Qualification Pack

ICT Network Infrastructure

QP Code: TEL/Q4204

Version: 1.0

NSQF Level: 4.5

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Contents

Qualification Pack

TEL/Q4204: ICT Network Infrastructure

Brief Job Description

The design, implementation, and upkeep of telecommunications infrastructure, such as data centres, LANs, mobile networks, CATV, industrial automation, and building automation, are all under the purview of ICT Network Infrastructure. With the focus on AI, Big Data, and Cloud services, and a quickly changing technical landscape, the knowledge of IoT and IIoT connection is invaluable. Among the things building network foundations, choosing and installing the right cables, and performing maintenance, testing, and commissioning is crucial. Considering how important communication networks are to the smooth operation of businesses, the ICT Network Infrastructure role is crucial to maintaining strong and dependable connectivity and reducing the possibility of network breakdowns, which might cost money and cause delays.

Personal Attributes

The individual in this job is required to have effective listening / questioning and communication skills with a clear diction. They should also have strong customer service focus and be able to work under pressure and in shifts.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. TEL/N4209: Work Organization & Management
2. TEL/N4210: Communication and Interpersonal Skills
3. TEL/N4211: Planning, implementation, management
4. TEL/N4212: Cabling and Installation
5. TEL/N4213: Installation of optical fibre cabling system
6. TEL/N4214: Installation of Copper Cabling System
7. TEL/N4215: Wireless Connectivity for IoT and IIOT Applications
8. TEL/N4216: Troubleshooting and ongoing maintenance
9. TEL/N4217: measurement

Qualification Pack (QP) Parameters

Qualification Pack

Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
Country	India
NSQF Level	4.5
Credits	17
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7422.0800
Minimum Educational Qualification & Experience	Not Applicable
Minimum Level of Education for Training in School	Not Applicable
Pre-Requisite License or Training	NA
Minimum Job Entry Age	16 Years
Last Reviewed On	NA
Next Review Date	06/02/2028
NSQC Approval Date	06/02/2026
Version	1.0
Reference code on NQR	QM-4.5-TL-05100-2026-V1-TSSC
NQR Version	1

Remarks:

The Competitors must not be older than 25 years in the year of the Competition. Age limit: 16 to 25 years.

TEL/N4209: Work Organization & Management

Description

This OS unit describes the knowledge and skills required for an individual to operate safely and effectively in technical environments and gain understanding of health and safety regulations, proper equipment uses, data security, and methodical work practices. Additionally, an individual can also research the importance of professional development and the impacts of poor network installations.

Scope

The scope covers the following :

- Work Organization and Management

Elements and Performance Criteria

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

PC1. Comply with health and safety standards, rules, and regulations

PC2. Adhere to relevant codes and/or standards

PC3. Maintain a safe working environment including the use of ladders for access to high work

PC4. Use personal protective equipment correctly

PC5. Identify and use the appropriate personal protective equipment for ESD

PC6. Select, use, clean, maintain, and store tools and equipment safely and securely

PC7. Plan work areas to maximize efficiency and maintain the discipline of regular tidying

PC8. Regularly schedule and re-schedule and multi-task according to changing priorities

PC9. Work efficiently and check progress and outcomes regularly

PC10. PC10. Actively work to fulfil industry certification requirements and keep up to date with 'license to practice' requirements (determined by their own country) and to complete regular Continued Professional Development (CPD)

PC11. PC11. Use thorough and efficient research methods to support knowledge growth

PC12. PC12. Proactively try new methods, and systems, and embrace change

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Health and safety legislation, obligations, regulations, and documentation

KU2. Basic first aid

KU3. The situations when personal protective equipment (PPE) must be used

KU4. The correct procedures for working with laser technologies

KU5. The purposes, uses, care, maintenance, safe handling, and storage of equipment in an ESD friendly environment

KU6. The importance of integrity and security when dealing with user equipment and information

KU7. The importance of safe disposal of waste for re-cycling

KU8. The significance of accuracy, checking, and attention to detail in all working practices

KU9. The importance of methodical working practices

KU10. Research methods and techniques

KU11. The value of managing ones own continuing professional development

KU12. The negative impacts on businesses and organizations of poor or unreliable network installations

KU13. Codes and standards

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Comply with health and safety standards, rules, and regulations	2	6	-	1
PC2. Adhere to relevant codes and/or standards	2	7	-	1
PC3. Maintain a safe working environment including the use of ladders for access to high work	2	6	-	1
PC4. Use personal protective equipment correctly	1	5	-	1
PC5. Identify and use the appropriate personal protective equipment for ESD	2	6	-	1
PC6. Select, use, clean, maintain, and store tools and equipment safely and securely	2	7	-	1
PC7. Plan work areas to maximize efficiency and maintain the discipline of regular tidying	2	6	-	1
PC8. Regularly schedule and re-schedule and multi-task according to changing priorities	2	6	-	1
PC9. Work efficiently and check progress and outcomes regularly	1	5	-	1
PC10. PC10. Actively work to fulfil industry certification requirements and keep up to date with 'license to practice' requirements (determined by their own country) and to complete regular Continued Professional Development (CPD)	2	6	-	1
PC11. PC11. Use thorough and efficient research methods to support knowledge growth	1	5	-	-
PC12. PC12. Proactively try new methods, and systems, and embrace change	1	5	-	-
NOS Total	**20**	**70**	**-**	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4209
NOS Name	Work Organization & Management
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	1
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4210: Communication and Interpersonal Skills

Description

This OS unit equips individuals to excel in collaborative communication, teamwork, and problem-solving within a professional environment. This will help an individual to develop expertise in active listening, discussing customer needs in an effective communication method to reduce conflict between the customer, build strong relationships, providing expert advice, tailoring solutions, learn to respect work environments, prepare construction plans, and explain the sustainability of cabling systems.

Scope

The scope covers the following :

- Communication and Interpersonal Skills

Elements and Performance Criteria

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

PC1. Use strong listening and questioning skills to deepen understanding of complex situations

PC2. Manage consistently effective verbal and written communications with colleagues

PC3. Proactively contribute to the development of a strong and effective team

PC4. Share knowledge and expertise with colleagues and develop supportive learning cultures

PC5. Manage tensions and disputes, providing confidence that problems can be resolved

PC6. Discuss customers' requirements and provide Expert advice and consultancy

PC7. Liaise with other professionals and suppliers to create a fully tailored package that fulfils customers' needs

PC8. Respect the impact that cabling activity can have on a busy working environment, showing consideration and care, and causing least disruption in all circumstances

PC9. Prepare construction plans and quotations for planned work and present to customers

PC10. Explain the sustainability of the cabling system

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The importance of listening as part of effective communication

KU2. The roles and requirements of colleagues and the most effective methods of communication

KU3. The importance of building and maintaining productive working relationships with colleagues and managers

KU4. Techniques for effective teamwork

KU5. Techniques for resolving misunderstandings and conflicting demands

KU6. The process for managing tension and anger to resolve difficult situations

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Use strong listening and questioning skills to deepen understanding of complex situations	2	7	-	1
PC2. Manage consistently effective verbal and written communications with colleagues	2	7	-	1
PC3. Proactively contribute to the development of a strong and effective team	2	7	-	1
PC4. Share knowledge and expertise with colleagues and develop supportive learning cultures	2	7	-	1
PC5. Manage tensions and disputes, providing confidence that problems can be resolved	2	7	-	1
PC6. Discuss customers' requirements and provide Expert advice and consultancy	2	7	-	1
PC7. Liaise with other professionals and suppliers to create a fully tailored package that fulfils customers' needs	2	7	-	1
PC8. Respect the impact that cabling activity can have on a busy working environment, showing consideration and care, and causing least disruption in all circumstances	2	7	-	1
PC9. Prepare construction plans and quotations for planned work and present to customers	2	7	-	1
PC10. Explain the sustainability of the cabling system	2	7	-	1
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4210
NOS Name	Communication and Interpersonal Skills
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	1
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4211: Planning, implementation, management

Description

This OS unit describes the knowledge and skills required for an individual to plan, install, and manage low-voltage cabling systems. An individual will understand industry standards, technical drawings, safety regulations to develop and execute installation plans, manage quality control, and implement sustainable practices. This equips an individual to do all required documentation tasks and take on positions in the installation and maintenance of structured cabling.

Scope

The scope covers the following :

- Planning, implementation, management

Elements and Performance Criteria

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

PC1. Perform site surveys

PC2. Plan and specify installations, according to principles and criteria for best practice

PC3. Work independently by planning, ordering and prioritizing work to maximize efficiency and to adhere to planned time schedules

PC4. Prepare, design, interpret, and analyse specialists' technical drawings and specifications

PC5. Select the tools and systems that are most appropriate for the planned tasks

PC6. Select the appropriate cabling media based on usage requirements

PC7. Interpret and apply manufacturers' instructions

PC8. carry out inventory control

PC9. Develop labelling schemes

PC10. Interpret and analyse complex plans and specifications

PC11. Ensure required quality specifications

PC12. Solve a range of problems, including complex ones

PC13. Assess work sites to effectively identify risks and thereby prevent or minimize hazards

PC14. Assess buildings and plan the location of cables to minimize damages, unsightliness, and risks

PC15. Develop and comply with site safety plans

PC16. Develop sustainability plans

PC17. Consider the sustainability of each system's life cycle

PC18. Maximize sustainability in processes

PC19. Complete all necessary documentation

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Terminology and symbols used in specifications, and drawings that are recognized by the industry

KU2. Principles of technical drawings and specifications that are recognized by the industry

KU3. Installation requirement and specifications

KU4. Quality planning

KU5. Installation planning

KU6. Properties and types of cables

KU7. Safety requirements and recommendations

KU8. Information network technology and their applications

KU9. Mathematics and physics

KU10. The laws of electricity and telecommunications

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Perform site surveys	1	3	-	-
PC2. Plan and specify installations, according to principles and criteria for best practice	1	4	-	1
PC3. Work independently by planning, ordering and prioritizing work to maximize efficiency and to adhere to planned time schedules	1	3	-	-
PC4. Prepare, design, interpret, and analyse specialists' technical drawings and specifications	2	4	-	1
PC5. Select the tools and systems that are most appropriate for the planned tasks	1	4	-	1
PC6. Select the appropriate cabling media based on usage requirements	1	4	-	-
PC7. Interpret and apply manufacturers' instructions	1	4	-	-
PC8. carry out inventory control	1	3	-	1
PC9. Develop labelling schemes	1	4	-	1
PC10. Interpret and analyse complex plans and specifications	1	4	-	1
PC11. Ensure required quality specifications	1	4	-	-
PC12. Solve a range of problems, including complex ones	1	4	-	1
PC13. Assess work sites to effectively identify risks and thereby prevent or minimize hazards	1	4	-	1
PC14. Assess buildings and plan the location of cables to minimize damages, unsightliness, and risks	1	4	-	-
PC15. Develop and comply with site safety plans	1	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. Develop sustainability plans	1	4	-	-
PC17. Consider the sustainability of each system's life cycle	1	4	-	-
PC18. Maximize sustainability in processes	1	3	-	1
PC19. Complete all necessary documentation	1	3	-	-
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4211
NOS Name	Planning, implementation, management
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	2
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4212: Cabling and Installation

Description

This OS unit is about to install and maintain structured cabling systems for various applications, including offices, homes, data centres, and building automation. An individual is responsible to identify cable types, perform installation methods, establish pathways, install equipment, adhere to safety & sustainability practices and also maintain professional work environments and documentation.

Scope

The scope covers the following :

- Cabling and Installation

Elements and Performance Criteria

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

PC1. Identify the cabling and installation required for generic cabling systems for customer premises, such as offices and Industries, single tenants' homes, data centres, and distributed building services, building automation systems, lighting systems, access control systems, security, fire alarm systems, and process control (IIoT)

PC2. Establish pathway systems (cable tray, cable support system, conduit, fibre channel, etc.)

PC3. Establish space (TR, ER, TE, etc.)

PC4. Pull cables within pathway systems

PC5. Install rack cabinets, patch panels, and network equipment

PC6. Select the appropriate procedures for cabling

PC7. Prioritize work and comply with plans to minimize disruption and to meet agreed time scales

PC8. Perform labelling

PC9. Remove abandoned cables

PC10. Clean sites after completing installations

PC11. Maximize sustainability during work processes

PC12. Develop and maintain on-site environments (respect clients' buildings, keeping them tidy and clean.)

PC13. Maintain equipment and complete associated administration

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The different types of cable, their characteristics, uses, and how they affect other aspects of the network

KU2. Cabling and installation methods of copper and fibre cabling

KU3. Installation requirements and specifications

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Identify the cabling and installation required for generic cabling systems for customer premises, such as offices and Industries, single tenants' homes, data centres, and distributed building services, building automation systems, lighting systems, access control systems, security, fire alarm systems, and process control (IIoT)	2	6	-	1
PC2. Establish pathway systems (cable tray, cable support system, conduit, fibre channel, etc.)	2	6	-	1
PC3. Establish space (TR, ER, TE, etc.)	2	6	-	1
PC4. Pull cables within pathway systems	2	5	-	1
PC5. Install rack cabinets, patch panels, and network equipment	2	5	-	1
PC6. Select the appropriate procedures for cabling	1	5	-	1
PC7. Prioritize work and comply with plans to minimize disruption and to meet agreed time scales	1	5	-	-
PC8. Perform labelling	2	6	-	1
PC9. Remove abandoned cables	1	5	-	-
PC10. Clean sites after completing installations	1	5	-	1
PC11. Maximize sustainability during work processes	1	5	-	1
PC12. Develop and maintain on-site environments (respect clients' buildings, keeping them tidy and clean.)	2	6	-	1
PC13. Maintain equipment and complete associated administration	1	5	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4212
NOS Name	Cabling and Installation
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	3
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4213: Installation of optical fibre cabling system

Description

This OS unit is about installation of components like splitters, connectors, splicing techniques and undertaking practices for commercial and domestic installation checks like FTTH, PON, and access networks.

Scope

The scope covers the following :

- Installation of optical fibre cabling system

Elements and Performance Criteria

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

PC1. Install components related to coper cabling systems: Optical closure, Optical panel, Splice box, TO, Cables (a fibre, ribbon, fibre, etc.)

PC2. Connect and splice optical fibre cables by or with: Fusion splicing, Mechanical splicing, Optical connectors, Installable optical connectors

PC3. Manage and maintain optical fibre cables system

PC4. Select, prepare, maintenance and manage equipment related installation of optical fibre cable

PC5. Install optical fibre cabling system and related applications (FTTH, PON, Access network, etc.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Optical fibre cables and connecting hardware

KU2. Properties and types of optical fibre cables

KU3. The uses of various connectors for optical fibre cables

KU4. Processes for installing optical fibre cables

KU5. The cabling appropriate for commercial and domestic use

KU6. Overview of optical fibre cabling system and related applications (FTTH, PON, Access network, outside plant cabling system, etc.)

KU7. Optical fibre structured cabling system

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Install components related to coper cabling systems: Optical closure, Optical panel, Splice box, TO, Cables (a fibre, ribbon, fibre, etc.)	4	14	-	2
PC2. Connect and splice optical fibre cables by or with: Fusion splicing, Mechanical splicing, Optical connectors, Installable optical connectors	4	14	-	2
PC3. Manage and maintain optical fibre cables system	4	14	-	2
PC4. Select, prepare, maintenance and manage equipment related installation of optical fibre cable	4	14	-	2
PC5. Install optical fibre cabling system and related applications (FTTH, PON, Access network, etc.	4	14	-	2
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4213
NOS Name	Installation of optical fibre cabling system
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	3
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4214: Installation of Copper Cabling System

Description

This OS unit describes the knowledge and skills required for an individual to install, terminate, and manage copper cabling systems in commercial and domestic settings. An individual will gain expertise in installing components like racks, panels, network equipment, various cable types (UTP, STP, coaxial) and master Insulation displacement connection (IDC) terminations for multi-pair, four-pair, and single-pair configurations, enabling them to effectively manage and maintain copper cabling infrastructure. Additionally, an individuals will learn to select, prepare, and maintain equipment crucial for copper cable installation, ensuring optimal system performance.

Scope

The scope covers the following :

- Installation of copper cabling system

Elements and Performance Criteria

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

PC1. Install components related to copper cabling systems, involving: 19 inches racks, Panels, TOs, Network equipment, Cables (unshielded twisted pair cable (U/UTP), shielded twisted pair cable (S/FTP, F/UTP), coaxial cable)

PC2. Perform IDC

PC3. Perform terminations (multi-pairs, four-pairs, single-pair)

PC4. Manage and maintain copper cabling systems

PC5. Select, prepare, maintenance and manage equipment related installation of copper cable

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Copper cables and connecting hardware

KU2. Properties and types of copper cables

KU3. Processes for installing copper cables

KU4. The cabling appropriate for commercial and domestic use

KU5. Copper structured cabling systems

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Install components related to copper cabling systems, involving: 19 inches racks, Panels, TOs, Network equipment, Cables (unshielded twisted pair cable (U/UTP), shielded twisted pair cable (S/FTP, F/UTP), coaxial cable)	4	14	-	2
PC2. Perform IDC	4	14	-	2
PC3. Perform terminations (multi-pairs, four-pairs, single-pair)	4	14	-	2
PC4. Manage and maintain copper cabling systems	4	14	-	2
PC5. Select, prepare, maintenance and manage equipment related installation of copper cable	4	14	-	2
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4214
NOS Name	Installation of Copper Cabling System
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	2
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4215: Wireless Connectivity for IoT and IIOT Applications

Description

This OS unit equips individuals to install, configure, and manage wireless networks, smart home/office/factory systems, security applications, and IoT/IIoT devices. Participants will learn to perform site surveys, configure equipment, and ensure secure connectivity for various environments.

Scope

The scope covers the following :

- Wireless Connectivity for IoT and IIOT Applications

Elements and Performance Criteria

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

PC1. Install and configure wireless systems
PC2. Install and complete basic configurations to provide smart home/ home/factory connectivity
PC3. Survey wireless network at the field
PC4. Install and configure smart applications and equipment
PC5. Install and configure security system and applications and equipment
PC6. Install and configure IoT/IIoT applications and equipment

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Wi-Fi configurations
KU2. Smart home/office/factory applications and equipment configurations
KU3. Security system applications and equipment configurations
KU4. IoT and IIOT applications and equipment configurations

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Install and configure wireless systems	3	10	-	2
PC2. Install and complete basic configurations to provide smart home/ home/factory connectivity	4	12	-	2
PC3. Survey wireless network at the field	3	12	-	1
PC4. Install and configure smart applications and equipment	4	12	-	2
PC5. Install and configure security system and applications and equipment	3	12	-	1
PC6. Install and configure IoT/IIoT applications and equipment	3	12	-	2
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4215
NOS Name	Wireless Connectivity for IoT and IIOT Applications
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	2
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4216: Troubleshooting and ongoing maintenance

Description

This OS unit is about to identifies and diagnoses system faults, minimizing business disruptions. An individual is responsible to maintain cabling infrastructure, including optical fiber and copper, perform Wi-Fi troubleshooting, and update systems to meet evolving needs. They also document procedures, label systems, and provide user guidance, ensuring smooth network operations and user satisfaction.

Scope

The scope covers the following :

- Troubleshooting and ongoing maintenance

Elements and Performance Criteria

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

PC1. Identify, locate, and diagnose system faults
PC2. Rectify faults and repair cabling systems
PC3. Replace and reinstall optical fibre cabling, and copper cabling
PC4. Carry out Wi-Fi network fault-finding
PC5. Complete troubleshooting and fault-finding log sheets thoroughly and clearly
PC6. Install updates to ensure systems meet emerging business needs
PC7. Label systems for users' information and guidance
PC8. Complete all records and documentation
PC9. Provide customers with advice and guidance on use of the systems, their features, and limitations

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. Where potential system faults may occur
KU2. Potential disruption to business activity resulting from system faults
KU3. The requirements for documentation
KU4. The requirements of administration systems

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Identify, locate, and diagnose system faults	3	8	-	2
PC2. Rectify faults and repair cabling systems	3	8	-	1
PC3. Replace and reinstall optical fibre cabling, and copper cabling	2	8	-	1
PC4. Carry out Wi-Fi network fault-finding	2	8	-	1
PC5. Complete troubleshooting and fault-finding log sheets thoroughly and clearly	2	8	-	1
PC6. Install updates to ensure systems meet emerging business needs	2	8	-	1
PC7. Label systems for users' information and guidance	2	8	-	1
PC8. Complete all records and documentation	2	7	-	1
PC9. Provide customers with advice and guidance on use of the systems, their features, and limitations	2	7	-	1
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4216
NOS Name	Troubleshooting and ongoing maintenance
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	2
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

TEL/N4217: measurement

Description

This OS unit describes the knowledge and skills required for an individual to demonstrate competence in selecting test equipment, performing inspections, and certifying cabling systems (copper and fiber optic) including connector quality and wireless network optimization. An individual will also understand measuring principles, inspection levels, and documentation practices.

Scope

The scope covers the following :

- Measurement

Elements and Performance Criteria

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

PC1. Select appropriate test equipment for the work in hand

PC2. Inspect cabling systems

PC3. Certify optical fibre cables by optical loss test set (OTLS)/Optical time domain reflect metre (OTDR)

PC4. Certify copper cables by cable/LAN tester

PC5. Certify/Verify the quality of fibre optical connector end-faces

PC6. Optimize the performance of 802.11 wireless networks

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. The principles and purposes of measuring devices

KU2. The practical uses of measuring devices

KU3. The purposes of measurement

KU4. Required and discretionary levels of inspection

KU5. Test result documentation

KU6. Inspection documentation

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
	20	**70**	**-**	**10**
PC1. Select appropriate test equipment for the work in hand	3	12	-	1
PC2. Inspect cabling systems	4	12	-	2
PC3. Certify optical fibre cables by optical loss test set (OTLS)/Optical time domain reflect metre (OTDR)	3	12	-	2
PC4. Certify copper cables by cable/LAN tester	3	12	-	2
PC5. Certify/Verify the quality of fibre optical connector end-faces	4	12	-	2
PC6. Optimize the performance of 802.11 wireless networks	3	10	-	1
NOS Total	**20**	**70**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N4217
NOS Name	measurement
Sector	Telecom
Sub-Sector	Passive Infrastructure
Occupation	Network (Passive) Installation
NSQF Level	4.5
Credits	1
Version	2.0
Last Reviewed Date	06/02/2026
Next Review Date	06/02/2028
NSQC Clearance Date	06/02/2026

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council.

2. Element/Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/PC.

3. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

4. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

5. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

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

7. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

8. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

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
TEL/N4209.Work Organization & Management	20	70	-	10	100	5
TEL/N4210.Communication and Interpersonal Skills	20	70	-	10	100	5
TEL/N4211.Planning, implementation, management	20	70	-	10	100	5
TEL/N4212.Cabling and Installation	20	70	-	10	100	10
TEL/N4213.Installation of optical fibre cabling system	20	70	-	10	100	20
TEL/N4214.Installation of Copper Cabling System	20	70	-	10	100	15
TEL/N4215.Wireless Connectivity for IoT and IIOT Applications	20	70	-	10	100	15
TEL/N4216.Troubleshooting and ongoing maintenance	20	70	-	10	100	10
TEL/N4217.measurement	20	70	-	10	100	15
Total	**180**	**630**	**-**	**90**	**900**	**100**

Acronyms

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

Glossary

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

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