Assessment Requirements for ICTTEN317 Locate, identify and rectify telecommunications network faults

Assessment Requirements for ICTTEN317 Locate, identify and rectify telecommunications network faults

Modification History

Release	Comments
Release 1	This version released with ICT Information and Communications Technology Training Package Version 5.0.

Performance Evidence

The candidate must demonstrate the ability to perform the tasks outlined in the elements, performance criteria, and foundation skills, and to:

- discuss faults with customers and appropriate personnel
- use systematic and logical fault-finding techniques and field-testing procedures according to workplace situations
- test telecommunications networks to identify a minimum of three different types of faults
- analyse test results and rectify faults for a minimum of three different types of faults
- comply with all related work health and safety (WHS) requirements and work practices
- follow direction from appropriate sources, personnel or network operators (including. operation centre, supervisor).

Note: Evidence must be provided at least once when a specific volume or frequency is not stated.

Knowledge Evidence

The candidate must demonstrate the knowledge required to perform the tasks outlined in the elements, performance criteria, and foundation skills, which includes knowledge about:

- work health and safety (WHS) and environmental requirements
- basic communications testing, measuring devices and techniques including:
  - types and applications of testing/measuring devices including voltage testers, multimeters, continuity testers and insulation resistance testers
  - features of testing/measuring devices including safety, user calibration and parameter and range settings
  - test/measuring devices into a circuit
  - safety procedures
  - circuit arrangement of test/measuring devices

- readings
- storage, maintenance and care of test/measuring devices.
- Australian Standard quality assurance requirements for test equipment calibration certification
- network fundamentals for analog and digital signals including:
  - how information is carried
  - signal distortion, attenuation, reflection, noise, dispersion, latency and collisions
  - types of networks, network components and hardware
  - local area network (LAN) architecture
  - networking protocols and the open systems interconnection (OSI) model
  - network signal propagation
  - transmission control protocol/internet protocol (TCP/IP)
- basics of encoding networking signals including:
  - internet services
- performance parameters associated with copper cables, coaxial cables and optical cables including:
  - electrical circuit characteristics of voltage, current and resistance/impedance
  - open circuit, short circuit and pair continuity
  - split legs and crossed legs, contacts, earths and foreign battery
  - attenuation
  - return loss
  - insulation resistance (leakage)
  - cross talk
  - attenuation to cross talk ratio (ACR)
  - loop resistance
  - noise (impulse noise and average noise)
  - characteristic impedance
- test result compliance with required regulations, standards and/or codes for structured copper cables, coaxial and optical fibre cables including:
  - tests required to evaluate a given performance parameter
  - test equipment and leads needed to evaluate a given performance parameter
  - operation of test equipment for correct evaluation of specific cable performance parameters and to obtain accurate and reliable results
  - transmission performance requirements
- behaviour of faulty network elements, including symptoms and impact on network
- systematic and logical fault-finding
- interpretation of test results and network element/system specifications
- types of power and signal sources used in telecommunications networks.

Assessment Conditions

Skills must be assessed in a workplace or simulated environment where conditions are typical of those in a telecommunications work environment or workplace.

Access is required to:

- site/s on which network testing and fault-finding can be conducted
- line transmission and optical measurement equipment currently used in industry
- system documentation and other site-related documentation require to conduct tests and fault-finding investigations, for a minimum of three different types of faults.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

Companion Volume Implementation Guides are available from VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2