning, safety and compliance to manufacturer's specifications		3	6	2	0.5
	PC10. plumb and level the supports and fixtures installed to ensure alignment and balance		2	2	1	0.5

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
	PC11. check if all installations are properly sized, supported and functioning		1	3	1	1
	Pc12. identify and rectify faults that are within limits of expertise and authority and escalate others to authorized personnel		2	3	1	0.5
	PC13. clear the work area and dispose, reuse or recycle left over materials according to regulations and codes of practice		1	1	1	-
	Total		30	49	14	7

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
5. PSC/N0142: Perform Troubleshooting and Maintenance for Domestic Plumbing Fixtures and Systems	Pc1. detect blockages and damage in plumbing pipes, fitting and fixtures	100	2	3	1	0.5
	PC2. conduct hydro test for checking leakages and pressure levels within piping systems		2	3	1	0.5
	Pc3. apply required water pressure to check joints in piping systems		1	3	0.5	0.5
	PC4. identify causes of water pressure or water flow problems		1	3	0.5	-
	PC5. rectify fault in case pipework is faulty		2	3	0.5	0.5
	Pc6. remove air lock and blockages in the pipes that are installed		2	3	0.5	0.5
	PC7. repair and maintain water supply tanks and valves		3	3	1	0.5
	PC8. unclog drains and drain's strainer baskets		3	3	1	0.5
	PC9. repair broken sewer, dripping faucets and fixtures that are not working properly		3	3	1	0.5
	PC10. resolve leakages, loosening and jamming of fittings		2	3	1	-
	Pc11. implement measures to reduce noise in pipes and fixtures		2	3	1	0.5

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
	Pc12. inspect and maintain the septic systems on a timely basis		2	3	0.5	0.5
	PC13. perform basic services for appliances such as water heaters, washing machines and dishwashers etc.		3	4	0.5	0.5
	PC14. clean up spills quickly after the task has been completed		1	2	1	0.5
	PC15. empty waste containers as per organisational procedures		1	1	1	-
	PC16. discard oily rags and flammable materials as per industry practices		-	2	1	0.5
	Pc17. record daily logs in a specified format for activities such as maintenance and installation		-	2	1	0.5
	Pc18. guide customers on proper care and maintenance of plumbing systems		-	2	-	-
	Total					

Total Marks: 900	Compulsory NOS	Marks Allocation				
		Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
Assessment outcomes	Assessment Criteria for outcomes					
6.PSC/N0137: Work Effectively with Others	PC1. obtain complete information and instructions	100	3	8	-	-
	Pc2. seek clarifications from appropriate source when required		1	5	-	-
	PC3. provide information accurately and clearly		3	7	-	1
	PC4. use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive		4	6	-	1
	PC5. prioritize tasks as required		3	8	-	1
	PC6. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		3	8	-	1
	Pc7. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		3	4	-	1
	Pc8. act upon constructive feedback from others		2	5	-	-
	PC9. transact with everyone without any personal bias based on gender, disability, caste, religion, colour, sexual orientation and culture		3	5	-	1
	PC10. recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation and culture at workplace		3	5	-	1
	PC11. report incidents of harassment and discrimination to appropriate authority		2	2	-	-
	Total		30	63		7

Total Marks: 900	Compulsory NOS	Marks Allocation				
		Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
Assessment outcomes	Assessment Criteria for outcomes					
7.PSC/N0136 : Apply Health and Safety Practices at the Workplace	Pc1. identify risks and hazards at the workplace	100	2	2	-	0.5
	PC2. wear personal protective equipment (PPE) as per the type of plumbing work		2	2	-	0.5
	PC3. place protective barricades and signages around the pits and trenches		1	4	-	0.5
	Pc4. isolate the plumbing fittings and fixtures from electrical wiring to avoid accidents		1	4	-	-
	PC5. adhere to organisational procedures for reporting hazards and incidents to relevant authorities		2	4	-	0.5
	PC6. establish ventilation before entering underground work areas		1	4	-	-
	PC7. work safely in and around trenches, elevated places and confined areas		1	3	-	-
	PC8. ensure tools and hazardous materials are not left unattended		1	3	-	-
	Pc9. ensure good housekeeping in order to prevent hazards e.g. fire		1	3	-	0.5
	PC10. dispose waste materials and used PPE according to regulations and codes of practice		1	3	-	0.5
	PC11. follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing etc.		1	3	-	0.5
	PC12. clean and disinfect work area, materials/supplies, equipment etc. before and after use.		1	3	-	0.5
	PC13. report hygiene and sanitation issues to appropriate authority		1	2	-	-

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project Marks	Viva Marks
	Pc14. check that the tools, equipment and materials are in good condition and as per industry standards before use		1	3	-	0.25
	PC15. use power tools and machinery that are grounded		1	2	-	0.25
	PC16. replace or repair split or loose tools before use		2	2	-	0.25
	PC17. store and transport various plumbing materials safely		2	2	-	0.25
	Pc18. follow workplace emergency and evacuation procedures		2	3	-	0.5
	PC19. use a fire extinguisher correctly		2	4	-	0.5
	PC20. use safe methods to free a person from electrocution		2	3	-	0.5
	PC21. administer appropriate first aid (such as CPR etc.) to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.		2	4	-	0.5
	Total		30	63	-	7

Total Marks: 900	Compulsory NOS	Marks Allocation				
Assessment outcomes	Assessment Criteria for outcomes	Total Marks	Theory Marks	Practical Marks	Project	Viva Marks
8.DGT/VSQ/N0 102: Employability Skills	Introduction to Employability Skills		1	1	-	-
	Pc1. identify employability skills required for jobs in various industries		-	-	-	-
	PC2. identify and explore learning and employability portals		-	-	-	-
	Constitutional values – Citizenship		1	1	-	-
	PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.		-	-	-	-
	PC4. follow environmentally sustainable practices		-	-	-	-
	Becoming a Professional in the 21st Century		2	4	-	-
	PC5. recognize the significance of 21st Century Skills for employment		-	-	-	-
	PC6. practice the 21st Century Skills such as Self- Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life		-	-	-	-
	Basic English Skills		2	3	-	-

Total Marks: 900	Compulsory NOS	Marks Allocation				
		Total Marks	Theory Marks	Practical Marks	Project	Viva Marks
Assessment outcomes	Assessment Criteria for outcomes					
Assessment outcomes	PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	Total Marks	-	-	-	-
	PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English		-	-	-	-
	PC9. write short messages, notes, letters, e-mails etc. in English		-	-	-	-
	Career Development & Goal Setting		1	2	-	-
	PC10. understand the difference between job and career		-	-	-	-
	PC11. prepare a career development plan with short- and long-term goals, based on aptitude		-	-	-	-
	Communication Skills		2	2	-	-
	PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings		-	-	-	-
	PC13. work collaboratively with others in a team		-	-	-	-
	Diversity & Inclusion		1	2	-	-
	PC14. communicate and behave appropriately with all genders and PwD		-	-	-	-
	PC15. escalate any issues related to sexual harassment at workplace according to POSH Act		-	-	-	-
	Financial and Legal Literacy		2	3	-	-

Total Marks: 900	Compulsory NOS	Marks Allocation				
		Total Marks	Theory Marks	Practical Marks	Project	Viva Marks
Assessment outcomes	Assessment Criteria for outcomes					
	Pc16. select financial institutions, products and services as per requirement	-	-	-	-	-
	PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-	-
	PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-	-
	PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-	-
	Essential Digital Skills	3	4	-	-	-
	PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-	-
	PC21. use e-mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-	-
	PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-	-
	Entrepreneurship	2	3	-	-	-
	PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-	-
	PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-	-

Total Marks: 900	Compulsory NOS	Marks Allocation				
		Total Marks	Theory Marks	Practical Marks	Project	Viva Marks
Assessment outcomes	Assessment Criteria for outcomes					
	Pc25. identify sources of funding, anticipate, and mitigate any financial/legal hurdles for the potential business opportunity		-	-	-	-
	Customer Service	1	2	-	-	
	PC26. identify different types of customers		-	-	-	-
	PC27. identify and respond to customer requests and needs in a professional manner.		-	-	-	-
	PC28. follow appropriate hygiene and grooming standards		-	-	-	-
	Getting ready for apprenticeship & Jobs	2	3	-	-	
	PC29. create a professional Curriculum vitae (Résumé)		-	-	-	-
	PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively		-	-	-	-
	PC31. apply to identified job openings using offline /online methods as per requirement		-	-	-	-
	PC32. answer questions politely, with clarity and confidence, during recruitment and selection		-	-	-	-
	PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements		-	-	-	-
	NOS Total		20	30	-	-

Glossary

- **Sector:** Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
- **Sub-sector:** Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
- **Occupation:** Occupation is a set of job roles, which perform similar/ related set of functions in an industry. **Job role:** Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
- **Occupational Standards (OS):** OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
- **Performance Criteria (PC):** Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
- **National Occupational Standards (NOS):** NOS are occupational standards which apply uniquely in the Indian context.
- **Qualifications Pack (QP):** QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
- **Unit Code:** Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
- **Unit Title:** Unit title gives a clear overall statement about what the incumbent should be able to do.
- **Description:** Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
- **Scope:** Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
- **Knowledge and Understanding (KU):** Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
- **Organizational Context:** Organizational context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
- **Technical Knowledge:** Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
- **Core Skills/ Generic Skills (GS):** Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
- **Electives:** Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.

- Options: Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.



Scan this QR Code to access eBook

Address: Water Management and Plumbing Skill Council

Unit 606 & 609, DLF Prime Tower

Okhla Phase -1

Delhi-110020

Email: wmpsc@wmpsc.in

Phone: 011 41513580