WATER MANAGEMENT AND PLUMBING SKILL COUNCIL

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP

Skill India
कौशल भारत-कुशल भारत

N·S·D·C National Skill Development Corporation
Transforming the skill landscape

Model Curriculum

QP Name: Plumber - General

QP Code: PSC/Q0104

QP Version: 5.0

NSQF Level: 4

Model Curriculum Version: 3.0

Water Management and Plumbing Skill Council || Unit- 606 & 609, Tower-C, DLF Prime Towers, Phase-1, Okhla, Delhi, 110020

Table of Contents

Training Parameters

Sector	Water Management and Plumbing
Sub-Sector	Industrial / Non-Industrial Plumbing
Occupation	Plumbing Systems Installation and Maintenance
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7126.0101
Minimum Educational Qualification and Experience	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
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	17-12-2024
Next Review Date	17-12-2027
NSQC Approval Date	17-12-2024
QP Version	5.0
Model Curriculum Creation Date	27-05-2024
Model Curriculum Valid Up to Date	17-12-2027
Model Curriculum Version	3.0
Minimum Duration of the Course	450 Hours
Maximum Duration of the Course	450 Hours

P0rogram Overview

This program is for training the candidates to become competent as an Assistant Plumber General so that s/he can perform tasks to assist assists the plumber in installation and repair of plumbing fittings and fixtures.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills.

- Prepare the work area and piping materials for plumbing.
- Install water supply system, drainage pipes, fittings and components, and plumbing fixtures.
- Identify and resolve faults in domestic/commercial plumbing systems and fixtures.
- Adhere to health and safety practices at the workplace
- Work in an effective manner
- Optimize resource utilization at the workplace

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
PSC/N0130: Prepare for Plumbing Installations and Maintenance NOS Version No.: 1.0 NSQF Level: 4	**20:00 Hours**	**35:00 Hours**	**20:00 Hours**	**00:00 Hours**	**75:00 Hours**
Module 1: Introduction to the sector and the job role	04:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	04:00 Hours
Module 2: Basics of plumbing	04:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	04:00 Hours
Module 3: Preparation for plumbing installations and maintenance	08:00 Hours	35:00 Hours	20:00 Hours	00:00 Hours	63:00 Hours
PSC/N0131: Install Water Supply Systems NOS Version No.: 1.0 NSQF Level: 4	**20:00 Hours**	**60:00 Hours**	**10:00 Hours**	**00:00 Hours**	**90:00 Hours**
Module 4: Installation of water supply systems	20:00 Hours	60:00 Hours	10:00 Hours	00:00 Hours	90:00 Hours
PSC/N0132: Install Drainage Systems NOS Version No.: 1.0 NSQF Level: 4	**20:00 Hours**	**60:00 Hours**	**10:00 Hours**	**00:00 Hours**	**90:00 Hours**

Module 5: Installation of the drainage systems	20:00 Hours	60:00 Hours	10:00 Hours	00:00 Hours	90:00 Hours
PSC/N0133: Install Plumbing Fixtures NOS Version No.: 1.0 NSQF Level: 4	**10:00 Hours**	**40:00 Hours**	**10:00 Hours**	**00:00 Hours**	**60:00 Hours**
Module 6: Installation of plumbing fixtures	10:00 Hours	40:00 Hours	10:00 Hours	00:00 Hours	60:00 Hours
PSC/N0142: Perform troubleshooting and maintenance for domestic plumbing fixtures and systems NOS Version No.: 1.0 NSQF Level: 4	**10:00 Hours**	**40:00 Hours**	**10:00 Hours**	**00:00 Hours**	**60:00 Hours**
Module 7: Troubleshooting and maintenance for plumbing	10:00 Hours	40:00 Hours	10:00 Hours	00:00 Hours	60:00 Hours
PSC/N0136: Apply health and safety practices at the workplace NOS Version No.: 1.0 NSQF Level: 3	**10:00 Hours**	**05:00 Hours**	**00:00 Hours**	**00:00 Hours**	**15:00 Hours**
Module 8: Health and safety	10:00 Hours	05:00 Hours	00:00 Hours	00:00 Hours	15:00 Hours
DGT/VSQ/N0102: Employability Skills (60 Hours) NOS Version No.: 1.0 NSQF Level: 4	**30:00 Hours**	**30:00 Hours**	**00:00 Hours**	**00:00 Hours**	**60:00 Hours**
Module 9: Employability Skills	30:00 Hours	30:00 Hours	00:00 Hours	00:00 Hours	60:00 Hours
Total Duration	**120:00 Hours**	**270:00 Hours**	**60:00 Hours**	**00:00 Hours**	**450:00 Hours**
PSC/N0183: Perform Installation of Insulation on pipes NOS Version No.: 1.0 NSQF Level: 4 (Optional NOS)	**10:00 Hours**	**20:00 Hours**	**00:00 Hours**	**00:00 Hours**	**30:00 Hours**

Module 10: Perform Installation of Insulation on Pipes	10:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Total Duration	**130:00 Hours**	**290:00 Hours**	**00:00 Hours**	**00:00 Hours**	**480:00 Hours**

Module Details

Module 1: Introduction to the sector and the job role

Bridge Module

Terminal Outcomes:

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

Duration: *04:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Outline the overview of the plumbing industry. • Discuss the scope of employment in the contracting segment of the industry. • List the key responsibilities of a plumber general. • Describe the process of water flow in domestic households and commercial setups. • Discuss the application of various types of plumbing systems in residential and commercial setups.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Nil	

Module 2: Basics of plumbing

Mapped to PSC/N0130, v 1.0

Terminal Outcomes:

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

Duration: *04:00*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Recall the various types of symbols and terminologies and titles used in plumbing installation. • Knowledge of different types of views such as plan view, isometric drawings, Cross-sectional view, and detail drawings • Describe the standards applicable (such as ISI) to piping installations in the plumbing industry. • State the importance of accuracy in measurements and calculations with respect to plumbing work. • 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. • Identify various plumbing tools and equipment correctly. • List the lifting/load shifting equipment including ladders, height scaffolding, elevated work platforms, hand trolleys, hoists and jacks used at plumbing installation sites. • Explain the properties of water, including pressure and flow rates. Describe processes such as capillary action and thermal expansion in plumbing.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Pipes (such as PVC, cPVC, uPVC, mild steel, cast iron, galvanised iron), fittings, plumbing fixtures, plumbing accessories, tools, solvent cement, power tools, mechanical fasteners (such as nuts, bolts, screws).	

Module 3: Preparation for plumbing installations and maintenance

Mapped to PSC/N0130, v 1.0

Terminal Outcomes:

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

Duration: *04:00*	**Duration**: *35:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the types and purpose of plumbing drawings. • Discuss the purpose of work schedules, work plans, charts, work bulletins, memos and the work-related information that can be obtained from them. • Describe the steps involved in collection of plumbing materials as per type, size and quantities based on specifications from drawings and plans. • List measures to avoid air and water contamination, erosion and sedimentation. • Discuss the risk and impact of not following defined procedures/work instructions. • Outline the process of reporting and handling hazards at the workplace. • Describe the working of essential tools such as pipe wrenches, adjustable spanners, pipe cutters, pliers, and plungers, etc. • Describe the function of each tool such as tightening pipes, cutting materials, or gripping components. • Explain working of specialized equipment like pipe threaders, soldering torches, drain cleaning machines, and pipe benders is important in complex installations and maintenance tasks. • Elaborate different types of pipes (PVC, Copper, PEX, GI) and corresponding fittings (elbows, tees, couplings). • Explain the working of tools like pressure gauges, leak detectors, and measuring is essential for troubleshooting and ensuring accuracy in installation.	• Demonstrate the extraction of information from job specifications, layouts and measurements from drawings and plans associated with plumbing. • Calculate the quantity, dimensions and type of pipes, pipe fittings, devices and materials required from design drawings/ specifications. • Prepare a work plan as per specified timelines. • Perform inspection of the tools and equipment to check for their proper functioning. • Demonstrate the process of clearing the work area of hazardous substances, debris and waste. • Demonstrate correct storage practices for plumbing materials. • Demonstrate placement of signages and barricades. • Ensure that the pipes are laid out logically, with minimal sharp turns, appropriate distances, and efficient use of space. • Verify that hot and cold water lines are correctly separated and insulated where necessary to prevent heat transfer. • Ensure that the pipe diameters are adequate for the anticipated water flow and pressure for both the water supply and drainage systems. • Anticipate that all plumbing fixtures (sinks, toilets, showers) are positioned according to the architectural plan, with proper spacing for usability and maintenance.

• Explain the meaning of different types of standardized symbols used to represent various components like pipes, fixtures, valves, and fittings. • Explain different types of views such as plan view, isometric drawings, Cross-sectional view, and detail drawings • Describe Techniques of jointing of different pipes, their slope (for drainage), and how they run through the building are necessary for effective system interpretation and troubleshooting.	• Ensure that each fixture has clearly indicated connection points for water supply. • Perform verification that all horizontal drainage pipes have the correct slope (usually 1/4" per foot) to allow for efficient wastewater flow. • Check all fixtures are properly vented to avoid issues like siphoning of traps, sewer gas escape, or slow drainage.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Plumbing drawings and plans; plumbing tools, materials and equipment; pipes, tubes, fittings and other accessories, pipes (such as PVC, cPVC, uPVC, mild steel, cast iron, galvanised iron), fittings, plumbing fixtures, plumbing accessories, tools, solvent cement, power tools, mechanical fasteners (such as nuts, bolts, screws).	

Module 4: Installation of water supply systems

Mapped to PSC/N0131, v 1.0

Terminal Outcomes:

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

Duration: *20:00*	**Duration**: *60:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the process of water distribution in municipal, residential, and private setups. • List the process and various components of a water supply and distribution system. • Explain typical water distribution systems and their different components. • Explain in detail the hot-water and cold-water distribution system. • Explain typical solar water heater systems and their different components with their applications. • State the piping system layouts for various types of water supply systems. • Outline the installation process of pipes and fittings for various plumbing applications. • 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. • Explain the properties of the different types of supports, hangers and restraints used in water supply plumbing systems. • List the characteristics of metal used in various plumbing materials and the fabrication methods compatible with them. • Explain the process of electrolysis and problems associated with the use of dissimilar metals.	• Determine the fitting requirements for specified water supply pipe installations. • Demonstrate the steps involved in marking dimensions for fabrication on the pipes and fittings making allowances for spring-back, distortion and assembly. • Apply appropriate cutting and bending techniques on water supply plumbing pipes. • Study a typical water distribution system and demonstrate its different components. • Demonstrate installation of the hot-water and cold-water distribution system. • Inspect a typical solar water heater system and demonstrate its different components with its applications. • Demonstrate how to join and fix pipes as per defined specifications. • Demonstrate the steps involved in the installation of water supply piping, fittings and components in buildings. • Perform the inspection of the water supply installation system to ensure proper alignment, size, support and functioning. • Evaluate faults and their causes in dysfunctional piping. • Demonstrate the rectification of common faults found in dysfunctional piping. • Perform post installation activities such as clearing the work area, disposal of waste and cleaning and storage of tools and equipment.

• State the impact of accurate marking on the fabrication process work time and finished work quality. • Describe the measuring and marking out processes for fabrication of pipes • List standard measuring procedures such as centre-to-centre, end-to-centre, and end-to-end. • State the allowances to be considered in measurements and markings during the fabrication of pipes. • List the types, characteristics and the application of different pipe fittings and fixture supports. • Discuss the various fixing and jointing techniques for water supply piping installations. • Explain the principles underlying various fit-off processes. • State the importance of ensuring alignment and balance in piping installations. • Describe the test procedures to check proper functioning of the pipework installed. • Describe the checks and procedures to be conducted before commissioning. • Explain the importance of reporting any difficulties as soon as they arise.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Pipes such as cPVC, Copper, SS, PPR, PEX, HDP; fittings such as elbow, coupling, union, reducer, tee, cross, cap, plug, nipple, barb, valves; fixing devices such as screws, plastic plugs, plasterboard fixings, cavity fixing, nails, clips and brackets, bolts and nuts; components of water distribution system such as water mains, ferrule and external stop valve, water meter, internal stop valve, water tank, water pump, main water supply pipes, branch water supply pipes, valves; types of pipe fitting such as threaded pipe, solvent welding, soldering, brazing, compression fitting, flare fitting, flange fitting, mechanical fittings, crimped or pressed fittings; tools for cutting pipes such as hacksaws (junior and frame) –blades for different materials; Pipe cutters –for iron, steel, plastics; Files -for different materials; Tap and Dies; Hand tools for cutting building materials – chisels, hammers; Snips for cutting sheet metal pipes; heating/joining machine, compression joints, solder capillary joints, push-fit joints, threaded joints, solvent-welded joints, push-fit joints.	

Module 5: Installation of the drainage systems

Mapped to PSC/N0132, v 1.0

Terminal Outcomes:

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

Duration: *20:00*	**Duration**: *60:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the process of wastewater drainage — from a fixture to the drain and then to the environment — across various residential and commercial setups. • Describe the functions of the components of drainage systems. • Describe the various types of drainage piping systems and the pipes and fittings used in them. • Discuss the type of drainage piping systems and its components used in various types of building. • Explain the characteristics and the application of different pipe fittings, fixture supports and fastening hardware. • Discuss the fit off, fixing and jointing techniques applicable for drainage pipes. • Explain the allowances to be made for spring-back, distortion and assembly during marking for fabrication of pipes. • Explain the procedure of installing various types of drainage systems such as sewage, sullage, stormwater, sub-soil drainage system, drainage for fixtures, etc. • Identify the trap to be installed as per the type of drainage system. • List different types of pumps used in sanitary and drainage systems and their applications. • Discuss the characteristics of the flooring using for installation and levelling of drainage system. • Explain the importance of conducting post-installation and pre-commissioning tests and checks.	• Apply appropriate techniques to determine the location of various drainage components and the route of the water drainage piping and traps using plumbing project plans. • Demonstrate the construction of chambers to accommodate drainage systems. • Determine fitting requirements for installing various types of drainage pipes according to given specifications and site requirements. • Perform the necessary checks on the area for laying underground, above ground and overhead piping systems. • Perform fitting activities on various types of pipes such as stoneware (SW) pipes, polyvinyl chloride (PVC) pipes, cast iron (CI) pipes, etc. • Demonstrate the installation of the various components of drainage system such as various pipes and their fittings, manholes, traps, cleanouts, catch basins, inspection chamber, soak pit etc. • Show how to install stormwater and sub-soil drainage system. • Demonstrate the process of installing pipes and related accessories in water and sewage treatment plants. • Perform the steps to install different types of pumps used in sanitary and drainage system. • Perform the various post installation and pre-commissioning tests and checks. • Perform the backfilling of all excavated areas to secure the installation.

• Describe the various post installation and pre-commissioning tests and checks. • List the signages to be put up at the site after the plumbing task has been completed.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Components of drainage system (drainage pipes, ventilation/anti-siphonage pipes, pipe fittings, traps, cleanouts, catch basins, manholes, inspection chamber, soak pit, storm water drainage pipes), pipes used in drainage system (SW, PVC, CI, AC, RCC, HDP), water traps (as per shape: P-trap, S-trap, Q-trap, bottle trap; as per function: floor-trap, gully trap, intercepting trap), pumps such as submersible water pumps, dewatering pumps (for rainwater piping).	

Module 6: Installation of plumbing fixtures

Mapped to PSC/N0133 v 1.0

Terminal Outcomes:

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

Duration: *10:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the types, characteristics, materials, finishes, uses, limitations, working principle and performance measures of various plumbing related fixtures. • List the accessories, supports and fasteners required for installing various types of wash basin, sinks, water closet, urinals, bathtubs and showers. • List the sensor types of fittings and fixtures. • Explain the basic working principal of sensor faucet and the principles of solenoid ball valves and sensors in touchless system. • Describe the correct practices for installing plumbing fixtures. • Explain the importance of traps for the sanitary fittings, both deep seal traps and low seal traps. • Explain the working and use of conservancy, water carriage and the combination system. • Discuss alignment and elevation techniques used in plumbing systems. • List the codes, standards and regulations applicable for the installation of plumbing fixtures. • Discuss about smart plumbing practises.	• Show how to tally the count and quality of fixtures, parts, support material provided in the packing with the manufacturer's list or order form. • Select the size, type and quantity of fixture and trim required for specific applications based on specifications. • Ensure fixtures are level and securely fastened. Tighten connections without over-tightening, which can damage the fittings. • Demonstrate how to mark the position of fixtures and fixture supports in structures based on plumbing plans. • Demonstrate the procedure of installing various types of sanitary fixtures, supports, and accessories. • Demonstrate the installation of sensors and batteries of fixtures with sensor-based or touchless fitting and fixtures. • perform installation of other smart plumbing fixtures. • Perform alignment and levelling of supports and fixtures installed. • Apply appropriate techniques to check if all installations are properly sized, supported and functioning. • Handover to customer with full information and warranty card of products.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	

Types of fixtures (taps/faucets, valves, water closet, showers, sinks, bath-tubs, basin, wall hung urinals, pop-up drains, water heaters), dishwashing machines, clothes washing machine, types of fasteners and supports (anchors, screws, nuts, bolts, circlips, clamps, wall hangers, carriers, etc.).

Module 7: Troubleshooting and maintenance for plumbing

Mapped to PSC/N0142, v 1.0

Terminal Outcomes:

- Demonstrate how to inspect of domestic plumbing systems and fixtures to identify faults.
- Perform repair and maintenance activities.

Duration: *10:00*	**Duration**: *40:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• 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.). • List the testing procedures to be performed to check proper functioning of the fixtures and pipework installed. • State the remedial and preventive measures for common plumbing problems with respect to fixtures, pipes and fittings. • Discuss correct practices for troubleshooting and maintenance for plumbing fixtures and systems. • Explain the application of mechanical and hydraulic principles for clearing blockages. • List the methods of corrosion protection such as coatings and tape. • Discuss common organisational policies related to costing, scheduling, procurement and documentation for plumbing maintenance and repair work. • Explain how to conduct assessments on the life-cycle impact of plumbing materials and systems to ensure they provide long-term sustainability. • Explain the process to manage stormwater to prevent pollution and reduce water waste. • Describe Plumbing system complies with relevant green building standards like LEED (Leadership in Energy and Environmental Design) or Green Building Certification.	• Show how to detect faults in various types of plumbing systems and fixtures. • Demonstrate the procedures involved in repair and rectification of common faults within the pipes, plumbing fixtures, drainage and water supply systems. • Perform cleaning and clearance related activities after completion of work. • Display how to record daily logs in a specified format for activities such as maintenance and installation. • Role-play a situation on how to guide the customers instruct the customers on proper care and maintenance of plumbing systems. • Perform minimization of the water usage by using water-efficient fixtures and appliances. • Demonstrate water leak prevention techniques • Perform Insulation on pipes carrying hot water to minimize energy loss and improve efficiency. • Use locally sourced materials and prefabricated components to reduce transportation energy, and choose products with a lower carbon footprint.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	

Tools, Equipment and Other Requirements
Plunger, pressure gauges, aerators septic systems, roof drain's strainer basket, Allen wrench, shower drain, pipes tube clamp, saws, pipe cutters, sealing compound, dripping faucets, tongue-and-groove plier, water heaters, washing machines, dishwashers, waste containers and logbook.

Module 8: Health and safety

Mapped to PSC/N0136, v 1.0

Terminal Outcomes:

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

Duration: *10:00*	**Duration**: *05:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Differentiate between risks and hazards. (KU4) • Discuss the specific safety and health related problems faced in domestic, commercial and institutional setups. • List the various types of hazards (such as physical, fire, chemical compounds and electrical) that could affect the work process. • List the various hazardous environments and common hazards that can occur during plumbing installation and maintenance along with their precautions and remedial measures. • Discuss the importance of various types of personal protective equipment (PPE). • Discuss where the general health and safety equipment commonly is kept at the workplace. • Explain the various types of safety signs and their significance in the work process. • Discuss various causes of fire and precautionary activities to prevent the fire accident. • 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, CO_2, fire extinguishing chemical, sand, blanket, etc. used for extinguishing fire as per the type (as per class A, B, C and D). • Describe rescue techniques applied during a fire hazard or electrocution. • Discuss appropriate basic first aid treatment relevant to the condition e.g.	• Perform inspection of a work area in order to identify risks and hazards. (PC1) • Apply various health and safety precautions to be taken during plumbing work. • Apply personal and workspace hygiene and sanitation practices. • Dramatize workplace emergency and evacuation procedures using role plays. • Demonstrate the correct use of fire extinguishers. • Dramatize, using role play, safe methods of freeing a person from electrocution. • Perform appropriate first aid treatment for various conditions such as bleeding, burns, choking, electric shock and poisoning and injury. • Demonstrate the process of providing cardiopulmonary resuscitation (CPR).

shock, electrical shock, bleeding, minor burns, poisoning, eye injuries etc. • Discuss potential injuries and health problems associated with incorrect handing of tools and equipment.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Personal protective equipment (such as eye protector, hard hats, safety belts, gloves, protective clothing), plumbing tools and materials, power tools, required machinery, fire extinguisher, first aid kit.	

Module 9: Employability Skills

Mapped to DGT/VSQ/N0102, v 1.0

Terminal Outcomes:

- Apply Professionalism in the 21st Century
- Able to demonstrate Basic English Skills & Communication Skills including Digital Skills
- Role-play a situation in selecting the right financial institution, product, and service

Duration: *30:00*	**Duration**: *30:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the Employability Skills required for jobs in various industries • List different learning and employability related GOI and private portals and their usage • Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen • Discuss importance of relevant 21st century skills. • Exhibit 21st century skills like Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life. • Describe the benefits of continuous learning. • Explain the importance of active listening for effective communication • Discuss the significance of working collaboratively with others in a team • Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD • Discuss the significance of escalating sexual harassment issues as per POSH act. • Outline the importance of selecting the right financial institution, product, and service	• Show how to practice different environmentally sustainable practices. • Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone • Read and interpret text written in basic English • Write a short note/paragraph / letter/e-mail using basic English11. Create a career development plan with well-defined short- and long-term goals • Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette. • Create sample word documents, excel sheets and presentations using basic features • Create a professional Curriculum Vitae (CV)

• Demonstrate how to carry out offline and online financial transactions, safely and securely • List the common components of salary and compute income, expenditure, taxes, investments etc. • Discuss the legal rights, laws, and aids. • Describe the role of digital technology in today's life. • Demonstrate how to operate digital devices and use the associated applications and features, safely and securely • Discuss the significance of displaying responsible online behaviour while browsing, using various social media platforms, e-mails, etc., safely and securely • Utilize virtual collaboration tools to work effectively • Explain the types of entrepreneurship and enterprises • Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan • Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement • Create a sample business plan, for the selected business opportunity • Describe the significance of analysing different types and needs of customers • Explain the significance of identifying customer needs and responding to them in a professional manner. • Discuss the significance of maintaining hygiene and dressing appropriately • Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively • Discuss the significance of maintaining hygiene and confidence during an interview 36. Perform a mock interview	

• List the steps for searching and registering for apprenticeship opportunities	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Energy-saving devices, non-recyclable, recyclable and reusable waste	

Module 10: Perform Installation of Insulation on Pipes

Mapped to PSC/N0183, v 1.0

Terminal Outcomes:

- Familiar with the insulation material
- perform measurement and cutting of insulation materials.
- Apply insulation material on pipes.

Duration: *10:00*	**Duration**: 2*0:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Understand the characteristics and properties of different insulation materials. • Explain the importance of pipe insulation in reducing heat loss or gain, improving energy efficiency, and lowering utility costs. • Explain the role of insulation in preventing condensation and moisture buildup on pipes. • Describe the steps to calculate the required thickness of insulation based on factors such as pipe diameter, operating temperature, and desired energy savings. • Describe various cutting techniques for insulation materials, such as using knives, shears, or saws, to achieve clean and precise cuts. • Explain proper surface preparation techniques, including cleaning and priming. • Explain different methods for installing insulation on pipes, such as wrapping, gluing, or using pre-formed sections, and selecting the most appropriate method for the application. • Explain sealing methods, such as tapes, adhesives, or mechanical fasteners, to ensure air-tightness and prevent moisture ingress at insulation joints and seams. • Explain the fire rating and flammability characteristics of insulation materials and ensuring compliance with fire safety codes and regulations	• Identify different types of insulation materials like fibre glass, mineral wood, foam insulation, cellulose, etc. • identify different types of covering for the protection of insulation material, fasteners and joints. • identify different types of sealings and jointing material. • identify the accessories such as insulation hanger, insulation saddle, etc. • identify the different types of cutting and sealing devices. • perform clean and smooth cutting of edges of insulation material. • perform checking of thermal conductivity, density and durability. • perform tightly fit of insulation material around the pipes. • perform secured sealing of seams, joints, and edges of insulation to prevent air leakage and moisture ingress. • Ensure compatibility of insulation material with the operating temperature and conditions of the piping system.

• Describe about the jacketing materials, such as aluminum or stainless steel. • Describe the specific requirements for insulating pipes in specialized applications, such as cryogenic systems, high-temperature steam lines, or underground piping • Explain the cost implications of different insulation materials and installation methods, and selecting cost-effective solutions without compromising performance.	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook	
Tools, Equipment and Other Requirements	
Nil	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E. / B. Tech	Civil or Mechanical Engineering	2	Plumbing	1	Plumbing	
Diploma	Civil or Mechanical Engineering	3	Plumbing	1	Plumbing	
10th + ITI	Plumbing	4	Plumbing	1	Plumbing	
CITS Certified Trainer	Plumbing					

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Plumber – General" mapped to QP: "PSC/Q0104, v4.0". Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer", (VET and Skills) mapped to the Qualification Pack: "MEP/Q2601". Minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
B.E. / B. Tech	Civil or Mechanical Engineering	2	Plumbing	1	Plumbing	
Diploma	Civil or Mechanical Engineering	3	Plumbing	1	Plumbing	
10th + ITI	Plumbing	4	Plumbing	1	Plumbing	

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Plumber – General" mapped to QP: "PSC/Q0104, v4.0". Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor" (VET and Skills), mapped to the Qualification Pack: "MEP/Q2701". Minimum accepted score as per MEPSC guidelines is 80%.

Assessment Strategy

Assessment is done through third parties who are affiliated to IPSC as Assessment Body. Assessors are trained & certified by IPSC through Training of Assessors program. The assessment involves two processes. The first process is gathering the evidence of the competency of individuals. The second part of the assessment process is the judgment, based on the evidence as to whether a person is competent as per the standard or not. The assessment plan contains the following information:

- What will be assessed, i.e., the competency based on each NOS
- How assessment will occur i.e., methods of assessment
- When the assessment will occur
- Where the assessment will take place i.e., context of the assessment (workplace/simulation)
- The criteria for decision making i.e., those aspects that will guide judgements and
- Where appropriate, any supplementary criteria used to make a judgement on the level of performance.

The assessment is conducted through theory, viva voce and practical.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards