



# Fire Systems Supervisor

QP Code: PSC/Q0119

Version: 1.0

NSQF Level: 5

Water Management and Plumbing Skill Council || Unit No-606, DLF Prime Tower  
Okhla Phase-1 New Delhi-110020

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## **PSC/Q0119: Fire Systems Supervisor**

### **Brief Job Description**

A Fire Systems Supervisor is responsible for installation, testing, commissioning and maintenance of fire protection systems. The individual also suggests modifications in the work requirements in line with local conditions and supervises the workforce to complete the tasks as per established standards.

### **Personal Attributes**

The individual must be able to do laborious work, perform independently on the assignment, lead a team and communicate with stakeholders. The individual must also be result oriented, meticulous and safety conscious.

### **Applicable National Occupational Standards (NOS)**

#### **Compulsory NOS:**

1. [PSC/N0158: Plan and prepare for installation and maintenance of fire protection systems](#)
2. [PSC/N0159: Install and commission fire protection systems](#)
3. [PSC/N0160: Ensure effective repair and maintenance of fire protection systems](#)
4. [PSC/N0136: Apply Health and Safety Practices at the Workplace](#)
5. [PSC/N0138: Implement Measures to Work Effectively](#)
6. [DGT/VSQ/N0103: Employability Skills \(90 Hours\)](#)

### **Qualification Pack (QP) Parameters**

<b>Sector</b>	Plumbing
<b>Sub-Sector</b>	Firefighting & Safety Systems
<b>Occupation</b>	Plumbing Systems Installation and Maintenance
<b>Country</b>	India
<b>NSQF Level</b>	5
<b>Credits</b>	18

<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/3119.1000
<b>Minimum Educational Qualification &amp; Experience</b>	Pursuing 3rd year of UG (Civil Engineering) OR Pursuing 3rd year of UG (Mechanical Engineering) OR 12th grade pass with 2 year NTC/ CITS/NAC with 1 Year of experience Relevant OR 12th grade Pass with 3 Years of experience Relevant OR Certificate-NSQF (Level-4 in Plumber - General) with 3 Years of experience Relevant
<b>Minimum Level of Education for Training in School</b>	12th Class
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	21 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	NA
<b>NSQC Approval Date</b>	
<b>Version</b>	1.0

## PSC/N0158: Plan and prepare for installation and maintenance of fire protection systems

### Description

This unit deals in detail with the requirement of an individual to plan and prepare for the installation of fire protection systems as per work requirements.

### Scope

The scope covers the following :

- Identify work requirements
- Plan and schedule project related tasks
- Organise for resources

### Elements and Performance Criteria

#### *Identify work requirements*

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

- PC1.** identify the type of fire systems to be installed at the site and the work involved from client inputs, project documents, work instructions, drawings and building plans
- PC2.** identify the type and nature of existing fire systems infrastructure at the worksite
- PC3.** identify the faults and drawbacks in the existing fire protection systems using appropriate techniques
- PC4.** identify site hazards and limitations such as electrical wiring and other complex structures for installation of fire protection systems
- PC5.** identify modifications required in the fire system drawings keeping in mind the local conditions
- PC6.** perform basic calculations to estimate time and material requirements

#### *Plan and schedule project related tasks*

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

- PC7.** establish the sequence and schedule of the tasks to be performed to complete the project requirements
- PC8.** plan a strategy for supervising multiple sites effectively
- PC9.** prepare a schedule for regular inspections to evaluate work progress
- PC10.** document the fire system installation plan, schedule and process flow as per organisational templates

#### *organise for resources*

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

- PC11.** estimate and source manpower as per plan in terms of welders, fitters, electricians, helpers etc.
- PC12.** Prepare the work allocation plan
- PC13.** communicate the fire systems work plan and procedure to the team

- PC14.** place order for the required resources such as type and amount of materials and equipment required to the concerned authority
- PC15.** escalate the issues that require expert help as per escalation matrix

## **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- KU1.** organisational quality procedures and processes within the context of work site
- KU2.** organisation's policies on delivery standards, safety and hazards, integrity, dress code, etc.
- KU3.** individual's role in the workflow
- KU4.** documentation procedure followed in the organisation
- KU5.** reporting procedure practiced within an organisation
- KU6.** risk and impact of not following defined procedures/work instructions
- KU7.** project documents for tasks to be performed for fire protection systems
- KU8.** impact of site limitations on the installation and maintenance work
- KU9.** various types of fire protection and fire suppression systems within different setups
- KU10.** procedure to inspect piping connections within a building for adequate water supply
- KU11.** importance of work instructions, drawings and building plans for plumbing project
- KU12.** different types of hazards at the work site
- KU13.** time and material requirements for the project
- KU14.** basic measurements performed for the identification of the types of pipes, fittings and materials required for the project
- KU15.** industry accepted standards for pipes, fittings and fixtures for fire systems
- KU16.** steps involved in planning the tasks to be performed as per inputs obtained
- KU17.** procedure to be followed for allocating manpower in a given project
- KU18.** considerations to decide the sequence of tasks to be performed
- KU19.** steps to prepare a process flow chart for the project
- KU20.** steps to prepare an inspection plan to evaluate the work progress
- KU21.** importance of discussing the work plan with the team
- KU22.** importance of planning a strategy to manage multiple sites effectively

## **Generic Skills (GS)**

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

- GS1.** read and write brief notes in local language/Hindi/English
- GS2.** read and write common, fire equipment, building construction and plumbing symbols
- GS3.** fill in relevant forms for material requisitioning, reporting, employment and other purposes
- GS4.** comprehend required quantities, names of materials, equipment and supplies and related forms and formats
- GS5.** provide verbal instructions and information about work related matters in local language or Hindi or English

- GS6.** state information, doubts and concerns about work related matters with clarity and in a professional manner
- GS7.** evaluate adequacy of information available for sound decision making
- GS8.** co-ordinate with a range of team members and activities
- GS9.** plan work activities and communicate to others whose work plans and timelines may be affected
- GS10.** identify the objectives, concerns and priorities of the client
- GS11.** identify array of solutions that addresses needs of the client
- GS12.** apply problem solving skills
- GS13.** seek official and authorised sources of help and guidance to resolve problems that cannot be solved at one's level of authority
- GS14.** diagnose the problem for root cause, identify the possible solution(s) and take up an optimum /best practical solution(s)
- GS15.** use logical thinking and make judgments
- GS16.** use reasoning skills and intuition to detect any potential problems which could arise



## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify work requirements</i>	<b>12</b>	<b>18</b>	<b>6</b>	<b>3</b>
<b>PC1.</b> identify the type of fire systems to be installed at the site and the work involved from client inputs, project documents, work instructions, drawings and building plans	2	3	1	0.5
<b>PC2.</b> identify the type and nature of existing fire systems infrastructure at the worksite	2	3	1	0.5
<b>PC3.</b> identify the faults and drawbacks in the existing fire protection systems using appropriate techniques	2	3	1	0.5
<b>PC4.</b> identify site hazards and limitations such as electrical wiring and other complex structures for installation of fire protection systems	2	3	1	0.5
<b>PC5.</b> identify modifications required in the fire system drawings keeping in mind the local conditions	2	3	1	0.5
<b>PC6.</b> perform basic calculations to estimate time and material requirements	2	3	1	0.5
<i>Plan and schedule project related tasks</i>	<b>8</b>	<b>14</b>	<b>4</b>	<b>2</b>
<b>PC7.</b> establish the sequence and schedule of the tasks to be performed to complete the project requirements	2	3.5	1	0.5
<b>PC8.</b> plan a strategy for supervising multiple sites effectively	2	3.5	1	0.5
<b>PC9.</b> prepare a schedule for regular inspections to evaluate work progress	2	3.5	1	0.5
<b>PC10.</b> document the fire system installation plan, schedule and process flow as per organisational templates	2	3.5	1	0.5
<i>organise for resources</i>	<b>10</b>	<b>17</b>	<b>4</b>	<b>2</b>
<b>PC11.</b> estimate and source manpower as per plan in terms of welders, fitters, electricians, helpers etc.	2	3.5	1	0.5



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> Prepare the work allocation plan	2	3.5	1	0.5
<b>PC13.</b> communicate the fire systems work plan and procedure to the team	2	3.5	1	0.5
<b>PC14.</b> place order for the required resources such as type and amount of materials and equipment required to the concerned authority	2	3.5	0.5	0.25
<b>PC15.</b> escalate the issues that require expert help as per escalation matrix	2	3	0.5	0.25
<b>NOS Total</b>	<b>30</b>	<b>49</b>	<b>14</b>	<b>7</b>

**National Occupational Standards (NOS) Parameters**

<b>NOS Code</b>	PSC/N0158
<b>NOS Name</b>	Plan and prepare for installation and maintenance of fire protection systems
<b>Sector</b>	Plumbing
<b>Sub-Sector</b>	Firefighting & Safety Systems
<b>Occupation</b>	Plumbing Systems Installation and Maintenance
<b>NSQF Level</b>	5
<b>Credits</b>	5
<b>Version</b>	1.0
<b>Next Review Date</b>	NA

## PSC/N0159: Install and commission fire protection systems

### Description

This unit deals in detail with the requirement of an individual to perform required checks for the testing and commissioning of the installed fire protection systems.

### Scope

The scope covers the following :

- Monitor the installation of fire protection systems
- Test the installed fire protection systems
- Commission the installed fire protection systems

### Elements and Performance Criteria

#### *Monitor the installation of fire protection systems*

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

- PC1.** check the adequacy of materials and project resources at the worksite to ensure that the task requirements are met
- PC2.** check and ensure that the fittings and accessories to be used are compliant to the site requirements
- PC3.** mark the route and lay out the piping for the fire protection system
- PC4.** instruct the team for installation of fire protection system components as per plan
- PC5.** check whether the welding operations are being performed using correct welding rods, file size, welding preparation etc.
- PC6.** check and confirm angle elevation and levelling
- PC7.** ensure that the workmanship and the erections are in line with task requirements

#### *Test the installed fire protection systems*

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

- PC8.** plan the sequence of testing activities to be performed to test the installed fire protection systems
- PC9.** perform visual and physical inspection of all installed fire protection systems including fire sprinklers, fire hydrants, water hose reel, water sprays/mist systems, valves, gauges, piping, etc.
- PC10.** perform pressure tests to ensure adequate water flow and zero leakage in the installed piping system
- PC11.** test the fire pump to evaluate pump's performance such as flow rate and pressure with respect to site requirements
- PC12.** conduct a partial-flow trip test to ensure the system activates appropriately in response to a fire emergency
- PC13.** conduct tests to evaluate the system performance with respect to required standards
- PC14.** confirm that the installation adheres to the established standards for fire safety for the building/structure
- PC15.** record faults to be rectified and improvements required

**PC16.** ensure that all the modifications are done to resolve the faults

*Commission the installed fire protection systems*

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

**PC17.** ensure that the work site is clear of flammable materials and unwanted waste after the completion of the project

**PC18.** verify that the water supply components are as per approved designs

**PC19.** ensure that the installed sprinklers have adequate supply of water as per demand

**PC20.** carry out start-up procedures for operating the fire protection systems, at the minimal initial recommended loads

**PC21.** confirm that the functioning meets specifications by conducting a trial run of the equipment at full power/speed/flow

**PC22.** deal with equipment malfunction and rectify faults during the commissioning process

**PC23.** complete necessary commissioning documentation and handover

**PC24.** provide training to the operators of the fire protection systems

## **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

**KU1.** organisational quality procedures and processes within the context of plumbing work site

**KU2.** organization's policies on delivery standards, safety and hazards, integrity, dress code, etc.

**KU3.** reporting procedure to be followed in an organisation

**KU4.** organisational documents such as product manuals, catalogues etc.

**KU5.** individual's role in the workflow

**KU6.** risk and impact of not following defined procedures/work instructions

**KU7.** documentation activities conducted in the organisation

**KU8.** procedure to check the installed piping with respect to site requirements

**KU9.** welding operations and correct welding practices applicable for fire protection systems

**KU10.** use of fittings, accessories and various types of materials used in the fire protection systems installation and commissioning

**KU11.** procedure to establish the sequence of operations for fire protection systems installation and commissioning

**KU12.** importance of workmanship and accurate erections for installation of fire systems

**KU13.** importance of adhering to approved project design and modifications for site installations

**KU14.** correct work practices for angle elevation and levelling for fire protection systems

**KU15.** steps to check the availability of materials and required resources at the work site

**KU16.** considerations to ensure minimal wastage and proper consumption of materials at the work site

**KU17.** inspections performed to check the installation of fire protection systems

**KU18.** importance of adhering to health and safety practices at the workplace

**KU19.** steps involved in the testing and troubleshooting of the installed fire system/equipment

**KU20.** techniques for testing and ensuring proper water circulation at the rising main pipes

**KU21.** procedure to conduct pressure test for installed piping systems

- KU22.** steps to test and evaluate the fire system's performance with respect to site requirements
- KU23.** process to conduct partial-flow trip test for installed fire system
- KU24.** techniques to test the sprinkler and its components as per approved standards
- KU25.** steps to perform final checks for the installed fire protection systems
- KU26.** techniques to rectify faults in the fire protection systems
- KU27.** procedure to inspect gauges to ensure required water pressure
- KU28.** impact of not following correct practices at the work site

## **Generic Skills (GS)**

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

- GS1.** read and write brief notes in local language/Hindi/English
- GS2.** read and write common, fire equipment, building construction and plumbing symbols
- GS3.** fill in relevant forms for material requisitioning, reporting, employment and other purposes
- GS4.** comprehend required quantities, names of materials, equipment and supplies and related forms and formats
- GS5.** provide verbal instructions and information about work related matters in local language or Hindi or English
- GS6.** state information, doubts and concerns about work related matters with clarity and in a professional manner
- GS7.** evaluate adequacy of information available for sound decision making
- GS8.** co-ordinate with a range of team members and activities
- GS9.** plan work activities and communicate to others whose work plans and timelines may be affected
- GS10.** identify the objectives, concerns and priorities of the client
- GS11.** identify array of solutions that addresses needs of the client
- GS12.** apply problem solving skills
- GS13.** seek official and authorised sources of help and guidance to resolve problems that cannot be solved at one's level of authority
- GS14.** diagnose the problem for root cause, identify the possible solution(s) and take up an optimum /best practical solution(s)
- GS15.** use logical thinking and make judgments
- GS16.** use reasoning skills and intuition to detect any potential problems which could

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Monitor the installation of fire protection systems</i>	<b>9</b>	<b>14</b>	<b>3.5</b>	<b>1.75</b>
<b>PC1.</b> check the adequacy of materials and project resources at the worksite to ensure that the task requirements are met	1.5	2	0.5	0.25
<b>PC2.</b> check and ensure that the fittings and accessories to be used are compliant to the site requirements	1.5	2	0.5	0.25
<b>PC3.</b> mark the route and lay out the piping for the fire protection system	1.5	2	0.5	0.25
<b>PC4.</b> instruct the team for installation of fire protection system components as per plan	1.5	2	0.5	0.25
<b>PC5.</b> check whether the welding operations are being performed using correct welding rods, fillet size, welding preparation etc.	1	2	0.5	0.25
<b>PC6.</b> check and confirm angle elevation and levelling	1	2	0.5	0.25
<b>PC7.</b> ensure that the workmanship and the erections are in line with task requirements	1	2	0.5	0.25
<i>Test the installed fire protection systems</i>	<b>11</b>	<b>19</b>	<b>6.5</b>	<b>3.25</b>
<b>PC8.</b> plan the sequence of testing activities to be performed to test the installed fire protection systems	1.5	2	0.5	0.25
<b>PC9.</b> perform visual and physical inspection of all installed fire protection systems including fire sprinklers, fire hydrants, water hose reel, water sprays/mist systems, valves, gauges, piping, etc.	1.5	2.5	1	0.5
<b>PC10.</b> perform pressure tests to ensure adequate water flow and zero leakage in the installed piping system	1.5	2.5	1	0.5
<b>PC11.</b> test the fire pump to evaluate pump's performance such as flow rate and pressure with respect to site requirements	1.5	2	1	0.5

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> conduct a partial-flow trip test to ensure the system activates appropriately in response to a fire emergency	1	2	1	0.5
<b>PC13.</b> conduct tests to evaluate the system performance with respect to required standards	1	2	0.5	0.25
<b>PC14.</b> confirm that the installation adheres to the established standards for fire safety for the building/structure	1	2	0.5	0.25
<b>PC15.</b> record faults to be rectified and improvements required	1	2	0.5	0.25
<b>PC16.</b> ensure that all the modifications are done to resolve the faults	1	2	0.5	0.25
<i>Commission the installed fire protection systems</i>	<b>10</b>	<b>16</b>	<b>4</b>	<b>2</b>
<b>PC17.</b> ensure that the work site is clear of flammable materials and unwanted waste after the completion of the project	1.5	2	0.5	0.25
<b>PC18.</b> verify that the water supply components are as per approved designs	1.5	2	0.5	0.25
<b>PC19.</b> ensure that the installed sprinklers have adequate supply of water as per demand	1.5	2	0.5	0.25
<b>PC20.</b> carry out start-up procedures for operating the fire protection systems, at the minimal initial recommended loads	1.5	2	0.5	0.25
<b>PC21.</b> confirm that the functioning meets specifications by conducting a trial run of the equipment at full power/speed/flow	1	2	0.5	0.25
<b>PC22.</b> deal with equipment malfunction and rectify faults during the commissioning process	1	2	0.5	0.25
<b>PC23.</b> complete necessary commissioning documentation and handover	1	2	0.5	0.25
<b>PC24.</b> provide training to the operators of the fire protection systems	1	2	0.5	0.25
<b>NOS Total</b>	<b>30</b>	<b>49</b>	<b>14</b>	<b>7</b>



## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	PSC/N0159
<b>NOS Name</b>	Install and commission fire protection systems
<b>Sector</b>	Plumbing
<b>Sub-Sector</b>	Firefighting & Safety Systems
<b>Occupation</b>	Plumbing Systems Installation and Maintenance
<b>NSQF Level</b>	5
<b>Credits</b>	5
<b>Version</b>	1.0
<b>Next Review Date</b>	NA

## PSC/N0160: Ensure effective repair and maintenance of fire protection systems

### Description

This unit deals in detail with the requirement of an individual to conduct preventive maintenance and repair of fire protection systems as per the industry specified standards.

### Scope

The scope covers the following :

- Prepare for repair and maintenance
- Conduct maintenance
- Conduct repair

### Elements and Performance Criteria

#### *Prepare for repair and maintenance*

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

- PC1.** ascertain maintenance and repair requirements from the client inputs, work instructions and standard operating procedures provided
- PC2.** obtain and interpret diagrams, sketches, blueprints, and manufacturers' manuals for the fire systems to be maintained and repaired
- PC3.** isolate the components/equipment that need repair and maintenance
- PC4.** identify the tasks to be performed for maintenance of the fire protection systems as per the maintenance agreement and manufacturer's specifications
- PC5.** prepare checklists and calendar for various scheduled maintenance activities for fire protection systems

#### *Conduct maintenance*

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

- PC6.** conduct visual and physical inspections of the fire protection systems as per checklists and calendar
- PC7.** check the activation mechanism of alarm systems and note the response time for performance evaluation
- PC8.** check the accessories, fittings and components of fire systems to ensure there are no signs of corrosion or wearing out
- PC9.** position and lock the control/section valves correctly to ensure there is zero leakage and adequate water pressure
- PC10.** check the discharge mechanism of drain valves and control valves to ensure they are operational and in proper condition
- PC11.** verify that all fire hydrants, hose and nozzles are in place, properly arranged, and in serviceable condition
- PC12.** operate all fire pumps to confirm adequate pressure and water flow across fire protection systems

- PC13.** confirm that the emergency fire pump fuel supply is adequate to ensure full operability at times of need
- PC14.** check the gauges to ensure they show correct readings for water pressure
- PC15.** check the sprinkler heads for any leakages or defects and replace if required
- PC16.** ensure that the static pressure, running pressure and flow rate of fire systems is maintained as per manufacturer guidelines
- PC17.** ensure that the hydraulic nameplate is secured to the sprinkler riser and is legible
- PC18.** check weight or liquid level on all pressure containers by following standard operating procedure
- PC19.** empty the pumps and refill using industry approved engine oil as per manufacturer guidelines
- PC20.** add antifreeze solution or other industry approved additives to prevent freezing of pipes in winters
- PC21.** enter the type of maintenance performed correctly in the organisational log book
- PC22.** ensure that the debris and contaminants from filters/strainers are cleared by following standard practices
- PC23.** record status, observations and work required to be done after all inspections and tests

#### Conduct repair

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

- PC24.** remove faulty items or components using appropriate procedures, tools and equipment for fire protection systems
- PC25.** select and fit the items/components replaced by following manufacturer recommendations and site specifications
- PC26.** adjust the equipment and/or components of fire protection systems to ensure job specifications are met
- PC27.** recharge the fire system with water by following job specifications and correct practices
- PC28.** repair the alarm systems that show problems in getting activated automatically
- PC29.** repair or replace the sprinkler heads and valves that show signs of damage to ensure proper operation during a fire
- PC30.** repair or replace the piping, hangers and seismic braces after a thorough inspection of the problems such as corroded piping or hangers, broken hangers, improper pipe alignment etc.
- PC31.** open any blockages that are hindering the flow of water across fire piping systems
- PC32.** repair the fire pumps that show sign of poor performance such inadequate water flow, and poor discharge mechanism
- PC33.** replace the depleted batteries to ensure that fire systems run effectively when required
- PC34.** replace or repair the non-functional relays, wiring, contactor in the fire alarm systems
- PC35.** install a backflow prevention device for preventing reverse flow within fire piping
- PC36.** install a relieving device such as expansion chambers to prevent over pressurization of fire piping
- PC37.** replace the corroded piping as per need and site requirements
- PC38.** repair or replace the pressure gauges showing incorrect readings
- PC39.** document the key findings observed during repair of fire protection systems

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organisational quality procedures and processes within the context of work site
- KU2.** organisation's policies on delivery standards, safety and hazards, integrity, dress code, etc.
- KU3.** individual's role in the workflow
- KU4.** organisational policy on maintenance of fire systems
- KU5.** reporting procedure practiced within an organisation
- KU6.** documentation followed within an organisation
- KU7.** risk and impact of not following defined procedures/work instructions
- KU8.** organisational policy on maintenance of fire protection systems
- KU9.** components and equipment used in fire protection and fire suppression systems
- KU10.** diagrams, sketches, blueprints and manufacturer manuals for fire systems
- KU11.** steps to perform functional testing for fire protection systems
- KU12.** type of faults that occur in fire protection systems and related visual inspection methods for repair and maintenance
- KU13.** fittings, accessories and types of piping used in fire systems
- KU14.** process to check the activation mechanism, control valves, signs of corrosion in fire alarm systems
- KU15.** impact of improper positioning and locking of valves in fire systems
- KU16.** process to verify the positioning of hose and nozzles in fire hydrant systems
- KU17.** process to check fire pumps for adequate pressure and water flow
- KU18.** importance of ensuring adequate fuel in emergency pumps
- KU19.** process to check the leakage and defects in the sprinkler heads
- KU20.** importance of maintaining static pressure, running pressure and flow rate at desirable level
- KU21.** role of a hydraulic nameplate in fire systems
- KU22.** considerations to check for weight or liquid level on all pressure containers
- KU23.** procedure followed for emptying and refilling the pumps with engine oil
- KU24.** importance of adding an antifreeze in pipes during winters
- KU25.** techniques for the removal of debris and other contaminants from fire systems
- KU26.** techniques to repair alarm systems to ensure proper activation
- KU27.** techniques to repair or replace corroded or damaged sprinkler heads, piping, hangers and seismic braces
- KU28.** methods of repair of control valves showing non-operability and improper drainage
- KU29.** methods used to unblock the piping to ensure adequate flow of water
- KU30.** techniques to repair faulty fire pumps showing signs of inadequate water flow and discharge pressure
- KU31.** methods to replace depleted batteries used in fire systems
- KU32.** repair and replacement methods for non-functional relays, wiring, contactor in the fire alarm systems
- KU33.** installation methods for backflow prevention device and expansion chambers
- KU34.** techniques followed for repair and replacement of pressure gauges showing incorrect readings and corroded piping

- KU35.** importance of ensuring that the work site is clean and tidy after maintenance and repair tasks
- KU36.** importance of disposing unwanted waste and flammable materials from the work site
- KU37.** standards applicable to fire protection systems such as National Buildings Code (NBC), National Environmental Policy Act (NEPA) and National Fire Protection Association (NFPA) regulations

## **Generic Skills (GS)**

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

- GS1.** read and write brief notes in local language/Hindi/English
- GS2.** read and write common, fire equipment, building construction and plumbing symbols
- GS3.** write reports based on inspections done for fire systems in local language/Hindi/English
- GS4.** enter data into log books related to the work being performed
- GS5.** state information, doubts and concerns about work related matters with clarity and in a professional manner
- GS6.** evaluate adequacy of information available for sound decision making
- GS7.** identify the objectives, concerns and priorities of the client
- GS8.** identify array of solutions that addresses needs of the client
- GS9.** apply problem solving skills
- GS10.** seek official and authorised sources of help and guidance to resolve problems that cannot be solved at one's level of authority
- GS11.** diagnose the problem for root cause, identify the possible solution(s) and take up an optimum /best practical solution(s)
- GS12.** use logical thinking and make judgments
- GS13.** use reasoning skills and intuition to detect any potential problems which could arise
- GS14.** ensure timely completion of work as per agreed standards
- GS15.** think through the problem, evaluate the possible solution(s) and take up an optimum /best possible solution(s)

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for repair and maintenance</i>	<b>5</b>	<b>7</b>	<b>2.5</b>	<b>1.5</b>
<b>PC1.</b> ascertain maintenance and repair requirements from the client inputs, work instructions and standard operating procedures provided	1	1.5	0.5	0.25
<b>PC2.</b> obtain and interpret diagrams, sketches, blueprints, and manufacturers' manuals for the fire systems to be maintained and repaired	1	1.5	0.5	0.25
<b>PC3.</b> isolate the components/equipment that need repair and maintenance	1	1	0.5	0.25
<b>PC4.</b> identify the tasks to be performed for maintenance of the fire protection systems as per the maintenance agreement and manufacturer's specifications	1	1.5	0.5	0.5
<b>PC5.</b> prepare checklists and calendar for various scheduled maintenance activities for fire protection systems	1	1.5	0.5	0.25
<i>Conduct maintenance</i>	<b>17</b>	<b>26</b>	<b>7.5</b>	<b>3</b>
<b>PC6.</b> conduct visual and physical inspections of the fire protection systems as per checklists and calendar	1	1.5	0.5	0.25
<b>PC7.</b> check the activation mechanism of alarm systems and note the response time for performance evaluation	1	1.5	0.5	0.25
<b>PC8.</b> check the accessories, fittings and components of fire systems to ensure there are no signs of corrosion or wearing out	1	1.5	0.5	0.25
<b>PC9.</b> position and lock the control/section valves correctly to ensure there is zero leakage and adequate water pressure	1	1.5	0.5	0.25
<b>PC10.</b> check the discharge mechanism of drain valves and control valves to ensure they are operational and in proper condition	1	1.5	0.5	0.25

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> verify that all fire hydrants, hose and nozzles are in place, properly arranged, and in serviceable condition	1	1.5	0.5	0.25
<b>PC12.</b> operate all fire pumps to confirm adequate pressure and water flow across fire protection systems	1	1.5	0.5	0.25
<b>PC13.</b> confirm that the emergency fire pump fuel supply is adequate to ensure full operability at times of need	1	1.5	0.5	0.25
<b>PC14.</b> check the gauges to ensure they show correct readings for water pressure	1	1.5	0.5	0.25
<b>PC15.</b> check the sprinkler heads for any leakages or defects and replace if required	1	1.5	0.5	0.25
<b>PC16.</b> ensure that the static pressure, running pressure and flow rate of fire systems is maintained as per manufacturer guidelines	1	1.5	0.5	0.25
<b>PC17.</b> ensure that the hydraulic nameplate is secured to the sprinkler riser and is legible	1	1.5	0.5	0.25
<b>PC18.</b> check weight or liquid level on all pressure containers by following standard operating procedure	1	1.5	0.25	-
<b>PC19.</b> empty the pumps and refill using industry approved engine oil as per manufacturer guidelines	1	1.5	0.25	-
<b>PC20.</b> add antifreeze solution or other industry approved additives to prevent freezing of pipes in winters	1	1.5	0.25	-
<b>PC21.</b> enter the type of maintenance performed correctly in the organisational log book	1	1.5	0.25	-
<b>PC22.</b> ensure that the debris and contaminants from filters/strainers are cleared by following standard practices	0.5	1	0.25	-
<b>PC23.</b> record status, observations and work required to be done after all inspections and tests	0.5	1	0.25	-
<i>Conduct repair</i>	<b>8</b>	<b>16</b>	<b>4</b>	<b>2.5</b>



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC24.</b> remove faulty items or components using appropriate procedures, tools and equipment for fire protection systems	0.5	1	0.25	0.25
<b>PC25.</b> select and fit the items/components replaced by following manufacturer recommendations and site specifications	0.5	1	0.25	0.25
<b>PC26.</b> adjust the equipment and/or components of fire protection systems to ensure job specifications are met	0.5	1	0.25	0.25
<b>PC27.</b> recharge the fire system with water by following job specifications and correct practices	0.5	1	0.25	0.25
<b>PC28.</b> repair the alarm systems that show problems in getting activated automatically	0.5	1	0.25	0.25
<b>PC29.</b> repair or replace the sprinkler heads and valves that show signs of damage to ensure proper operation during a fire	0.5	1	0.25	0.25
<b>PC30.</b> repair or replace the piping, hangers and seismic braces after a thorough inspection of the problems such as corroded piping or hangers, broken hangers, improper pipe alignment etc.	0.5	1	0.25	0.25
<b>PC31.</b> open any blockages that are hindering the flow of water across fire piping systems	0.5	1	0.25	0.25
<b>PC32.</b> repair the fire pumps that show sign of poor performance such inadequate water flow, and poor discharge mechanism	0.5	1	0.25	0.25
<b>PC33.</b> replace the depleted batteries to ensure that fire systems run effectively when required	0.5	1	0.25	0.25
<b>PC34.</b> replace or repair the non-functional relays, wiring, contactor in the fire alarm systems	0.5	1	0.25	-
<b>PC35.</b> install a backflow prevention device for preventing reverse flow within fire piping	0.5	1	0.25	-
<b>PC36.</b> install a relieving device such as expansion chambers to prevent over pressurization of fire piping	0.5	1	0.25	-
<b>PC37.</b> replace the corroded piping as per need and site requirements	0.5	1	0.25	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC38.</b> repair or replace the pressure gauges showing incorrect readings	0.5	1	0.25	-
<b>PC39.</b> document the key findings observed during repair of fire protection systems	0.5	1	0.25	-
<b>NOS Total</b>	<b>30</b>	<b>49</b>	<b>14</b>	<b>7</b>

**National Occupational Standards (NOS) Parameters**

<b>NOS Code</b>	PSC/N0160
<b>NOS Name</b>	Ensure effective repair and maintenance of fire protection systems
<b>Sector</b>	Plumbing
<b>Sub-Sector</b>	Firefighting & Safety Systems
<b>Occupation</b>	Plumbing Systems Installation and Maintenance
<b>NSQF Level</b>	5
<b>Credits</b>	4
<b>Version</b>	1.0
<b>Next Review Date</b>	NA

## PSC/N0136: 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

The scope 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*

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.
- 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*

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
- 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

#### *Deal with emergencies*

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

- 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



## Qualification Pack



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

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow safety measures to avoid accidents</i>	<b>13</b>	<b>32</b>	-	<b>3</b>
<b>PC1.</b> identify risks and hazards at the workplace	2	2	-	0.5
<b>PC2.</b> wear personal protective equipment (PPE) as per the type of plumbing work	2	2	-	0.5
<b>PC3.</b> place protective barricades and signages around the pits and trenches	1	4	-	0.5
<b>PC4.</b> isolate the plumbing fittings and fixtures from electrical wiring to avoid accidents	1	4	-	-
<b>PC5.</b> adhere to organisational procedures for reporting hazards and incidents to relevant authorities	2	4	-	0.5
<b>PC6.</b> establish ventilation before entering underground work areas	1	4	-	-
<b>PC7.</b> work safely in and around trenches, elevated places and confined areas	1	3	-	-
<b>PC8.</b> ensure tools and hazardous materials are not left unattended	1	3	-	-
<b>PC9.</b> ensure good housekeeping in order to prevent hazards e.g. fire	1	3	-	0.5
<b>PC10.</b> dispose waste materials and used PPE according to regulations and codes of practice	1	3	-	0.5
<i>Follow hygiene and sanitation practices</i>	<b>3</b>	<b>8</b>	-	<b>1</b>
<b>PC11.</b> follow recommended personal hygiene and sanitation practices, for example, washing/sanitizing hands, covering face with a bent elbow while coughing/sneezing etc.	1	3	-	0.5
<b>PC12.</b> clean and disinfect work area, materials/supplies, equipment etc. before and after use.	1	3	-	0.5
<b>PC13.</b> report hygiene and sanitation issues to appropriate authority	1	2	-	-
<i>Use tools, equipment and materials safely</i>	<b>6</b>	<b>9</b>	-	<b>1</b>



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> check that the tools, equipment and materials are in good condition and as per industry standards before use	1	3	-	0.25
<b>PC15.</b> use power tools and machinery that are grounded	1	2	-	0.25
<b>PC16.</b> replace or repair split or loose tools before use	2	2	-	0.25
<b>PC17.</b> store and transport various plumbing materials safely	2	2	-	0.25
<i>Deal with emergencies</i>	<b>8</b>	<b>14</b>	-	<b>2</b>
<b>PC18.</b> follow workplace emergency and evacuation procedures	2	3	-	0.5
<b>PC19.</b> use a fire extinguisher correctly	2	4	-	0.5
<b>PC20.</b> use safe methods to free a person from electrocution	2	3	-	0.5
<b>PC21.</b> administer appropriate first aid (such as CPR etc.) to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.	2	4	-	0.5
<b>NOS Total</b>	<b>30</b>	<b>63</b>	-	<b>7</b>

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	PSC/N0136
<b>NOS Name</b>	Apply Health and Safety Practices at the Workplace
<b>Sector</b>	Plumbing
<b>Sub-Sector</b>	Industrial / Non-Industrial Plumbing, Water Supply & Water Treatment & Quality Control, Sewerage & Sewage Treatment, Drainage, Water Harvesting & Ground Recharging, Firefighting & Safety Systems, Gas & Piping (Industrial / Medical), HVAC & Steam, Manufacturing of Plumbing / Firefighting Products, Micro-Hydel Power
<b>Occupation</b>	Plumbing Systems Installation and Maintenance, Designing, Sales, Material Handling, Plumbing Servicing, Plumbing Plant Operations
<b>NSQF Level</b>	4
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	24/02/2022
<b>Next Review Date</b>	24/02/2025
<b>NSQC Clearance Date</b>	24/02/2022

## PSC/N0138: Implement Measures to Work Effectively

### Description

This unit covers basic etiquette and competencies that a candidate requires to implement measures for effective team working and communication at the workplace.

### Scope

The scope covers the following :

- Ensure team preparedness for the tasks
- Monitor completion of work as per expected standards
- Handle queries, concerns and welfare of workers
- Respect diversity

### Elements and Performance Criteria

#### *Ensure team preparedness for the tasks*

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

- PC1.** create a work plan and schedule for the workers as per work priorities, availability of manpower, equipment and weather conditions
- PC2.** assign work taking full account of each team member's abilities
- PC3.** train the workers

#### *Monitor completion of work as per expected standards*

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

- PC4.** monitor project activities to ensure adherence to work instructions, schedules, budgets and targets
- PC5.** identify causes for any lag in performance as well as possible solutions to bridge the gap
- PC6.** provide feedback on individual work performance to each team member for improvement in work quality
- PC7.** implement measures to improve team effectiveness e.g. adhering to timelines, taking scheduled breaks, proactiveness, minimum interruptions etc.
- PC8.** ensure accurate and effective delivery of written communication (reports, updates etc.) to stakeholders within agreed timelines

#### *Handle queries, concerns and welfare of workers*

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

- PC9.** investigate work-related complaints to verify problems and record responses relevant to the project
- PC10.** perform administrative duties, such as authorising leaves, processing time sheets as per standard operating procedure (SOP)
- PC11.** review contracts or work assignments to determine service, machine, or workforce requirements for jobs
- PC12.** deal with conflicts among the team members in a professional manner
- PC13.** prepare and maintain required records, such as work activity or personnel reports

#### *Respect diversity*

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

- PC14.** use respectful verbal, non-verbal and written communication that is gender, disability, age and culturally sensitive
- PC15.** transact with all people without any personal bias based on gender, disability, caste, religion, colour, sexual orientation or culture and in accordance with their legal rights
- PC16.** recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation or culture at workplace and follow organisational policy for reporting the same.

## **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- KU1.** legislation, standards, policies, and procedures followed in the company relevant to employment, behaviour and performance conditions
- KU2.** reporting structure, inter-dependent functions, lines and procedures in the work area
- KU3.** relevant people and their responsibilities within the work area
- KU4.** escalation matrix and procedures for reporting work and employment related issues
- KU5.** sexual harassment of women at workplace (Prevention, Prohibition and Redressal) Act, 2013
- KU6.** organizational policy for harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation or culture
- KU7.** internal and external stakeholders at the workplace and their communication requirements
- KU8.** importance of effective communication in the workplace and the impact of poor communication on the employee, the employer and the customer
- KU9.** various components of effective communication such as tone and pitch
- KU10.** advantages and disadvantages of various modes of communication
- KU11.** importance of teamwork in organizational and individual success
- KU12.** goal setting
- KU13.** group dynamics and processes
- KU14.** measures to improve workplace productivity
- KU15.** importance of ethics and discipline for professional success
- KU16.** common reasons for interpersonal conflict
- KU17.** importance of developing effective working relationships for professional success
- KU18.** how to deal with grievances and problems appropriately and effectively
- KU19.** importance and ways of managing interpersonal conflict effectively
- KU20.** laws, acts and provisions defined for PwD by the statutory bodies
- KU21.** government and private schemes and benefits available for PwD
- KU22.** basic gender concepts such as gender power relations, gender roles, access and control, gender sensitivity, gender equity and equality
- KU23.** gender, disability, cultural and age related biases, stereotyping and its impact
- KU24.** actions and consequences of gendered behavior
- KU25.** types of harassment and discrimination based on gender, disability, caste, religion or culture that occurs at a typical workplace and how to recognize it
- KU26.** types of unacceptable behavior

## Generic Skills (GS)

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

- GS1.** write clear and legible notes, instructions and maintain records in local language or English
- GS2.** comprehend quantities and basic work-related terminology for operational requirements
- GS3.** interpret information accurately from work-related documents, work instructions and records
- GS4.** communicate appropriately (correct protocol and manner of speaking) to understand about the type of output required and answer queries
- GS5.** display active listening skills while interacting with co-workers and others in the workplace
- GS6.** plan tasks to maintain a smooth relationship with fellow team members
- GS7.** plan the steps within one's limits of authority as per required modification
- GS8.** perform activities accurately and effectively in order to meet customer requirements
- GS9.** work with co-workers and supervisor to resolve any issues that threaten work quality as per the planned schedule

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure team preparedness for the tasks</i>	<b>6</b>	<b>11</b>	<b>2</b>	<b>2</b>
<b>PC1.</b> create a work plan and schedule for the workers as per work priorities, availability of manpower, equipment and weather conditions	2	4	1	0.5
<b>PC2.</b> assign work taking full account of each team member's abilities	2	4	1	0.5
<b>PC3.</b> train the workers	2	3	-	1
<i>Monitor completion of work as per expected standards</i>	<b>10</b>	<b>15</b>	<b>4</b>	<b>3</b>
<b>PC4.</b> monitor project activities to ensure adherence to work instructions, schedules, budgets and targets	2	3	1	0.5
<b>PC5.</b> identify causes for any lag in performance as well as possible solutions to bridge the gap	2	3	1	0.5
<b>PC6.</b> provide feedback on individual work performance to each team member for improvement in work quality	2	3	0.5	0.5
<b>PC7.</b> implement measures to improve team effectiveness e.g. adhering to timelines, taking scheduled breaks, proactiveness, minimum interruptions etc.	2	3	0.5	0.5
<b>PC8.</b> ensure accurate and effective delivery of written communication (reports, updates etc.) to stakeholders within agreed timelines	2	3	1	1
<i>Handle queries, concerns and welfare of workers</i>	<b>7</b>	<b>14</b>	<b>5</b>	<b>1</b>
<b>PC9.</b> investigate work-related complaints to verify problems and record responses relevant to the project	1	3	1	-
<b>PC10.</b> perform administrative duties, such as authorising leaves, processing time sheets as per standard operating procedure (SOP)	2	3	1	0.5
<b>PC11.</b> review contracts or work assignments to determine service, machine, or workforce requirements for jobs	2	3	1	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC12.</b> deal with conflicts among the team members in a professional manner	1	3	1	0.5
<b>PC13.</b> prepare and maintain required records, such as work activity or personnel reports	1	2	1	-
<i>Respect diversity</i>	<b>7</b>	<b>9</b>	<b>3</b>	<b>1</b>
<b>PC14.</b> use respectful verbal, non-verbal and written communication that is gender, disability, age and culturally sensitive	3	3	1	-
<b>PC15.</b> transact with all people without any personal bias based on gender, disability, caste, religion, colour, sexual orientation or culture and in accordance with their legal rights	2	3	1	0.5
<b>PC16.</b> recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation or culture at workplace and follow organisational policy for reporting the same.	2	3	1	0.5
<b>NOS Total</b>	<b>30</b>	<b>49</b>	<b>14</b>	<b>7</b>



## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	PSC/N0138
<b>NOS Name</b>	Implement Measures to Work Effectively
<b>Sector</b>	Plumbing
<b>Sub-Sector</b>	Industrial / Non-Industrial Plumbing, Water Supply & Water Treatment & Quality Control, Sewerage & Sewage Treatment, Drainage, Water Harvesting & Ground Recharging, Firefighting & Safety Systems, Gas & Piping (Industrial / Medical), HVAC & Steam, Manufacturing of Plumbing / Firefighting Products, Micro-Hydel Power
<b>Occupation</b>	Plumbing Systems Installation and Maintenance, Designing, Sales, Material Handling, Plumbing Servicing
<b>NSQF Level</b>	5
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	24/02/2022
<b>Next Review Date</b>	24/02/2025
<b>NSQC Clearance Date</b>	24/02/2022

## DGT/VSQ/N0103: Employability Skills (90 Hours)

### Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

### Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

### Elements and Performance Criteria

#### *Introduction to Employability Skills*

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

- PC1.** understand the significance of employability skills in meeting the current job market requirement and future of work
- PC2.** identify and explore learning and employability relevant portals
- PC3.** research about the different industries, job market trends, latest skills required and the available opportunities

#### *Constitutional values - Citizenship*

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

- PC4.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC5.** follow environmentally sustainable practices

#### *Becoming a Professional in the 21st Century*

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

- PC6.** recognize the significance of 21st Century Skills for employment
- PC7.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

**PC8.** adopt a continuous learning mindset for personal and professional development

*Basic English Skills*

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

**PC9.** use basic English for everyday conversation in different contexts, in person and over the telephone

**PC10.** read and understand routine information, notes, instructions, mails, letters etc. written in English

**PC11.** write short messages, notes, letters, e-mails etc. in English

*Career Development & Goal Setting*

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

**PC12.** identify career goals based on the skills, interests, knowledge, and personal attributes

**PC13.** prepare a career development plan with short- and long-term goals

*Communication Skills*

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

**PC14.** follow verbal and non-verbal communication etiquette while communicating in professional and public settings

**PC15.** use active listening techniques for effective communication

**PC16.** communicate in writing using appropriate style and format based on formal or informal requirements

**PC17.** work collaboratively with others in a team

*Diversity & Inclusion*

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

**PC18.** communicate and behave appropriately with all genders and PwD

**PC19.** escalate any issues related to sexual harassment at workplace according to POSH Act

*Financial and Legal Literacy*

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

**PC20.** identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.

**PC21.** carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook

**PC22.** identify common components of salary and compute income, expenses, taxes, investments etc

**PC23.** identify relevant rights and laws and use legal aids to fight against legal exploitation

*Essential Digital Skills*

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

**PC24.** operate digital devices and use their features and applications securely and safely

**PC25.** carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.

**PC26.** display responsible online behaviour while using various social media platforms

**PC27.** create a personal email account, send and process received messages as per requirement

**PC28.** carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications

**PC29.** utilize virtual collaboration tools to work effectively

### *Entrepreneurship*

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

- PC30.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC31.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC32.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

### *Customer Service*

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

- PC33.** identify different types of customers and ways to communicate with them
- PC34.** identify and respond to customer requests and needs in a professional manner
- PC35.** use appropriate tools to collect customer feedback
- PC36.** follow appropriate hygiene and grooming standards

### *Getting ready for apprenticeship & Jobs*

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

- PC37.** create a professional Curriculum vitae (Résumé)
- PC38.** search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
- PC39.** apply to identified job openings using offline /online methods as per requirement
- PC40.** answer questions politely, with clarity and confidence, during recruitment and selection
- PC41.** identify apprenticeship opportunities and register for it as per guidelines and requirements

## **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- KU1.** need for employability skills and different learning and employability related portals
- KU2.** various constitutional and personal values
- KU3.** different environmentally sustainable practices and their importance
- KU4.** Twenty first (21st) century skills and their importance
- KU5.** how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up
- KU6.** importance of career development and setting long- and short-term goals
- KU7.** about effective communication
- KU8.** POSH Act
- KU9.** Gender sensitivity and inclusivity
- KU10.** different types of financial institutes, products, and services
- KU11.** components of salary and how to compute income and expenditure
- KU12.** importance of maintaining safety and security in offline and online financial transactions
- KU13.** different legal rights and laws
- KU14.** different types of digital devices and the procedure to operate them safely and securely
- KU15.** how to create and operate an e- mail account

- KU16.** use applications such as word processors, spreadsheets etc.
- KU17.** how to identify business opportunities
- KU18.** types and needs of customers
- KU19.** how to apply for a job and prepare for an interview
- KU20.** apprenticeship scheme and the process of registering on apprenticeship portal

### **Generic Skills (GS)**

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

- GS1.** read and write different types of documents/instructions/correspondence in English and other languages
- GS2.** communicate effectively using appropriate language in formal and informal settings
- GS3.** behave politely and appropriately with all to maintain effective work relationship
- GS4.** how to work in a virtual mode, using various technological platforms
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

## Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	<b>1</b>	<b>1</b>	-	-
<b>PC1.</b> understand the significance of employability skills in meeting the current job market requirement and future of work	-	-	-	-
<b>PC2.</b> identify and explore learning and employability relevant portals	-	-	-	-
<b>PC3.</b> research about the different industries, job market trends, latest skills required and the available opportunities	-	-	-	-
<i>Constitutional values – Citizenship</i>	<b>1</b>	<b>1</b>	-	-
<b>PC4.</b> recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
<b>PC5.</b> follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	<b>1</b>	<b>3</b>	-	-
<b>PC6.</b> recognize the significance of 21st Century Skills for employment	-	-	-	-
<b>PC7.</b> practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
<b>PC8.</b> adopt a continuous learning mindset for personal and professional development	-	-	-	-
<i>Basic English Skills</i>	<b>3</b>	<b>4</b>	-	-
<b>PC9.</b> use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
<b>PC11.</b> write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development &amp; Goal Setting</i>	<b>1</b>	<b>2</b>	-	-
<b>PC12.</b> identify career goals based on the skills, interests, knowledge, and personal attributes	-	-	-	-
<b>PC13.</b> prepare a career development plan with short- and long-term goals	-	-	-	-
<i>Communication Skills</i>	<b>2</b>	<b>2</b>	-	-
<b>PC14.</b> follow verbal and non-verbal communication etiquette while communicating in professional and public settings	-	-	-	-
<b>PC15.</b> use active listening techniques for effective communication	-	-	-	-
<b>PC16.</b> communicate in writing using appropriate style and format based on formal or informal requirements	-	-	-	-
<b>PC17.</b> work collaboratively with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	<b>1</b>	<b>1</b>	-	-
<b>PC18.</b> communicate and behave appropriately with all genders and PwD	-	-	-	-
<b>PC19.</b> escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	<b>2</b>	<b>3</b>	-	-
<b>PC20.</b> identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.	-	-	-	-
<b>PC21.</b> carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC22.</b> identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
<b>PC23.</b> identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	<b>3</b>	<b>5</b>	-	-
<b>PC24.</b> operate digital devices and use their features and applications securely and safely	-	-	-	-
<b>PC25.</b> carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.	-	-	-	-
<b>PC26.</b> display responsible online behaviour while using various social media platforms	-	-	-	-
<b>PC27.</b> create a personal email account, send and process received messages as per requirement	-	-	-	-
<b>PC28.</b> carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications	-	-	-	-
<b>PC29.</b> utilize virtual collaboration tools to work effectively	-	-	-	-
<i>Entrepreneurship</i>	<b>2</b>	<b>3</b>	-	-
<b>PC30.</b> identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
<b>PC31.</b> develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
<b>PC32.</b> identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	<b>1</b>	<b>2</b>	-	-
<b>PC33.</b> identify different types of customers and ways to communicate with them	-	-	-	-



Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC34.</b> identify and respond to customer requests and needs in a professional manner	-	-	-	-
<b>PC35.</b> use appropriate tools to collect customer feedback	-	-	-	-
<b>PC36.</b> follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>2</b>	<b>3</b>	-	-
<b>PC37.</b> create a professional Curriculum vitae (Résumé)	-	-	-	-
<b>PC38.</b> search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
<b>PC39.</b> apply to identified job openings using offline /online methods as per requirement	-	-	-	-
<b>PC40.</b> answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
<b>PC41.</b> identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-

## National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	DGT/VSQ/N0103
<b>NOS Name</b>	Employability Skills (90 Hours)
<b>Sector</b>	Cross Sectoral
<b>Sub-Sector</b>	Professional Skills
<b>Occupation</b>	Employability
<b>NSQF Level</b>	5
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	05/01/2026
<b>NSQC Clearance Date</b>	05/02/2023

## 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 100% aggregate marks to successfully clear the assessment.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

### Minimum Aggregate Passing % at QP Level : 80

(**Please note:** Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

### Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
PSC/N0158.Plan and prepare for installation and maintenance of fire protection systems	30	49	14	7	100	20
PSC/N0159.Install and commission fire protection systems	30	49	14	7	100	20
PSC/N0160.Ensure effective repair and maintenance of fire protection systems	30	49	14	7	100	20
PSC/N0136.Apply Health and Safety Practices at the Workplace	30	63	-	7	100	15
PSC/N0138.Implement Measures to Work Effectively	30	49	14	7	100	15
DGT/VSQ/N0103.Employability Skills (90 Hours)	20	30	-	-	50	10
<b>Total</b>	<b>170</b>	<b>289</b>	<b>56</b>	<b>35</b>	<b>550</b>	<b>100</b>

## Acronyms

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

## Glossary

<b>Sector</b>	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.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	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.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	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.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	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.
<b>Scope</b>	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.
<b>Knowledge and Understanding (KU)</b>	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

<b>Organisational Context</b>	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.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	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.
<b>Electives</b>	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.
<b>Options</b>	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.
<b>Sector</b>	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.
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<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by N
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
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