Qualification Pack



MEP Technician

Electrical Systems

QP Code: ICE/CON/Q1502 Instantiated QP Code: ICE/CON/Q1502-SI002

Version: 1.0

NSQF Level: 4

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Contents

ICE/CON/Q1502-SI002: MEP Technician 3
Brief Job Description 3
Applicable National Occupational Standards (NOS) 3
Compulsory NOS 3
Elective : Electrical Systems 3
Qualification Pack (QP) Parameters 3
ICE/CON/N1501: Plan, Schedule and Manage Resources for Project Execution 6
ICE/CON/N1502: Inspect and Report Issues in MEP Installations 11
ICE/CON/N1503: Carry out Documentation Concerning MEP Works and ensure Compliance 16
ICE/CON/N9901: Implement Safe Work Practices and Environmental Stewardship at Construction Sites 20
DGT/VSQ/N0101: Employability Skills (30 Hours) 25
ICE/CON/N1508: Install Electrical Systems and Wiring 31
ICE/CON/N1509: Install and Integrate IoT- Enabled Electrical Systems 36
ICE/CON/N1510: Install and Maintain Renewable Energy Solutions in Electrical Systems 40
ICE/CON/N1511: Diagnose, Maintain and Repair Electrical Systems and Components 45
Assessment Guidelines and Weightage 51
Assessment Guidelines 51
Assessment Weightage 52

Qualification Pack

ICE/CON/Q1502-SI002: MEP Technician

Brief Job Description

The MEP Technician is responsible for installing, maintaining, troubleshooting, and repairing Mechanical, Electrical, and Plumbing systems at construction sites or facilities. The role ensures compliance with safety standards, project specifications, preventive maintenance schedules, and operational efficiency across all MEP systems.

Personal Attributes

The individual should be physically fit and mentally alert. The person should have problem-solving, coordination and appropriate verbal and written communication skills.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. ICE/CON/N1501: Plan, Schedule and Manage Resources for Project Execution
2. ICE/CON/N1502: Inspect and Report Issues in MEP Installations
3. ICE/CON/N1503: Carry out Documentation Concerning MEP Works and ensure Compliance
4. ICE/CON/N9901: Implement Safe Work Practices and Environmental Stewardship at Construction Sites
5. DGT/VSQ/N0101: Employability Skills (30 Hours)

Electives*(mandatory to select at least one):*

Elective : Electrical Systems

1. ICE/CON/N1508: Install Electrical Systems and Wiring
2. ICE/CON/N1509: Install and Integrate IoT- Enabled Electrical Systems
3. ICE/CON/N1510: Install and Maintain Renewable Energy Solutions in Electrical Systems
4. ICE/CON/N1511: Diagnose, Maintain and Repair Electrical Systems and Components

Qualification Pack (QP) Parameters

Qualification Pack

Sector	Construction
Sub-Sector	Real Estate and Infrastructure Construction
Occupation	MEP (Mechanical, Electrical and Plumbing)
Country	India
NSQF Level	4
Credits	15
Aligned to NCO/ISCO/ISIC Code	NCO-2015/ 7412.0202, NCO-2015/7412.0200, NCO-2015/ 7411.0100, NCO-2015/ 7126.0103, NCO-2015/ 7126.0107
Minimum Educational Qualification & Experience	12th grade Pass OR 10th grade pass with 2 Years of experience Relevant Industry OR 8th grade pass with 4 Years of experience Relevant Industry OR Previous relevant Qualification of NSQF Level (3 as MEP Executive) with 3 Years of experience Relevant Industry OR Previous relevant Qualification of NSQF Level (3.5) with 1.5 years of experience Relevant Industry
Minimum Level of Education for Training in School	Not Applicable
Pre-Requisite License or Training	Not Applicable
Minimum Job Entry Age	18 Years
Last Reviewed On	07/10/2025
Next Review Date	07/10/2028
NSQC Approval Date	07/10/2025
Version	1.0
Reference code on NQR	NCVET-QG-04-CO-046412025-V1-ICES
NQR Version	1.0

Remarks:

The Min. Job Entry Age for this Job Role will be as per Government Norms

ICE/CON/N1501: Plan, Schedule and Manage Resources for Project Execution

Description

This unit covers the competencies required for planning and organizing work activities, managing resources effectively, monitoring project progress, and maintaining documentation to ensure the timely and efficient execution of MEP projects.

Scope

The scope covers the following :

- Plan work activities
- Manage resources
- Collaborate with team members
- Monitor project progress

Elements and Performance Criteria

Plan work activities

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

PC1. Interpret project drawings and specifications for mechanical, electrical, and plumbing systems

PC2. Identify tasks to be completed and arrange them in a logical sequence

PC3. Prepare a daily work schedule based on project timelines

Manage resources

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

PC4. Assess the quantity and quality of materials required for specific tasks

PC5. Check the availability of tools, machinery, and safety equipment

PC6. Ensure proper storage and handling of materials to avoid wastage

Collaborate with team members

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

PC7. Communicate daily targets and tasks to team members effectively

PC8. Report issues related to resource shortages or technical challenges to supervisors

PC9. Assist in assigning tasks to junior technicians or helpers based on their skills

Monitor project progress

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

PC10. Track completion of tasks against the schedule

PC11. Inspect ongoing work to ensure compliance with quality standards

PC12. Suggest adjustments in plans to accommodate unexpected delays or challenges

Maintain documentation

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

PC13. Maintain daily logs concerning project work progress
PC14. Maintain records of materials used and tools issued
PC15. Prepare reports on resource utilization and submit them to supervisors

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The basics of MEP systems and their installation processes
KU2. How to read and interpret engineering drawings and schematics
KU3. Different types of materials and tools required for MEP work
KU4. The fundamental principles of project planning and resource allocation
KU5. The importance of timelines and task prioritization
KU6. The inventory management and procurement processes
KU7. The applicable occupational health and safety practices
KU8. The quality control parameters for MEP installations
KU9. The appropriate techniques for effective team communication and conflict resolution
KU10. The reporting formats for documenting work progress and issues
KU11. The basics of software/tools for maintaining project logs (e.g., MS Excel)
KU12. The documentation related to project resources

Generic Skills (GS)

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

GS1. Identify and address common challenges in project execution
GS2. Analyze project plans to identify potential bottlenecks
GS3. Prioritize tasks effectively to meet deadlines
GS4. Work as part of a team to achieve project objectives
GS5. Perform basic calculations for material estimation and measurement
GS6. Ensure accuracy in work activities and documentation
GS7. Adjust to changes in project requirements or schedules
GS8. Convey clear instructions and document information effectively

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan work activities	**6**	**12**	**-**	**2**
PC1. Interpret project drawings and specifications for mechanical, electrical, and plumbing systems	-	-	-	-
PC2. Identify tasks to be completed and arrange them in a logical sequence	-	-	-	-
PC3. Prepare a daily work schedule based on project timelines	-	-	-	-
Manage resources	**6**	**12**	**-**	**2**
PC4. Assess the quantity and quality of materials required for specific tasks	-	-	-	-
PC5. Check the availability of tools, machinery, and safety equipment	-	-	-	-
PC6. Ensure proper storage and handling of materials to avoid wastage	-	-	-	-
Collaborate with team members	**6**	**12**	**-**	**2**
PC7. Communicate daily targets and tasks to team members effectively	-	-	-	-
PC8. Report issues related to resource shortages or technical challenges to supervisors	-	-	-	-
PC9. Assist in assigning tasks to junior technicians or helpers based on their skills	-	-	-	-
Monitor project progress	**6**	**12**	**-**	**2**
PC10. Track completion of tasks against the schedule	-	-	-	-
PC11. Inspect ongoing work to ensure compliance with quality standards	-	-	-	-
PC12. Suggest adjustments in plans to accommodate unexpected delays or challenges	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Maintain documentation	**6**	**12**	**-**	**2**
PC13. Maintain daily logs concerning project work progress	-	-	-	-
PC14. Maintain records of materials used and tools issued	-	-	-	-
PC15. Prepare reports on resource utilization and submit them to supervisors	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N1501
NOS Name	Plan, Schedule and Manage Resources for Project Execution
Sector	Construction
Sub-Sector	
Occupation	MEP (Mechanical, Electrical and Plumbing)
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N1502: Inspect and Report Issues in MEP Installations

Description

This unit covers the inspection, diagnosis, and reporting of issues in MEP installations using advanced diagnostic tools to ensure system functionality and compliance with safety standards.

Scope

The scope covers the following :

- Identify tools and equipment
- Conduct visual and preliminary inspections
- Perform diagnostic testing
- Data interpretation and analysis
- Report and make recommendations
- Conduct post-inspection procedures

Elements and Performance Criteria

Identify tools and equipment

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

PC1. Select and prepare appropriate advanced diagnostic tools, e.g. thermal cameras, multimeters, vibration analyzers, for inspection

PC2. Verify the calibration status and functionality of tools before use

PC3. Ensure adherence to safety protocols and use personal protective equipment (PPE)

Conduct visual and preliminary inspections

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

PC4. Conduct visual checks for signs of wear, damage, or irregularities in MEP installations

PC5. Record observations using digital documentation tools for traceability

Perform diagnostic testing

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

PC6. Perform non-invasive diagnostic tests using advanced tools, such as thermal imaging for electrical panels, ultrasonic testing for pipes, or airflow analysis for HVAC systems

PC7. Identify abnormalities, such as overheating components, leaks, or pressure drops

Data interpretation and analysis

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

PC8. Analyze diagnostic data to identify root causes of issues

PC9. Utilize software tools or dashboards to generate diagnostic reports

Report and make recommendations

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

PC10. Document findings with supporting evidence (e.g., thermal images, test readings)

PC11. Provide recommendations for corrective actions and maintenance schedules

PC12. Communicate effectively with supervisors and clients, detailing the urgency of required interventions

Conduct post-inspection procedures

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

PC13. Reset or re-calibrate diagnostic tools after use

PC14. Ensure all tools and equipment are stored securely and in good condition

PC15. Submit completed reports and data logs to the concerned department

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The basic principles of mechanical, electrical, and plumbing systems, including HVAC components, electrical panels, and plumbing layouts

KU2. The functions, applications, and maintenance of tools such as thermal imaging cameras, ultrasonic leak detectors, and multimeters

KU3. The procedures for safe handling of electrical, mechanical, and plumbing systems

KU4. The relevant OSHA, IS, or IEC standards for workplace safety

KU5. The methods for interpreting data from diagnostic tools and software

KU6. The reporting formats and communication standards for technical findings

KU7. The approaches for diagnosing and resolving common MEP issues (e.g., leaks, overheating, circuit faults)

KU8. The use of software applications for inspection logs, data visualization, and report generation

KU9. The of electrical loads, circuit design, and mechanical stress factors in MEP systems

KU10. The importance and process of calibrating diagnostic equipment

Generic Skills (GS)

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

GS1. Articulate findings and recommendations in verbal and written formats

GS2. Analyze data logically to diagnose issues and prioritize actions

GS3. Work effectively with colleagues, supervisors, and clients to address MEP concerns

GS4. Identify and resolve challenges efficiently during inspections

GS5. Complete inspections and reporting within stipulated time frames

GS6. Operate diagnostic software and digital tools proficiently

GS7. Conduct thorough inspections and documentation to ensure accuracy

GS8. Adjust to diverse MEP systems and evolving diagnostic technologies

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Identify tools and equipment	**6**	**12**	**-**	**2**
PC1. Select and prepare appropriate advanced diagnostic tools, e.g. thermal cameras, multimeters, vibration analyzers, for inspection	-	-	-	-
PC2. Verify the calibration status and functionality of tools before use	-	-	-	-
PC3. Ensure adherence to safety protocols and use personal protective equipment (PPE)	-	-	-	-
Conduct visual and preliminary inspections	**6**	**12**	**-**	**2**
PC4. Conduct visual checks for signs of wear, damage, or irregularities in MEP installations	-	-	-	-
PC5. Record observations using digital documentation tools for traceability	-	-	-	-
Perform diagnostic testing	**6**	**12**	**-**	**2**
PC6. Perform non-invasive diagnostic tests using advanced tools, such as thermal imaging for electrical panels, ultrasonic testing for pipes, or airflow analysis for HVAC systems	-	-	-	-
PC7. Identify abnormalities, such as overheating components, leaks, or pressure drops	-	-	-	-
Data interpretation and analysis	**6**	**12**	**-**	**2**
PC8. Analyze diagnostic data to identify root causes of issues	-	-	-	-
PC9. Utilize software tools or dashboards to generate diagnostic reports	-	-	-	-
Report and make recommendations	**6**	**12**	**-**	**2**
PC10. Document findings with supporting evidence (e.g., thermal images, test readings)	-	-	-	-
PC11. Provide recommendations for corrective actions and maintenance schedules	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. Communicate effectively with supervisors and clients, detailing the urgency of required interventions	-	-	-	-
Conduct post-inspection procedures	**-**	**-**	**-**	**-**
PC13. Reset or re-calibrate diagnostic tools after use	-	-	-	-
PC14. Ensure all tools and equipment are stored securely and in good condition	-	-	-	-
PC15. Submit completed reports and data logs to the concerned department	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N1502
NOS Name	Inspect and Report Issues in MEP Installations
Sector	Construction
Sub-Sector	
Occupation	MEP (Mechanical, Electrical and Plumbing)
NSQF Level	4
Credits	3
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N1503: Carry out Documentation Concerning MEP Works and ensure Compliance

Description

This unit focuses on documenting work processes, maintaining records, and adhering to compliance standards. This includes accurate recording of maintenance activities, compliance with safety protocols, and adherence to environmental regulations.

Scope

The scope covers the following :

- Carry out documentation
- Ensure compliance

Elements and Performance Criteria

Carry out documentation

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

PC1. Record daily work activities, including installations, repairs, and maintenance tasks

PC2. Fill out work orders, maintenance logs, and inspection reports as per organizational standards

PC3. Ensure all documentation is error-free and up-to-date

PC4. Use digital tools or software to maintain and update records as required

PC5. Submit reports to supervisors or quality assurance teams in a timely manner

Ensure compliance

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

PC6. Follow safety standards while performing MEP tasks as per local and national regulations

PC7. Comply with environmental regulations related to the disposal of hazardous materials and waste management

PC8. Adhere to organization-specific Standard Operating Procedures (SOPs)

PC9. Conduct regular self-audits to ensure compliance with relevant codes and standards

PC10. Participate in inspections and audits conducted by internal or external teams

PC11. Address gaps or errors in compliance as identified during audits

PC12. Provide feedback on documentation processes and suggest improvements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. MEP tasks, including installation, maintenance, and repair activities

KU2. The documentation formats such as work orders, maintenance logs, and inspection reports

KU3. The safety, health, and environmental regulations applicable to MEP tasks

KU4. The tools and software for digital documentation and record-keeping
KU5. The local, national, and international standards (e.g., IS, BIS, ISO) relevant to MEP operations
KU6. The waste management protocols and handling of hazardous material
KU7. The organizations SOPs for documentation and compliance
KU8. The reporting hierarchy and submission deadlines
KU9. The principles of auditing and the steps involved in internal and external compliance checks
KU10. The corrective actions required to address non-compliance issues

Generic Skills (GS)

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

GS1. Communicate effectively with team members and supervisors
GS2. Use documentation tools, spreadsheets, and software
GS3. Ensure accuracy in documentation and compliance activities
GS4. Collaborate with colleagues to ensure smooth documentation and compliance processes
GS5. Meet deadlines for report submissions and audits
GS6. Identify and address gaps in compliance or documentation processes
GS7. Analyze audit findings and suggest improvements
GS8. Adjust to changes in compliance requirements or documentation formats
GS9. Maintain well-organized records and archives
GS10. Follow changes in regulations and best practices

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Carry out documentation	**15**	**30**	**-**	**5**
PC1. Record daily work activities, including installations, repairs, and maintenance tasks	-	-	-	-
PC2. Fill out work orders, maintenance logs, and inspection reports as per organizational standards	-	-	-	-
PC3. Ensure all documentation is error-free and up-to-date	-	-	-	-
PC4. Use digital tools or software to maintain and update records as required	-	-	-	-
PC5. Submit reports to supervisors or quality assurance teams in a timely manner	-	-	-	-
Ensure compliance	**15**	**30**	**-**	**5**
PC6. Follow safety standards while performing MEP tasks as per local and national regulations	-	-	-	-
PC7. Comply with environmental regulations related to the disposal of hazardous materials and waste management	-	-	-	-
PC8. Adhere to organization-specific Standard Operating Procedures (SOPs)	-	-	-	-
PC9. Conduct regular self-audits to ensure compliance with relevant codes and standards	-	-	-	-
PC10. Participate in inspections and audits conducted by internal or external teams	-	-	-	-
PC11. Address gaps or errors in compliance as identified during audits	-	-	-	-
PC12. Provide feedback on documentation processes and suggest improvements	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N1503
NOS Name	Carry out Documentation Concerning MEP Works and ensure Compliance
Sector	Construction
Sub-Sector	
Occupation	MEP (Mechanical, Electrical and Plumbing)
NSQF Level	4
Credits	3
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N9901: Implement Safe Work Practices and Environmental Stewardship at Construction Sites

Description

This NOS focuses on enabling construction workers and supervisors to actively adopt safe work practices, promote environmental stewardship and ensure a hazard-free workplace through proactive risk management, sustainable resource usage and timely emergency response.

Scope

The scope covers the following :

- Conduct workplace safety inspections
- Apply safe operational practices
- Promote health, hygiene, and well-being
- Implement sustainability and environmental conservation measures
- Respond effectively to onsite emergencies

Elements and Performance Criteria

Conduct Workplace Safety Inspections

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

PC1. identify unsafe conditions such as improper scaffolding, poor lighting, open edges or obstructed pathways

PC2. assess task-specific risks involving tools, machinery, and hazardous materials

PC3. document safety observations and communicate them to the safety lead or supervisor

PC4. verify that safety controls such as guard rails, signages and access controls are in place

Apply Safe Operational Practices

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

PC5. use appropriate PPE and ensure correct fit before beginning any activity

PC6. follow safe operation procedures for cutting, lifting, mixing and power tools

PC7. implement ergonomic practices to reduce fatigue and prevent musculoskeletal injuries

PC8. maintain housekeeping standards by ensuring clean and clutter-free work areas

Promote Health, Hygiene and Well-Being

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

PC9. follow personal hygiene practices such as handwashing, clean clothing and proper hydration

PC10. identify signs of health issues such as heat stress, dehydration and respiratory discomfort

PC11. ensure availability and safe usage of sanitation facilities, drinking water and resting zones

PC12. report workplace illnesses or physical discomfort to the assigned authority

Implement Sustainability and Environmental Conservation Measures

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

PC13. follow procedures for safe storage and controlled use of chemicals, fuels and hazardous substances

PC14. practice material conservation by preventing spillage, wastage and improper handling
PC15. undertake waste segregation for recyclable, non-recyclable and hazardous waste
PC16. support measures for dust suppression, noise control and energy/water conservation

Respond Effectively to Onsite Emergencies

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

PC17. identify emergency alarms, muster points and evacuation routes
PC18. use basic firefighting equipment such as extinguishers, fire blankets and sand buckets where appropriate
PC19. assist in basic first-aid procedures including bleeding control, CPR and heat-stroke management
PC20. support emergency communication protocols and follow command instructions

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. workplace safety policies, EHS manuals and site-specific procedures
KU2. roles of safety personnel, supervisors and emergency response teams
KU3. documentation formats for safety reporting and compliance
KU4. internal escalation protocols for hazardous conditions or incidents
KU5. legal obligations related to occupational safety and environmental protection
KU6. types of workplace hazards chemical, physical, electrical, ergonomic and environmental
KU7. safe handling techniques for construction materials, tools and machinery
KU8. principles of PPE selection, inspection and maintenance
KU9. basics of first aid, CPR and firefighting methods
KU10. environmental management practices including waste reduction and pollution control
KU11. measures for heat-stress prevention, hydration management and fatigue control
KU12. ergonomics and safe manual handling techniques

Generic Skills (GS)

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

GS1. read and interpret safety signage, manuals and instructions
GS2. communicate safety findings and concerns clearly to team members
GS3. maintain basic documentation and reports for safety audits
GS4. use problem-solving skills to manage minor hazards or disruptions
GS5. collaborate effectively during drills, emergency situations and environmental initiatives
GS6. demonstrate awareness and discipline in following safe work practices consistently

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Conduct Workplace Safety Inspections	**6**	**12**	**-**	**2**
PC1. identify unsafe conditions such as improper scaffolding, poor lighting, open edges or obstructed pathways	-	-	-	-
PC2. assess task-specific risks involving tools, machinery, and hazardous materials	-	-	-	-
PC3. document safety observations and communicate them to the safety lead or supervisor	-	-	-	-
PC4. verify that safety controls such as guard rails, signages and access controls are in place	-	-	-	-
Apply Safe Operational Practices	**6**	**12**	**-**	**2**
PC5. use appropriate PPE and ensure correct fit before beginning any activity	-	-	-	-
PC6. follow safe operation procedures for cutting, lifting, mixing and power tools	-	-	-	-
PC7. implement ergonomic practices to reduce fatigue and prevent musculoskeletal injuries	-	-	-	-
PC8. maintain housekeeping standards by ensuring clean and clutter-free work areas	-	-	-	-
Promote Health, Hygiene and Well-Being	**6**	**12**	**-**	**2**
PC9. follow personal hygiene practices such as handwashing, clean clothing and proper hydration	-	-	-	-
PC10. identify signs of health issues such as heat stress, dehydration and respiratory discomfort	-	-	-	-
PC11. ensure availability and safe usage of sanitation facilities, drinking water and resting zones	-	-	-	-
PC12. report workplace illnesses or physical discomfort to the assigned authority	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Implement Sustainability and Environmental Conservation Measures	**6**	**12**	**-**	**2**
PC13. follow procedures for safe storage and controlled use of chemicals, fuels and hazardous substances	-	-	-	-
PC14. practice material conservation by preventing spillage, wastage and improper handling	-	-	-	-
PC15. undertake waste segregation for recyclable, non-recyclable and hazardous waste	-	-	-	-
PC16. support measures for dust suppression, noise control and energy/water conservation	-	-	-	-
Respond Effectively to Onsite Emergencies	**6**	**12**	**-**	**2**
PC17. identify emergency alarms, muster points and evacuation routes	-	-	-	-
PC18. use basic firefighting equipment such as extinguishers, fire blankets and sand buckets where appropriate	-	-	-	-
PC19. assist in basic first-aid procedures including bleeding control, CPR and heat-stroke management	-	-	-	-
PC20. support emergency communication protocols and follow command instructions	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N9901
NOS Name	Implement Safe Work Practices and Environmental Stewardship at Construction Sites
Sector	Construction
Sub-Sector	
Occupation	Generic
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

DGT/VSQ/N0101: Employability Skills (30 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
- 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 job requirements

Constitutional values – Citizenship

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

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

Basic English Skills

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

PC4. speak with others using some basic English phrases or sentences

Communication Skills

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

PC5. follow good manners while communicating with others

PC6. work with others in a team

Diversity & Inclusion

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

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

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

PC9. use various financial products and services safely and securely

PC10. calculate income, expenses, savings etc.

PC11. approach the concerned authorities for any exploitation as per legal rights and laws

Essential Digital Skills

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

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

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

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

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

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

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 basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

KU10. how to compute income and expenses
KU11. importance of maintaining safety and security in financial transactions
KU12. different legal rights and laws
KU13. how to operate digital devices and applications safely and securely
KU14. ways to identify business opportunities
KU15. types of customers and their needs
KU16. how to apply for a job and prepare for an interview
KU17. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. communicate effectively using appropriate language
GS2. behave politely and appropriately with all
GS3. perform basic calculations
GS4. solve problems effectively
GS5. be careful and attentive at work
GS6. use time effectively
GS7. maintain hygiene and sanitisation to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**1**	**3**	**-**	**-**
PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
Communication Skills	**1**	**1**	**-**	**-**
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**1**	**-**	**-**
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
Financial and Legal Literacy	**3**	**4**	**-**	**-**
PC9. use various financial products and services safely and securely	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. calculate income, expenses, savings etc.	-	-	-	-
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
Essential Digital Skills	**4**	**6**	**-**	**-**
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
Entrepreneurship	**3**	**5**	**-**	**-**
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
Customer Service	**2**	**2**	**-**	**-**
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**1**	**3**	**-**	**-**
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Last Reviewed Date	22/07/2026
Next Review Date	22/07/2029
NSQC Clearance Date	22/07/2026

ICE/CON/N1508: Install Electrical Systems and Wiring

Description

This unit focuses on the installation of electrical systems and wiring in compliance with safety and quality standards, ensuring functionality and reliability of the systems.

Scope

The scope covers the following :

- Plan and prepare for installation tasks
- Install electrical systems and wiring
- Test and verify installations
- Maintain work area and documentation
- Ensure compliance with standards

Elements and Performance Criteria

Plan and prepare for installation tasks

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

PC1. Read and interpret electrical diagrams, circuit schematics, and layouts

PC2. Inspect and confirm availability of tools, equipment, and materials

PC3. Follow work schedules and safety protocols

Install electrical systems and wiring

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

PC4. Lay conduits and cable trays as per project requirements

PC5. Pull and secure electrical wires in conduits or raceways

PC6. Install circuit breakers, distribution boards, switches, and outlets

PC7. Ensure proper grounding and earthing of systems

Test and verify installations

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

PC8. Conduct continuity and insulation resistance tests on wiring

PC9. Check the functionality of installed systems using appropriate testing equipment

PC10. Identify and resolve faults or deficiencies in installations

Maintain work area and documentation

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

PC11. Clean and organize the workspace after completion

PC12. Record installation details and test results in logs or reports

PC13. Follow environmental regulations for waste disposal

Ensure compliance with standards

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

PC14. Follow National Electrical Code (NEC) or local regulations during installation

PC15. Adhere to workplace safety standards to prevent accidents

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The principles of electricity and wiring systems
KU2. Different types of electrical circuits and their applications
KU3. The standards and regulations for electrical installations (e.g., NEC, IEC)
KU4. The use of relevant tools and equipment for electrical installations (e.g., multimeters, wire strippers)
KU5. The importance of grounding and earthing
KU6. Different electrical hazards and the appropriate risk mitigation techniques
KU7. The safe handling and storage of electrical materials
KU8. The methods for recording test results and installation details
KU9. How to read and interpret electrical blueprints and technical manuals

Generic Skills (GS)

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

GS1. Identify and resolve installation-related challenges effectively
GS2. Collaborate with colleagues and supervisors during projects
GS3. Convey information effectively during work and report progress
GS4. Ensure accurate alignment and secure connections in installations
GS5. Perform basic calculations for load, resistance, and voltage drops
GS6. Respond to unexpected issues and adjust work plans accordingly
GS7. Consistently follow safety protocols and use protective equipment
GS8. Complete tasks within the allocated timelines
GS9. Follow updates on new tools, technologies, and regulations
GS10. Demonstrate reliability, punctuality, and a professional attitude

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan and prepare for installation tasks	**6**	**12**	**-**	**2**
PC1. Read and interpret electrical diagrams, circuit schematics, and layouts	-	-	-	-
PC2. Inspect and confirm availability of tools, equipment, and materials	-	-	-	-
PC3. Follow work schedules and safety protocols	-	-	-	-
Install electrical systems and wiring	**6**	**12**	**-**	**2**
PC4. Lay conduits and cable trays as per project requirements	-	-	-	-
PC5. Pull and secure electrical wires in conduits or raceways	-	-	-	-
PC6. Install circuit breakers, distribution boards, switches, and outlets	-	-	-	-
PC7. Ensure proper grounding and earthing of systems	-	-	-	-
Test and verify installations	**6**	**12**	**-**	**2**
PC8. Conduct continuity and insulation resistance tests on wiring	-	-	-	-
PC9. Check the functionality of installed systems using appropriate testing equipment	-	-	-	-
PC10. Identify and resolve faults or deficiencies in installations	-	-	-	-
Maintain work area and documentation	**6**	**12**	**-**	**2**
PC11. Clean and organize the workspace after completion	-	-	-	-
PC12. Record installation details and test results in logs or reports	-	-	-	-
PC13. Follow environmental regulations for waste disposal	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure compliance with standards	**6**	**12**	**-**	**2**
PC14. Follow National Electrical Code (NEC) or local regulations during installation	-	-	-	-
PC15. Adhere to workplace safety standards to prevent accidents	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N1508
NOS Name	Install Electrical Systems and Wiring
Sector	Construction
Sub-Sector	
Occupation	MEP (Mechanical, Electrical and Plumbing)
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N1509: Install and Integrate IoT- Enabled Electrical Systems

Description

This unit focuses on the installation, integration, and basic troubleshooting of IoT-enabled electrical systems, ensuring functionality and compliance with safety standards.

Scope

The scope covers the following :

- Set up and connect IoT-based electrical systems

Elements and Performance Criteria

Set up and connect IoT-based electrical systems

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

PC1. Identify the specifications and components required for IoT-enabled electrical systems from design plans and installation manuals

PC2. Assemble, mount, and install IoT-enabled devices such as sensors, switches, relays, and controllers

PC3. Establish wired and wireless connectivity between IoT-enabled devices and the central control system

PC4. Integrate IoT devices with mobile applications or cloud-based platforms for remote monitoring and control

PC5. Perform functional tests to ensure proper operation of IoT-enabled electrical systems

PC6. Conduct basic troubleshooting and resolve connectivity or performance issues in IoT-enabled systems

PC7. Follow workplace safety protocols, including lockout-tagout (LOTO), during installation and maintenance activities

PC8. Maintain proper documentation for installation, testing, and troubleshooting activities as per organizational guidelines

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The fundamentals of IoT technology and its application in electrical systems

KU2. Different types of IoT-enabled devices and their specific functionalities

KU3. The basic concepts of electrical circuits and wiring in IoT setups

KU4. The network protocols such as Wi-Fi, Zigbee, Bluetooth, and LAN used in IoT-enabled systems

KU5. The tools and equipment required for installing IoT-enabled systems

KU6. The procedures for integrating IoT devices with software applications and platforms

KU7. The common issues in IoT-enabled electrical systems and basic troubleshooting techniques

KU8. The safety standards, including electrical safety and use of relevant PPE

KU9. The documentation requirements for IoT system installation and integration

Generic Skills (GS)

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

GS1. Read and interpret technical drawings, manuals, and instructions
GS2. Work collaboratively with other technicians and engineers during installation tasks
GS3. Analyze and resolve issues in IoT-enabled systems effectively
GS4. Plan and execute tasks efficiently to meet project deadlines
GS5. Operate mobile and desktop applications for IoT integration and control
GS6. Ensure all connections and integrations are accurate and compliant with standards
GS7. Learn and work with new IoT technologies and protocols
GS8. Address client requirements and explain system functionalities clearly
GS9. Adhere to safety protocols and guidelines during work
GS10. Record and maintain accurate logs of activities performed during installation

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Set up and connect IoT-based electrical systems	**30**	**60**	**-**	**10**
PC1. Identify the specifications and components required for IoT-enabled electrical systems from design plans and installation manuals	-	-	-	-
PC2. Assemble, mount, and install IoT-enabled devices such as sensors, switches, relays, and controllers	-	-	-	-
PC3. Establish wired and wireless connectivity between IoT-enabled devices and the central control system	-	-	-	-
PC4. Integrate IoT devices with mobile applications or cloud-based platforms for remote monitoring and control	-	-	-	-
PC5. Perform functional tests to ensure proper operation of IoT-enabled electrical systems	-	-	-	-
PC6. Conduct basic troubleshooting and resolve connectivity or performance issues in IoT-enabled systems	-	-	-	-
PC7. Follow workplace safety protocols, including lockout-tagout (LOTO), during installation and maintenance activities	-	-	-	-
PC8. Maintain proper documentation for installation, testing, and troubleshooting activities as per organizational guidelines	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N1509
NOS Name	Install and Integrate IoT- Enabled Electrical Systems
Sector	Construction
Sub-Sector	
Occupation	MEP (Mechanical, Electrical and Plumbing)
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N1510: Install and Maintain Renewable Energy Solutions in Electrical Systems

Description

This unit covers the installation, testing, and maintenance of renewable energy systems integrated into electrical systems, ensuring functionality, safety, and compliance with regulations.

Scope

The scope covers the following :

- Install renewable energy systems
- Perform testing and commissioning
- Perform maintenance and troubleshooting
- Ensure Health, Safety, and Environment (HSE) compliance

Elements and Performance Criteria

Install renewable energy systems

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

PC1. Interpret and follow installation drawings, diagrams, and manufacturer guidelines for renewable energy solutions

PC2. Assemble, install, and secure renewable energy system components (e.g., solar panels, inverters, batteries) in the designated area

PC3. Integrate renewable energy systems into existing electrical systems using appropriate tools and techniques

PC4. Perform wiring and connection tasks, ensuring proper polarity and earthing

Perform testing and commissioning

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

PC5. Conduct functionality tests on installed systems to ensure operational efficiency

PC6. Use appropriate diagnostic tools to measure voltage, current, and resistance to verify compliance with specifications

PC7. Rectify identified faults in the installed renewable energy systems

Perform maintenance and troubleshooting

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

PC8. Inspect renewable energy systems for wear, damage, or loose connections

PC9. Clean and replace defective components, including batteries and connectors

PC10. Update system configurations or software as required for optimal performance

Ensure Health, Safety, and Environment (HSE) compliance

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

PC11. Follow safe working practices, including the use of personal protective equipment (PPE)

PC12. Adhere to environmental guidelines for the disposal of electronic and hazardous waste

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The principles of solar, wind, and other renewable energy technologies
KU2. The wiring, circuits, and earthing methods
KU3. The installation standards, diagrams, and manufacturer manuals
KU4. The use of diagnostic tools, such as multimeters, insulation testers, etc.
KU5. The electrical safety standards, PPE usage, and emergency procedures
KU6. The techniques for identifying and resolving common issues in renewable energy systems
KU7. The routine checks and preventive maintenance procedures
KU8. The relevant national and international standards for renewable energy systems
KU9. The waste disposal and recycling methods for renewable energy components
KU10. The basics of monitoring software and system configuration tools

Generic Skills (GS)

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

GS1. Interpret and explain technical information clearly to supervisors or customers
GS2. Collaborate effectively with other technicians or contractors
GS3. Manage installation and maintenance schedules efficiently
GS4. Diagnose and rectify issues in renewable energy systems
GS5. Ensure precision in wiring, connections, and system alignment
GS6. Operate software tools and maintain digital records
GS7. Perform accurate measurements and calculations
GS8. Work in diverse environments and conditions
GS9. Evaluate the performance of systems and recommend improvements
GS10. Address client concerns and ensure satisfaction with installed systems

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Install renewable energy systems	**8**	**15**	**-**	**3**
PC1. Interpret and follow installation drawings, diagrams, and manufacturer guidelines for renewable energy solutions	-	-	-	-
PC2. Assemble, install, and secure renewable energy system components (e.g., solar panels, inverters, batteries) in the designated area	-	-	-	-
PC3. Integrate renewable energy systems into existing electrical systems using appropriate tools and techniques	-	-	-	-
PC4. Perform wiring and connection tasks, ensuring proper polarity and earthing	-	-	-	-
Perform testing and commissioning	**8**	**15**	**-**	**3**
PC5. Conduct functionality tests on installed systems to ensure operational efficiency	-	-	-	-
PC6. Use appropriate diagnostic tools to measure voltage, current, and resistance to verify compliance with specifications	-	-	-	-
PC7. Rectify identified faults in the installed renewable energy systems	-	-	-	-
Perform maintenance and troubleshooting	**7**	**15**	**-**	**2**
PC8. Inspect renewable energy systems for wear, damage, or loose connections	-	-	-	-
PC9. Clean and replace defective components, including batteries and connectors	-	-	-	-
PC10. Update system configurations or software as required for optimal performance	-	-	-	-
Ensure Health, Safety, and Environment (HSE) compliance	**7**	**15**	**-**	**2**
PC11. Follow safe working practices, including the use of personal protective equipment (PPE)	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. Adhere to environmental guidelines for the disposal of electronic and hazardous waste	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N1510
NOS Name	Install and Maintain Renewable Energy Solutions in Electrical Systems
Sector	Construction
Sub-Sector	
Occupation	MEP (Mechanical, Electrical and Plumbing)
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

ICE/CON/N1511: Diagnose, Maintain and Repair Electrical Systems and Components

Description

This unit focuses on diagnosing, maintaining, and repairing electrical systems and components using digital diagnostic tools, predictive maintenance techniques, and industry-standard repair methods.m

Scope

The scope covers the following :

- Use diagnostic and analyze data
- Perform predictive maintenance
- Repair and replace electrical components
- Optimize electrical system performance
- Conduct system testing and troubleshooting
- Use software and IoT applications
- Ensure compliance and proper reporting

Elements and Performance Criteria

Use Diagnostic Tools and Analyze Data

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

PC1. Operate digital diagnostic tools such as multimeters, thermal cameras, and IoT-enabled monitoring devices to analyze electrical systems

PC2. Check the accuracy of the readings and identify inconsistencies or faults

PC3. Analyze real-time data from electrical systems to detect anomalies such as voltage drops, overheating, or current imbalances

PC4. Use trend analysis to predict potential system failures

Perform predictive maintenance

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

PC5. Plan and execute predictive maintenance activities based on diagnostics, including replacement of worn-out components and calibration of electrical systems

PC6. Document digital logs of maintenance activities using the appropriate software

Repair and Replace Electrical Components

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

PC7. Inspect electrical systems to identify faulty components such as fuses, switches, circuit breakers, and wiring.

PC8. Safely disconnect, remove, and document faulty components for proper disposal or repair.

PC9. Install compatible replacement components, ensuring proper connections and compliance with electrical standards.

PC10. Repair minor electrical faults such as loose connections or faulty terminals.

PC11. Test repaired components before reinstallation.

Optimize electrical system performance

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

PC12. Implement system optimization recommendations provided by diagnostic tools, such as balancing loads or adjusting parameters to improve efficiency

PC13. Identify and rectify faults in electrical systems based on diagnostic results, ensuring compliance with safety standards

Conduct System Testing and Troubleshooting

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

PC14. Reassemble the system and perform functional tests to ensure components operate correctly.

PC15. Use appropriate testing tools to verify system safety and efficiency.

PC16. Diagnose and resolve any issues arising after component replacement or repair.

PC17. Ensure system performance aligns with expected parameters.

Use software and IoT applications

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

PC18. Use software or IoT platforms to monitor electrical systems remotely and schedule predictive maintenance

PC19. Configure and troubleshoot IoT devices connected to electrical systems

Ensure compliance and proper reporting

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

PC20. Ensure all diagnostic and maintenance activities adhere to electrical safety standards and regulations

PC21. Maintain accurate records of diagnostic results, maintenance activities, and compliance checks

PC22. Communicate diagnostic results and maintenance recommendations to supervisors and stakeholders

PC23. Generate detailed technical reports for maintenance activities

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The principles of electricity, including voltage, current, resistance, and power

KU2. The operations of diagnostic tools such as thermal imaging, power analyzers, and vibration sensors

KU3. The predictive maintenance strategies like vibration analysis, infrared thermography, and condition monitoring

KU4. The basics of IoT-enabled devices and their application in monitoring and diagnostics

KU5. The interpretation of diagnostic data and use of trend analysis for predictive maintenance

KU6. The methods to optimize electrical system performance, including load balancing and efficiency improvement

KU7. The electrical safety standards, codes, and procedures

KU8. The techniques for maintaining logs and creating detailed reports for diagnostics and maintenance activities

KU9. The proper use, care, and calibration of diagnostic tools and equipment

KU10. The methods to identify and resolve common electrical system issues

Generic Skills (GS)

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

GS1. Apply logical and analytical approaches to troubleshoot and resolve electrical system issues

GS2. Evaluate diagnostic data to make informed decisions on maintenance actions

GS3. Ensure accuracy in diagnostics, maintenance, and reporting tasks

GS4. Convey technical information effectively to team members and stakeholders

GS5. Use software and IoT platforms proficiently for diagnostics and maintenance

GS6. Prioritize tasks to ensure timely maintenance and minimal downtime

GS7. Work effectively with team members and supervisors in maintenance activities

GS8. Learn and implement new diagnostic tools and techniques

GS9. Adhere to safety protocols and regulations during all tasks

GS10. Follow updates on the latest technologies and trends in predictive maintenance and diagnostics

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Use Diagnostic Tools and Analyze Data	**5**	**9**	**-**	**2**
PC1. Operate digital diagnostic tools such as multimeters, thermal cameras, and IoT-enabled monitoring devices to analyze electrical systems	-	-	-	-
PC2. Check the accuracy of the readings and identify inconsistencies or faults	-	-	-	-
PC3. Analyze real-time data from electrical systems to detect anomalies such as voltage drops, overheating, or current imbalances	-	-	-	-
PC4. Use trend analysis to predict potential system failures	-	-	-	-
Perform predictive maintenance	**5**	**9**	**-**	**2**
PC5. Plan and execute predictive maintenance activities based on diagnostics, including replacement of worn-out components and calibration of electrical systems	-	-	-	-
PC6. Document digital logs of maintenance activities using the appropriate software	-	-	-	-
Repair and Replace Electrical Components	**4**	**9**	**-**	**2**
PC7. Inspect electrical systems to identify faulty components such as fuses, switches, circuit breakers, and wiring.	-	-	-	-
PC8. Safely disconnect, remove, and document faulty components for proper disposal or repair.	-	-	-	-
PC9. Install compatible replacement components, ensuring proper connections and compliance with electrical standards.	-	-	-	-
PC10. Repair minor electrical faults such as loose connections or faulty terminals.	-	-	-	-
PC11. Test repaired components before reinstallation.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Optimize electrical system performance	**4**	**9**	**-**	**1**
PC12. Implement system optimization recommendations provided by diagnostic tools, such as balancing loads or adjusting parameters to improve efficiency	-	-	-	-
PC13. Identify and rectify faults in electrical systems based on diagnostic results, ensuring compliance with safety standards	-	-	-	-
Conduct System Testing and Troubleshooting	**4**	**8**	**-**	**1**
PC14. Reassemble the system and perform functional tests to ensure components operate correctly.	-	-	-	-
PC15. Use appropriate testing tools to verify system safety and efficiency.	-	-	-	-
PC16. Diagnose and resolve any issues arising after component replacement or repair.	-	-	-	-
PC17. Ensure system performance aligns with expected parameters.	-	-	-	-
Use software and IoT applications	**4**	**8**	**-**	**1**
PC18. Use software or IoT platforms to monitor electrical systems remotely and schedule predictive maintenance	-	-	-	-
PC19. Configure and troubleshoot IoT devices connected to electrical systems	-	-	-	-
Ensure compliance and proper reporting	**4**	**8**	**-**	**1**
PC20. Ensure all diagnostic and maintenance activities adhere to electrical safety standards and regulations	-	-	-	-
PC21. Maintain accurate records of diagnostic results, maintenance activities, and compliance checks	-	-	-	-
PC22. Communicate diagnostic results and maintenance recommendations to supervisors and stakeholders	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. Generate detailed technical reports for maintenance activities	-	-	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	ICE/CON/N1511
NOS Name	Diagnose, Maintain and Repair Electrical Systems and Components
Sector	Construction
Sub-Sector	
Occupation	MEP (Mechanical, Electrical and Plumbing)
NSQF Level	4
Credits	1
Version	1.0
Last Reviewed Date	07/10/2025
Next Review Date	07/10/2028
NSQC Clearance Date	07/10/2025

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Awarding Body. Each Performance Criteria (PC)/ Element will be assigned marks proportional to its importance in NOS. AB will also lay down proportion of marks for Theory and Practical Skills for each PC/ Element.

2. The assessment of the knowledge part will be based on knowledge bank of questions created by Assessment Bodies subject to approval by AB.

3. Individual assessment agencies will create unique question papers for knowledge/theory part for assessment of candidates as per assessment criteria given below.

4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on assessment criteria.

5. To pass the Qualification Pack, every trainee must score 70% on overall QP.

6. The Assessor shall check the outcome of the practices while evaluating the steps performed to achieve the outcome.

7. The trainee shall be provided with a chance to repeat the test to correct his procedures in case of

improper performance, with a deduction of marks for each iteration.

8. After the certain number of iterations as decided by AB the trainee is marked as fail, scoring zero marks for the procedure for the practical activity.

9. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack within the specified time frame set by AB.

10. Minimum duration of Assessment of each QP shall be 8hrs/batch (max. 30 candidates).

Minimum Aggregate Passing % at QP Level : 70

(**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
ICE/CON/N1501.Plan, Schedule and Manage Resources for Project Execution	30	60	-	10	100	10
ICE/CON/N1502.Inspect and Report Issues in MEP Installations	30	60	-	10	100	10
ICE/CON/N1503.Carry out Documentation Concerning MEP Works and ensure Compliance	30	60	-	10	100	10
ICE/CON/N9901.Implement Safe Work Practices and Environmental Stewardship at Construction Sites	30	60	-	10	100	5
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	5
Total	**140**	**270**	**-**	**40**	**450**	**40**

Elective: 1 Electrical Systems

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ICE/CON/N1508.Install Electrical Systems and Wiring	30	60	-	10	100	10
ICE/CON/N1509.Install and Integrate IoT- Enabled Electrical Systems	30	60	-	10	100	10
ICE/CON/N1510.Install and Maintain Renewable Energy Solutions in Electrical Systems	30	60	-	10	100	20
ICE/CON/N1511.Diagnose, Maintain and Repair Electrical Systems and Components	30	60	-	10	100	20
Total	**120**	**240**	**-**	**40**	**400**	**60**