



Model Curriculum

QP Name: Technician – Water Distribution System (Multi-Skill)

QP Code: PSC/Q0120

QP Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0



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Training Parameters

Sector	Plumbing
Sub-Sector	Water Supply & Water Treatment & Quality Control
Occupation	Plumbing Systems Installation and Maintenance
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7126.0101, NCO-2015/3132.0600, NCO-2015/8212.0402
Minimum Educational Qualification and Experience	12th grade Pass OR 10th Class/I.T.I with 2 Years of experience Relevant OR 8th grade pass with 2 year NTC plus 1 year NAC plus 1 year CITS OR Previous relevant Qualification of NSQF Level (3 with min. 8th Grade Pass) with 2 Years of experience Relevant
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	03-05-2023
Next Review Date	03-05-2026
NSQC Approval Date	03-05-2023
QP Version	1.0
Model Curriculum Creation Date	03-05-2023
Model Curriculum Valid Up to Date	03-05-2026
Model Curriculum Version	1.0
Minimum Duration of the Course	450 Hours
Maximum Duration of the Course	450 Hours
NQR Code	QM-04-PL-00371-2023-V1-WMPS



Program Overview

The Technician - Water Distribution System monitors and controls water system facilities and equipment manually and / or using information technology to regulate raw water supply and treated water distribution, control pumps, solar system and electrical appliances, monitor water quality and performs related work as required.

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 and tools for plumbing and water management
- Install water supply system, drainage pipes, sanitary fixtures and CP fittings
- Identify and resolve faults in domestic/commercial plumbing systems and fixtures
- Install and operate pumping systems and related machinery
- Operate and maintain water treatment units
- Maintain of water distribution and storage systems at water supply stations
- Identify basic electrical and solar components
- Install, operate and maintenance of electrical panel boards and solar pumping systems
- Adhere to health and safety practices at the workplace
- Work in an effective manner
- Learn employability and entrepreneurship skills



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/N0163: Installation and Operations of Plumbing and Water Management Systems NOS Version No.: 1.0 NSQF Level: 4	34:00 Hours	80:00 Hours	00:00 Hours	06:00 Hours	120:00 Hours
Module 1: Introduction to the sector and the job role	05:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	05:00 Hours
Module 2: Basic concepts of water management and plumbing systems	05:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	05:00 Hours
Module 3: Preparation for plumbing systems installation, operation and maintenance	06:00 Hours	20:00 Hours	00:00 Hours	00:00 Hours	26:00 Hours
Module 4: Installation and operation of water supply systems	06:00 Hours	20:00 Hours	00:00 Hours	02:00 Hours	28:00 Hours
Module 5: Installation and operation of drainage systems	06:00 Hours	20:00 Hours	00:00 Hours	02:00 Hours	28:00 Hours
Module 6: Installation and operation of sanitary fixtures and CP fittings	06:00 Hours	20:00 Hours	00:00 Hours	02:00 Hours	28:00 Hours
PSC/N0164: Perform Troubleshooting and Maintenance of Plumbing Systems NOS Version No.: 1.0 NSQF Level: 4	34:00 Hours	80:00 Hours	00:00 Hours	06:00 Hours	120:00 Hours
Module 7: Inspection, repair and maintenance of installed plumbing systems	34:00 Hours	80:00 Hours	00:00 Hours	06:00 Hours	120:00 Hours



PSC/N0165: Perform Water Quality Monitoring and Maintenance of Water Supply Stations and Water Sources NOS Version No.: 1.0 NSQF Level: 4	17:00 Hours	37:00 Hours	00:00 Hours	06:00 Hours	60:00 Hours
Module 8: Monitoring water quality	06:00 Hours	13:00 Hours	00:00 Hours	02:00 Hours	21:00 Hours
Module 9: Maintenance of Hand pump, Tube well and bore well	06:00 Hours	13:00 Hours	00:00 Hours	02:00 Hours	21:00 Hours
Module 10: Maintenance of sump and storage tanks	05:00 Hours	11:00 Hours	00:00 Hours	02:00 Hours	18:00 Hours
PSC/N0166: Perform Installation, Operation and Maintenance of Pumps and Related Machinery at Water Supply Stations and Water Treatment Units NOS Version No.: 1.0 NSQF Level: 4	17:00 Hours	37:00 Hours	00:00 Hours	06:00 Hours	60:00 Hours
Module 11: Basic concepts of Water pumps	02:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	02:00 Hours
Module 12: Installation of water pump systems and related machinery	05:00 Hours	12:00 Hours	00:00 Hours	02:00 Hours	19:00 Hours
Module 13: Operation and maintenance of water pump systems	05:00 Hours	12:00 Hours	00:00 Hours	02:00 Hours	19:00 Hours
Module 14: Monitoring and maintenance of water meter, flow meter and water treatment units	05:00 Hours	13:00 Hours	00:00 Hours	02:00 Hours	20:00 Hours
PSC/N0167: Perform Operation and Maintenance of Solar Systems and Electrical Panel NOS Version No.: 1.0 NSQF Level: 4	08:00 Hours	16:00 Hours	00:00 Hours	06:00 Hours	30:00 Hours



Module 15: Basic concepts of solar components, solar pumping systems and electrical panel connections	02:00 Hours	00:00 Hours	00:00 Hours	00:00 Hours	02:00 Hours
Module 16: Installation and operation of solar pumping systems and control panel boards	03:00 Hours	08:00 Hours	00:00 Hours	03:00 Hours	14:00 Hours
Module 17: Maintenance of solar pumping systems and electrical panels	03:00 Hours	08:00 Hours	00:00 Hours	03:00 Hours	14:00 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 18: Health and safety	10:00 Hours	05:00 Hours	00:00 Hours	00:00 Hours	15:00 Hours
PSC/N0137: Work effectively with others NOS Version No.: 1.0 NSQF Level: 3	10:00 Hours	05:00 Hours	00:00 Hours	00:00 Hours	15:00 Hours
Module 19: Working effectively	10:00 Hours	05:00 Hours	00:00 Hours	00:00 Hours	15:00 Hours
DGT/VSQ/N0101: Employability Skills (30 Hours) NOS Version No.: 1.0 NSQF Level: 2	20:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Module 20: Employability Skills	20:00 Hours	10:00 Hours	00:00 Hours	00:00 Hours	30:00 Hours
Total Duration	150:00 Hours	270:00 Hours	00:00 Hours	30:00 Hours	450:00 Hours



Module Details

Module 1: Introduction to the sector and the job role

Bridge Module

Terminal Outcomes:

- Explain the importance of water and plumbing industry.
- Describe the key responsibilities of an Technician - Water Distribution System.

Duration: 05:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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 water technician. • 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. • Outline the overview of solar pumping and electric panel. • Discuss the importance solar pumping system in rural and urban areas. • Describe the importance of contribution to the sustainable operation and maintenance of the village rural water supply system 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Nil	



Module 2: Basic concepts of water management and plumbing systems

Mapped to PSC/N0163, v 1.0

Terminal Outcomes:

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

Duration: 05:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Recall the various types of symbols and terminologies and titles used in plumbing installation. • 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 systems installation, operation and maintenance

Mapped to PSC/N0163, v 1.0

Terminal Outcomes:

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

Duration: 06:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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. • Explain the factors to be kept in mind for safe handling, storage and transport of various plumbing materials. • 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. 	<ul style="list-style-type: none"> • 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.
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 and operation of water supply systems

Mapped to PSC/N0163, 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: 06:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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. • 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. • 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. 	<ul style="list-style-type: none"> • 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. • 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 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 and operation of the drainage systems

Mapped to PSC/N0163, 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: 06:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.



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| <ul style="list-style-type: none">• 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. | |
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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 and operation of sanitary fixtures and CP fittings Mapped to PSC/N0163 v 1.0

Terminal Outcomes:

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

Duration: 06:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. • 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 alignment and levelling of supports and fixtures installed. • Apply appropriate techniques to check if all installations are properly sized, supported and functioning.
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: Inspection, repair and maintenance of installed plumbing systems

Mapped to PSC/N0164, v 1.0

Terminal Outcomes:

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

Duration: 34:00	Duration: 80:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
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: Monitoring water quality

Mapped to PSC/N0165, v 1.0

Terminal Outcomes:

- Monitor water quality.

Duration: 06:00	Duration: 13:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain the importance of water quality monitoring. • Describe water quality monitoring tasks. • Explain the importance of adhering to water sampling schedule as per standard operating procedure. • Explain how to share water quality test results with appropriate authorities and who are the authorities. • Explain the physical, chemical and biological water quality parameter. • Explain the significance of different colour coding in the testing kit. • Describe the possible damage that can occur in supply system due to poor water quality and vice-versa. • Explain different types of nuts and bolts. 	<ul style="list-style-type: none"> • Identify a water sampling site representative to the source and in line with sampling guidelines. • Obtain water samples from dug well, hand pump, tube well and borewell for quality testing. • Test water quality using a field test kit. • Store and send samples for laboratory testing. • Interpret relevant information from water quality report. • Identify physical, chemical, and biological water quality parameters. • Identify the damages in the system • Identify different types of nut, bolts and assembly.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
water quality field test kit	



Module 9: Maintenance of hand pump, tube well and bore well

Mapped to PSC/N0165, v 1.0

Terminal Outcomes:

- Perform the maintenance of hand pump, tube well, bore well and pipelines

Duration: 06:00	Duration: 13:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the structure and use of hand pump, tube well and bore well. • Explain the maintenance activities performed for a hand pump, tube well and borewell. • Explain the importance of adhering to standard operating procedure while troubleshooting hand pumps, tube well and borewell. • Describe operational and maintenance requirements and procedures for pipelines. • Describe the working procedures of saddle and ferrule 	<ul style="list-style-type: none"> • Check all the flange nuts and bolts, axle bolt, flange bolts and tighten as needed. • Tighten the handle axle nut and lock nut. • Verify whether hand pump is firm on its base and fix it if needed. • Open the cover and clean inside the pump. • Dismantle the hand pump for inspection/cleaning and reassemble after inspection. • Check the chain anchor bolt for proper position and tighten if needed. • Verify rusty patches, clean with a wire brush and apply anticorrosive paint. • Verify the discharge of water. • Verify the handle position and repair if needed. • Verify whether guide bush, roller chain is not excessively worn out and replace if needed. • Clean and de-calcify pump components. • Demonstrate the action to be taken to troubleshoot faults occurring in the hand pump. • Operate pump starter and isolation valve. • Check if readings on ammeter and voltmeter are normal – stop pump if electric motor is drawing too much current. • Verify whether adequate water is being delivered. • Clean the pump house. • Check for leaks in the rising main. • Remove the pump and rising main from the well and inspect. • Inspect pipes, electric cables, insulation between cables. • Demonstrate how to make records of servicing and maintenance in the logbook. • Re-cut corroded or damaged threads and replace badly corroded pipes.

	<ul style="list-style-type: none"> • De-silt borehole. • Demonstrate actions to be taken to troubleshoot common faults occurring in the tube or bore well. • Operate water pipelines with positive pressure and by opening and shutting off the valves gradually. • Flush the system to clear sediments. • Service the valve chamber and valves. • Inspect the pipelines for damage, wear and tear, leakage, entrainment and water hammer. • Locate the leaks in the pipes. • Replace faulty parts like gaskets, valves joints and pipes that are not repairable. • Repair damaged pipelines. • Apply cement mortar lining on corroded pipes.
<p>Classroom Aids:</p>	
<p>Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook</p>	
<p>Tools, Equipment and Other Requirements</p>	
<p>Hand Pump, tools for dismantling and repairing hand pumps (clamp, pipe wrench and spanners, hammers, screw drivers, etc), Tube well; bore well; pump starter and isolation valve; ammeter and voltmeter; tools for de-silting bore wells, tools for re-cutting damaged threads, Water pipelines; cement mortar; tools for repairing water pipelines</p>	



Module 10: Maintenance of sump and storage tanks

Mapped to PSC/N0165, v 1.0

Terminal Outcomes:

- Perform the maintenance of sump and storage tanks.

Duration: 05:00	Duration: 11:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • State an overview of water distribution and storage systems at water supply stations. • Describe the operational and maintenance requirements and procedures for sump and storage tanks. 	<ul style="list-style-type: none"> • Dewater sump and tank. • Clean, disinfect and rinse the sump and tank. • Desilt the area and pump house. • Perform leakage test and carry out rectification if needed with epoxy coating, cement concreting, painting etc.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
sump and tank; tools and materials for cleaning, disinfecting and rinsing sump and tank; tools for leakage test; tools and materials for epoxy coating, cement concreting, painting etc.	



Module 11: Basic concepts of water pumps

Mapped to PSC/N0166, v 1.0

Terminal Outcomes:

- List the processes conducted at the plumbing work site for pumping water and distribution of water.
- Identify the various pumps and related machinery.

Duration: 02:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the various types of pumps used in residential, agricultural and commercial setups. • Describe the performance measures, applications and properties of water pumps. • Interpret the common terminologies used in pump systems. • Identify the various components of pump systems and related equipment. 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Various types of pumps used in residential, agricultural and commercial setups	



Module 12: Installation of water pump systems and related machinery

Mapped to PSC/N0166, v 1.0

Terminal Outcomes:

- Prepare of installation.
- Install water pump and related equipment.
- Check the installation of pump
- Perform operation of various types of pumps
- Perform electrical connection of pumps

Duration: 05:00	Duration: 12:00
Theory – Key Learning Outcomes <ul style="list-style-type: none"> • List the preparatory requirements for pump system installation. • List the tools and materials used in pump installation. • State the units of measurements used during the preparation, installation and checking of water pumps. • State the steps involved in calculating material requirements. • State the types of water supply and their implication on pumping system. • Explain the importance of referring to the manufacturers’ specifications and standard Operating Procedures (SOPs) related to the installation and fitting of pumps. • Describe the procedure of installing water pumps. • State some common dos and don’ts of various pumping systems. • Explain the importance of ensuring prevention of any contact of water and electrical connections with each other during the process. • Describe levelling and alignment procedures. • List the different types of pumping apparatus (reciprocating, rotary etc.) and associated equipment and purposes. • List the basic fittings (valves, clamps, elbows, etc.) in the pumping apparatus. • List the gauges, dials, monitoring apparatus and their purpose. 	Practical – Key Learning Outcomes <ul style="list-style-type: none"> • Assemble pump components and equipment. • Prepare the tools, area and materials for the task. • Locate and mark position for inlet and outlet supply connections of pump. • Fix the pump at the designated location as per instruction. • Connect the hoses of inlet and outlet supply to the pump. • Make provisions for electrical and other required connections. • Install and connect pump components without any damage to pump, fixture, pipe work, the surrounding environment, or to other services. • Adjust pressure/flow as per required supply and demand. • Check installed pump systems for correct functioning and compliance with specifications. • Check for cracks, defects and anomalies in the pumping apparatus. • Check for condition of couplings in the equipment and pumping on both suction and discharge sides. • Check the oil level, fuel level, radiator coolant and engine condition of a diesel operated pump. • Check air release valve and prime the pump.



- List the different types of valves and their functioning (stop valve, non-return valve, etc.)
- State the importance of working as per the standards, policies, and procedures followed in the company relevant to employment and performance conditions.
- Describe the material disposal procedure to be applied after installation and its importance.
- Describe the process for condition monitoring of the equipment.
- Explain the importance of adhering to workplace safety requirements, hazard reporting and handling procedures during installation and checking of water motor pump systems and related equipment.

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook

Tools, Equipment and Other Requirements

pumping apparatus (centrifugal, reciprocating, rotary etc.); basic fittings (valves, clamps, elbows, etc.); tools and materials used in pump installation.

Module 13: Operation and maintenance of water pump systems

Mapped to PSC/N0167, v 1.0

Terminal Outcomes:

- Perform maintenance of water pump systems.

Duration: 05:00	Duration: 12:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • List the key features of the various types of pumps to be operated. • Describe different types of operation and maintenance schedules. • Explain the importance of preparing and following a schedule for pump operation and maintenance. • List the factors to be considered for preparing an operation and maintenance schedule. • Explain the need for standby pumps. • Describe how to improve output gain from the pump. • Explain the need and process for avoiding overloading and sudden change of water pressure. • Describe the function and operation of various valves such as bypass valves of reflux valve, sluice valve and butterfly valve during operation of the pumps. • Describe the factors that affect the efficiency of the pump such as voltage, current, location, starting load, etc. • Identify common sounds, vibrations, temperature and other related parameters that can change during the operation of the pump and their significance. • Explain the impact of various physical parameters like temperature, pressure, etc on the properties of final output. • Describe various input/output parameters of the pump for various types of requirements. • Explain the importance of preparing and following a schedule for pump maintenance • Describe the factors to be considered for preparing a maintenance schedule. • Explain the purpose and procedure for checking pump motor alignment. 	<ul style="list-style-type: none"> • Demonstrate how to prepare a schedule for running the main pumps and the standby. • Demonstrate how to prime the centrifugal pump before start of operation. • Demonstrate measures that can be taken to ensure operation of the pump with full efficiency to improve output gain. • Demonstrate how to operate the delivery valve effectively to avoid overloading and sudden change of water pressure. • Close bypass valves of reflux valve, sluice valve and butterfly valve during normal operation of the pumps. • Demonstrate the monitoring of sound, vibration, temperature and other related parameters to ensure that the pump is operating smoothly. • Demonstrate how to maintain input/output parameters for the pump as per requirements. • Check pump motor alignment. • Demonstrate the defined action to be taken in case of overload/under load when the load parameters are above/below the specified limits. • Demonstrate the maintenance of a record of all pump operation timings, voltage, current, reading on gauges and flow meter, temperature, water level and any problem that occurred during the operation. • Demonstrate the preparation of a monthly, quarterly, bi-annual and annual preventive maintenance schedule • Demonstrate how to clean the pump, related machinery, pump chamber filter beds, other structures and the area. • Inspect the pump, related machinery and water supply system for faults, leaks, sparks,



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| <ul style="list-style-type: none">• Explain normal load parameters and indicators of overload/underload.• State the action to be taken in case of overload/underload.• Explain the importance of maintaining a record of pump operation timings, voltage, current, reading on gauges and flow meter, temperature, water level and any problem that occurred during the operation.• Explain the importance of preventive maintenance.• List the various preventive maintenance tasks to be performed daily, monthly, quarterly, bi-annually and annually.• Explain the considerations to be taken while making a preventive maintenance schedule.• State the dos and don'ts while cleaning the pump, related machinery, pump chamber filter beds, other structures and the area.• Explain the importance of regular inspections of the pump, related machinery and water supply system.• Identify common indicators of faults, leaks, sparks, improper functioning, wear and tear or tampering in a pump and related machinery.• Explain the importance of timely recording and reporting of faults, leaks, sparks, improper functioning, water supply complaints and tampering.• Describe appropriate oil levels and procedure to check it.• State the action to be taken if motor is sparking or parts are leaking or worn out.• Describe the procedure to check and rectify alignment of pump and drive.• List the various bolts to be tightened.• Describe the calibration procedure of all vital instruments such as pressure gauge, vacuum gauge, ammeter, voltmeter, watt meters, frequency meter, tachometer and flow meter.• Describe the performance testing procedure of the pump for discharge, head and efficiency.• Describe the usages of 3-phase and single phase motor systems | <ul style="list-style-type: none">• improper functioning, wear and tear or evidence of tampering.• Demonstrate how to record and report the faults, leaks, sparks, improper functioning, water supply complaints and tampering.• Apply appropriate oil where oil levels are low as per standard• Repair or replace sparking motor and leaking or worn-out parts• Check and rectify alignment of pump and drive.• Tighten the foundation bolts and holding down bolts of pump and motor mounting.• Calibrate all vital instruments such as pressure gauge, vacuum gauge, ammeter, voltmeter, watt meters, frequency meter, tachometer and flow meter.• Conduct performance test of the pump for discharge, head and efficiency• Demonstrate how to troubleshoot faults as per standard operating procedure. |
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Classroom Aids:



Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements

centrifugal pump, basic fittings (valves, clamps, elbows, etc.); tools and materials used in pump operation.



Module 14: Monitoring and maintenance of water meter, flow meter and water treatment units

Mapped to PSC/N0166, v 1.0

Terminal Outcomes:

- Perform maintenance for the water meter, flow meter and water treatment units.

Duration: 05:00	Duration: 13:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe the operational and maintenance requirements and procedures for water meters. • State the importance of following standard operating procedures while troubleshooting faults. • Describe the operational and maintenance requirements and procedures for flow meters. • Provide an overview of water treatment units. • Describe commonly used water treatment units such as slow sand filters and chlorinators. • Describe operational and maintenance requirements and procedures for water treatment units. • Describe the process for starting and shutting off the filtration. • Explain the concepts of rate of filtration and need for its adjustment. • List the chemicals used in the water treatment units. • Explain when and how to add chemicals, such as ammonia, chlorine, or lime, to disinfect water or other liquids. • Explain the importance of regular inspection and the inspection process. • Describe various meter and gauges and information to be gathered from them. • Explain the importance and procedure of water and sewage testing. • Explain the importance of maintaining records. 	<ul style="list-style-type: none"> • Clean the dirt box or strainer. • Replace gaskets upon its wear and tear. • Clean the chamber where meter is installed. • Apply standard measures to prevent water seepage into the water meter. • Verify if water meter is given correct reading. • Disassemble and reassemble the water meter for verification or repair. • Demonstrate actions to be taken to troubleshoot common faults in water meters. • Check the range and zero setting of the flow meter. • Inspect for bearing wear out, deposits in flow meter or corrosion of attached pipes. • Demonstrate actions to be taken to troubleshoot common faults in flow meters. • Clean the disassembled parts. • Start and shut off the filtration process. • Adjust the rate of filtration as needed. • Add chemicals, such as ammonia, chlorine, or lime, to disinfect water or other liquids. • Inspect equipment on a regular basis to ensure proper functioning and adherence to safety standards. • Monitor operating conditions, meters, and gauges. • Collect and test water and sewage samples. • Take recordings of meter and gauge readings, and operational data. • Operate equipment to purify and clarify water, or to process or dispose of sewage. • Clean and maintain equipment, tanks, filter beds, and other work areas.
Classroom Aids:	



Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator's Guide, Participant's Handbook

Tools, Equipment and Other Requirements

Water meter, tools for disassemble, reassemble and repair water meter, Flow meter; tools for troubleshooting flow meters



Module 15: Basic concepts of solar components, solar pumping system and electrical panel connections

Mapped to PSC/N0167, v 1.0

Terminal Outcomes:

- Identify basic solar and electrical components related to pumping systems

Duration: 02:00	Duration: 00:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Explain various terminologies used in the electrical industry • Explain various terminologies used in the solar industry • Explain various signages and symbols used for electrical connections and solar (pumping) systems • Describe the performance measures, applications and properties of water pumps. 	
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Water meter, tools for disassemble, reassemble and repair water meter	



Module 16: Installation and operation of solar pumping systems and control panel board

Mapped to PSC/N0167, v 1.0

Terminal Outcomes:

- Perform the steps involved in the installation and operation of solar pumping system and control panel board.

Duration: 03:00	Duration: 08:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Describe different types, sizes and specifications of modules, inverters, • Charge controllers, cables, conduits, junction boxes, solar batteries and allied accessories. • Explain the identification of location for installation of device. • explain various terminologies used in the solar industry • Explain different components of solar PV system • Basic performance enhancement methods • Enlist in detail about installation of surface motor pump sets. • efficiency, cost and typical specifications, functioning and operating principle of different types of solar photovoltaic plants, commercially available PV modules, inverters, charge controllers, battery, mounting structures, cables, junction boxes and other components • Enlist the tools required for installation and work in varying weather conditions 	<ul style="list-style-type: none"> • Identify different types of tools, their functions and application for carrying out work • Identify rating and current carrying capacity of electrical appliances. • Identify the colour coding, connection and identification of conductors, cables and wires, routing of cables, proper selection of conductors, wires and connectors and connection of single pole device • Identify the electrical layouts of the system. • Perform the fittings using hand power tools • Identify different types of tools, their functions and application for carrying out work • Identify components of solar PV system • Perform basic operations used in installation of solar PV panel • Perform regular cleaning of solar panels • Perform cleaning of the surrounding from tall grass and trees by trimming them • Identify the tools required for installation and work in varying weather conditions
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	
Water pipelines; cement mortar; tools for repairing water pipelines	



Module 17: Maintenance of solar pumping system and electrical panels

Mapped to PSC/N0167, v 1.0

Terminal Outcomes:

- Perform the steps involved in the maintenance of solar pumping system and electrical panels

Duration: 03:00	Duration: 08:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • Provide an overview of wiring, mains and distribution systems • Describe operations and repair of control panel boards • Explain performance test of solar PV pumping systems • Explain the maintenance of surface motor pumps and their connection • Explain the repair and maintenance of pump control valves • Explain the maintenance of inverters, charge controllers, battery, mounting structures, cables, junction boxes and other components 	<ul style="list-style-type: none"> • Locate and mark the position of conduit pipe ensures, connections into the structures with proper equipment like measuring tape, hammer, saw, drill machines etc. • cut openings in structures to accommodate conduit pipes or pipe fittings, using hand or power tools. • Perform operations on installation of brackets and hangers to support electrical equipment, install the protective device as per the load and join and connect wire to fixtures and components to form circuits • Insert the mounting screws, spring washers and the free earth lug of the wiring loom, and tighten screws. • inspect civil works (castle, basin, trough, fixing the solar supports etc.) piping, valves and all other important elements that can compromise the sound operation of the system • Test the type of pump set to be used which must match the total dynamic head requirement of the site • Perform operations on lubrication and inspection on control panel. • Perform operations on closing the pipeline isolation valve during troubleshooting, to prevent reverse flow through the pump • Perform regular cleaning of solar panels and shut down the pump as soon as the tank is full to avoid overflows.
Classroom Aids:	
Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook	
Tools, Equipment and Other Requirements	



Water treatment unit; chemicals, such as ammonia, chlorine, or lime, to disinfect water or other liquids; water testing kit; tools and materials for cleaning and maintaining equipment, tanks, filter beds, and other work areas



Module 18: 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
<p>Theory – Key Learning Outcomes</p> <ul style="list-style-type: none"> • 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, CO₂, 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. 	<p>Practical – Key Learning Outcomes</p> <ul style="list-style-type: none"> • 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).



<p>shock, electrical shock, bleeding, minor burns, poisoning, eye injuries etc.</p> <ul style="list-style-type: none">• Discuss potential injuries and health problems associated with incorrect handling 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 19: Working effectively with others

Mapped to PSC/N0137, v 1.0

Terminal Outcomes:

- Apply effective communication techniques.
- Demonstrate teamwork and a positive attitude.
- Demonstrate responsible and disciplined behaviour.

Duration: 10:00 Theory – Key Learning Outcomes	Duration: 05:00 Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • State the importance of effective communication in the workplace. • Describe the typical organisational hierarchy and the various categories of people that one is required to communicate and coordinate with. • List various components of effective communication. • State the importance of using inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive. • State the importance of teamwork and developing effective working relationships for professional success. • Discuss the importance and ways of managing interpersonal conflict effectively. • Discuss how to express and address grievances appropriately and effectively. • State the importance of ethics and discipline for professional success. • Explain what constitutes disciplined behaviour and integrity for a working professional. • Discuss the legislation, standards, policies, and procedures relevant to own employment and performance conditions. • Discuss importance of dress code in organisations. • Explain the impact of gender, disability, cultural and age-related biases, stereotyping at the workplace and in society. 	<ul style="list-style-type: none"> • Demonstrate key steps involved in conducting a survey to estimate the water requirements in consultation with the Village Water and Sanitation Committee (VWSC). • Demonstrate the activities involved in collating community related data and suggestions for water conservation, grey water re-use and water usage efficiency potential. • Dramatize co-ordination activities with the village committees and gram panchayat for implementation of schemes for water conservation and efficient water usage. • Demonstrate the activities involved in conducting workshops, distributing flyers, organizing rallies and other awareness building activities as part of promotion campaigns. • Dramatise the training to various local level stakeholders for use and care of the systems and structures installed • Demonstrate techniques used for ensuring timely receipt of complete information and instructions from appropriate sources. • Apply practices that improve effectiveness while providing information. • Demonstrate the use of inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive. • Illustrate the use of appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism. • Dramatize a situation to show effective team work.



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| <ul style="list-style-type: none"> • List the different types of disabilities and the challenges faced by persons with disability (PwD). • State the laws, acts, provisions and schemes defined for PwD by the Government bodies. • Discuss gender, disability and cultural biases, stereotypes and impact on others • Discuss basic gender concepts such as gender power relations, gender roles, access and control, gender sensitivity, gender equity and equality. • Discuss the importance of gender sensitivity and equality. • List the indicators of harassment and discrimination based on gender, disability, caste, religion or culture that occurs at a typical workplace. • State general organisational norms and procedures applied to protect against harassment and discrimination. • Discuss the importance of reporting incidents of harassment and discrimination to appropriate authority. | <ul style="list-style-type: none"> • Dramatize (through role-play) disciplined behaviours at the workplace. • Dramatize (through role-play) the process of escalation of grievances and problems. • Recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation and culture at workplace. • Demonstrate practices to eliminate personal bias based on gender, disability, caste, religion, colour, sexual orientation and culture from routine transactions. |
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Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and software, Facilitator’s Guide, Participant’s Handbook

Tools, Equipment and Other Requirements

Nil



Module 20: Employability Skills

Mapped to DGT/VSQ/N0101, 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: 20:00 Theory – Key Learning Outcomes	Duration: 10:00 Practical – Key Learning Outcomes
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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



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| <ul style="list-style-type: none">List the steps for searching and registering for apprenticeship opportunities | |
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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



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	2	Plumbing	1	Plumbing	
Graduation (Science)	Plumbing / Environmental Engineering/ Water Management	2	Plumbing	1	Plumbing	
CITS Certified Trainer	Plumbing					

Trainer Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Technician - Water Distribution System" mapped to QP: "PSC/Q0120, v1.0" Minimum accepted score is 80%.	Recommended that the Trainer is certified for the Job Role: "Trainer", 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	2	Plumbing	1	Plumbing	
Graduation (Science)	Plumbing / Environmental Engineering/ Water Management	2	Plumbing	1	Plumbing	

Assessor Certification	
Domain Certification	Platform Certification
Certified for Job Role: "Technician - Water Distribution System" mapped to QP: "PSC/Q0120, v1.0" Minimum accepted score is 80%.	Recommended that the Assessor is certified for the Job Role: "Assessor", 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
NCVET	National Council for Vocational Education and Training
WMPSC	Water Management and Plumbing Skill Council
QP	Qualification Pack
MC	Model Curriculum
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
NCO	National Classification of Occupations
ES	Employability Skills