



Radio Frequency Engineer- Drone-Based Surveys

QP Code: TEL/Q6226

Version: 1.0

NSQF Level: 5.5

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TEL/Q6226: Radio Frequency Engineer- Drone-Based Surveys

Brief Job Description

An RF Engineer - Drone-Based Surveys is responsible for planning, executing, and analysing drone-based radio frequency (RF) surveys to assess network coverage, identify interference, and support the deployment of wireless communication technologies. The individual will collect and process RF data, generate coverage maps, and provide insights to optimise wireless networks. The individual will also coordinate with stakeholders and adhere to required safety regulations regarding drone operations.

Personal Attributes

The individual should have strong analytical and problem-solving skills, keen attention to detail, and the ability to work independently in outdoor and dynamic environments. The individual should also possess good communication and teamwork skills and a safety-conscious mindset.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [TEL/N6293: Analyse RF signal strength data from drone-based surveys](#)
2. [TEL/N6294: Identify signal interference and dead zones](#)
3. [TEL/N6295: Identify interference and blind spots for 5G/4G/LTE networks](#)
4. [TEL/N6296: Support 5G Rollout Planning with Drone-Based Data Collection](#)
5. [TEL/N6297: Optimise Antenna Alignments for Better Network Coverage](#)
6. [TEL/N6298: Ensure Health, Safety, and Environmental Compliance in Drone Operations](#)
7. [DGT/VSQ/N0103: Employability Skills \(90 Hours\)](#)

Qualification Pack (QP) Parameters

Sector	Telecom
Sub-Sector	Network Managed Services
Occupation	Network Operation and Maintenance
Country	India
NSQF Level	5.5

Credits	19
Aligned to NCO/ISCO/ISIC Code	NCO-2015/2153.0200
Minimum Educational Qualification & Experience	Completed 3 year UG degree (3-year/ 4-years) with NA of experience OR Completed 2nd year diploma after 12th with 1 Year of experience Relevant Experience OR Previous relevant Qualification of NSQF Level (5) with 1.5 years of experience Relevant Experience OR Previous relevant Qualification of NSQF Level (4.5) with 3 Years of experience Relevant Experience
Minimum Level of Education for Training in School	Not Applicable
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	NA
NSQC Approval Date	
Version	1.0

TEL/N6293: Analyse RF signal strength data from drone-based surveys

Description

The OS unit is about preparing and planning RF drone-based surveys by identifying objectives, selecting appropriate equipment, planning flight paths, and ensuring regulatory compliance.

Scope

The scope covers the following :

- Prepare for drone based RF signal strength survey
- Analyse RF signal strength data
- Document and report analysis findings

Elements and Performance Criteria

Prepare for drone based RF signal strength survey

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

- PC1.** determine the purpose of the RF survey, such as interference detection, coverage analysis, or signal optimisation.
- PC2.** identify target frequency bands (e.g., 5G, 4G, LTE) based on network and business requirements.
- PC3.** define survey parameters, including coverage area, altitude considerations, and resolution requirements.
- PC4.** review pre-survey documentation, including network topology and expected signal strength benchmarks.
- PC5.** select appropriate drone type (surveillance drone, survey drone) based on the survey requirements.
- PC6.** set up and calibrate the drone, ensuring compatibility with RF measurement tools.
- PC7.** set up the ground control station, including RF system, laptop, and RAC system.
- PC8.** plan flight routes (Google Earth Pro), ensuring a clear line of sight and optimal survey path.
- PC9.** use GIS tools and mapping software for survey planning and data visualisation.
- PC10.** account for location-based altitude considerations, including higher altitude and low-altitude endurance requirements.

Analyse RF signal strength data

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

- PC11.** extract raw RF signal strength data from drone-based measurement tools.
- PC12.** ensure the integrity and accuracy of raw RF data by checking timestamps, locations, and metadata.
- PC13.** clean the raw data by filtering out inconsistencies, duplicate readings, and noise.
- PC14.** normalise data to ensure compatibility with telecom industry benchmarks and analytical models.
- PC15.** use RF data visualisation tools to generate initial signal strength plots.
- PC16.** analyse signal strength variations across different altitudes and locations.

- PC17.** compare recorded signal strength values against network design specifications.
- PC18.** detect and highlight unexpected fluctuations or weak signal areas in the dataset.
- PC19.** measure signal levels at different locations and determine RF performance variations.
- PC20.** choose appropriate radio equipment based on required power wattage and frequency bandwidth.
- PC21.** implement an antenna tracking system by pairing drone RF modems with ground modems.
- PC22.** use different antennas (patch antenna, yagi antenna for directional signals, omni antenna for 360-degree coverage).
- PC23.** assess RF bandwidth for camera throughput and radio capability compatibility.
- PC24.** perform internal testing, including SNR (Signal-to-Noise Ratio) and RSS (Received Signal Strength).

Document and report analysis findings

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

- PC25.** generate RF heatmaps to visualise coverage strength and network performance across surveyed areas.
- PC26.** interpret frequency spectrum analysis to detect unusual signal behaviour.
- PC27.** validate findings with historical network performance data to identify persistent issues.
- PC28.** document and categorise analysis results based on signal strength range (strong, moderate, weak, dead zones).
- PC29.** recommend technical improvements based on analytical insights for network optimisation.
- PC30.** maintain records of RF survey results and analysis for future reference.
- PC31.** evaluate quality of video feedback and identify glitches or transmission issues.
- PC32.** perform interference scanning using a frequency scanner and smart radio for frequency hopping.
- PC33.** assess mesh radio system performance for multiple data feeds and point-to-point radio system efficiency.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** fundamentals of RF signal propagation, reflection, and absorption.
- KU2.** concepts of signal strength measurement, including RSSI, SINR, and SNR.
- KU3.** effects of environmental factors such as buildings, trees, and terrain on RF signals.
- KU4.** different frequency bands and their respective transmission characteristics.
- KU5.** use of drone-based RF survey systems and their limitations.
- KU6.** operation and configuration of different types of RF modems and transceivers.
- KU7.** working principles of directional and omnidirectional antennas.
- KU8.** techniques for setting up and calibrating RF measurement equipment on drones.
- KU9.** GIS tools and mapping software
- KU10.** RF bandwidth and its impact on camera throughput and data transmission.
- KU11.** interference sources such as Wi-Fi networks, microwave signals, and industrial equipment.
- KU12.** best practices for flight path planning and ensuring a clear line of sight (LoS).

- KU13.** data extraction and processing techniques for RF analysis.
- KU14.** selection of appropriate radios based on power wattage, frequency range, and survey requirements.
- KU15.** mesh and point-to-point radio systems for handling multiple feeds.
- KU16.** techniques for interference scanning and smart radio frequency hopping.
- KU17.** methods to assess and optimise video quality, latency, and feedback systems.
- KU18.** regulatory compliance and safety measures for drone-based surveys.

Generic Skills (GS)

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

- GS1.** communicate effectively with team members, engineers, and stakeholders.
- GS2.** read and interpret technical documents, reports, and survey results.
- GS3.** write clear and concise documentation, including survey findings and recommendations.
- GS4.** work efficiently in a team environment, collaborating with other professionals.
- GS5.** make informed decisions based on data analysis and situational awareness.
- GS6.** approach challenges with a problem-solving mindset to troubleshoot RF issues.
- GS7.** manage time effectively to ensure surveys and analyses are completed within deadlines.
- GS8.** think critically to assess RF performance data and optimise network coverage.
- GS9.** stay updated with the latest advancements in RF technology, drones, and telecom networks.
- GS10.** adapt to changing conditions and modify survey plans as needed.
- GS11.** maintain a positive attitude and resilience while handling complex technical tasks.
- GS12.** follow safety protocols and regulatory guidelines for drone-based RF surveys.
- GS13.** demonstrate attention to detail to ensure data accuracy and reliability.
- GS14.** exhibit a continuous learning attitude to enhance technical expertise.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare for drone based RF signal strength survey</i>	8	16	-	4
PC1. determine the purpose of the RF survey, such as interference detection, coverage analysis, or signal optimisation.	1	1	-	-
PC2. identify target frequency bands (e.g., 5G, 4G, LTE) based on network and business requirements.	1	1	-	-
PC3. define survey parameters, including coverage area, altitude considerations, and resolution requirements.	1	2	-	-
PC4. review pre-survey documentation, including network topology and expected signal strength benchmarks.	1	2	-	-
PC5. select appropriate drone type (surveillance drone, survey drone) based on the survey requirements.	-	1	-	1
PC6. set up and calibrate the drone, ensuring compatibility with RF measurement tools.	-	2	-	-
PC7. set up the ground control station, including RF system, laptop, and RAC system.	1	2	-	1
PC8. plan flight routes (Google Earth Pro), ensuring a clear line of sight and optimal survey path.	1	2	-	1
PC9. use GIS tools and mapping software for survey planning and data visualisation.	1	2	-	-
PC10. account for location-based altitude considerations, including higher altitude and low-altitude endurance requirements.	1	1	-	1
<i>Analyse RF signal strength data</i>	13	29	-	4
PC11. extract raw RF signal strength data from drone-based measurement tools.	1	2	-	-
PC12. ensure the integrity and accuracy of raw RF data by checking timestamps, locations, and metadata.	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. clean the raw data by filtering out inconsistencies, duplicate readings, and noise.	1	2	-	-
PC14. normalise data to ensure compatibility with telecom industry benchmarks and analytical models.	1	2	-	1
PC15. use RF data visualisation tools to generate initial signal strength plots.	1	2	-	-
PC16. analyse signal strength variations across different altitudes and locations.	1	2	-	-
PC17. compare recorded signal strength values against network design specifications.	1	2	-	1
PC18. detect and highlight unexpected fluctuations or weak signal areas in the dataset.	1	2	-	-
PC19. measure signal levels at different locations and determine RF performance variations.	-	2	-	-
PC20. choose appropriate radio equipment based on required power wattage and frequency bandwidth.	1	2	-	1
PC21. implement an antenna tracking system by pairing drone RF modems with ground modems.	1	2	-	-
PC22. use different antennas (patch antenna, yagi antenna for directional signals, omni antenna for 360-degree coverage).	1	2	-	-
PC23. assess RF bandwidth for camera throughput and radio capability compatibility.	1	2	-	-
PC24. perform internal testing, including SNR (Signal-to-Noise Ratio) and RSS (Received Signal Strength).	1	3	-	-
<i>Document and report analysis findings</i>	9	15	-	2
PC25. generate RF heatmaps to visualise coverage strength and network performance across surveyed areas.	1	2	-	-
PC26. interpret frequency spectrum analysis to detect unusual signal behaviour.	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC27. validate findings with historical network performance data to identify persistent issues.	1	2	-	1
PC28. document and categorise analysis results based on signal strength range (strong, moderate, weak, dead zones).	1	2	-	-
PC29. recommend technical improvements based on analytical insights for network optimisation.	1	-	-	1
PC30. maintain records of RF survey results and analysis for future reference.	1	2	-	-
PC31. evaluate quality of video feedback and identify glitches or transmission issues.	1	1	-	-
PC32. perform interference scanning using a frequency scanner and smart radio for frequency hopping.	1	2	-	-
PC33. assess mesh radio system performance for multiple data feeds and point-to-point radio system efficiency.	1	2	-	-
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6293
NOS Name	Analyse RF signal strength data from drone-based surveys
Sector	Telecom
Sub-Sector	
Occupation	Network Operation and Maintenance
NSQF Level	5.5
Credits	4
Version	1.0
Next Review Date	NA

TEL/N6294: Identify signal interference and dead zones

Description

The OS unit is about generating edit and enhances drone footage and images in order to create high-quality content.

Scope

The scope covers the following :

- Assist in software and systems integration
- Analyse RF spectrum for signal interference
- Classify and assess types of RF interference
- Identify and map dead zones in network coverage
- Recommend mitigation strategies for interference and dead zones

Elements and Performance Criteria

Assist in software and systems integration

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

- PC1.** install and configure flight control software such as Betaflight, ArduPilot, or PX4.
- PC2.** interface microcontrollers (e.g., Arduino, STM32) with sensors and actuators.
- PC3.** write and test basic embedded code for sensor calibration and motor control.
- PC4.** upload firmware updates to flight controller and ensure compatibility with hardware.
- PC5.** debug simple code issues and troubleshoot embedded system failures in drones.
- PC6.** log and analyze flight data to optimize software parameters and system response.

Analyse RF spectrum for signal interference

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

- PC7.** examine frequency bands for unexpected fluctuations or anomalies.
- PC8.** detect signal degradation patterns across different locations and altitudes.
- PC9.** analyse the impact of environmental factors such as weather, terrain, and obstructions on RF performance.
- PC10.** compare real-time interference levels with network design parameters and historical data.
- PC11.** use frequency scanners to detect interference and assess the effectiveness of smart radio frequency hopping techniques.
- PC12.** determine the role of mesh radio systems in mitigating interference by providing multiple transmission pathways.

Classify and assess types of RF interference

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

- PC13.** identify and classify interference sources such as co-channel, adjacent-channel, and multipath interference.
- PC14.** use RF spectrum analysers and interference detection tools to assess the severity and duration of interference.

- PC15.** detect transient interference caused by moving objects like vehicles, aircraft, or construction activities.
- PC16.** cross-check interference data with external RF sources, including Wi-Fi networks, microwave links, and industrial equipment.
- PC17.** determine whether interference is persistent, intermittent, or location-specific.

Identify and map dead zones in network coverage

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

- PC18.** extract signal strength data to locate areas with poor or no coverage.
- PC19.** use GIS tools to map dead zones and visualise coverage gaps.
- PC20.** correlate dead zone locations with topographical features such as buildings, hills, and trees.
- PC21.** compare detected dead zones with expected network coverage models.
- PC22.** identify whether dead zones are caused by physical obstructions, network congestion, or interference issues.

Recommend mitigation strategies for interference and dead zones

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

- PC23.** propose solutions such as power adjustments, antenna realignment, or frequency reallocation to minimise interference.
- PC24.** suggest the placement of additional network elements like repeaters, small cells, or relay stations to cover dead zones.
- PC25.** evaluate the feasibility of network reconfiguration to improve signal performance.
- PC26.** document findings and provide technical reports on identified interference and dead zones.
- PC27.** collaborate with telecom engineers and network planners to implement corrective actions.
- PC28.** maintain logs of interference cases and dead zones for ongoing network optimisation.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** basics of embedded systems, microcontrollers, and communication protocols (I2C, UART).
- KU2.** common drone flight controller platforms and their software interfaces.
- KU3.** logic and syntax of programming languages like C/C++ and Python in embedded applications.
- KU4.** calibration procedures for IMU, GPS, barometers, and other drone sensors.
- KU5.** principles of RF signal propagation and factors affecting coverage.
- KU6.** types of RF interference and their impact on telecom networks.
- KU7.** methods for detecting and classifying interference in wireless communication systems.
- KU8.** tools and technologies used for RF spectrum analysis.
- KU9.** techniques for mapping and visualising dead zones using geospatial tools.
- KU10.** regulatory guidelines and compliance requirements for RF spectrum usage.
- KU11.** effects of environmental factors like buildings, terrain, and weather on signal strength.
- KU12.** standard telecom network performance metrics and thresholds.
- KU13.** best practices for mitigating RF interference in telecom infrastructure.
- KU14.** network optimisation strategies for improving coverage and reducing dead zones.

- KU15.** common interference sources in urban, suburban, and rural environments.
- KU16.** role of drone-based surveys in telecom network planning and optimisation.
- KU17.** collaboration protocols with drone operators and telecom engineers for RF analysis.
- KU18.** reporting formats and documentation requirements for interference detection.
- KU19.** impact of interference and dead zones on 5G/4G/LTE network performance.
- KU20.** use of different antenna types (patch, yagi, omni) for various coverage needs.
- KU21.** signal-to-noise ratio (SNR) and received signal strength (RSS) evaluation techniques.
- KU22.** advanced RF bandwidth considerations, including the balance between camera throughput and radio capability compatibility.
- KU23.** basics of embedded systems, microcontrollers, and communication protocols (I2C, UART).
- KU24.** common drone flight controller platforms and their software interfaces.
- KU25.** logic and syntax of programming languages like C/C++ and Python in embedded applications.
- KU26.** calibration procedures for IMU, GPS, barometers, and other drone sensors.
- KU27.** concepts of PID tuning, failsafe settings, and telemetry in drone operations.

Generic Skills (GS)

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

- GS1.** analyse RF interference data and interpret technical findings.
- GS2.** communicate interference-related insights effectively to engineers and project teams.
- GS3.** use digital tools for mapping, visualisation, and reporting.
- GS4.** apply problem-solving techniques to troubleshoot signal issues.
- GS5.** work collaboratively with telecom professionals to enhance network performance.
- GS6.** adapt to new RF measurement and analysis technologies.
- GS7.** follow safety and compliance protocols for RF data collection.
- GS8.** maintain attention to detail in interference detection and reporting.
- GS9.** manage time efficiently to meet project deadlines.
- GS10.** continuously update knowledge on evolving telecom standards and RF spectrum management.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Assist in software and systems integration</i>	6	14	-	1
PC1. install and configure flight control software such as Betaflight, ArduPilot, or PX4.	1	3	-	-
PC2. interface microcontrollers (e.g., Arduino, STM32) with sensors and actuators.	1	3	-	-
PC3. write and test basic embedded code for sensor calibration and motor control.	1	2	-	1
PC4. upload firmware updates to flight controller and ensure compatibility with hardware.	1	2	-	-
PC5. debug simple code issues and troubleshoot embedded system failures in drones.	1	2	-	-
PC6. log and analyze flight data to optimize software parameters and system response.	1	2	-	-
<i>Analyse RF spectrum for signal interference</i>	6	12	-	3
PC7. examine frequency bands for unexpected fluctuations or anomalies.	1	2	-	-
PC8. detect signal degradation patterns across different locations and altitudes.	1	2	-	-
PC9. analyse the impact of environmental factors such as weather, terrain, and obstructions on RF performance.	1	2	-	1
PC10. compare real-time interference levels with network design parameters and historical data.	1	2	-	1
PC11. use frequency scanners to detect interference and assess the effectiveness of smart radio frequency hopping techniques.	1	2	-	-
PC12. determine the role of mesh radio systems in mitigating interference by providing multiple transmission pathways.	1	2	-	1
<i>Classify and assess types of RF interference</i>	5	10	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. identify and classify interference sources such as co-channel, adjacent-channel, and multipath interference.	1	2	-	1
PC14. use RF spectrum analysers and interference detection tools to assess the severity and duration of interference.	1	2	-	-
PC15. detect transient interference caused by moving objects like vehicles, aircraft, or construction activities.	1	2	-	-
PC16. cross-check interference data with external RF sources, including Wi-Fi networks, microwave links, and industrial equipment.	1	2	-	-
PC17. determine whether interference is persistent, intermittent, or location-specific.	1	2	-	1
<i>Identify and map dead zones in network coverage</i>	7	13	-	1
PC18. extract signal strength data to locate areas with poor or no coverage.	1	2	-	-
PC19. use GIS tools to map dead zones and visualise coverage gaps.	1	3	-	-
PC20. correlate dead zone locations with topographical features such as buildings, hills, and trees.	2	2	-	1
PC21. compare detected dead zones with expected network coverage models.	2	3	-	-
PC22. identify whether dead zones are caused by physical obstructions, network congestion, or interference issues.	1	3	-	-
<i>Recommend mitigation strategies for interference and dead zones</i>	6	11	-	3
PC23. propose solutions such as power adjustments, antenna realignment, or frequency reallocation to minimise interference.	1	1	-	1
PC24. suggest the placement of additional network elements like repeaters, small cells, or relay stations to cover dead zones.	1	1	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. evaluate the feasibility of network reconfiguration to improve signal performance.	1	2	-	-
PC26. document findings and provide technical reports on identified interference and dead zones.	1	2	-	-
PC27. collaborate with telecom engineers and network planners to implement corrective actions.	1	2	-	1
PC28. maintain logs of interference cases and dead zones for ongoing network optimisation.	1	3	-	-
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6294
NOS Name	Identify signal interference and dead zones
Sector	Telecom
Sub-Sector	
Occupation	Network Operation and Maintenance
NSQF Level	5.5
Credits	2
Version	1.0
Next Review Date	NA

TEL/N6295: Identify interference and blind spots for 5G/4G/LTE networks

Description

The OS unit is about procedures that are followed in order to maintain and troubleshoot drones.

Scope

The scope covers the following :

- Conduct drone-based RF surveys to detect interference and blind spots
- Analyse RF data for interference and coverage gaps
- Classify and document sources of interference

Elements and Performance Criteria

Conduct drone-based RF surveys to detect interference and blind spots

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

- PC1.** retrieve and verify RF signal strength and interference data collected from drone-based surveys.
- PC2.** ensure data collection covers all necessary frequency bands for 5G/4G/LTE networks.
- PC3.** identify discrepancies between expected and measured signal strengths using real-time drone data.
- PC4.** detect inconsistencies in network coverage due to external interference sources.
- PC5.** map RF blind spots by analysing signal attenuation across surveyed locations.

Analyse RF data for interference and coverage gaps

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

- PC6.** use RF analysis software to process and visualise collected data.
- PC7.** identify persistent interference sources such as adjacent-channel and co-channel interference.
- PC8.** correlate interference patterns with potential external factors such as weather, terrain, or urban structures.
- PC9.** evaluate network congestion levels that may contribute to degraded signal quality.
- PC10.** compare RF data with telecom coverage maps to detect deviations from expected network performance.

Classify and document sources of interference

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

- PC11.** categorise types of interference based on their frequency characteristics.
- PC12.** identify sources of RF interference such as industrial equipment, Wi-Fi networks, or unauthorised transmissions.
- PC13.** document blind spot locations with precise geospatial coordinates.
- PC14.** report findings with recommended actions to network planners and optimisation teams.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** principles of RF propagation and signal interference in 5G/4G/LTE networks.
- KU2.** methods for measuring and analysing RF signal strength using drone-based surveys.
- KU3.** different types of RF interference and their impact on telecom performance.
- KU4.** tools and technologies for RF spectrum analysis and interference detection.
- KU5.** techniques for mapping blind spots and weak coverage areas in telecom networks.
- KU6.** effects of environmental factors (e.g., buildings, terrain, weather) on signal strength.
- KU7.** compliance requirements and regulatory standards for RF spectrum management.
- KU8.** standard methodologies for classifying and mitigating RF interference.
- KU9.** importance of network optimisation in 5G/4G/LTE deployments.
- KU10.** reporting and documentation best practices for interference and blind spot analysis.

Generic Skills (GS)

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

- GS1.** use analytical tools to interpret RF interference data effectively.
- GS2.** communicate technical findings clearly to telecom engineers and stakeholders.
- GS3.** apply problem-solving techniques to address interference and blind spot issues.
- GS4.** work collaboratively with drone operators and network planners.
- GS5.** follow safety protocols and compliance standards for RF data collection.
- GS6.** maintain attention to detail in data analysis and documentation.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Conduct drone-based RF surveys to detect interference and blind spots</i>	10	22	-	4
PC1. retrieve and verify RF signal strength and interference data collected from drone-based surveys.	2	5	-	1
PC2. ensure data collection covers all necessary frequency bands for 5G/4G/LTE networks.	2	4	-	1
PC3. identify discrepancies between expected and measured signal strengths using real-time drone data.	2	4	-	1
PC4. detect inconsistencies in network coverage due to external interference sources.	2	5	-	1
PC5. map RF blind spots by analysing signal attenuation across surveyed locations.	2	4	-	-
<i>Analyse RF data for interference and coverage gaps</i>	11	22	-	3
PC6. use RF analysis software to process and visualise collected data.	2	5	-	-
PC7. identify persistent interference sources such as adjacent-channel and co-channel interference.	2	4	-	1
PC8. correlate interference patterns with potential external factors such as weather, terrain, or urban structures.	3	4	-	1
PC9. evaluate network congestion levels that may contribute to degraded signal quality.	2	4	-	-
PC10. compare RF data with telecom coverage maps to detect deviations from expected network performance.	2	5	-	1
<i>Classify and document sources of interference</i>	9	16	-	3
PC11. categorise types of interference based on their frequency characteristics.	3	4	-	1
PC12. identify sources of RF interference such as industrial equipment, Wi-Fi networks, or unauthorised transmissions.	2	4	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. document blind spot locations with precise geospatial coordinates.	2	4	-	-
PC14. report findings with recommended actions to network planners and optimisation teams.	2	4	-	1
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6295
NOS Name	Identify interference and blind spots for 5G/4G/LTE networks
Sector	Telecom
Sub-Sector	
Occupation	Network Operation and Maintenance
NSQF Level	5.5
Credits	3
Version	1.0
Next Review Date	NA

TEL/N6296: Support 5G Rollout Planning with Drone-Based Data Collection

Description

Support 5G Rollout Planning with Drone-Based Data Collection

Scope

The scope covers the following :

- Plan and coordinate drone-based RF data collection for 5G rollout
- Analyse collected RF data for 5G deployment readiness
- Identify Network Gaps and Signal Propagation Challenges
- Recommend optimisation strategies for 5G infrastructure deployment

Elements and Performance Criteria

Plan and coordinate drone-based RF data collection for 5G rollout

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

- PC1.** identify key geographical areas for 5G signal strength measurement and network evaluation.
- PC2.** coordinate with drone operators to optimise flight paths for comprehensive data collection.
- PC3.** verify the accuracy and calibration of RF measurement equipment before data collection.

Analyse collected RF data for 5G deployment readiness

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

- PC4.** process RF measurement data to evaluate 5G network performance.
- PC5.** identify signal propagation characteristics in various urban, suburban, and rural environments.
- PC6.** detect potential interference sources affecting 5G coverage and performance.
- PC7.** compare collected data with expected 5G network models to validate planning assumptions.
- PC8.** use data visualisation tools to map 5G signal strength and coverage distribution.

Identify Network Gaps and Signal Propagation Challenges

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

- PC9.** assess 5G network gaps caused by physical obstructions, interference, or propagation limitations.
- PC10.** identify areas requiring additional infrastructure, such as small cells, repeaters, or network densification.
- PC11.** evaluate the impact of terrain, buildings, and vegetation on 5G signal performance.
- PC12.** document findings and highlight key coverage issues for 5G planners and engineers.
- PC13.** provide insights into optimal antenna placements and configurations for improved coverage.

Recommend optimisation strategies for 5G infrastructure deployment

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

- PC14.** suggest network optimisation strategies based on collected drone-based RF data.
- PC15.** recommend site modifications, antenna adjustments, or additional network elements.

PC16. maintain detailed records of 5G survey findings to support future network expansion.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** fundamentals of 5G network architecture, including frequency bands and signal propagation.
- KU2.** importance of drone-based RF surveys in 5G network planning.
- KU3.** methods for collecting and interpreting RF signal strength and interference data.
- KU4.** tools and techniques used for analysing 5G RF data.
- KU5.** regulatory requirements and compliance considerations for drone-based RF measurements.
- KU6.** impact of urban infrastructure, terrain, and environmental factors on 5G signal performance.
- KU7.** network densification strategies for optimising 5G coverage and capacity.
- KU8.** role of small cells, repeaters, and beamforming in 5G rollout.
- KU9.** methods for documenting and reporting network planning insights effectively.

Generic Skills (GS)

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

- GS1.** interpret RF survey data to provide meaningful insights for 5G network planning.
- GS2.** communicate technical findings clearly to network planners and engineers.
- GS3.** apply problem-solving techniques to address network deployment challenges.
- GS4.** work collaboratively with cross-functional teams involved in the 5G rollout.
- GS5.** follow industry standards and regulatory requirements for RF data collection.
- GS6.** manage time effectively to ensure timely completion of survey and reporting tasks.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan and coordinate drone-based RF data collection for 5G rollout</i>	6	11	-	1
PC1. identify key geographical areas for 5G signal strength measurement and network evaluation.	2	4	-	-
PC2. coordinate with drone operators to optimise flight paths for comprehensive data collection.	2	4	-	1
PC3. verify the accuracy and calibration of RF measurement equipment before data collection.	2	3	-	-
<i>Analyse collected RF data for 5G deployment readiness</i>	10	20	-	4
PC4. process RF measurement data to evaluate 5G network performance.	2	4	-	1
PC5. identify signal propagation characteristics in various urban, suburban, and rural environments.	2	4	-	1
PC6. detect potential interference sources affecting 5G coverage and performance.	2	4	-	1
PC7. compare collected data with expected 5G network models to validate planning assumptions.	2	4	-	1
PC8. use data visualisation tools to map 5G signal strength and coverage distribution.	2	4	-	-
<i>Identify Network Gaps and Signal Propagation Challenges</i>	10	19	-	4
PC9. assess 5G network gaps caused by physical obstructions, interference, or propagation limitations.	2	4	-	1
PC10. identify areas requiring additional infrastructure, such as small cells, repeaters, or network densification.	2	4	-	1
PC11. evaluate the impact of terrain, buildings, and vegetation on 5G signal performance.	2	4	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. document findings and highlight key coverage issues for 5G planners and engineers.	2	4	-	-
PC13. provide insights into optimal antenna placements and configurations for improved coverage.	2	3	-	1
<i>Recommend optimisation strategies for 5G infrastructure deployment</i>	4	10	-	1
PC14. suggest network optimisation strategies based on collected drone-based RF data.	1	3	-	-
PC15. recommend site modifications, antenna adjustments, or additional network elements.	1	3	-	1
PC16. maintain detailed records of 5G survey findings to support future network expansion.	2	4	-	-
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6296
NOS Name	Support 5G Rollout Planning with Drone-Based Data Collection
Sector	Telecom
Sub-Sector	
Occupation	Network Operation and Maintenance
NSQF Level	5.5
Credits	3
Version	1.0
Next Review Date	NA

TEL/N6297: Optimise Antenna Alignments for Better Network Coverage

Description

The OS unit is about use of drone photography in different other sectors.

Scope

The scope covers the following :

- Conduct drone-based RF surveys to assess antenna performance
- Analyse RF data to determine optimal antenna alignment
- Recommend adjustments for improved signal strength and coverage
- Validate antenna optimisation through post-alignment testing

Elements and Performance Criteria

Plan and coordinate drone-based RF data collection for 5G rollout

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

- PC1.** identify key locations for conducting RF signal strength measurements near antennas.
- PC2.** coordinate with drone operators to ensure accurate data collection.
- PC3.** verify drone-mounted RF sensors for calibration and accuracy before deployment.
- PC4.** collect real-time RF data to assess the current signal strength and coverage patterns..

Analyse RF Data to Determine Optimal Antenna Alignment

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

- PC5.** use RF analysis tools to evaluate signal strength, interference, and coverage gaps.
- PC6.** identify misaligned antennas causing weak signals or network dead zones.
- PC7.** correlate RF data with geographical and environmental factors affecting antenna performance.

Recommend adjustments for improved signal strength and coverage

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

- PC8.** provide recommendations for optimal antenna tilt, azimuth, and height adjustments.
- PC9.** suggest alternative antenna placements to reduce signal obstructions and interference.
- PC10.** collaborate with network engineers to integrate drone survey insights into antenna optimisation plans.

Validate antenna optimisation through post-alignment testing

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

- PC11.** conduct follow-up RF surveys after antenna adjustments to verify signal improvements.
- PC12.** compare pre- and post-alignment RF data to measure coverage enhancements.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** basics of RF propagation and antenna alignment in telecom networks.

- KU2.** principles of signal strength measurement and interpretation of RF data.
- KU3.** impact of environmental factors (e.g., terrain, buildings) on antenna performance.
- KU4.** tools and software used for RF signal analysis and optimisation.
- KU5.** best practices for antenna tilting, azimuth adjustments, and height modifications.
- KU6.** methods for minimising interference and optimising network coverage.
- KU7.** compliance and safety regulations for antenna adjustments in telecom networks.
- KU8.** procedures for collaborating with network engineers and field technicians.
- KU9.** importance of post-optimisation testing and validation in network planning.
- KU10.** documentation standards for recording RF survey results and optimisation efforts.

Generic Skills (GS)

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

- GS1.** interpret RF survey data to make informed recommendations for antenna optimisation.
- GS2.** communicate technical findings clearly to network engineers and field teams.
- GS3.** use problem-solving skills to address signal coverage challenges.
- GS4.** work collaboratively with drone operators and telecom professionals.
- GS5.** adhere to safety and compliance protocols during RF data collection.
- GS6.** manage time efficiently to ensure timely execution of network optimisation tasks.
- GS7.** document antenna alignment recommendations and performance improvements systematically.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan and coordinate drone-based RF data collection for 5G rollout</i>	10	20	-	3
PC1. identify key locations for conducting RF signal strength measurements near antennas.	3	5	-	1
PC2. coordinate with drone operators to ensure accurate data collection.	3	5	-	-
PC3. verify drone-mounted RF sensors for calibration and accuracy before deployment.	3	5	-	1
PC4. collect real-time RF data to assess the current signal strength and coverage patterns..	1	5	-	1
<i>Analyse RF Data to Determine Optimal Antenna Alignment</i>	8	15	-	3
PC5. use RF analysis tools to evaluate signal strength, interference, and coverage gaps.	3	5	-	1
PC6. identify misaligned antennas causing weak signals or network dead zones.	2	5	-	1
PC7. correlate RF data with geographical and environmental factors affecting antenna performance.	3	5	-	1
<i>Recommend adjustments for improved signal strength and coverage</i>	8	15	-	2
PC8. provide recommendations for optimal antenna tilt, azimuth, and height adjustments.	3	5	-	1
PC9. suggest alternative antenna placements to reduce signal obstructions and interference.	3	5	-	1
PC10. collaborate with network engineers to integrate drone survey insights into antenna optimisation plans.	2	5	-	-
<i>Validate antenna optimisation through post-alignment testing</i>	4	10	-	2
PC11. conduct follow-up RF surveys after antenna adjustments to verify signal improvements.	2	5	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. compare pre- and post-alignment RF data to measure coverage enhancements.	2	5	-	1
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6297
NOS Name	Optimise Antenna Alignments for Better Network Coverage
Sector	Telecom
Sub-Sector	
Occupation	Network Operation and Maintenance
NSQF Level	5.5
Credits	3
Version	1.0
Next Review Date	NA

TEL/N6298: Ensure Health, Safety, and Environmental Compliance in Drone Operations

Description

The OS unit is about use of drone photography in different other sectors.

Scope

The scope covers the following :

- Follow workplace safety and regulatory compliance for drone operations
- Implement environmental best practices in drone-based RF surveys
- Ensure risk mitigation and emergency preparedness in drone operations

Elements and Performance Criteria

Follow workplace safety and regulatory compliance for drone operations

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

- PC1.** ensure adherence to government and industry regulations for drone operations in RF surveys.
- PC2.** verify that the drone operator follows all airspace regulations and permissions.
- PC3.** conduct pre-operation safety checks to identify potential hazards in the survey area.
- PC4.** ensure proper handling, transportation, and storage of RF measurement equipment.
- PC5.** use personal protective equipment (PPE) as per industry guidelines.
- PC6.** maintain compliance with telecom industry health and safety protocols.

Implement environmental best practices in drone-based RF surveys

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

- PC7.** assess environmental impact factors such as noise pollution and wildlife disturbance.
- PC8.** ensure minimal interference with natural habitats during drone operations.
- PC9.** promote responsible disposal and recycling of drone batteries and electronic components.
- PC10.** follow best practices to reduce carbon footprint during field operations.
- PC11.** monitor and document environmental conditions that may impact RF data accuracy.

Ensure risk mitigation and emergency preparedness in drone operations

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

- PC12.** identify potential risks such as drone malfunctions, weather changes, and airspace conflicts.
- PC13.** develop contingency plans for emergency scenarios such as equipment failure or accidents.
- PC14.** maintain a first-aid kit and emergency response plan for on-site operations.
- PC15.** communicate emergency protocols to the drone operator and team members.
- PC16.** report and document any safety incidents or regulatory violations.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** national and international drone operation regulations and legal compliance.
- KU2.** workplace safety standards specific to RF surveys using drones.
- KU3.** environmental impact assessments and sustainable practices in drone operations.
- KU4.** proper handling and storage of drone and RF measurement equipment.
- KU5.** risk assessment techniques for identifying and mitigating hazards.
- KU6.** emergency response procedures in case of accidents or equipment failure.
- KU7.** importance of PPE in drone-based fieldwork.
- KU8.** airspace management rules and permissions required for drone operations.
- KU9.** industry best practices for minimising electronic waste and reducing environmental footprint.
- KU10.** communication protocols for ensuring safe coordination between RF engineers and drone operators.
- KU11.** first aid and medical response protocols in case of field emergencies.
- KU12.** standard documentation procedures for recording safety and environmental compliance.
- KU13.** guidelines for weather and terrain assessment before conducting drone-based surveys.
- KU14.** ethical considerations and responsibilities in conducting drone-based RF surveys.
- KU15.** importance of safety training and ongoing professional development in drone operations.

Generic Skills (GS)

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

- GS1.** communicate safety protocols and risk mitigation plans effectively.
- GS2.** use problem-solving skills to handle unforeseen safety and environmental challenges.
- GS3.** work collaboratively with drone operators and network engineers to ensure compliance.
- GS4.** interpret regulatory guidelines and implement them in daily operations.
- GS5.** document and report safety concerns and incidents with clarity.
- GS6.** manage time efficiently to ensure safe and smooth field operations.
- GS7.** apply critical thinking to assess and minimise environmental impact.
- GS8.** stay updated with industry best practices and evolving safety regulations.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Follow workplace safety and regulatory compliance for drone operations</i>	10	22	-	4
PC1. ensure adherence to government and industry regulations for drone operations in RF surveys.	2	3	-	1
PC2. verify that the drone operator follows all airspace regulations and permissions.	2	4	-	-
PC3. conduct pre-operation safety checks to identify potential hazards in the survey area.	-	3	-	1
PC4. ensure proper handling, transportation, and storage of RF measurement equipment.	2	4	-	1
PC5. use personal protective equipment (PPE) as per industry guidelines.	2	4	-	-
PC6. maintain compliance with telecom industry health and safety protocols.	2	4	-	1
<i>Implement environmental best practices in drone-based RF surveys</i>	10	20	-	3
PC7. assess environmental impact factors such as noise pollution and wildlife disturbance.	2	3	-	-
PC8. ensure minimal interference with natural habitats during drone operations.	2	3	-	1
PC9. promote responsible disposal and recycling of drone batteries and electronic components.	2	4	-	-
PC10. follow best practices to reduce carbon footprint during field operations.	2	5	-	1
PC11. monitor and document environmental conditions that may impact RF data accuracy.	2	5	-	1
<i>Ensure risk mitigation and emergency preparedness in drone operations</i>	10	18	-	3
PC12. identify potential risks such as drone malfunctions, weather changes, and airspace conflicts.	2	3	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. develop contingency plans for emergency scenarios such as equipment failure or accidents.	2	4	-	1
PC14. maintain a first-aid kit and emergency response plan for on-site operations.	2	4	-	1
PC15. communicate emergency protocols to the drone operator and team members.	2	3	-	-
PC16. report and document any safety incidents or regulatory violations.	2	4	-	1
NOS Total	30	60	-	10

National Occupational Standards (NOS) Parameters

NOS Code	TEL/N6298
NOS Name	Ensure Health, Safety, and Environmental Compliance in Drone Operations
Sector	Telecom
Sub-Sector	
Occupation	Network Operation and Maintenance
NSQF Level	5.5
Credits	1
Version	1.0
Next Review Date	NA

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

Description

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

Scope

The scope covers the following :

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

Elements and Performance Criteria

Introduction to Employability Skills

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

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

Constitutional values - Citizenship

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

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

Becoming a Professional in the 21st Century

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

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

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

Basic English Skills

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

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

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

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

Career Development & Goal Setting

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

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

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

Communication Skills

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

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

PC15. use active listening techniques for effective communication

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

PC17. work collaboratively with others in a team

Diversity & Inclusion

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

PC18. communicate and behave appropriately with all genders and PwD

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

Financial and Legal Literacy

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

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

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

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

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

Essential Digital Skills

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

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

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

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

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

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

PC29. utilize virtual collaboration tools to work effectively

Entrepreneurship

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

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

Customer Service

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

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

Getting ready for apprenticeship & Jobs

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

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

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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

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

Generic Skills (GS)

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

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

Assessment Criteria

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

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

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

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

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0103
NOS Name	Employability Skills (90 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	5
Credits	3
Version	1.0
Last Reviewed Date	29/09/2025
Next Review Date	29/09/2028
NSQC Clearance Date	29/09/2025

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/N6293.Analyse RF signal strength data from drone-based surveys	30	60	0	10	100	15
TEL/N6294.Identify signal interference and dead zones	30	60	0	10	100	15
TEL/N6295.Identify interference and blind spots for 5G/4G/LTE networks	30	60	0	10	100	15
TEL/N6296.Support 5G Rollout Planning with Drone-Based Data Collection	30	60	0	10	100	15
TEL/N6297.Optimise Antenna Alignments for Better Network Coverage	30	60	0	10	100	15
TEL/N6298.Ensure Health, Safety, and Environmental Compliance in Drone Operations	30	60	0	10	100	15
DGT/VSQ/N0103.Employability Skills (90 Hours)	20	30	-	-	50	10
Total	200	390	-	60	650	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.