

Qualification Pack



Plumber - General

QP Code: PSC/Q0104

QP Version: 2.0

NSQF Level: 4

Indian Plumbing Skills Council

Unit-606 & 609; Tower-C; DLF Prime Towers; Okhla Industrial Area; Phase-1; New Delhi - 110020

Qualification Pack

Contents

PSC/Q0104: Plumber - General	3
Brief Job Description.....	3
Personal Attributes.....	3
Applicable National Occupational Standards (NOS).....	3
<i>Compulsory NOS:</i>	3
<i>Qualification Pack (QP) Parameters</i>	3
<i>PSC/N0132: Prepare for plumbing installations and maintenance</i>	5
<i>PSC/N0133: Install water supply systems</i>	9
<i>PSC/N0135: Install drainage systems</i>	14
<i>PSC/N0134: Install plumbing fixtures</i>	19
<i>PSC/N0136: Perform troubleshooting and maintenance for domestic plumbing fixtures and systems</i>	23
<i>PSC/N9901: Apply health and safety practices at the workplace</i>	27
<i>PSC/N9902: Work effectively with others</i>	31
<i>SGJ/N1702: Optimize resource utilization at workplace</i>	35
Assessment Guidelines and Assessment Weightage	39
<i>Assessment Guidelines</i>	39
<i>Assessment Weightage</i>	39
Acronyms	41
Glossary.....	42

Qualification Pack

PSC/Q0104: Plumber - General

Brief Job Description

The Plumber - General installs sewage and drainage systems, water supply systems, general and advanced sanitary fittings and fixtures in housing, commercial and institutional setups. The Plumber-General also maintains the plumbing systems and fixtures for housing setups.

Personal Attributes

The individual must be able to work independently and be comfortable in performing laborious work. The person should be good at following instructions and a team player with a positive attitude.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [PSC/N0132: Prepare for plumbing installations and maintenance](#)
2. [PSC/N0133: Install water supply systems](#)
3. [PSC/N0135: Install drainage systems](#)
4. [PSC/N0134: Install plumbing fixtures](#)
5. [PSC/N0136: Perform troubleshooting and maintenance for domestic plumbing fixtures and systems](#)
6. [PSC/N9901: Apply health and safety practices at the workplace](#)
7. [PSC/N9902: Work effectively with others](#)
8. [SGJ/N1702: Optimize resource utilization at workplace](#)

Qualification Pack (QP) Parameters

Sector	Plumbing
Sub-Sector	Industrial / Non-Industrial Plumbing (As per NBC 2016 Classification)
Occupation	Plumbing Systems Installation and Maintenance
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7126.0101

Qualification Pack

Minimum Educational Qualification & Experience	5th Class 1-2 years of experience as an assistant plumber.
Minimum Level of Education for Training in School	10th Pass
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	16/07/2020
Next Review Date	16/07/2025
NSQC Approval Date	
Version	2.0

Qualification Pack

PSC/N0132: Prepare for plumbing installations and maintenance

Description

This unit is about identification of tasks, organisation of materials and preparation of work area for starting the plumbing work.

Scope

This unit/task covers the following

- Prepare for work

Elements and Performance Criteria

Prepare for work

To be competent, the user/individual on the job must be able to:

- PC1. collect plumbing material as per type, size and quantities based on specifications from drawings and plans
- PC2. check if the tools and equipment are functioning properly and inform relevant authority in case of any issues
- PC3. clear the area of hazardous substances, debris and waste as per organisational norms
- PC4. store collected materials to be used in a secure manner ensuring there is no spillage or cross-contamination
- PC5. place signages and barricades as required to ensure safety and security of work area, workers and visitors
- PC6. plan tasks in agreement with others while adhering to time commitments

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. standards, policies, and procedures followed in the company relevant to employment and performance conditions
- KU2. organization's departments, hierarchy, products, services
- KU3. workplace safety requirements, hazard reporting and handling procedures
- KU4. commonly used scales, symbols, terminologies, abbreviations, titles, sub-titles, dimensions, reference dates used by plumbers
- KU5. measurements and standards relevant to the plumbing industry
- KU6. types and purpose of drawings and plans associated with plumbing
- KU7. tools, equipment and materials relative to drawings/specifications
- KU8. importance of accuracy in measurements and calculations
- KU9. purpose of work schedules, work plans, charts, work bulletins and memos and the work-related information that can be obtained from them
- KU10. mathematical formulas needed to calculate area, length, perimeter, diameter, circumference, volume, mass, force, pressure, scales, ratios etc.
- KU11. categories of materials and their safe handling, storage and transport requirements
- KU12. measures to avoid air and water contamination, erosion and sedimentation
- KU13. types of plumbing waste and their disposal

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Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. prepare checklists, reports and fill out forms in local language or Hindi/English
- GS2. perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS3. read and interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS4. state information, doubts and concerns about work related matters in local language or Hindi/English
- GS5. plan one's daily tasks to achieve maximum productivity
- GS6. establish priorities and deadlines in consultation with others and record them
- GS7. be punctual and work as per agreed priorities
- GS8. manage distractions and maintain workplace discipline
- GS9. listen to customer's concerns and doubts carefully and address them
- GS10. be courteous
- GS11. identify ways to increase productivity and reduce errors

Qualification Pack

Assessment Criteria

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

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	PSC/N0132
OS Name	Prepare for plumbing installations and maintenance
Sector	Plumbing
Sub-Sector	Industrial / Non-Industrial Plumbing (As per NBC 2016 Classification)
Occupation	Plumbing Systems Installation and Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	16/07/2020
Next Review Date	16/07/2025
NSQC Clearance Date	

Qualification Pack

PSC/N0133: Install water supply systems

Description

This unit is about installing the assembled pipes, fittings and other components of a water supply system and, ensuring their proper functioning.

Scope

This unit/task covers the following

- Prepare for piping process
- Cut, bend and assemble various types of pipes
- Install the assembled pipes, fittings and other water supply components
- Post-installation activities

Elements and Performance Criteria

Prepare for piping process

To be competent, the user/individual on the job must be able to:

- PC1. determine the fitting requirements to install the pipes
- PC2. measure and mark dimensions for fabrication on the pipes and fittings making allowances for spring-back, distortion and assembly

Cut, bend and assemble various types of pipes

To be competent, the user/individual on the job must be able to:

- PC3. cut various types of pipes to the length determined
- PC4. cut threads on metal pipe ends to the appropriate length
- PC5. bend and form the pipes to specified angle and offsets
- PC6. prepare pipe ends using techniques such as reaming, leveling, filing and grinding
- PC7. join different types of pipes using fittings and relevant techniques
- PC8. ensure the assembled pipe meets the required specifications
- PC9. report any difficulties that may arise
- PC10. carry out the corrective actions

Install the assembled pipes fittings and other water supply components

To be competent, the user/individual on the job must be able to:

- PC11. identify the area and route where the assembled pipes are to be installed
- PC12. perform chase cutting, drilling and nailing on a range of building material such as brickwork, concrete, block work, timber etc.
- PC13. install pipes and other water supply components according to given specifications and site requirements without damage or interference to the surrounding structures

Qualification Pack

Post-installation activities

To be competent, the user/individual on the job must be able to:

- PC14. check if all the water supply system installations are properly aligned, sized, supported and functioning properly
- PC15. identify and rectify faults that are within limits of expertise and authority and escalate others to authorized personnel
- PC16. clear the work area and dispose, reuse or recycle left over materials according to regulations and, codes of practice
- PC17. clean and store tools and equipment according to manufacturer's recommendations and workplace procedures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. standards, policies, and procedures followed in the company relevant to employment and performance conditions
- KU2. organization's departments, hierarchy, products, services
- KU3. workplace safety requirements, hazard reporting and handling procedures
- KU4. processes and components of municipal, residential, and private water distribution systems
- KU5. properties of water, including pressure and flow rates
- KU6. capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- KU7. electrolysis and problems associated with the use of dissimilar metals
- KU8. types of documents containing water supply plans and how to extract relevant information from them
- KU9. standard plumbing symbols used in sketches and blueprints
- KU10. various techniques of installing the water piping system in a building such as over ground piping, underground piping, piping embedded in
- KU11. concrete, concealed piping, wall mounted piping
- KU12. standards applicable to the piping installation in plumbing
- KU13. types, characteristics and the application of different pipe fittings and fixture supports, and the fixing and jointing techniques
- KU14. process of mains supply of water in buildings
- KU15. layout of piping systems
- KU16. supports, hangers and restraints used in water supply systems
- KU17. plumbing tools, equipment and hardware (studs, bolts and nuts)
- KU18. standard measuring procedures such as center-to-center, end-to-center, and end-to-end
- KU19. impact of accurate marking out on fabrication process, work time and finished work quality
- KU20. characteristics of metal used in various plumbing materials and the fabrication methods compatible with them
- KU21. measuring and marking out processes and allowances to be considered for fabrication of pipes
- KU22. various fit off processes and their tools and principles
- KU23. installation process of pipes and fittings for various plumbing applications
- KU24. test procedures to check proper functioning of the pipework installed
- KU25. pre-commissioning checks and procedures
- KU26. application of mechanical and hydraulic principles for clearing blockages

Qualification Pack

KU27. corrosion protection such as coatings and tape

KU28. procedure to rectify faults such as air lock in the pipes and pipe blockages

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. prepare checklists, reports and fill out forms in local language or Hindi/English
- GS2. measure all dimensions in metric scale
- GS3. perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS4. read and interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS5. state information, doubts and concerns about work related matters in local language or Hindi/English
- GS6. plan one's daily tasks to achieve maximum productivity
- GS7. be punctual and work as per agreed priorities
- GS8. listen to customer's concerns and doubts carefully and address them
- GS9. be courteous and polite with customers and team members
- GS10. establish workable solutions for problems in hand in consultation with others and record them
- GS11. breakdown relevant work process into its constituent activities for ease of analysis
- GS12. identify ways to increase productivity and reduce errors

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for piping process</i>	2	6	0	1
To be competent, the user/individual on the job must be able to:				
PC1. determine the fitting requirements to install the pipes	1	3	0	0.5
PC2. measure and mark dimensions for fabrication on the pipes and fittings making allowances for spring-back, distortion and assembly	1	3	0	0.5
<i>Cut, bend and assemble various types of pipes</i>	12	20	8	2.5
To be competent, the user/individual on the job must be able to:				
PC3. cut various types of pipes to the length determined	2	5	1	0.5
PC4. cut threads on metal pipe ends to the appropriate length	1	2	1	0.2
PC5. bend and form the pipes to specified angle and offsets	2	3	1	0.5
PC6. prepare pipe ends using techniques such as reaming, leveling, filing and grinding	2	3	1	0.5
PC7. join different types of pipes using fittings and relevant techniques	2	3	1	0.5
PC8. ensure the assembled pipe meets the required specifications	1	2	1	0.3
PC9. report any difficulties that may arise	1	1	1	0
PC10. carry out the corrective actions	1	1	1	0
<i>Install the assembled pipes fittings and other water supply components</i>	8	12	3	2
To be competent, the user/individual on the job must be able to:				
PC11. identify the area and route where the assembled pipes are to be installed	2	3	1	0.5
PC12. perform chase cutting, drilling and nailing on a range of building material such as brickwork, concrete, block work, timber etc.	4	6	1	1
PC13. install pipes and other water supply components according to given specifications and site requirements without damage or interference to the surrounding structures	2	3	1	0.5
<i>Check proper functioning of the water supply system</i>	8	11	3	1.5
To be competent, the user/individual on the job must be able to:				
PC14. check if all the water supply system installations are properly aligned, sized, supported and functioning	3	4	1	0.5
PC15. identify and rectify faults that are within limits of expertise and authority and escalate to authorized personnel, if outside limits of expertise and authority	3	4	1	0.5
PC16. clear the work area and dispose, reuse or recycle left	1	2	0.5	0

Qualification Pack

over materials according to legislation, regulations, codes of practice and job specification				
PC17. clean and store tools and equipment according to manufacturer recommendations and workplace procedures	1	1	0.5	0.5
NOS Total	30	49	14	7

National Occupational Standards (NOS) Parameters

NOS Code	PSC/N0133
NOS Name	Install water supply systems
Sector	Plumbing
Sub-Sector	Industrial / Non-Industrial Plumbing (As per NBC 2016 Classification)
Occupation	Plumbing Systems Installation and Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	16/07/2020
Next Review Date	16/07/2025
NSQC Clearance Date	

Qualification Pack

PSC/N0135: Install drainage systems

Description

This unit deals in detail with the installation of drainage systems in accordance with the industry standards and site requirements.

Scope

This unit/task covers the following

- Prepare for installation of drainage systems
- Perform installation of drainage systems
- Post-installation activities

Elements and Performance Criteria

Prepare for installation of drainage systems

To be competent, the user/individual on the job must be able to:

- PC1. identify the type of drainage piping systems and its components to be installed as appropriate for the type of building
- PC2. use plumbing project plans to determine the location of various drainage components and the route of the water drainage piping and traps
- PC3. calculate quantity, dimensions and type of materials required from design drawings/specifications
- PC4. construct chambers to accommodate drainage systems
- PC5. determine fitting requirements for installing various types of drainage pipes according to given specifications and site requirements
- PC6. check if the area is prepared for laying the pipes for underground, above ground and overhead piping systems

Perform installation of drainage systems

To be competent, the user/individual on the job must be able to:

- PC7. install the various components of drainage system such as various pipes and their fittings, manholes, traps, cleanouts, catch basins, inspection chamber, soak pit etc.
- PC8. perform fitting activities on various types of pipes such as stoneware (SW) pipes, polyvinyl chloride (PVC) pipes etc.
- PC9. install storm water and sub-soil drainage system
- PC10. install different types of pumps used in sanitary and drainage systems such as submersible water pumps, dewatering pumps (for rainwater piping) etc.
- PC11. install pipework for water and sewage treatment plant

Post-installation activities

To be competent, the user/individual on the job must be able to:

- PC12. test the installations for proper functioning
- PC13. repair faulty drainage pipes and traps

Qualification Pack

- PC14. ensure that all inspection openings and covers are fitted according to relevant standards and job specifications
- PC15. backfill excavated areas to secure the installation
- PC16. put required signage at the site after the plumbing task has been completed
- PC17. clear the work area and dispose, reuse or recycle left over materials according to legislation, regulations, codes of practice and job specification
- PC18. clean and store tools and equipment according to manufacturer's recommendations and workplace procedures

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. standards, policies, and procedures followed in the company relevant to employment and performance conditions
- KU2. organization's departments, hierarchy, products, services
- KU3. workplace safety requirements, hazard reporting and handling procedures
- KU4. plan documents containing drainage details
- KU5. how to identify the standard plumbing symbols used in sketches and blueprints
- KU6. 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
- KU7. installing wastewater and drainage plumbing for various fixtures
- KU8. function of each component of a drainage system
- KU9. standards applicable to the piping installation in plumbing
- KU10. properties of water, including pressure and flow rates
- KU11. capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- KU12. electrolysis and problems associated with the use of dissimilar metals
- KU13. characteristics and the application of different pipe fittings and fixture supports, including fixing and jointing techniques
- KU14. process of mains supply of water and drainage
- KU15. layout of piping systems and types and grades of pipes and fittings
- KU16. description of soil waste pipe, siphon pipe and vent pipe and their importance
- KU17. types of supports, hangers and restraints, their properties and grades of fastening hardware such as studs, bolts and nuts
- KU18. types of flooring for installations and leveling
- KU19. piping and plumbing tools and equipment
- KU20. standard measuring procedures such as center-to-center, end-to-center, and end-to-end
- KU21. impact of accurate marking out on fabrication process, work time and finished work quality
- KU22. measuring and marking dimensions and allowances on the pipes for fabrication
- KU23. plumbing materials characteristics of various metal materials and their compatibility with different fabrication methods
- KU24. various fit off processes and their tools and principles
- KU25. installation process of pipes and fittings for various plumbing applications
- KU26. test procedures to check proper functioning of the pipework installed
- KU27. pre-commissioning checks and procedures
- KU28. application of mechanical and hydraulic principles for clearing blockages

Qualification Pack

KU29. corrosion protection such as coatings and tape

KU30. air lock and blockage removal in the pipes

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. prepare checklists, reports and fill out forms in local language or Hindi/English
- GS2. measure all dimensions used in plumbing in metric scale
- GS3. perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS4. read and interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS5. state information, doubts and concerns about work related matters in local language or Hindi/English
- GS6. plan one's daily tasks to achieve maximum productivity
- GS7. be punctual and work as per agreed priorities
- GS8. listen to customer's concerns and doubts carefully and address them
- GS9. be courteous and polite with customers and team members
- GS10. establish workable solutions for problems in hand in consultation with others and record them
- GS11. breakdown relevant work process into its constituent activities for ease of analysis
- GS12. identify ways to increase productivity and reduce errors

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation of drainage systems</i>	11	17	5	2.5
To be competent, the user/individual on the job must be able to:				
PC1. identify the type of drainage piping systems and it's components such as drainage pipes, ventilation/anti-siphonage pipes, storm water drainage pipes to be installed appropriate for the type of building	2.5	3	0	0.5
PC2. use plans to determine the location of various drainage components and the route of the water drainage piping and traps	1	3	1	0.5
PC3. calculate quantity, dimensions and type of materials required from design drawings / specifications	3	3	1	0.5
PC4. construct chambers to accommodate drainage systems	1	2	1	0.5
PC5. determine fitting requirements for various types of pipes for installation according to given specifications and site requirements	2.5	4	1	0
PC6. check if the area is prepared for laying the pipes for underground, above ground and overhead piping systems	1	2	1	0.5
<i>Perform installation of drainage systems</i>	11	21	5	2.5
PC7. install the various components of sanitary drainage system such as drainage pipes, ventilation/anti-siphonage pipes and their fittings, manholes, traps, cleanouts, catch basins, inspection chamber, soak pit etc.	3	6	1	1
PC8. perform fitting activities on various types of pipes such as stoneware (SW) pipes, polyvinyl chloride (PVC) pipes, cast iron (CI) pipes, asbestos cement (AC) pipes, reinforced cement concrete (RCC) pipes or high-density polyethylene (HDPE) pipes	3	6	1	0.5
PC9. install storm water and sub-soil drainage system	2	3	1	0.5
PC10. install different types of pumps used in sanitary and drainage systems such as submersible water pumps, dewatering pumps (for rainwater piping) etc.	2	3	1	0.5
PC11. install pipework for water treatment and sewage treatment plant	1	3	1	0
<i>Post-installation activities</i>	8	11	4	2
To be competent, the user/individual on the job must be able to:				
PC12. test the installation and check for proper functioning as per relevant standards and job	2	3	1	0

Qualification Pack

specifications				
PC13. repair faulty drainage pipes and traps	1	2.5	1	0.5
PC14. ensure that all inspection openings and covers are fitted according to relevant standards and job specifications	1	2	1	0.5
PC15. backfill excavated areas to secure the installation	1	2	1	0.5
PC16. mark signage after the plumbing task has been completed	1	0.5	0	0
PC17. clear the work area and dispose, reuse or recycle left over materials according to legislation, regulations, codes of practice and job specification	1	0.5	0	0
PC18. clean and store tools and equipment according to manufacturer recommendations and workplace procedures	1	0.5	0	0.5
NOS Total	30	49	14	7

National Occupational Standards (NOS) Parameters

NOS Code	PSC/N0135
OS Name	Install drainage systems
Sector	Plumbing
Sub-Sector	Industrial / Non-Industrial Plumbing (As per NBC 2016 Classification)
Occupation	Plumbing Systems Installation and Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	16/07/2020
Next Review Date	16/07/2025
NSQC Clearance Date	

Qualification Pack

PSC/N0134: Install plumbing fixtures

Description

This unit deals in detail with installing plumbing fixtures in accordance with industry standards and site requirements.

Scope

This unit/task covers the following

- Prepare for installation of fixtures
- Install sanitary fixtures, support and related accessories
- Perform post-Installation activities

Elements and Performance Criteria

Prepare for installation of fixtures

To be competent, the user/individual on the job must be able to:

- PC1. tally the count and quality of fixtures, parts, support material provided in the packing with the manufacturer's list or order form
- PC2. select size, type and quantity of fixture and trim for specific application according to given specifications
- PC3. locate and mark the position of fixtures and fixture supports in structures

Install sanitary fixtures, support and related accessories

To be competent, the user/individual on the job must be able to:

- PC4. cut the physical structures such as walls, concrete in line with correct markings and specifications for performing internal pipe installations
- PC5. install supports for plumbing piping using appropriate fasteners to ensure grade, spacing and alignment
- PC6. install fixtures as per specifications without damage to fixture, pipework, the surrounding environment etc.
- PC7. Install and secure the sensor for touchless fittings and fixtures in the slot provided slot.
- PC8. insert batteries for sensor-based fittings and fixtures safely and in compliance to manufacturer's specifications
- PC9. connect fixture to water supply, drainage and electricity supply ensuring proper functioning, safety and compliance to manufacturer's specifications

Perform post-Installation activities

To be competent, the user/individual on the job must be able to:

- PC10. plumb and level the supports and fixtures installed to ensure alignment and balance
- PC11. check if all installations are properly sized, supported and functioning
- PC12. identify and rectify faults that are within limits of expertise and authority and escalate others to authorized personnel
- PC13. clear the work area and dispose, reuse or recycle left over materials according to regulations and codes of practice

Qualification Pack

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. organization's policies on quality and delivery standards, safety and hazards, integrity, dress code, etc.
- KU2. individual's role in the workflow
- KU3. risk and impact of not following defined procedures/work instructions
- KU4. standards, regulations and codes of practice relevant to the plumbing industry
- KU5. alignment and elevation techniques used in plumbing systems
- KU6. types of plumbing related fixtures, supports (such as carriers, blocking and wall hangers) and fasteners (such as anchors, bolts and clamps)
- KU7. tools and equipment such as hand tools including adjustable wrench, ball-peen hammer, basin wrench, chalk line, chisel, file, hacksaw, level, pliers, lineman, needle nose, water pump, groove lock, plumb bob, pry bars, rubber mallet, screwdrivers (complete set) and power tools such as power drill and screw gun
- KU8. lifting/load shifting equipment including ladders, height scaffolding, elevated work platforms, hand trolleys, hoists and jacks
- KU9. sealants and adhesives, plumber's putty
- KU10. characteristics, materials, finishes, uses, limitations and performance measures of plumbing related fixtures
- KU11. plumbing for various types of water closets
- KU12. types of urinal, description of flushing, devices, lipper automatic tanks
- KU13. principles of siphon ball valves in a flushing system
- KU14. types of wash basin, sinks, kitchen sink sizes and its description
- KU15. types of fittings and fixtures that come with sensors
- KU16. basic working principal of sensor faucet
- KU17. principles of solenoid ball valves and sensors in touchless system
- KU18. accessories required for installing wash basin, sizes of mirror, glass shelf, towel rail
- KU19. description and sizes of pantry and laundry sinks, their waste outlets, bathtubs and its accessories
- KU20. importance of introducing the traps of the sanitary fittings, both deep seal traps and low seal traps
- KU21. conservancy system and water carriage system and the combination system
- KU22. correct practices for installing plumbing fixtures
- KU23. codes, standards and regulations applicable for the installation of plumbing fixtures

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. prepare checklists, reports and fill out forms in local language or Hindi/English
- GS2. measure all dimensions used in plumbing in metric scale
- GS3. perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS4. read and interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS5. state information, doubts and concerns about work related matters in local language or Hindi/English
- GS6. plan one's daily tasks to achieve maximum productivity
- GS7. be punctual and work as per agreed priorities
- GS8. listen to customer's concerns and doubts carefully and address them
- GS9. be courteous and polite with customers and team members
- GS10. establish workable solutions for problems in hand in consultation with others and record them
- GS11. breakdown relevant work process into its constituent activities for ease of analysis

Qualification Pack

GS12. identify ways to increase productivity and reduce errors

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for installation of fixtures</i>	8	12	3	2
To be competent, the user/individual on the job must be able to:				
PC1. tally the count and quality of fixtures, parts, support material provided in the packing with the manufacturer's list provided or order form	2	3	1	0.5
PC2. select size, type and quantity of fixture and trim for specific application according to given	3	4	1	0.5
PC3. locate and mark the position of fixtures and fixture supports in structures, using measuring and marking instruments as per the	3	5	1	1
<i>Install sanitary fixtures support and related</i>	16	28	7	3
To be competent, the user/individual on the job must be able to:				
PC4. cut the physical structures such as walls, concrete in line with correct markings and specifications for performing internal pipe installations	3	6	1	0
PC5. install supports for plumbing piping using appropriate fasteners to ensure grade, spacing	3	6	1	1
PC6. install fixtures as per specifications without damage to fixture, pipework, the surrounding	3	6	1	1
PC7. install the sensor of touchless fittings and fixtures in the slot provided and secure it with a	2	2	2	0.5
PC8. insert batteries for sensor-based fittings and fixtures safely and in compliance to manufacturer's specifications	2	2	2	
PC9. connect fixture to water supply, drainage and electricity supply ensuring proper	3	6	0	0.5
<i>Ensure proper functioning</i>	6	9	4	2
To be competent, the user/individual on the job must be able to:				
PC10. plumb and level the supports and fixtures installed to ensure alignment and balance	2	2	1	0.5
PC11. check if all installations are properly sized, supported and functioning	1	3	1	1
PC12. identify and rectify faults that are within limits of expertise and authority and escalate others to authorized personnel	2	3	1	0.5

Qualification Pack

PC13. clear the work area and dispose, reuse or recycle left over materials according to legislation, regulations, codes of practice and job specification	1	1	1	0
NOS Total	30	49	14	7

National Occupational Standards (NOS) Parameters

NOS Code	PSC/N0134
OS Name	Install plumbing fixtures
Sector	Plumbing
Sub-Sector	Industrial / Non-Industrial Plumbing (As per NBC 2016 Classification)
Occupation	Plumbing Systems Installation and Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	16/07/2020
Next Review Date	16/07/2025
NSQC Clearance Date	

Qualification Pack

PSC/N0136: Perform troubleshooting and maintenance for domestic plumbing fixtures and systems

Description

This unit deals in detail with performing maintenance activities, identifying and rectifying faults in domestic plumbing systems and fixtures as per the standards.

Scope

This unit/task covers the following

- Identify faults in domestic plumbing systems and fixtures
- Perform repair and maintenance activities
- Post-maintenance activities

Elements and Performance Criteria

Identify faults in domestic plumbing systems and fixtures

To be competent, the user/individual on the job must be able to:

- PC1. detect blockages and damage in plumbing pipes, fitting and fixtures
- PC2. conduct hydro test for checking leakages and pressure levels within piping systems
- PC3. apply required water pressure to check joints in piping systems
- PC4. identify causes of water pressure or water flow problems

Perform repair and maintenance activities

To be competent, the user/individual on the job must be able to:

- PC5. rectify fault in case pipework is faulty
- PC6. remove air lock and blockages in the pipes that are installed
- PC7. repair and maintain water supply tanks and valves
- PC8. unclog drains and drain's strainer baskets
- PC9. repair broken sewer, dripping faucets and fixtures that are not working properly
- PC10. resolve leakages, loosening and jamming of fittings
- PC11. implement measures to reduce noise in pipes and fixtures
- PC12. inspect and maintain the septic systems on a timely basis
- PC13. perform basic services for appliances such as water heaters, washing machines and dishwashers etc.

Post-maintenance activities

To be competent, the user/individual on the job must be able to:

- PC14. clean up spills quickly after the task has been completed
- PC15. empty waste containers as per organisational procedures
- PC16. discard oily rags and flammable materials as per industry practices
- PC17. record daily logs in a specified format for activities such as maintenance and installation

Qualification Pack

PC18. guide customers on proper care and maintenance of plumbing systems

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. organization's policies on quality and delivery standards, safety and hazards, integrity, dress code, etc.
- KU2. risk and impact of not following defined procedures/work instructions
- KU3. organisational requirements of documentation for work
- KU4. organisational policies on repair work w.r.t. cost, time, material, process, etc.
- KU5. standards, regulations and codes of practice relevant to the plumbing industry
- KU6. types of plumbing related tools, equipment, fixtures, pipes, fittings, supports, fasteners, etc.
- KU7. various pipes used in plumbing such as metal pipes - cast iron (CI), galvanised iron (GI); plastic pipes -polyvinyl chloride (PVC) pipes, chlorinated polyvinyl chloride (cPVC); stoneware pipes; soft, semi-soft and hard temper
- KU8. characteristics, materials, finishes, uses, limitations and performance measures of plumbing related fixtures
- KU9. SI system of measurement
- KU10. properties of water, including pressure and flow rates
- KU11. mathematical formulas needed to calculate pipe length and piping offsets
- KU12. capillary action, thermal expansion and fabrication techniques to prevent leaking installations
- KU13. characteristics and the application of different pipe fittings and fixture supports, including fixing and jointing techniques
- KU14. process of mains supply of water and drainage and their plumbing
- KU15. layout of piping systems
- KU16. various fit off processes and their tools and principles
- KU17. common plumbing problems with respect to fixtures, pipes and fittings and their remedial and preventive measures
- KU18. test procedures to check proper functioning of the fixtures and pipework installed
- KU19. application of mechanical and hydraulic principles for clearing blockages
- KU20. corrosion protection such as coatings and tape
- KU21. correct practices for troubleshooting and maintenance for plumbing fixtures and systems

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. write common words/signs and set phrases used in the work
- GS2. prepare checklists, reports and fill out forms in local language or Hindi/English
- GS3. measure all dimensions used in plumbing in metric scale
- GS4. perform arithmetic calculations of addition, subtraction, multiplication and division processes
- GS5. read and interpret information (symbols, dimensions, terminology, dates etc.) given in local language or Hindi
- GS6. state information, doubts and concerns about work related matters in local language or Hindi/English
- GS7. spot discrepancies or errors and select the most efficient solution
- GS8. plan one's daily tasks to achieve maximum productivity
- GS9. be punctual and work as per agreed priorities
- GS10. listen to customer's concerns and doubts carefully and address them

Qualification Pack

GS11. be courteous and polite in communications with customers and team

GS12. establish workable solutions for problems in hand in consultation with others and record them

GS13. identify ways to improve quality of work and reduce errors

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify faults in domestic plumbing systems and fixtures</i>	6	12	3	1.5
To be competent, the user/individual on the job must be able to:				
PC1. detect blockages, leakages, and damage in plumbing pipes, fitting and fixtures	2	3	1	0.5
PC2. conduct hydro test for checking leakages and pressure levels within piping systems	2	3	1	0.5
PC3. apply required water pressure to check joints in piping systems	1	3	0.5	0.5
PC4. identify causes of water pressure or water flow problems	1	3	0.5	
<i>Perform repair and maintenance activities</i>	22	28	7	4
To be competent, the user/individual on the job must be able to:				
PC5. rectify fault in case pipework is faulty	2	3	0.5	0.5
PC6. remove air lock and blockages in the pipes that are installed	2	3	0.5	0.5
PC7. repair and maintain water supply tanks and valves	3	3	1	0.5
PC8. unclog drains and drain's strainer baskets	3	3	1	0.5
PC9. repair broken sewer, dripping faucets and fixtures that are not working properly	3	3	1	0.5
PC10. resolve leakages, loosening and jamming of fittings	2	3	1	0
PC11. implement measures to reduce noise in pipes and fixtures	2	3	1	0.5
PC12. inspect and maintain the septic systems on a timely basis	2	3	0.5	0.5
PC13. perform basic services for appliances such as water heaters, washing machines and dishwashers etc.	3	4	0.5	0.5
<i>Perform post-maintenance activities</i>	2	9	4	1.5
To be competent, the user/individual on the job must be able to:				
PC14. clean up spills quickly after the task has been completed	1	2	1	0.5
PC15. empty waste containers as per organisational procedures	1	1	1	0.5
PC16. discard oily rags and flammable materials as per industry practices	0	2	1	0.5
PC17. record daily logs in a specified format for activities such as maintenance and installation	0	2	1	0
PC18. guide customers on proper care and maintenance of plumbing systems	0	2	0	0
NOS Total	30	49	14	7

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	PSC/N0136
OS Name	Perform troubleshooting and maintenance for domestic plumbing fixtures and systems
Sector	Plumbing
Sub-Sector	Industrial / Non-Industrial Plumbing (As per NBC 2016 Classification)
Occupation	Plumbing Systems Installation and Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	16/07/2020
Next Review Date	16/07/2025
NSQC Clearance Date	

Qualification Pack

PSC/N9901: Apply health and safety practices at the workplace

Description

This unit is about following safety procedures, communicating potential hazards and dangers of accidents on the job.

Scope

This unit/task covers the following:

- Follow safety measures to avoid accidents
- Daily inspection of tools and equipment
- Deal with emergencies

Elements and Performance Criteria

Follow safety measures to avoid accidents

To be competent, the user/individual on the job must be able to:

- PC1. identify risks and hazards at the workplace
- PC2. wear personal protective equipment (PPE) as per the type of plumbing work
- PC3. place protective barricades and signages around the pits and trenches
- PC4. isolate the plumbing fittings and fixtures from electrical wiring to avoid accidents
- PC5. adhere to organisational procedures for reporting hazards and incidents to relevant authorities
- PC6. establish ventilation before entering underground work areas
- PC7. work safely in and around trenches, elevated places and confined areas
- PC8. ensure tools and hazardous materials are not left unattended
- PC9. ensure good housekeeping in order to prevent hazards e.g. fire
- PC10. dispose waste materials and used PPE according to regulations and codes of practice

Follow hygiene and sanitation practices

- PC11. follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing etc.
- PC12. clean and disinfect work area, materials/supplies, equipment etc. before and after use.
- PC13. report hygiene and sanitation issues to appropriate authority

Use tools, equipment and materials safely

- PC14. check that the tools, equipment and materials are in good condition and as per industry standards before use
- PC15. use power tools and machinery that are grounded
- PC16. replace or repair split or loose tools before use
- PC17. store and transport various plumbing materials safely

Qualification Pack

Deal with emergencies

PC18. follow workplace emergency and evacuation procedures

PC19. use a fire extinguisher correctly

PC20. use safe methods to free a person from electrocution

PC21. administer appropriate first aid (such as CPR etc.) to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. possible causes of risk, hazard or accident in the workplace

KU2. organisational procedures for upkeep of tools and plumbing materials, health and safety

KU3. location of all the general health and safety equipment in the workplace

KU4. meaning of “hazards” and “risks”

KU5. hazardous environment encountered during work such as underground areas, elevated areas, areas with water and electricity supply, presence of biological waste, under construction sites etc.

KU6. work practices and precautions to control and prevent risks, hazards and accidents

KU7. importance of each personal protective equipment used such as eye protection mask, hard hats, gloves, apron, rubber boots etc.

KU8. tools and plumbing equipment as per latest industry standards

KU9. preventative and remedial actions to be taken in case of exposure to toxic materials

KU10. specific safety and health related problems faced in domestic, commercial and institutional setups

KU11. various causes of fire and precautionary activities to prevent the fire accident

KU12. techniques of using the different fire extinguishers

KU13. rescue techniques applied during a fire hazard

KU14. various types of safety signs and meaning

KU15. appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, minor burns, poisoning, eye injuries etc.

KU16. potential injuries and ill health associated with incorrect handling of tools and equipment

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. write an accident/incident report in local language or English

GS2. read and comprehend labels, charts, signages, manuals, plumbing symbols etc.

GS3. question coworkers appropriately in order to clarify instructions and other issues

GS4. plan and organize the work schedule, work area, tools, equipment and materials for improved productivity

GS5. determine key considerations and priorities when faced with problems

GS6. seek official and authorised sources of help and guidance to resolve problems that cannot be solved at one's level of authority

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow safety measures to avoid accidents</i>	13	32	0	3
To be competent, the user/individual on the job must be able to:				
PC1. identify risks and hazards at the workplace	2	2	0	0.5
PC2. wear personal protective equipment as per the type of plumbing work	2	2	0	0.5
PC3. place protective barricades and signages around the pits and trenches	1	4	0	0.5
PC4. isolate the plumbing fittings and fixtures from electrical wiring to avoid accidents	1	4	0	0
PC5. adhere to organisational procedures for reporting hazards and incidents to relevant authorities	2	4	0	0.5
PC6. establish ventilation before entering underground work areas	1	4	0	0
PC7. work safely in and around trenches, elevated places and confined areas	1	3	0	0
PC8. ensure no tools and hazardous materials are left unattended	1	3	0	0
PC9. ensure good housekeeping in order to prevent hazards e.g. fire	1	3	0	0.5
PC10. dispose waste materials according to regulations and codes of practice	1	3	0	0.5
<i>Follow hygiene and sanitation practices</i>	3	8	0	1
To be competent, the user/individual on the job must be able to:				
PC11. follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing etc.	1	3	0	0.5
PC12. clean and disinfect work area, materials/supplies, equipment etc. before and after use.	1	3	0	0.5
PC13. report hygiene and sanitation issues to appropriate authority	1	2	0	0
<i>Use tools, equipment and materials safely</i>	6	9	0	1
To be competent, the user/individual on the job must be able to:				
PC14. check that the tools, equipment and materials are in good condition and as per industry standards before use	1	3	0	0.25
PC15. use power tools and machinery that are grounded	1	2	0	0.25
PC16. replace or repair split or loose tools before use	2	2	0	0.25
PC17. store and transport various plumbing materials safely	2	2	0	0.25

Qualification Pack

<i>Deal with emergencies</i>	8	14	0	2
To be competent, the user/individual on the job must be able to:				
PC18. follow workplace emergency and evacuation procedures	2	3	0	0.5
PC19. use a fire extinguisher correctly	2	4	0	0.5
PC20. use safe methods to free a person from electrocution	2	3	0	0.5
PC21. administer appropriate first aid (such as CPR etc.) to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.	2	4	0	0.5
NOS Total	30	63	0	7

National Occupational Standards (NOS) Parameters

NOS Code	PSC/N9901
NOS Name	Apply health and safety practices at the workplace
Sector	Plumbing
Sub-Sector	All
Occupation	All
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	16/07/2020
Next Review Date	16/07/2025
NSQC Clearance Date	

Qualification Pack

PSC/N9902: Work effectively with others

Description

This unit covers basic etiquette and competencies required in behavior and interactions with others at the workplace.

Scope

This unit/task covers the following:

- Communicate effectively
- Work in a team effectively
- Respect diversity

Elements and Performance Criteria

Communicate effectively

To be competent, the user/individual on the job must be able to:

- PC1. obtain complete information and instructions
- PC2. seek clarifications from appropriate source when required
- PC3. provide information accurately and clearly
- PC4. use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive

Work in a team effectively

To be competent, the user/individual on the job must be able to:

- PC5. prioritize tasks as required
- PC6. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks
- PC7. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict
- PC8. act upon constructive feedback from others

Respect diversity

To be competent, the user/individual on the job must be able to:

- PC9. transact with everyone without any personal bias based on gender, disability, caste, religion, colour, sexual orientation and culture
- PC10. recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation and culture at workplace
- PC11. report incidents of harassment and discrimination to appropriate authority

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

Qualification Pack

- KU1. legislation, standards, policies, and procedures followed in the company relevant to employment, behavior, harassment, discrimination and performance conditions
- KU2. reporting structure, inter-dependent functions, lines and procedures in the work area
- KU3. escalation matrix and procedures for reporting work and employment related issues
- KU4. types of harassment and discrimination based on gender, disability, caste, religion and culture and how to recognize it.
- KU5. importance of effective communication and the impact of poor communication on the employee, the employer and the customer
- KU6. importance of teamwork in organizational and individual success
- KU7. various components of effective communication such as tone and pitch
- KU8. importance of ethics and discipline for professional success
- KU9. how to express and address grievances appropriately and effectively
- KU10. importance and ways of managing interpersonal conflict effectively
- KU11. different types of disabilities and the challenges faced by persons with disability (PwD)
- KU12. laws, acts and provisions defined for PwD by the statutory bodies
- KU13. government and private schemes and benefits available for PwD
- KU14. Importance of gender sensitivity and equality.
- KU15. gender, disability and cultural biases, stereotypes and impact on others
- KU16. gender and its concepts such as gender roles, gender spectrum, gender as an identity
- KU17. legislations, grievance redressal mechanisms, and penalties against harassment in the workplace

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. write clear and legible notes, keep records, prepare to-do lists and take down instructions
- GS2. write basic numbers, quantities and basic work-related terminology for operational requirements in the local language and English
- GS3. read basic terminologies to accurately interpret labels, supervisor's instructions in the local language and English
- GS4. read and interpret accurate information from work-related documents and various relevant work instructions and records in local language or English
- GS5. interact with the concerned personnel appropriately (correct protocol and manner of speaking etc.)
- GS6. display active listening skills while interacting with co-workers and others in the workplace
- GS7. deliver consistent and reliable service to internal and external customers
- GS8. work with co-workers and supervisor to resolve any issues that threaten work quality as per the planned schedule

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Communicate effectively</i>	11	26	0	2
To be competent, the user/individual on the job must be able to:				
PC1. obtain complete information and instructions	3	8	0	0
PC2. seek clarifications from appropriate source when required	1	5	0	0
PC3. provide information accurately and clearly	3	7	0	1
PC4. use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive	4	6	0	1
<i>Work in a team effectively</i>	11	25	0	3
To be competent, the user/individual on the job must be able to:				
PC5. prioritize tasks as required	3	8	0	1
PC6. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks	3	4	0	1
PC7. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict	2	5	0	0
PC8. act upon constructive feedback from others				
<i>Respect diversity</i>	8	12	0	2
To be competent, the user/individual on the job must be able to:				
PC9. transact with everyone without any personal bias based on gender, disability, caste, religion, colour, sexual orientation and culture	4	6	0	1
PC10. recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation and culture at workplace and follow organizational policy for reporting the same.	4	6	0	1
NOS Total	30	63	0	7

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	PSC/N9902
NOS Name	Work effectively with others
Sector	Plumbing
Sub-Sector	All
Occupation	All
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	16/07/2020
Next Review Date	16/07/2025
NSQC Clearance Date	

Qualification Pack

SGJ/N1702: Optimize resource utilization at workplace

Description

This unit is about adopting sustainable practices and optimizing use of resources, especially material, energy and waste, in day-to-day operations at work.

Scope

This unit/task covers the following

- Material conservation practices
- Energy/electricity conservation practices
- Effective waste management/recycling practices

Elements and Performance Criteria

Material conservation practices

To be competent, the user/individual on the job must be able to:

- PC1. identify ways to optimize usage of material including water in various tasks/activities/processes
- PC2. check for spills/leakages in various tasks/activities/processes
- PC3. plug spills/leakages and escalate to appropriate authority if unable to rectify
- PC4. carry out routine cleaning of tools, machines and equipment

Energy/electricity conservation practices

To be competent, the user/individual on the job must be able to:

- PC5. identify ways to optimize usage of electricity/energy in various tasks/activities/processes
- PC6. check if the equipment/machine is functioning normally before commencing work and rectify wherever required
- PC7. report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment
- PC8. ensure electrical equipment and appliances are properly connected and turned off when not in use

Effective waste management/recycling practices

To be competent, the user/individual on the job must be able to:

- PC9. identify recyclable and non-recyclable, and hazardous waste generated
- PC10. segregate waste into different categories
- PC11. dispose non-recyclable waste appropriately
- PC12. deposit recyclable and reusable material at identified location
- PC13. follow processes specified for disposal of hazardous waste

Qualification Pack

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. potential hazards, risks and threats based on the nature of work
- KU2. layout of the workstation and electrical and thermal equipment used
- KU3. organization's procedures for minimizing waste
- KU4. efficient and inefficient utilization of material and water
- KU5. ways of efficiently managing material and water in the process
- KU6. basics of electricity and prevalent energy efficient devices
- KU7. ways to recognize common electrical problems
- KU8. common practices of conserving electricity
- KU9. usage of different colours of dustbins
- KU10. categorization of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics
- KU11. waste management and methods of waste disposal
- KU12. common sources of pollution and ways to minimize it

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1. record data on waste disposal at workplace
- GS2. complete statutory documents relevant to safety and hygiene
- GS3. read Standard Operating Practices (SOP) documents
- GS4. communicate with colleagues on the significance of greening of jobs
- GS5. make timely decisions for efficient utilization of resources
- GS6. complete tasks efficiently and accurately within stipulated time
- GS7. work with supervisors/team members to carry out work related tasks
- GS8. identify cause and effect of greening of jobs

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Material conservation practices</i>	4	8	0	0
To be competent, the user/individual on the job must be able to:				
PC1. identify ways to optimize usage of material including water in various tasks/activities/processes	1	2	0	0
PC2. check for spills/leakages in various tasks/activities/processes	1	2	0	0
PC3. plug spills/leakages and escalate to appropriate authority if unable to rectify	1	2	0	0
PC4. carry out routine cleaning of tools, machines and equipment	1	2	0	0
<i>Energy/electricity conservation practices</i>	4	8	0	0
To be competent, the user/individual on the job must be able to:				
PC5. identify ways to optimize usage of electricity/energy in various	1	2	0	0
PC6. check if the equipment/machine is functioning normally before commencing work	1	2	0	0
PC7. report malfunctioning (fumes/sparks/emission/vibration/noise) and	1	2	0	0
PC8. ensure electrical equipment and appliances are properly connected and turned off when not	1	2	0	0
<i>Effective waste management/recycling practices</i>	5	10	0	0
To be competent, the user/individual on the job must be able to:				
PC9. identify recyclable and non-recyclable, and hazardous waste generated	1	2	0	0
PC10. segregate waste into different categories	1	2	0	0
PC11. dispose non-recyclable waste appropriately	1	2	0	0
PC12. deposit recyclable and reusable material at identified location	1	2	0	0
PC13. follow processes specified for disposal of hazardous waste	1	2	0	0
NOS Total	13	26	0	0

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	SGJ/N1702
OS Name	Optimize resource utilization at workplace
Sector	Green Jobs
Sub-Sector	Other Green Jobs
Occupation	Resource Optimization
NSQF Level	3
Credits	
Version	1.0
Last Reviewed Date	16/12/2019
Next Review Date	27/04/2022
NSQC Clearance Date	

Qualification Pack

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score a minimum of 70% of total aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Recommended Pass % aggregate for QP: 70

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
PSC/N0132: Prepare for plumbing installations and maintenance	30	49	14	7	100	10
PSC/N0133: Install water supply systems	30	49	14	7	100	15
PSC/N0134: Install plumbing fixtures	30	49	14	7	100	15
PSC/N0135: Install drainage systems	30	49	14	7	100	15
PSC/N0136: Perform troubleshooting and maintenance for domestic	30	49	14	7	100	15
PSC/N9901: Apply health and safety practices at the workplace	30	63	0	7	100	10

Qualification Pack

PSC/N9902: Work effectively with others	30	63	0	7	100	10
SGJ/N1702: Optimize resource utilization at workplace at work place	13	26	26	26	26	10
Total	223	397	70	49	739	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Qualification Pack

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements that together specify the technical, generic, professional and organisational specific knowledge that an individual need in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication-related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.