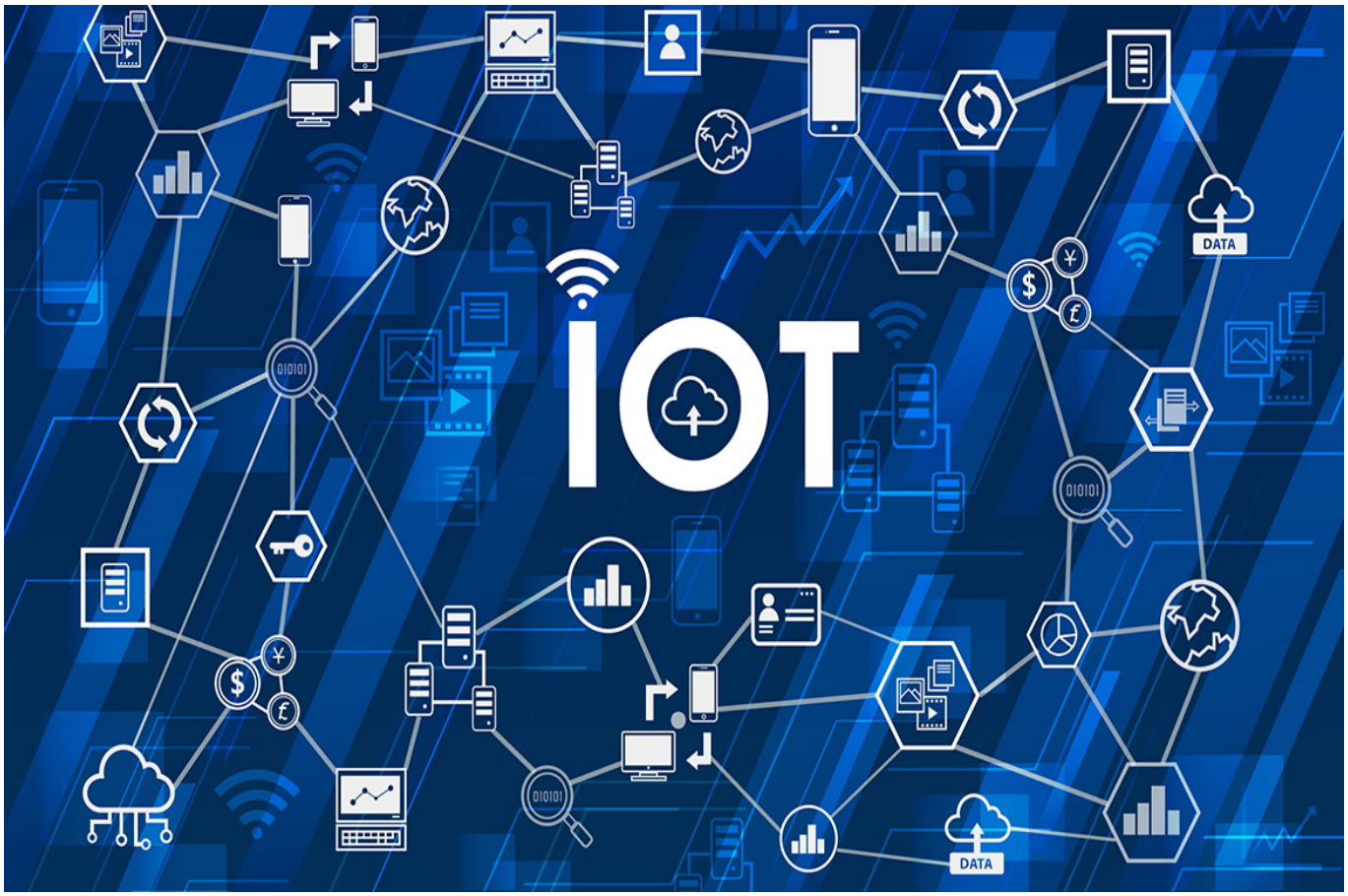
Qualification Pack



IoT Installation Solution Architect

QP Code: TEL/Q6216

Version: 2.0

NSQF Level: 5

Telecom Sector Skill Council || 3rd Floor, Plot No 126, Sector - 44
Gurgaon - 122003

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Qualification Pack

TEL/Q6216: IoT Installation Solution Architect

Brief Job Description

The individual in this job is responsible for conducting the site survey for layout, planning and designing for installation and deployment of IoT sensors/devices, IoT gateways and access layer connectivity in IoT ecosystem to suggest and implement the best IoT solution for the business model.

Personal Attributes

The individual needs to have the ability to upgrade skills with changing technologies, work in a team, multitask and track multiple projects simultaneously with full dedication and willingness. The individual should have generic communication and leadership skills, attention to details, excellent problem-solving capabilities, strong quantitative abilities and good interpersonal skills. The individual with skills like innovation, customer focus, collaboration, value creation and professionalism would have added advantage in this job role.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. TEL/N6260: Perform Market Analysis on Application of IoT
2. TEL/N6261: Supervise in Installation IoT Devices and System
3. TEL/N6262: Administer Acceptance Testing and Site Optimization Activities
4. TEL/N9103: Implement Effective Interaction at workplace
5. TEL/N9104: Manage Work, Resources and Safety at workplace
6. DGT/VSQ/N0102: Employability Skills (60 Hours)

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
Country	India
NSQF Level	5

Credits	21
Aligned to NCO/ISCO/ISIC Code	NCO-2015/3114.6216
Minimum Educational Qualification & Experience	Completed 2nd year of UG (UG Diploma) (of 3-year/ 4-years UG) OR Pursuing 2nd year of UG (of 3-year/ 4-years UG and continuing education) OR Completed 2nd year diploma after 12th OR Pursuing 2nd year of 2-year diploma after 12th (with No Experience required) OR 12th grade Pass (with 2 year of any combination of NTC/NAC/CITS or equivalent.with No Experience required) OR Completed 3 year diploma after 10th OR 12th grade pass with 1 year NTC/ NAC OR Completed 1st year of UG (UG Certificate) (of 3-year/ 4-years UG) with 1 Year of experience OR 12th grade Pass with 2 Years of experience OR 10th grade pass with 4 Years of experience OR Previous relevant Qualification of NSQF Level (4) with 3 Years of experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	21 Years
Last Reviewed On	NA
Next Review Date	30/06/2025
NSQC Approval Date	30/06/2022
Version	2.0
Reference code on NQR	QG-05-TL-00470-2023-V1.1-TSSC
NQR Version	1.1

TEL/N6260: Perform Market Analysis on Application of IoT

Description

This OS unit is about carrying out various activities to adopt the changing trends of industry, including the upgradation as well as potential upgradation of new IoT device and the services required for existing technology.

Scope

The scope covers the following :

- Assess industry trends
- Collate data on leading suppliers of IoT devices
- Analyse existing services and derive potential need for a new IoT services
- Prepare a budget (cost workout) for implementing the IoT solution in the business

Elements and Performance Criteria

Assess industry trends

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

PC1. guide team to collect data pertaining to the industry trends from various reliable sources

PC2. analyse the data about changing technologies in the industry

PC3. identify the products, customers, competitors and landscapes to ensure the reliability/preferences on IoT devices

PC4. ensure that standards and practices of emerging IoT technologies is regularly updated

PC5. collate the information on the latest industry trends and requirements of the company

PC6. determine the logistics operations and rethink the ways to approach businesses

PC7. identify the type of industry (Agriculture, Transport, Port, etc.) for the implementation of technology

PC8. analyse the geographical aspects using various identification and map reading parameters

PC9. evaluate the range of access technology and frequency band required as per site/customer specifications

Collate data on leading suppliers of IoT device

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

PC10. identify the leading suppliers and key solution providers

PC11. evaluate the supplier on the basis of solution performance, geographic availability, support services and security, etc.

PC12. identify various ways for a business to operate with a real-time data that is constantly changing

PC13. ensure that the machines providing real-time data perform as per requirements and specifications

PC14. analyse the existing and potential tools to improve business strategies for selling and integrating IoT devices

Analyse existing services and derive potential need for a new IoT service

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

PC15. assess the key optimization requirements of the business (assets, operations, or workforce) for choosing an IoT solution

PC16. analyse the application of IoT for the current business model and the benefits that could be achieved in the value chain

PC17. evaluate the potential of stakeholders and customers for the business

PC18. assess the usage of sensors and other IoT devices within different fields like agriculture, home-automation and healthcare, and their usage in the current business model

PC19. analyse the extent of monitoring business processes and improvement of the customer experience (CX) based on application of latest IoT devices from varied competitors

PC20. advise a suitable IoT solution for the business model based on requirements and specifications and collated market data

PC21. analyse the application server requirements by creating a connectivity diagram of the required devices to the application server

Prepare a budget (cost workout) for implementing the IoT solution in the business

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

PC22. prepare two cost workouts - cost of implementation/integration of IoT devices and services into the current business and ongoing operational costs

PC23. categorize the implementation/integration costs involved such as hardware (firmware & devices and their testing tools/equipment) and software (dashboard, cloud platform, analytics etc.)

PC24. prepare an explanatory report for the costs and discuss with the authorized personnel before implementation of the IoT solution

PC25. get a sign-off on all budgets/costs before starting IoT solution implementation

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the impact of industry trends

KU2. how to ensure transparency in customer transactions

KU3. how IoT really work

KU4. performance of machines to supply chain and logistics operations

KU5. usage or implementation of IoT in different sectors including manufacturing, transportation, utility organizations, engineering, industry, and infrastructure

KU6. connection of IoT with robotics and artificial intelligence

KU7. sensors and their types

KU8. IoT device life cycle i.e. battery life span, sensor life etc, sensitivity range

KU9. different security mechanisms and features

KU10. types of IoT technologies like LORA, NB-IOT, Industrial IoT etc.

KU11. Machine-to-Machine (M2M) communication awareness

KU12. RF environments, vertical/horizontal obstruction

KU13. impact of metal body on sensors and RF environment

Generic Skills (GS)

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

GS1. communicate with team members in a polite and courteous manner
GS2. map latest trends to the requirements of the company
GS3. enhance employee productivity, integrate and adapt business models and generate more revenue
GS4. fill up appropriate technical forms, activity logs in required format of the company
GS5. maintain proper records as per given format
GS6. read and understand manuals, work orders, health and safety instructions, reports etc.
GS7. communicate with supervisor, peers and customers
GS8. prioritize and execute tasks in a high-pressure environment and handle high pressure situations
GS9. handle multiple tasks and complete them successfully within due timelines
GS10. use and maintain resources efficiently and effectively
GS11. analyse and interpret the messages and prompts timely and correctly
GS12. communicate with external stakeholders in their preferred language (English, Hindi or regional)
GS13. provide advice and guidance to peers and juniors
GS14. seek experts help timely, if needed at any stage
GS15. interpret reports and numerical data
GS16. adapt new technologies
GS17. willingness to learn upcoming potential technologies

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Assess industry trends	**9**	**22**	**-**	**4**
PC1. guide team to collect data pertaining to the industry trends from various reliable sources	1	2	-	1
PC2. analyse the data about changing technologies in the industry	1	2	-	-
PC3. identify the products, customers, competitors and landscapes to ensure the reliability/preferences on IoT devices	1	3	-	-
PC4. ensure that standards and practices of emerging IoT technologies is regularly updated	1	2	-	1
PC5. collate the information on the latest industry trends and requirements of the company	1	3	-	-
PC6. determine the logistics operations and rethink the ways to approach businesses	1	2	-	1
PC7. identify the type of industry (Agriculture, Transport, Port, etc.) for the implementation of technology	1	2	-	-
PC8. analyse the geographical aspects using various identification and map reading parameters	1	3	-	-
PC9. evaluate the range of access technology and frequency band required as per site/customer specifications	1	3	-	1
Collate data on leading suppliers of IoT device	**5**	**12**	**-**	**1**
PC10. identify the leading suppliers and key solution providers	1	2	-	-
PC11. evaluate the supplier on the basis of solution performance, geographic availability, support services and security, etc.	1	2	-	-
PC12. identify various ways for a business to operate with a real-time data that is constantly changing	1	3	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. ensure that the machines providing real-time data perform as per requirements and specifications	1	2	-	-
PC14. analyse the existing and potential tools to improve business strategies for selling and integrating IoT devices	1	3	-	-
Analyse existing services and derive potential need for a new IoT service	**7**	**20**	**-**	**3**
PC15. assess the key optimization requirements of the business (assets, operations, or workforce) for choosing an IoT solution	1	3	-	-
PC16. analyse the application of IoT for the current business model and the benefits that could be achieved in the value chain	1	4	-	-
PC17. evaluate the potential of stakeholders and customers for the business	1	2	-	-
PC18. assess the usage of sensors and other IoT devices within different fields like agriculture, home-automation and healthcare, and their usage in the current business model	1	3	-	1
PC19. analyse the extent of monitoring business processes and improvement of the customer experience (CX) based on application of latest IoT devices from varied competitors	1	4	-	1
PC20. advise a suitable IoT solution for the business model based on requirements and specifications and collated market data	1	2	-	1
PC21. analyse the application server requirements by creating a connectivity diagram of the required devices to the application server	1	2	-	-
Prepare a budget (cost workout) for implementing the IoT solution in the business	**4**	**11**	**-**	**2**
PC22. prepare two cost workouts - cost of implementation/integration of IoT devices and services into the current business and ongoing operational costs	1	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. categorize the implementation/integration costs involved such as hardware (firmware & devices and their testing tools/equipment) and software (dashboard, cloud platform, analytics etc.)	1	3	-	1
PC24. prepare an explanatory report for the costs and discuss with the authorized personnel before implementation of the IoT solution	1	3	-	-
PC25. get a sign-off on all budgets/costs before starting IoT solution implementation	1	2	-	1
NOS Total	**25**	**65**	**-**	**10**

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6260
NOS Name	Perform Market Analysis on Application of IoT
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	6
Version	2.0
Last Reviewed Date	NA
Next Review Date	30/06/2025
NSQC Clearance Date	30/06/2022

TEL/N6261: Supervise in Installation IoT Devices and System

Description

This OS unit is about supervising the installation of IoT devices and system performed by technicians that includes the elements/components required for connection and the process of connecting through different technologies.

Scope

The scope covers the following :

- Advise the team on pre-installation activities
- Inspect routing for connected devices

Elements and Performance Criteria

Advise the team on pre-installation activities

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

PC1. ensure that the team checks the basic connectivity, network and communication protocols

PC2. assess the availability of the basic elements required for of installation, set up and connection of the devices

PC3. identify the embedded systems such as processors, controllers, sensors and communication hardware and analyse their effectiveness for collating and monitoring data

PC4. list the types of micro-processor boards like Arduino, raspberry-Pi, customized platforms etc. that need to be integrated as per the current required setup on site

PC5. identify the microcontrollers that need to be installed and their quantity and application in the current business model

PC6. analyse the working of sensors like humidity sensor, temperature sensor, gyro meter, accelerometer, video surveillance cameras etc. and check their requirement for the current business model

PC7. assess the application of sensors fitment to the business model

PC8. evaluate the implementation of advanced features including Data Distribution Service (DDS), Advanced Message Queuing Protocol (AMQP), Constrained Application Protocol (CoAP), etc.

PC9. analyse the application of short and long range protocols including 3G/4G, 6LowPAN, LoRa, Bluetooth, RFID, ZigBee, etc

PC10. identify the application of communication protocols in IoT and which ones are required for the current scenario/specification

Inspect routing for connected devices

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

PC11. identify the software/hardware requirement into IoT solution to achieve optimal output

PC12. ensure requirements fits the architecture of IoT and map it to the business need

PC13. identify the working process including Data Collection, Device Integration, Real-Time Analytics, Application and Process Extension

PC14. detect the application of devices to collect, send and act on data

PC15. collate the list of frameworks used in IoT including Amazon Web Services (AWS) IoT , Arm Mbed IoT, Microsoft's Azure IoT, Google's Brillo/Weave, Calvin, IBM Watson IoT platform, Artik Cloud IoT platform etc.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. IoT architecture
KU2. different types of smart devices like accelerometers-temperature sensors, magnetometers-proximity sensors, gyroscopes-image sensors, acoustic sensors-light sensors, pressure sensors-gas RFID sensors, humidity sensors-micro flow sensors.
KU3. different types of features required for devices such as Connectivity, Analysing, Integrating, Artificial Intelligence, Sensing, Active Engagement, Endpoint Management, etc.
KU4. IoT platforms which connect sensors and devices, handles different software communication protocol and hardware providing security and authentication
KU5. various types of sensors and actuators
KU6. smart devices that use embedded systems, such as processors, sensors and communication hardware, to collect, send and act on data they acquire from their environment
KU7. low powered devices like embedded microcontrollers (Arduino, Raspberry Pu, Beagle board etc.)
KU8. IoT hardware setup on breadboard or perfboard
KU9. various use cases of IoT in various industries
KU10. IoT markets
KU11. how to conduct market analysis
KU12. various connectivity technologies (Infrared, RFID, Bluetooth, Wi-Fi, Zigbee,Sigfox)
KU13. networking protocols such as MQTT, CoAP, AMQP and ZeroMQ
KU14. radio planning and tools used for planning (Aircom Asset Mentum Planet, ATDI, CelPlan, Siradel Atoll FORSK
KU15. optimization engines (Actix, Capesso)
KU16. network optimization for performance analysis of quality and interference
KU17. network dimensioning to find out equipment requirements, coverage capacities, quality etc.
KU18. various data formats of the sensors

Generic Skills (GS)

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

GS1. evaluate the site to take necessary action
GS2. perform tasks in a high-pressure environment
GS3. multitask and complete tasks successfully within due timelines
GS4. use and maintain resources efficiently and effectively
GS5. make decisions on suitable course of actions

GS6. achieve profitable outcomes

GS7. maintain healthy professional relationships

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Advise the team on pre-installation activities	**23**	**40**	**-**	**10**
PC1. ensure that the team checks the basic connectivity, network and communication protocols	2	2	-	1
PC2. assess the availability of the basic elements required for of installation, set up and connection of the devices	2	4	-	1
PC3. identify the embedded systems such as processors, controllers, sensors and communication hardware and analyse their effectiveness for collating and monitoring data	3	4	-	1
PC4. list the types of micro-processor boards like Arduino, raspberry-Pi, customized platforms etc. that need to be integrated as per the current required setup on site	2	3	-	1
PC5. identify the microcontrollers that need to be installed and their quantity and application in the current business model	2	4	-	1
PC6. analyse the working of sensors like humidity sensor, temperature sensor, gyro meter, accelerometer, video surveillance cameras etc. and check their requirement for the current business model	3	6	-	1
PC7. assess the application of sensors fitment to the business model	1	2	-	1
PC8. evaluate the implementation of advanced features including Data Distribution Service (DDS), Advanced Message Queuing Protocol (AMQP), Constrained Application Protocol (CoAP), etc.	3	5	-	1
PC9. analyse the application of short and long range protocols including 3G/4G, 6LowPAN, LoRa, Bluetooth, RFID, ZigBee, etc	3	6	-	1
PC10. identify the application of communication protocols in IoT and which ones are required for the current scenario/specification	2	4	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Inspect routing for connected devices	**7**	**15**	**-**	**5**
PC11. identify the software/hardware requirement into IoT solution to achieve optimal output	2	4	-	1
PC12. ensure requirements fits the architecture of IoT and map it to the business need	1	2	-	1
PC13. identify the working process including Data Collection, Device Integration, Real-Time Analytics, Application and Process Extension	1	3	-	1
PC14. detect the application of devices to collect, send and act on data	1	2	-	1
PC15. collate the list of frameworks used in IoT including Amazon Web Services (AWS) IoT , Arm Mbed IoT, Microsoft's Azure IoT, Google's Brillo/Weave, Calvin, IBM Watson IoT platform, Artik Cloud IoT platform etc.	2	4	-	1
NOS Total	**30**	**55**	**-**	**15**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6261
NOS Name	Supervise in Installation IoT Devices and System
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	5
Version	2.0
Last Reviewed Date	NA
Next Review Date	30/06/2025
NSQC Clearance Date	30/06/2022

TEL/N6262: Administer Acceptance Testing and Site Optimization Activities

Description

This OS unit is about supervising the activities involved in acceptance testing after IoT devices are installed as per the business model requirements, and eventually evaluating the fulfilment of the requirements as well as need for optimization.

Scope

The scope covers the following :

- Supervise Acceptance Testing (AT) of the integrated IoT solution in the business
- Monitor optimization of devices
- Prepare reports and logs

Elements and Performance Criteria

Supervise Acceptance Testing (AT) of the integrated IoT solution in the business

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

PC1. identify the requirements of the implemented solution to carry out acceptance testing

PC2. assess the validation of all installed sensors and other IoT devices as per the business model

PC3. supervise the testing based on the desired/expected output as identified in requirement analysis stage or as per user specifications

PC4. ensure that the team checks the alarms and faults, if any

PC5. validate the proper functioning of test tools

PC6. guide team to check system settings, alarms, and nodal functionality of the system

PC7. evaluate the efficiency of system test for IoT application to measure baseline noises, movements and noise sensitivity and ensure its efficiency and effectiveness in the business model

PC8. deliver test results to site engineers/authorized personnel to validate the efficiency of the IoT solution

PC9. analyse the strength of the current network security and test its resistance to hacking and other attacks

PC10. guide the team to test security of integrated IoT devices against outsider invasion or other threats

PC11. validate the integrity of the IoT solution and level of data security of IoT devices, and take necessary actions

Monitor optimization of devices

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

PC12. supervise optimization activities such as performing basic walk tests as per requirements to get optimum, expected results

PC13. analyse the current network traffic and data used by IoT devices and apply optimization techniques to improve transfer and monitoring of data

PC14. observe and regulate IoT traffic from installed devices and its services

PC15. optimize device integration to the IoT application(s) to achieve expected results even with higher volume of traffic (or control plane messages)

PC16. guide team to achieve optimization of IoT devices and network using efficient mechanism to boost the control plane messaging from IoT devices

PC17. confirm that site is assessed for safety and emergency readiness compliance as defined by the organisation

PC18. use personal protection equipment like helmets, knee pads, safety boots, safety glasses and trench guards as required and defined by the protocol of the organisation.

PC19. ensure that the team works while considering environmental conditions and hazards like Earth Potential Rise (EPR)

PC20. supervise data transfer over a network without human-to-human or human-to-computer interaction

Prepare reports and logs

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

PC21. record all data and monitoring activities from sensors into pre-defined online logs/formats

PC22. maintain records of all test results in prescribed formats

PC23. ensure all reports are timely maintained and reported to authorized personnel

PC24. manage the installation and functioning of all active and passive equipment and ensure the status is maintained in a log book periodically

PC25. ensure that all records are validated and verified timely to check for any anomalies in the working of IoT devices

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. electrical safety compliances and EMI/EMC hygiene requirements

KU2. risk and impact of not following defined procedures/work instructions

KU3. escalation matrix for reporting identified incidents, troubles and/ or emergencies e.g. system failures,fire and power failures

KU4. weight and size requirement of the equipment

KU5. spare management, repair and return process for faulty equipment

KU6. first aid requirements in case of electrical shocks, cuts, fall and other common injuries

KU7. electrical and chemical, environmental related hazards and precautionary measures

KU8. IoT architecture

KU9. various types of sensors and actuators

KU10. low powered devices like embedded microcontrollers (Arduino, Raspberry Pu, Beagle board etc.)

KU11. IoT hardware setup on breadboard or perfboard

KU12. various use cases of IoT in various industries

KU13. IoT markets

KU14. how to conduct market analysis

KU15. various connectivity technologies (Infrared, RFID, Bluetooth, Wi-Fi, Zigbee,Sigfox)
KU16. basics of networking protocols such as MQTT, CoAP, AMQP and ZeroMQ
KU17. radio planning and tools used for planning (Aircom Asset Mentum Planet, ATDI, CelPlan, Siradel Atoll FORSK
KU18. optimization engines (Actix, Capesso)
KU19. network optimization for performance analysis of quality and interference
KU20. network dimensioning to find out equipment requirements, coverage capacities, quality etc.
KU21. various data formats of the sensors
KU22. different types of documentation in organization and its importance
KU23. the records to be maintained and implication of non-maintenance
KU24. benefits of IoT like automate processes and reduce labor costs, cuts down on waste and improves service delivery

Generic Skills (GS)

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

GS1. interpret notifications, alert and messages
GS2. read and comprehend generated reports
GS3. analyse problems and implement suitable solutions
GS4. perform tasks in a high-pressure environment
GS5. multitask and complete tasks successfully within due timelines
GS6. use and maintain resources efficiently and effectively
GS7. write in English and any regional language
GS8. fill up appropriate technical forms, activity logs in the required format of the company
GS9. maintain proper records as per the given format
GS10. read and understand manuals, work orders, health and safety instructions, reports etc.
GS11. communicate with supervisor and peers, as well as customers
GS12. prioritize and execute tasks in a high-pressure environment and handle high-pressure situations
GS13. handle multiple tasks and complete them successfully within due timelines
GS14. use and maintain resources efficiently and effectively
GS15. take initiatives and progressively assume increased responsibilities
GS16. analyse data and activities

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Supervise Acceptance Testing (AT) of the integrated IoT solution in the business	**11**	**26**	**-**	**5**
PC1. identify the requirements of the implemented solution to carry out acceptance testing	1	3	-	1
PC2. assess the validation of all installed sensors and other IoT devices as per the business model	1	2	-	-
PC3. supervise the testing based on the desired/expected output as identified in requirement analysis stage or as per user specifications	1	3	-	1
PC4. ensure that the team checks the alarms and faults, if any	1	2	-	-
PC5. validate the proper functioning of test tools	1	2	-	-
PC6. guide team to check system settings, alarms, and nodal functionality of the system	1	2	-	-
PC7. evaluate the efficiency of system test for IoT application to measure baseline noises, movements and noise sensitivity and ensure its efficiency and effectiveness in the business model	1	3	-	1
PC8. deliver test results to site engineers/authorized personnel to validate the efficiency of the IoT solution	1	2	-	-
PC9. analyse the strength of the current network security and test its resistance to hacking and other attacks	1	3	-	1
PC10. guide the team to test security of integrated IoT devices against outsider invasion or other threats	1	2	-	-
PC11. validate the integrity of the IoT solution and level of data security of IoT devices, and take necessary actions	1	2	-	1
Monitor optimization of devices	**9**	**22**	**-**	**6**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. supervise optimization activities such as performing basic walk tests as per requirements to get optimum, expected results	1	2	-	-
PC13. analyse the current network traffic and data used by IoT devices and apply optimization techniques to improve transfer and monitoring of data	1	4	-	1
PC14. observe and regulate IoT traffic from installed devices and its services	1	2	-	-
PC15. optimize device integration to the IoT application(s) to achieve expected results even with higher volume of traffic (or control plane messages)	1	3	-	1
PC16. guide team to achieve optimization of IoT devices and network using efficient mechanism to boost the control plane messaging from IoT devices	1	3	-	1
PC17. confirm that site is assessed for safety and emergency readiness compliance as defined by the organisation	1	2	-	1
PC18. use personal protection equipment like helmets, knee pads, safety boots, safety glasses and trench guards as required and defined by the protocol of the organisation.	1	2	-	-
PC19. ensure that the team works while considering environmental conditions and hazards like Earth Potential Rise (EPR)	1	2	-	1
PC20. supervise data transfer over a network without human-to-human or human-to-computer interaction	1	2	-	1
Prepare reports and logs	**5**	**12**	**-**	**4**
PC21. record all data and monitoring activities from sensors into pre-defined online logs/formats	1	2	-	1
PC22. maintain records of all test results in prescribed formats	1	2	-	-
PC23. ensure all reports are timely maintained and reported to authorized personnel	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. manage the installation and functioning of all active and passive equipment and ensure the status is maintained in a log book periodically	1	3	-	1
PC25. ensure that all records are validated and verified timely to check for any anomalies in the working of IoT devices	1	3	-	1
NOS Total	**25**	**60**	**-**	**15**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6262
NOS Name	Administer Acceptance Testing and Site Optimization Activities
Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
NSQF Level	5
Credits	5
Version	2.0
Last Reviewed Date	NA
Next Review Date	30/06/2025
NSQC Clearance Date	30/06/2022

TEL/N9103: Implement Effective Interaction at workplace

Description

This OS unit is about communicating with superiors and colleagues as well as customers and other stakeholders in own or other work groups within as well as outside the organisation

Scope

The scope covers the following :

- Interact effectively with superiors
- Interact effectively with colleagues and customers
- Respect differences of gender and ability

Elements and Performance Criteria

Interact effectively with superiors

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

PC1. interpret work requirements from the superior and customers

PC2. report any unforeseen disruptions or delays to superiors and/or concerned person

PC3. achieve productivity and quality of work as per the company procedure

Interact effectively with colleagues and customers

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

PC4. explain the work requirements and the scope of work to the team

PC5. communicate information using different techniques such as face-to-face, telephonic and written means

PC6. co-ordinate with team to integrate work as per requirements

PC7. respect colleagues and customers and communicate taking care of their personal spaces

PC8. find solutions to work related difficulties with mutual agreement with colleagues and customers

PC9. resolve conflicts within the team at work to achieve smooth workflow

PC10. motivate team members to put organizational goals over individual goals

PC11. encourage the team to provide feedback on any issues facing them

Respect differences of gender and ability

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

PC12. ensure personal behaviour of self and team is conducted taking gender and disability of the person into consideration

PC13. demonstrate sensitivity towards gender and person with disability while communicating

PC14. list the different types of disabilities with their respective issues

PC15. provide help to PwD team members in overcoming any challenges faced in work

PC16. use inclusive language irrespective of the disability and the gender of the person

PC17. treat all colleagues and co-workers equally

PC18. respect personal space of colleagues and co-workers

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. importance of effective and different means of communication and establishing good working relationships with colleagues and superiors

KU2. importance of helping colleagues with problems, in order to meet quality and time standards as a team

KU3. different methods of communication

KU4. different types of information that colleagues might need and the importance of providing this information in an appropriate manner

KU5. helping colleagues with problems, in order to meet quality and time standards as a team

KU6. organisation's policies and procedures for working with colleagues and superior

KU7. implications of own work on the work and schedule of others

KU8. importance of understanding consequences of gender based behaviour

KU9. gender based concepts, issues and legislation

KU10. organisation standards and guidelines to be followed for PwD and knowledge about laws, acts and provisions defined for PwD by the statutory bodies and the right way to use them including various medical conditions associated with PwD

KU11. health and safety requirements at workplace for PwD

KU12. rights and duties at workplace with respect to PwD

KU13. process of recruiting people for a particular job profile w.r.t PwD and gender

KU14. various government / private schemes and benefits available for PwD and information about various institutes working for PwD to enable in providing livelihood opportunities for PwD

Generic Skills (GS)

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

GS1. complete written work with attention to detail and read instructions/guidelines/procedures

GS2. listen effectively and orally communicate information

GS3. ask for clarification and advice from the concerned person

GS4. deliver consistent and reliable service to customers

GS5. check that the work meets customer requirements

GS6. practice and acceptance of gender and its concepts

GS7. develop empathy across genders and towards PwD

GS8. reflect on own gender identity, gender roles and PwD issues

GS9. engage and participate in discussions to end gender and disability discrimination

GS10. improve and modify work practices

GS11. maintain positive and effective relationships with colleagues and customers

GS12. evaluate the possible solution(s) to the problem

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Interact effectively with superiors	**2**	**9**	**-**	**1**
PC1. interpret work requirements from the superior and customers	1	2	-	-
PC2. report any unforeseen disruptions or delays to superiors and/or concerned person	1	2	-	1
PC3. achieve productivity and quality of work as per the company procedure	-	5	-	-
Interact effectively with colleagues and customers	**13**	**27**	**-**	**5**
PC4. explain the work requirements and the scope of work to the team	2	3	-	-
PC5. communicate information using different techniques such as face-to-face, telephonic and written means	2	4	-	1
PC6. co-ordinate with team to integrate work as per requirements	-	4	-	1
PC7. respect colleagues and customers and communicate taking care of their personal spaces	-	3	-	-
PC8. find solutions to work related difficulties with mutual agreement with colleagues and customers	3	3	-	-
PC9. resolve conflicts within the team at work to achieve smooth workflow	-	4	-	1
PC10. motivate team members to put organizational goals over individual goals	3	4	-	1
PC11. encourage the team to provide feedback on any issues facing them	3	2	-	1
Respect differences of gender and ability	**15**	**24**	**-**	**4**
PC12. ensure personal behaviour of self and team is conducted taking gender and disability of the person into consideration	2	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. demonstrate sensitivity towards gender and person with disability while communicating	2	3	-	1
PC14. list the different types of disabilities with their respective issues	2	3	-	1
PC15. provide help to PwD team members in overcoming any challenges faced in work	2	3	-	-
PC16. use inclusive language irrespective of the disability and the gender of the person	2	3	-	1
PC17. treat all colleagues and co-workers equally	2	3	-	-
PC18. respect personal space of colleagues and co-workers	3	5	-	1
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9103
NOS Name	Implement Effective Interaction at workplace
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

TEL/N9104: Manage Work, Resources and Safety at workplace

Description

This OS unit is about planning work and implementing sustainable as well as healthy practices for safety and optimal use of resources

Scope

The scope covers the following :

- Manage learning and self-direction
- Develop critical thinking and problem solving
- Perform work as per quality standards
- Maintain safe and secure working environment
- Comply with material / energy / electricity conservation practices

Elements and Performance Criteria

Manage learning and self-direction

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

PC1. develop technical and personal skills to be updated with new technologies prevalent in the industry

PC2. train the team such that they are able to adapt latest products/services in their working environment

PC3. identify opportunities for team building workshops and motivational trainings

Develop critical thinking and problem solving

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

PC4. guide the team to be accountable for timely completion of tasks

PC5. analyse problems accurately to be able to correctly suggest suitable solutions to the concerned persons

PC6. train the team to estimate the cause of the problem and validate

Perform work as per quality standards

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

PC7. implement ways to keep immediate as well as team's work area clean and tidy

PC8. maintain efficiency and productivity while performing role/responsibility

PC9. supervise the team to ensure that the work is done as per the assigned and agreed requirements

PC10. create schedules and rosters for the team to ensure they understand individual work requirements

Maintain safe and secure working environment

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

PC11. identify organisation’s health, safety, security policies and procedures

PC12. instruct team to report any identified breaches in health, safety, and security policies and procedures to the designated person

PC13. manage hazards such as illness, accidents, fires or any other natural calamity safely, as per organisation's emergency procedures, within the limits of individual's authority

PC14. report any hazard outside the individual's authority to the relevant person in line with organisational procedures and warn others who may be affected

Material / energy / electricity conservation practices

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

PC15. implement ways to optimize usage of material including water in various tasks/activities/processes

PC16. supervise the team to ensure responsible use of resources

PC17. motivate the team to carry out routine cleaning of tools, machine and equipment

PC18. guide the team to optimize use of electricity/energy in various tasks/activities/processes

PC19. implement periodic checks of the functioning of the equipment/machine and rectify wherever required

PC20. guide the team to report malfunctioning and lapses in maintenance of equipment

PC21. implement ways to use electrical equipment and appliances properly

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. strategies pertinent to the field that can be used to pursue an advancement of skills

KU2. key performance indicators for the new tasks

KU3. feedback processes and formats

KU4. timelines and goals as well as their relevance to work allocated

KU5. importance of quality and timely delivery of the product/service

KU6. layout of the workstation and equipment used

KU7. escalation matrix and its importance, especially in case of emergencies

KU8. ways of time and cost management

KU9. rules/regulation for maintaining health and safety at workplace

KU10. meaning of hazard, different types of health and safety hazards found in the workplace, risks and threats based on the nature of work

KU11. procedures to report breaches in health, safety and security

KU12. ways of managing resources and material efficiently

KU13. ways to recognize common electrical problems and common practices of conserving electricity

Generic Skills (GS)

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

GS1. explore various pathways to expand one's own learning skills and abilities

GS2. analyse feedback for improving one's way of working
GS3. interpret feedback from superiors in a constructive way
GS4. identify the root cause of problems
GS5. understand the problem by asking significant questions to clarify the various points of view on the problem
GS6. seek clarifications from superior about the job requirement
GS7. work in a team with full coordination of team members
GS8. read instructions/guidelines and Standard Operating Practices (SOP) documents
GS9. complete tasks efficiently and accurately within stipulated time
GS10. record data in statutory documents relevant to safety and hygiene
GS11. escalate/refer all anomalies to the concerned persons
GS12. identify the most suitable course of action for completing the task using provided resources

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Manage learning and self-direction	**4**	**5**	**-**	**-**
PC1. develop technical and personal skills to be updated with new technologies prevalent in the industry	2	1	-	-
PC2. train the team such that they are able to adapt latest products/services in their working environment	1	2	-	-
PC3. identify opportunities for team building workshops and motivational trainings	1	2	-	-
Develop critical thinking and problem solving	**4**	**7**	**-**	**-**
PC4. guide the team to be accountable for timely completion of tasks	2	3	-	-
PC5. analyse problems accurately to be able to correctly suggest suitable solutions to the concerned persons	1	2	-	-
PC6. train the team to estimate the cause of the problem and validate	1	2	-	-
Perform work as per quality standards	**5**	**9**	**-**	**4**
PC7. implement ways to keep immediate as well as team's work area clean and tidy	1	2	-	-
PC8. maintain efficiency and productivity while performing role/responsibility	1	2	-	2
PC9. supervise the team to ensure that the work is done as per the assigned and agreed requirements	1	2	-	1
PC10. create schedules and rosters for the team to ensure they understand individual work requirements	2	3	-	1
Maintain safe and secure working environment	**12**	**13**	**-**	**2**
PC11. identify organisation’s health, safety, security policies and procedures	3	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. instruct team to report any identified breaches in health, safety, and security policies and procedures to the designated person	3	3	-	-
PC13. manage hazards such as illness, accidents, fires or any other natural calamity safely, as per organisation's emergency procedures, within the limits of individual's authority	3	4	-	1
PC14. report any hazard outside the individual's authority to the relevant person in line with organisational procedures and warn others who may be affected	3	3	-	1
Material / energy / electricity conservation practices	**15**	**16**	**-**	**4**
PC15. implement ways to optimize usage of material including water in various tasks/activities/processes	1	2	-	1
PC16. supervise the team to ensure responsible use of resources	2	2	-	1
PC17. motivate the team to carry out routine cleaning of tools, machine and equipment	2	2	-	1
PC18. guide the team to optimize use of electricity/energy in various tasks/activities/processes	3	4	-	-
PC19. implement periodic checks of the functioning of the equipment/machine and rectify wherever required	2	2	-	1
PC20. guide the team to report malfunctioning and lapses in maintenance of equipment	3	2	-	-
PC21. implement ways to use electrical equipment and appliances properly	2	2	-	-
NOS Total	**40**	**50**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N9104
NOS Name	Manage Work, Resources and Safety at workplace
Sector	Telecom
Sub-Sector	Generic
Occupation	Generic
NSQF Level	5
Credits	1
Version	2.0
Last Reviewed Date	NA
Next Review Date	27/01/2025
NSQC Clearance Date	27/01/2022

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

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

Scope

The scope covers the following :

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

Elements and Performance Criteria

Introduction to Employability Skills

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

PC1. identify employability skills required for jobs in various industries

PC2. identify and explore learning and employability portals

Constitutional values – Citizenship

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

PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.

PC4. follow environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC5. recognize the significance of 21st Century Skills for employment

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

Basic English Skills

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

PC7. use basic English for everyday conversation in different contexts, in person and over the telephone

PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English

PC9. write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

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

PC10. understand the difference between job and career

PC11. prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

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

PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings

PC13. work collaboratively with others in a team

Diversity & Inclusion

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

PC14. communicate and behave appropriately with all genders and PwD

PC15. escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

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

PC16. select financial institutions, products and services as per requirement

PC17. carry out offline and online financial transactions, safely and securely

PC18. identify common components of salary and compute income, expenses, taxes, investments etc

PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

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

PC20. operate digital devices and carry out basic internet operations securely and safely

PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively

PC22. use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

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

PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research

PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion

PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

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

PC26. identify different types of customers

PC27. identify and respond to customer requests and needs in a professional manner.

PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

GS3. behave politely and appropriately with all
GS4. how to work in a virtual mode
GS5. perform calculations efficiently
GS6. solve problems effectively
GS7. pay attention to details
GS8. manage time efficiently
GS9. maintain hygiene and sanitization to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	**1**	**1**	**-**	**-**
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values – Citizenship	**1**	**1**	**-**	**-**
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	**2**	**4**	**-**	**-**
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
Basic English Skills	**2**	**3**	**-**	**-**
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
Career Development & Goal Setting	**1**	**2**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	**2**	**2**	**-**	**-**
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
Diversity & Inclusion	**1**	**2**	**-**	**-**
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
Financial and Legal Literacy	**2**	**3**	**-**	**-**
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
Essential Digital Skills	**3**	**4**	**-**	**-**
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Entrepreneurship	**2**	**3**	**-**	**-**
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
Customer Service	**1**	**2**	**-**	**-**
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**2**	**3**	**-**	**-**
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	29/03/2026
NSQC Clearance Date	29/03/2023

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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

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

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

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

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

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

7. 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/N6260.Perform Market Analysis on Application of IoT	25	65	-	10	100	20
TEL/N6261.Supervise in Installation IoT Devices and System	30	55	-	15	100	20
TEL/N6262.Administer Acceptance Testing and Site Optimization Activities	25	60	-	15	100	20
TEL/N9103.Implement Effective Interaction at workplace	30	60	-	10	100	15
TEL/N9104.Manage Work, Resources and Safety at workplace	40	50	-	10	100	15
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
Total	**170**	**320**	**-**	**60**	**550**	**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.