TRAINING REGULATIONS

Telecom OSP Installation (Fiber Optic Cable) NC II

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SECTOR (TELECOMMUNICATION INDUSTRY)

TECHNICAL EDUCATION AND SKILLS DEVELOPMENT AUTHORITY
East Service Road, South Superhighway, Taguig City, Metro Manila

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NATIONAL CERTIFICATE LEVEL II

TRAINING REGULATIONS FOR
TELECOM OSP INSTALLATION (FIBER OPTIC CABLE) NC II

SECTION 1 TELECOM OSP INSTALLATION (FIBER OPTIC CABLE) NC II QUALIFICATION

The **Telecom OSP Installation (Fiber Optic Cable) NC II** Qualification consists of competencies that a person must possess to install pole hardware and accessories, lay out and install fiber optic cables and accessories as well as to climb poles, enter/re-enter and clean manhole splice, re-splices fiber optic cables and perform continuity optical testing and repair.

This Qualification is packaged from the competency map of the ICT sector - (Telecommunication Industry) as shown in Annex A.

The units of competency comprising this qualification include the following:

Code	BASIC COMPETENCIES
5 00 311 1 05	Participate in workplace communication
5 00 311 1 06	Work in team environment
5 00 311 1 07	Practice career professionalism
5 00 311 1 08	Practice occupational health and safety procedures

Code	COMMON COMPETENCIES
ICT 315 2 02	Apply Quality Standards
ICT 311 2 03	Operate a Personal Computer

Code	CORE COMPETENCIES
ICT 724 611	Install and Splice/Join Aerial/Underground Fiber Optic Cables
ICT 724 612	Perform optical testing and repair

A person who has achieved this Qualification is competent to be:

- **Fiber Optic Cable Technician**

SECTION 2: COMPETENCY STANDARDS

This section gives the details of the contents of the basic, common, and core units of competency required for Telecom outside plant (OSP) installation for fiber optic cable.

BASIC COMPETENCIES

UNIT OF COMPETENCY : PARTICIPATE IN WORKPLACE COMMUNICATION

UNIT CODE : 500311105

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the Range of Variables
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from ***appropriate sources*** 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information 1.3 Appropriate ***medium*** is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and ***storage*** of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time 2.2 Own opinions are clearly expressed and those of others are listened to without interruption 2.3 Meeting inputs are consistent with the meeting purpose and established ***protocols*** 2.4 ***Workplace interactions*** are conducted in a courteous manner 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to 2.6 Meetings outcomes are interpreted and implemented
3. Complete relevant work related documents	3.1 Range of ***forms*** relating to conditions of employment are completed accurately and legibly 3.2 Workplace data is recorded on standard workplace forms and documents 3.3 Basic mathematical processes are used for routine calculations 3.4 Errors in recording information on forms/ documents are identified and properly acted upon 3.5 Reporting requirements to supervisor are completed according to organizational guidelines

RANGE OF VARIABLES

VARIABLE	RANGE
1. Appropriate sources	1.1. Team members 1.2. Suppliers 1.3. Trade personnel 1.4. Local government 1.5. Industry bodies
2. Medium	2.1. Memorandum 2.2. Circular 2.3. Notice 2.4. Information discussion 2.5. Follow-up or verbal instructions 2.6. Face to face communication
3. Storage	3.1. Manual filing system 3.2. Computer-based filing system
4. Forms	4.1. Personnel forms, telephone message forms, safety reports
5. Workplace interactions	5.1. Face to face 5.2. Telephone 5.3. Electronic and two way radio 5.4. Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
6. Protocols	6.1. Observing meeting 6.2. Compliance with meeting decisions 6.3. Obeying meeting instructions

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Prepared written communication following standard format of the organization 1.2. Accessed information using communication equipment 1.3. Made use of relevant terms as an aid to transfer information effectively 1.4. Conveyed information effectively adopting the formal or informal communication
2. Required Knowledge and Attitude	2.1. Effective communication 2.2. Different modes of communication 2.3. Written communication 2.4. Organizational policies 2.5. Communication procedures and systems 2.6. Technology relevant to the enterprise and the individual's work responsibilities
3. Required Skills	3.1. Follow simple spoken language 3.2. Perform routine workplace duties following simple written notices 3.3. Participate in workplace meetings and discussions 3.4. Complete work related documents 3.5. Estimate, calculate and record routine workplace measures 3.6. Basic mathematical processes of addition, subtraction, division and multiplication 3.7. Ability to relate to people of social range in the workplace 3.8. Gather and provide information in response to workplace Requirements
4. Resource Implications	4.1. Fax machine 4.2. Telephone 4.3. Writing materials 4.4. Internet
5. Methods of Assessment	5.1. Direct Observation 5.2. Oral interview 5.3. Written test
6. Context for Assessment	6.1. Competency may be assessed individually in the actual workplace or through accredited institution

UNIT OF COMPETENCY: WORK IN TEAM ENVIRONMENT

UNIT CODE : 500311106

UNIT DESCRIPTOR : This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the Range of Variables
1. Describe team role and scope	1.1. The ***role and objective of the team*** is identified from available ***sources of information*** 1.2. Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources
2. Identify own role and responsibility within team	2.1. Individual role and responsibilities within the team environment are identified 2.2. Roles and responsibility of other team members are identified and recognized 2.3. Reporting relationships within team and external to team are identified
3. Work as a team member	3.1. Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives 3.2. Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and ***workplace context*** 3.3. Observed protocols in reporting using standard operating procedures 3.4. Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.

RANGE OF VARIABLES

VARIABLE	RANGE
1. Role and objective of team	1.1. Work activities in a team environment with enterprise or specific sector 1.2. Limited discretion, initiative and judgement maybe demonstrated on the job, either individually or in a team environment
2. Sources of information	2.1. Standard operating and/or other workplace procedures 2.2. Job procedures 2.3. Machine/equipment manufacturer's specifications and instructions 2.4. Organizational or external personnel 2.5. Client/supplier instructions 2.6. Quality standards 2.7. Health, safety and environmental standards
3. Workplace context	3.1. Work procedures and practices 3.2. Conditions of work environments 3.3. Legislation and industrial agreements 3.4. Standard work practice including the storage, safe handling and disposal of chemicals 3.5. Occupational Health Safety, environmental, housekeeping and quality guidelines

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1. Operated in a team to complete workplace activity 1.2. Worked effectively with others 1.3. Conveyed information in written or oral form 1.4. Selected and used appropriate workplace language 1.5. Followed designated work plan for the job 1.6. Reported outcomes
2. Required Knowledge and Attitude	2.1. Communication process 2.2. Team structure 2.3. Team roles 2.4. Group planning and decision making
3. Required Skills	3.1. Communicate appropriately, consistent with the culture of the workplace 3.2. Participate in workplace discussion 3.3. Comply with organization work requirements
4. Resource Implications	The following resources **MUST** be provided: 4.1. Access to relevant workplace or appropriately simulated environment where assessment can take place 4.2. Materials relevant to the proposed activity or tasks 4.3. Communication and work tools
5. Methods of Assessment	Competency may be assessed through: 5.1. Observation of the individual member in relation to the work activities of the group 5.2. Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal 5.3. Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
6. Context for Assessment	6.1. Competency may be assessed in workplace or in a simulated workplace setting 6.2. Assessment shall be observed while task are being undertaken individually

UNIT OF COMPETENCY: PRACTICE CAREER PROFESSIONALISM

UNIT CODE : 500311107

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes in promoting career growth and advancement.

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the Range of Variables
1. Integrate personal objectives with organizational goals	1.1. Personal growth and work plans are pursued towards improving the qualifications set for the profession 1.2. Intra- and interpersonal relationships are maintained in the course of managing oneself based on performance ***evaluation*** 1.3. Commitment to the organization and its goal is demonstrated in the performance of duties
2. Set and meet work priorities	2.1. Competing demands are prioritized to achieve personal, team and organizational goals and objectives. 2.2. ***Resources*** are utilized efficiently and effectively to manage work priorities and commitments 2.3. Practices along economic use and maintenance of equipment and facilities are followed as per established procedures
3. Maintain professional growth and development	3.1. ***Trainings and career opportunities*** are identified and availed of based on job requirements 3.2 ***Recognitions*** are sought/received and demonstrated as proof of career advancement 3.3 ***Licenses and/or certifications*** relevant to job and career are obtained and renewed every 3 years

RANGE OF VARIABLES

VARIABLE	RANGE
1. Evaluation	1.1 Performance Appraisal 1.2 Psychological Profile 1.3 Aptitude Tests
2. Resources	2.1 Human 2.2 Financial 2.3 Technology 2.3.1 Hardware 2.3.2 Software
3. Trainings and career opportunities	3.1 Participation in training programs 3.1.1 Technical 3.1.2 Supervisory 3.1.3 Managerial 3.1.4 Continuing Education 3.2 Serving as Resource Persons in conferences and workshops
4. Recognitions	4.1 Recommendations 4.2 Citations 4.3 Certificate of Appreciations 4.4 Commendations 4.5 Awards 4.6 Tangible and Intangible Rewards
5. Licenses and/or certifications	5.1 National Certificates 5.2 Certificate of Competency 5.3 Support Level Licenses 5.4 Professional Licenses

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Attained job targets within key result areas (KRAs) 1.2 Maintained intra - and interpersonal relationship in the course of managing oneself based on performance evaluation 1.3 Completed trainings and career opportunities which are based on the requirements of the industries 1.4 Acquired and maintained licenses and/or certifications according to the requirement of the qualification
2. Required Knowledge and Attitude	2.1 Work values and ethics (Code of Conduct, Code of Ethics, etc.) 2.2 Company policies 2.3 Company-operations, procedures and standards 2.4 Fundamental rights at work including gender sensitivity 2.5 Personal hygiene practices
3. Required Skills	3.1 Application of outside plant safety practices 3.2 Intra and Interpersonal skills 3.3 Communication skills
4. Resource Implications	The following resources **MUST** be provided: 4.1 Workplace or assessment location 4.2 Case studies/scenarios 4.3 Standard tools/equipment
5. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview 5.3 Simulation/Role-plays 5.4 Observation 5.5 Third Party Reports 5.6 Exams and Tests
6. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

UNIT OF COMPETENCY : **PRACTICE OCCUPATIONAL HEALTH AND SAFETY PROCEDURES**

UNIT CODE : **500311108**

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to comply with regulatory and organizational requirements for occupational health and safety.

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the Range of Variables
1. Identify hazards and risks	1.1 ***Safety regulations*** and workplace safety and hazard control practices and procedures are clarified and explained based on organization procedures 1.2 ***Hazards/risks*** in the workplace and their corresponding indicators are identified to minimize or eliminate risk to co-workers, workplace and environment in accordance with organization procedures 1.3 ***Contingency measures*** during workplace accidents, fire and other emergencies are recognized and established in accordance with organization procedures
2. Evaluate hazards and risks	2.1 Terms of maximum tolerable limits which when exceeded will result in harm or damage are identified based on threshold limit values (TLV) 2.2 Effects of the hazards are determined 2.3 OHS issues and/or concerns and identified safety hazards are reported to designated personnel in accordance with workplace requirements and relevant workplace OHS legislation
3. Control hazards and risks	3.1 Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace are consistently followed 3.2 Procedures for dealing with workplace accidents, fire and emergencies are followed in accordance with organization OHS policies 3.3 ***Personal protective equipment (PPE)*** is correctly used in accordance with organization OHS procedures and practices 3.4 Appropriate assistance is provided in the event of a workplace emergency in accordance with established organization protocol
4. Maintain OHS awareness	4.1 ***Emergency-related drills and trainings*** are participated in as per established organization guidelines and procedures 4.2 ***OHS personal records*** are completed and updated in accordance with workplace requirements

RANGE OF VARIABLES

VARIABLE	RANGE
1. Safety regulations	May include but are not limited to: 1.1 Clean Air Act 1.2 Building code 1.3 National Electrical and Fire Safety Codes 1.4 Waste management statutes and rules 1.5 Philippine Occupational Safety and Health Standards 1.6 DOLE regulations on safety legal requirements 1.7 ECC regulations
2. Hazards/Risks	May include but are not limited to: 2.1 Physical hazards – impact, illumination, pressure, noise, vibration, temperature, radiation 2.2 Biological hazards- bacteria, viruses, plants, parasites, mites, molds, fungi, insects 2.3 Chemical hazards – dusts, fibers, mists, fumes, smoke, gasses, vapors 2.4 Ergonomics 2.4.1 Psychological factors – over exertion/ excessive force, awkward/static positions, fatigue, direct pressure, varying metabolic cycles 2.4.2 Physiological factors – monotony, personal relationship, work out cycle
3. Contingency measures	May include but are not limited to: 3.1 Evacuation 3.2 Isolation 3.3 Decontamination 3.4 (Calling designed) emergency personnel
4. Personal Protective Equipment	May include but are not limited to: 4.1 Mask 4.2 Gloves 4.3 Goggles 4.4 Hair Net/cap/bonnet 4.5 Face mask/shield 4.6 Ear muffs 4.7 hard hat/body belt /safety straps 4.8 Anti-static suits

VARIABLE	RANGE
5. Emergency-related drills and training	5.1 Fire drill 5.2 Earthquake drill 5.3 Basic life support/CPR 5.4 First aid 5.5 Spillage control 5.6 Decontamination of chemical and toxic 5.7 Disaster preparedness/management
6. OHS personal records	6.1 Medical/Health records 6.2 Incident reports 6.3 Accident reports 6.4 OHS-related training completed

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment requires evidence that the candidate: 1.1 Explained clearly established workplace safety and hazard control practices and procedures 1.2 Identified hazards/risks in the workplace and its corresponding indicators in accordance with company procedures 1.3 Recognized contingency measures during workplace accidents, fire and other emergencies 1.4 Identified terms of maximum tolerable limits based on threshold limit value- TLV. 1.5 Followed Occupational Health and Safety (OHS) procedures for controlling hazards/risks in workplace 1.6 Used Personal Protective Equipment (PPE) in accordance with company OHS procedures and practices 1.7 Completed and updated OHS personal records in accordance with workplace requirements
2. Required Knowledge and Attitude	2.1 OHS procedures and practices and regulations 2.2 PPE types and uses 2.3 Personal hygiene practices 2.4 Hazards/risks identification and control 2.5 Threshold Limit Value -TLV 2.6 OHS indicators 2.7 Organization safety and health protocol 2.8 Safety consciousness 2.9 Health consciousness
3. Required Skills	3.1 Outside plant safety and practices 3.2 Hazards/risks identification and control skills 3.3 Interpersonal skills 3.4 Communication skills
2. Resource Implications	The following resources must be provided: 4.1 Workplace or assessment location 4.2 OHS personal records 4.3 Personal protective equipment 4.4 Health records
3. Methods of Assessment	Competency may be assessed through: 5.1 Portfolio Assessment 5.2 Interview/written test 5.3 Case Study/Situation
4. Context for Assessment	6.1 Competency may be assessed in the work place or in a simulated work place setting

COMMON COMPETENCIES

UNIT TITLE : **APPLY QUALITY STANDARDS**
UNIT CODE : **ICT315202**
UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes needed to apply quality standards in the workplace. The unit also includes the application of relevant safety procedures and regulations, organization procedures and customer requirements

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the Range of Variables
1. Assess quality of received materials or components	1.1. Work instructions are obtained and work is carried out in accordance with standard operating procedures 1.2. Received ***materials or component parts*** are checked against workplace standards and specifications 1.3. Faulty material or components related to work are identified and isolated 1.4. ***Faults*** and any identified causes are recorded and/or reported to the supervisor concerned in accordance with workplace procedures 1.5. Faulty materials or components are replaced in accordance with workplace procedures
2. Assess own work	2.1. ***Documentation*** relative to quality within the company is identified and used 2.2. Completed work is checked against workplace standards relevant to the task undertaken 2.3. Faulty pieces are identified and isolated 2.4. Information on the quality and other indicators of production performance is recorded in accordance with workplace procedures 2.5. Deviations from specified ***quality standards***, causes are documented and reported in accordance with the workplace' standards operating procedures
3. Engage in quality improvement	3.1. Process improvement procedures are participated in relation to workplace assignment 3.2. Work is carried out in accordance with process improvement procedures 3.3. Performance of operation or quality of product or service to ensure ***customer*** satisfaction is monitored

RANGE OF VARIABLES

VARIABLE	RANGE
1. Materials/components	1.1. Materials may include but not limited to: 1.1.1. Wires 1.1.2. Optical Cables, soldering lead 1.1.3. Electrical tape 1.1.4. Connectors 1.1.5. Optical Cable closures 1.1.6. Protection sleeve 1.1.7. FO organizers 1.2. Components may include but not limited to: 1.2.1. ICs 1.2.2. Diodes 1.2.3. Resistors 1.2.4. capacitors
2. Faults	Faults may include but not limited to: 2.1. Components/materials not according to specification 2.2. Components/materials contain manufacturing defects 2.3. Components/materials do not conform with government regulation i.e., PEC, environmental code 2.4. Components/materials have safety defect
3. Documentation	3.1. Organization work procedures 3.2. Manufacturer's instruction manual 3.3. Customer requirements 3.4. Forms
4. Quality standards	4.1. Quality standards may relate but not limited to the following: 4.1.1. Materials 4.1.2. Component parts 4.1.3. Final product 4.1.4. Production processes
5. Customer	5.1. Co-worker 5.2. Supplier 5.3. Client 5.4. Organization receiving the product or service

EVIDENCE GUIDE

1. Critical aspect of competency	Assessment requires evidence that the candidate: 1.1. Carried out work in accordance with the company's standard operating procedures 1.2. Performed task according to specifications 1.3. Reported defects detected in accordance with standard operating procedures 1.4. Carried out work in accordance with the process improvement procedures
2. Required knowledge and attitude	2.1. Relevant production processes, materials and products 2.2. Characteristics of materials/component parts used in electronic production processes 2.3. Quality checking procedures 2.4. Workplace procedures 2.5. Safety and environmental aspects of production processes 2.6. Fault identification and reporting 2.7. Quality improvement process
3. Required skills	3.1. Reading skills required to interpret work instruction 3.2. Communication skills needed to interpret and apply defined work procedures 3.3. Carry out work in accordance with OHS policies and procedures
4. Method of assessment	4.1. The assessor may select at least two (2) of the following assessment methods to objectively assess the candidate: 4.1.1. Observation 4.1.2. Questioning 4.1.3. Practical demonstration
5. Resource implication	5.1. Materials and component parts and equipment to be used in a real or simulated electronic production situation
6. Context of Assessment	6.1. Assessment may be conducted in the workplace or in a simulated work environment.

UNIT TITLE : **OPERATE A PERSONAL COMPUTER**

UNIT CODE : **ICT 311203**

UNIT DESCRIPTOR : This unit defines the competency required to operate a personal computer by: starting the PC, logging in, using and working with files, folders and programs, saving work, and closing down the PC.

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the Range of Variables
1. Start the computer	1.1 The ***peripheral devices*** are properly connected 1.2 Power is checked and the ***computer*** and peripheral devices are switched on 1.3 Proper logging in and logging off is successfully done 1.4 The ***operating system*** features and functions are accessed and navigated 1.5 Hardware configuration and other ***system features*** are checked
2. Arrange and customize desktop display/ GUI settings	2.1 The desktop screen or GUI elements are changed as needed 2.2 Desktop icons are added, renamed, moved, copied or deleted 2.3 The ***online help functions*** are accessed or used as needed 2.4 Desktop icons of ***application programs*** are selected, opened and closed 2.5 ***Properties*** of icons are displayed 2.6 Computer or desktop settings are saved and restored
3. Work with files and folders (or directories)	3.1 A file or folder is created, opened, moved, renamed or copied 3.2 Files are located, deleted and restored 3.3 Details and properties of files and folders are displayed or viewed 3.4 ***Various files*** are organized for easy lookup and use 3.5 Files and information are searched 3.6 ***Disks*** are checked, erased or formatted as necessary
4. Work with user application programs	4.1 ***Application programs*** are added, changed, removed or ran 4.2 User software or application program are installed, updated and upgraded 4.3 Information/data are moved between documents or files
5. Print information	5.1 Printer is added or installed and correct ***printer settings*** is ensured 5.2 Default printer is assigned accordingly 5.3 Information or document is printed on the installed printer 5.4 Progress of print jobs are viewed and deleted as required
6. Shut down computer	6.1 All open application programs are closed 6.2 Computer and peripheral devices are properly shut down

RANGE OF VARIABLES

VARIABLE	RANGE
1. Peripheral device	This may include but is not limited to: 1.1 mouse 1.2 keyboard 1.3 monitor or visual display unit 1.4 printer 1.5 scanner
2. Computer	May include: 2.1. Laptops/notebooks 2.2. Workstations 2.3. Servers 2.4. other personal computer devices
3. Application programs	Can include: 3.1 user programs 3.2 database programs 3.3 word processors 3.4 email programs 3.5 Internet browsers 3.6 system browsers 3.7 spreadsheets
4. Operating system	May include but is not limited to the various versions and variants of operating systems running on personal computers and servers, such as: 4.1 Windows 4.2 NT 4.3 Mac OS 4.4 Linux 4.5 Solaris 4.6 Unix
5. System features	May include but is not limited to the operating system features and hardware features like: 5.1 memory size 5.2 disk capacities 5.3 video cards 5.4 USBs 5.5 Modems 5.6 1394 and LAN connectors 5.7 SD and PC cards 5.8 wireless and infrared connections.
6. Online help functions	6.1 An instruction manual, or a portion of the manual, integrated and accessible from within the program or software being used.

VARIABLE	RANGE
7. Properties	Indicates the description of the file or folder to include the: 7.1 file name 7.2 type of file 7.3 file size 7.4 date created and modified 7.5 attributes (hidden, read-only).
8. Various files	8.1 Documents 8.2 Records 8.3 Pictures 8.4 Music 8.5 Video
9. Disks	May include but is not limited to: 9.1 Floppy disks 9.2 CDs 9.3 CD-RW (Compact discs-Read/Write) 9.4 DVD RW 9.5 zip disks 9.6 flash drives 9.7 memory sticks 9.8 hard drives
10. Printer settings	The properties of the printer that enables it to work includes: 10.1 page layout 10.2 paper size 10.3 ink/cartridge type 10.4 number of copies 10.5 page orientation.

EVIDENCE GUIDE

1. Critical aspects of Competency	Assessment must confirm the candidate's ability to: 1.1 utilize software 1.2 navigate the desktop 1.3 use system features to perform tasks 1.4 save results of work.
2. Required Knowledge and Attitude	Knowledge includes: 2.1 Keyboard layout and functions 2.2 Computer functions 2.3 Basic parts of a computer and various hardware components 2.4 Storage devices and file concepts 2.5 Basic software operation and functionalities
3. Required Skills	Skills include: 3.1 Saving and retrieving files to and from various folders or disk storage 3.2 Mouse and keyboarding skills for running software applications 3.3 Reading and writing at a level where basic workplace documents are understood 3.4 Clear ability to communicate with peers and supervisors 3.5 Interpretation of user manuals and help functions 3.6 The ability to carry out written and verbal instructions using a personal computer whether standalone or in a networked environment
4. Resource Implications	To demonstrate competence in this unit access to the following resources will be required: 4.1 A personal computer 4.2 A printer 4.3 Mouse and keyboard 4.4 Basic systems software
5. Methods of Assessment	Competency may be assessed through: 5.1 Observation in a workplace or simulated environment 5.2 Third party reports 5.3 Exams and tests 5.4 Demonstration of required skills 5.5 Interviews
6. Context for Assessment	6.1 Competency may be assessed in the workplace or in a simulated work environment.

CORE COMPETENCIES

UNIT OF COMPETENCY : **INSTALL AND SPLICE/JOIN AERIAL/ UNDERGROUND FIBER OPTIC CABLES**

UNIT CODE : ICT724611

DESCRIPTOR : This unit covers the outcomes required for installation and splicing/joining of aerial/underground fiber optic cables including protection sleeves installation using fusion machine and mechanical method as well as cable closure and cable support installation both for aerial and underground. This involves working with a team.

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the range of variables
1. Prepare for fiber optic cable layout and installation	1.1. Necessary ***tools, equipment, materials and personal protective equipment (PPE)*** are prepared in line with job requirements. 1.2. Cable preparation and installation requirements and constraints from plan and site inspection are identified as per job requirements. 1.3. Cable preparation and installation equipment is set up in accordance with manufacturer's and job requirements. 1.4. Site is made safe and secure for cable installation. 1.5. Suitable protective clothing is selected and required safety devices are used. 1.6. ***Support structure*** is assessed in line with job requirements. 1.7. Cable route is checked for ***obstructions*** and vertical clearances from street level and are made clear using ***suitable methods*** and in coordination with authorities concerned. 1.8. Fiber optic cable is laid out in line with installation plan.
2. Prepare Fiber Optic cable for splicing and joining	2.1 Sheath opening of the cable and strength member is installed as required per outside plant standards. 2.2 Buffer tubes and fiber strands are secured and assembly of fiber optic organizer is aligned/ positioned in accordance with standard installation procedures. 2.3 Fiber strands are stripped, cleaned and cleaved in accordance with established procedures. 2.4 Loop and bending radius tolerance is observed for cable materials at all times.

3. Splice/join fibers and install protection sleeves using fusion machine	3.1 Occupational health & safety (OH&S) policies and procedures are followed based on safety requirements. 3.2 Insertion of fibers strand to the fusion machine (automatic operation) is performed in accordance to procedural standards and product/equipment specification. 3.3 Spliced fiber strands are protected and organized as per procedure and job requirements. 3.4 Loop and bending radius tolerance is applied in line with established standards 3.5 Problems encountered are reported as per standard operating procedures (SOP). 3.6 Accomplishment reports are accurately reported/ documented in accordance with job requirements
4. Splice/join fibers and install protection sleeves using mechanical method	4.1. Occupational health & safety (OH&S) policies and procedures are followed based on safety requirements. 4.2. Placement of prepared fiber in mechanical splicing kit is followed as per established procedure. 4.3. Spliced fiber strands are protected and organized as per procedure and job requirements. 4.4. Loop and bending radius tolerance is applied in line with established standards 4.5. Problems encountered are reported as per standard operating procedures (SOP). 4.6. Accomplishment reports are accurately reported/ documented in accordance with job requirements
5. Install Cable closure and support (aerial and underground)	5.1. Cable are placed inside the cable cover and properly attached and closed in accordance with the product specification. 5.2. Problems encountered are reported as per standard operating procedures (SOP). 5.3. Flash testing of completed closure according to job requirements and SOP to prevent water and moisture entry. 5.4. Spliced cable are attached to messenger wire/pole or cable rack for support in line with job requirements and product specifications
6. Wrap up job	6.1. Tools, equipment and materials are gathered and stored back to the service vehicle 6.2. Waste materials are removed from work place and disposed off in accordance with government regulations and environmental health & safety requirements 6.3. Changes made are restored to the work area during installation, splicing and re-splicing for acceptance as job requirements and procedure.

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Tools, equipment and materials and PPE	May include but not limited to: **Tools and Equipment:** 1.1 hammers 1.2 aerial handline 1.3 extension ladders (24 ft. and 20 ft. length) 1.4 adjustable wrench 1.5 fixing brackets/clamps 1.6 cable tensioner/rachet 1.7 come-a-long / guy grip 1.8 polyethylene knife 1.9 wire/lashing wire 1.10 cable puncher 1.11 tape linen/steel tape 1.12 height measuring stick/pole stick for clearances. **Tools for fiber-optics:** 1.13 Fiber cleaver 1.14 Buffer Tube Stripper 1.15 Cable slitter 1.16 Fiber stripper 1.17 Kevlar cutter 1.18 Alcohol dispenser 1.19 Tissue paper/cotton buds 1.20 Alcohol 99.9% Isopropyl 1.21 Diagonal side cutter 1.22 Bolt cutter 1.23 Safety goggles 1.24 NT cutter 1.25 Messenger Grip M118 **Materials:** 1.26 cable clip 1.27 grounding wire 1.28 lashing wire 1.29 lashing wire clamps 1.30 cable closure 1.31 cable support 1.32 cable spacer 1.33 adhesive tape 1.34 strand clamps 1.35 cable roller 1.36 standard rope 1.37 tie wrap 1.38 cable-loop form / X-frame 1.39 ground/guying insulator	1.40 thimble eye nut 1.41 sets of washer, bolts and nuts, machine bolts 1.42 guying fixtures 1.43 conduit pipes 1.44 cable tag 1.45 pole tag 1.46 braces 1.47 color coded marked tape 1.48 spiral sleeve **Materials for Fiber-optics:** 1.49 Fiber Optic Cable 12C 1.50 Optical closure 1.51 X-Frame Fiber Management 1.52 Patch cord 1.53 Pigtail 1.54 Optical Adapter 1.55 Preformed Wire ¼ 1.56 Protection Sleeves 1.57 Optical Distribution Frame (Patch Panel) 1.58 3-bolt suspension clamp 1.59 Pole clamp 1.60 Mechanical connector **Equipment:** 1.61 lashing machine 1.62 tensioning machine 1.63 cable trailer 1.64 lineman's truck 1.65 Fusion machine 1.66 OTDR 1.67 Power Meter 1.68 Fiber scope 1.69 Mechanical splicing kit **PPE:** 1.70 body belt & strap 1.71 hard hat/ helmet 1.72 set gloves 1.73 goggles 1.74 safety shoes 1.75 tool pouch 1.76 safety cones/traffic safety devices

2. Support structure	2.1 Electric/Telephone pole 2.2 Guy wire 2.3 Pole dressing
3. Obstructions	3.1 Trees 3.2 Structures such as arcs, billboards, etc. 3.3 Parts of buildings and houses such as roof extensions/overhangs 3.4 Traffic lights, street lights, etc. 3.5 Power lines
4. Suitable methods for removing obstructions	4.1 Trimming of tree branches 4.2 Installation of ten-pin alley arm 4.3 Installation of high-tension insulation materials

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1. Spliced and joined fiber strands 1.2. Organized fiber optic strands 1.3. Laid out and installed fiber-optic cables aerial and underground 1.4. Installed closure and support for aerial and underground
2. Required knowledge and attitude	2.1 Safety Practices 1.1.1 Work safety requirements 1.1.2 Proper use of tools and equipment 2.2 Materials, Tools and Equipment: Uses and Specifications 2.2.1 Identification of appropriate tools, equipment; and devices and proper usage 2.3 Theory and Practices 2.1.1 Fiber Optic Basics 2.1.2 Fiber optic cable splicing and joining 2.1.3 Cable Map reading and identification of OSP Standards symbols and diagrams 2.1.4 Handling of fiber-optic cables 2.1.5 Installation of cable closure and support 2.4 Government regulations and environmental health & safety requirements 2.5 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)
3. Required skills	3.1. Work efficiently and systematically 3.2. Observing safety precautions 3.3. STP in pole climbing & proper handling of extension ladder 3.4. Proper handling, use and maintenance of tools and equipment. 3.5. Proper handling of fiber-optic cables 3.6. Communicating effectively 3.7. Interpreting plans and symbols
4. Resource implications	The following resources should be available: 4.1. Tools, equipment, materials and PPE (see range of variables) 4.2. Work area with pole/s installed or manhole
5. Method of assessment	5.1. Direct observation/demonstration with oral questioning 5.2. Written test
6. Context of assessment	6.1. Competency maybe assessed in the workplace or in a simulated workplace setting 6.2. Assessment shall be undertaken individually and direct supervision

UNIT OF COMPETENCY : **PERFORM OPTICAL TESTING AND REPAIR**

UNIT CODE : ICT724612

UNIT DESCRIPTOR : This unit covers the knowledge, skills and attitudes required to perform optical testing and repair of spliced fibers. This unit focuses in testing fiber optics using optical time domain reflectometer (OTDR).

ELEMENT	PERFORMANCE CRITERIA ***Bold & italicized*** fonts are elaborated in the range of variables
1. Prepare for optical fiber testing and repair	1.1 Documentation are required and interpreted in accordance with enterprise procedures 1.2 Necessary ***tools, equipment, materials and personal protective equipment (PPE)*** are identified and prepared in line with job requirements. 1.3 Fiber strands identification and preparation is performed in accordance with job requirements and assignments.
2. Test and repair fiber strands	2.1 Occupational health & safety (OH&S) policies and procedures are followed based on safety requirements. 2.2 Identification of optical ***cable faults and error*** is performed in line with OTDR manual. 2.3 Localization of optical cable faults are performed in accordance to standard industry practices 2.4 Faulty fiber optic strands are re-spliced in accordance with established procedures 2.5 Problems encountered are reported as per standard operating procedures (SOP). 2.6 Testing is properly documented according to job requirements and SOP.
3. Wrap up job	3.1 Tools, equipment and materials are gathered and stored back to the service vehicle 3.2 Waste materials are removed from work place and disposed off in accordance with environmental health & safety requirements.

RANGE OF VARIABLES

VARIABLE	RANGE	
1. Tools, equipment, materials and PPE	May include but not limited to: **Tools and Equipment:** 1.1 hammers 1.2 aerial handline 1.3 extension ladders (24 ft. and 20 ft. length) 1.4 adjustable wrench 1.5 fixing brackets/clamps 1.6 cable tensioner/rachet 1.7 come-a-long / guy grip 1.8 polyethylene knife 1.9 wire/lashing wire 1.10 cable puncher 1.11 tape linen/steel tape 1.12 height measuring stick/ pole stick for clearances. **Tools for fiber-optics:** 1.13 Fiber cleaver 1.14 Buffer Tube Stripper 1.15 Cable slitter 1.16 Fiber stripper 1.17 Kevlar cutter 1.18 Alcohol dispenser 1.19 Tissue paper/cotton buds 1.20 Alcohol 99.9% Isopropyl 1.21 Diagonal side cutter 1.22 Bolt cutter 1.23 Safety goggles 1.24 NT cutter 1.25 Messenger Grip M118 **Materials:** 1.26 cable clip 1.27 grounding wire 1.28 lashing wire 1.29 lashing wire clamps 1.30 cable closure 1.31 cable support 1.32 cable spacer 1.33 adhesive tape 1.34 strand clamp 1.35 cable roller 1.36 standard rope 1.37 tie wrap 1.38 cable-loop form / X-frame 1.39 ground/guying insulator	1.40 thimble eye nut 1.41 sets of washer, bolts and nuts, machine bolts 1.42 guying fixtures 1.43 conduit pipes 1.44 cable tag 1.45 pole tag 1.46 braces 1.47 color coded marked tape 1.48 spiral sleeve **Materials for Fiber-optics:** 1.49 Fiber Optic Cable 12C 1.50 Optical closure 1.51 X-Frame Fiber Management 1.52 Patch cord 1.53 Pigtail 1.54 Optical Adapter 1.55 Preformed Wire ¼ 1.56 Protection Sleeves 1.57 Optical Distribution Frame (Patch Panel) 1.58 3-bolt suspension clamp 1.59 Pole clamp 1.60 Mechanical connector **Equipment:** 1.61 lashing machine 1.62 tensioning machine 1.63 cable trailer 1.64 lineman's truck 1.65 Fusion machine 1.66 OTDR 1.67 Power Meter 1.68 Fiber scope 1.69 Mechanical splicing kit **PPE:** 1.70 body belt & strap 1.71 hard hat/ helmet 1.72 set gloves 1.73 goggles 1.74 safety shoes 1.75 tool pouch 1.76 safety cones/traffic safety devices
2. cable faults	2.1 open 2.2 high attenuation 2.3 transposed	

EVIDENCE GUIDE

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Identified fiber strands (color coding) 1.2 Checked quality of fiber optic joints 1.3 Repaired fiber optic cable faults
2. Required knowledge and attitude	2.1 Safety Practices 2.1.1 Work safety requirements 2.1.2 Proper handling and use of tools and equipment 2.2 Materials, Tools and Equipment: Uses and Specifications 2.2.1 Identification of appropriate tools, equipment and proper usage 2.3 Theory and Practices 2.3.1 Fiber Optic Basics 2.3.2 Fiber Optic cable testing 2.3.3 Operation of OTDR 2.3.4 Fiber optic cable faults 2.4 Government regulations and environmental health & safety requirements 2.5 Desirable work values and attitudes (cost conscious, safety conscious, quality conscious, etc.)
3. Required skills	3.1 Work efficiently and systematically 3.2 Observing safety precautions 3.3 Fiber optic splicing 3.4 Fiber optic testing 3.5 Proper handling of tools, equipment and proper maintenance. 3.6 Communicating effectively
4. Resource implications	The following resources must be available: 4.1 Tools and test instruments and PPE (see range of variables) 4.2 Work area with OSP fiber optic cable network
5. Method of assessment	5.1 Direct observation/ oral questioning /written test 5.2 Written test
6. Context of assessment	6.1 Competency may be assessed in the workplace or in a simulated workplace setting 6.2 Assessment shall be undertaken either individually and direct supervision

SECTION 3 TRAINING STANDARDS

3.1 CURRICULUM DESIGN

Course Title: Telecom OSP Installation (Fiber Optic Cable) NC II

Nominal Training Duration: **1**6 hrs – Basic Competencies
16 hrs – Common Competencies
288 hrs – Core Competencies
104 hrs in-school **+**
184 hrs Supervised-Industry Training (SIT) in actual work environment
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320 hrs – Total training duration

Course Description:

This course is designed to develop & enhance the knowledge, skills, & attitudes of a Fiber Optic Cable Technician, in accordance with industry standards. It covers the basic and common competencies in addition to the core competencies such as installing and splicing/joining aerial/underground fiber optic cables as well as performing optical testing and repair thru re-splicing/joining and testing using optical time domain reflectometer (OTDR).

BASIC COMPETENCIES
16 hrs

Unit of Competency	Learning Outcome	Training Methodology	Institutional Assessment Approach
1. Participate in Workplace Communication	1.1 Obtain and convey workplace information 1.2 Complete relevant work-related document 1.3 Participate in workplace meeting and discussion	• Group discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
2. Work in a Team Environment	2.1 Describe and identify team role and responsibility in a team 2.2 Describe work as a team member	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning

3. Practice Career Professionalism	3.1 Integrate personal objectives with organizational goals. 3.2 Set and meet work priorities. 3.3 Maintain professional growth and development.	• Discussion • Interaction	• Demonstration • Observation • Interviews/ questioning
4. Practice Occupational Health and Safety Procedures	4.1 Identify hazards and risks. 4.2 Evaluate hazards and risks. 4.3 Control hazards and risks. 4.4 Maintain occupational health and safety awareness.	• Discussion • Plant tour • Symposium	• Observation • Interview

COMMON COMPETENCIES

16 hrs

Unit of Competency	Learning Outcomes	Training Methodology	Institutional Assessment Approach
1. Apply Quality Standards	1.1 Asses quality of received materials 1.2 Assess own work 1.3 Engage in quality improvement	▪ Field trip ▪ Symposium ▪ Film showing ▪ Simulation ▪ On the job training	▪ Demonstration & questioning ▪ Observation & questioning ▪ Third party report
2. Operate a Personal Computer	2.1 Start and shutdown computer 2.2 Work with files and folders 2.3 Arrange and customize desktop display 2.4 Utilize OS bundled application	• Modular • Film showing • Computer based training (e-learning) • Project method • On the job training	• Demonstration & questioning • Observation & questioning • Third party report • Assessment of output product • Portfolio • Computer-based assessment

CORE COMPETENCIES

320 hrs (104 hrs in-school + 184 hrs. SIT*)

Unit of Competency	Learning Outcomes	Training Methodology	Institutional Assessment Approach
1. Install and splice/ join aerial/under-ground fiber optic cable	1.1 Prepare for fiber optic cable layout and installation 1.2 Prepare fiber optic cable for splicing and joining 1.3 Splice/Join fibers and install protection sleeves using fusion machine 1.4 Splice/Join fibers and install protection sleeves using mechanical method 1.5 Install cable closure and support (aerial and underground) 1.6 Wrap up job	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice / Simulation	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test
2. Perform optical testing and repair	2.1 Prepare for optical fiber testing and repair 2.2 Test and repair fiber strands 2.3 Wrap up job	▪ Lecture ▪ Discussion ▪ Demonstration ▪ Viewing multimedia ▪ Hands on practice/ Simulation	▪ Observation in workplace ▪ Demonstration ▪ Oral questioning ▪ Written test

*Note: Supervised-Industry Training (SIT) in actual workplace environment is included in the nominal number of training hours.

3.2 TRAINING DELIVERY

The delivery of training should adhere to the design of the curriculum. Delivery should be guided by the 10 basic principles of the competency-based TVET.

- The training is based on curriculum developed from the competency standards;
- Learning is modular in its structure;
- Training delivery is individualized and self-paced;
- Training is based on work that must be performed;
- Training materials are directly related to the competency standards and the curriculum modules;
- Assessment is based in the collection of evidence of the performance of work to the industry required standard;
- Training is based both on and off-the-job components;
- Allows for recognition of prior learning (RPL) or current competencies;
- Training allows for multiple entry and exit; and
- Approved training programs are nationally accredited.

The competency-based TVET system recognizes various types of delivery modes, both on and off-the-job as long as the learning is driven by the competency standards specified by the industry. The following training modalities may be adopted when designing training programs:

- The dualized mode of training delivery is preferred and recommended. Thus programs would contain both in-school and in-industry training or fieldwork components. Details can be referred to the Dual Training System (DTS) Implementing Rules and Regulations.
- Modular/self-paced learning is a competency-based training modality wherein the trainee is allowed to progress at his own pace. The trainer only facilitates the training delivery.
- Peer teaching/mentoring is a training modality wherein fast learners are given the opportunity to assist the slow learners.
- Supervised industry training or on-the-job training is an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire a specific competencies prescribed in the training regulations.
- Distance learning is a formal education process in which majority of the instruction occurs when the students and instructors are not in the same place. Distance learning may employ correspondence study, or audio, video or computer technologies.

3.3 TRAINEE ENTRY REQUIREMENTS

The trainees who wish to enter the course should possess the following requirements:

- Can communicate in oral and written language
- Can perform basic mathematical computations
- Must be physically and mentally fit to undergo training

This list does not include specific institutional requirements such as educational attainment, appropriate work experience and others that may be required from the trainees by the school or training center delivering the TVET program.

3.4 LIST OF TOOLS, EQUIPMENT AND MATERIALS (Institution-based)

Recommended list of tools, equipment and materials required for a class size of 15 trainees for Fiber Optic Cable Splicing and Installation:

TOOLS		EQUIPMENT		MATERIALS	
Qty.	Description	Qty.	Description	Qty.	Description
5	set of wrenches	1	cable roller block (single or multiple cable)*	3	set of suspension clamps
5	Set of screwdrivers	1	Service vehicle*	3	pole extension arm
5	torque wrench	3	Power Meter	5	cable-loop form / X-frame
5	F-open wrench	3	OTDR	5	ground/guying insulator
1	bolt cutter	3	Visual Fault Locator	5	pole clamps of various sizes
5	cable cutter/slitter			3	guy protector
5	NT cutter / blade cutter	5	Kevlar cutter	3	set of guy grips
5	Polyethylene knife	5	Alcohol dispenser	5	cable clip
5	Cable prep tool	3	Laser Source	5	lag screws
5	set of hammer	3	Fusion Machine	5	sets of washer, bolts and nuts, machine bolts
5	set of pliers	3	Mechanical Splicing Kit		
3	Boring tools			1rl	stainless lashing wire
5	hacksaw			10	lashing wire clamps
5	cable tensioner/ rachet/ coping jack	1	**PPE:**	5	screw hooks
5	Fiber optic Stripper	5	body belt & strap		
1	cable guide	5	hard hat/ helmet		
5	aerial hand-line	5	set gloves		
5	Buffer tube cutter	5	safety shoes		
5	tape linen/steel tape	5	Safety goggles		
5	multiple cable puller*	5	tool pouch/holster		
1	come-a-long/guy grip*	3	safety cones/other collapsible signs		
5	Manhole ladder	5	rubber boots		

TOOLS		Materials for Fiber-optics:		MATERIALS	
Qty.	Description	Qty.	Description	Qty.	Description
FIBER OPTICS					
1	fixing brackets/ clamps	5	Optical closure kit	5	bonding clamp
				5	anchor and grounding rods
1	lay-up stick / cable lifter	5	Patchcord	60	cable spacer
1	drill/electric drill (w/ bits of various sizes)	5	Pigtail	1 rl	grounding wire (gauge 12, stranded)
5	adjustable wrench			5 rls	adhesive tape
5	extension ladders (24 ft. length)	100	Protection Sleeves	60 pcs	cable tie 6”
1	bender board/cable form	10	Tissue paper		
1	messenger wire raising tool	5 bot	Alcohol 99.9%		
		50m	Fiber optic cable 12C		
		100 pcs	Mechanical Connector		

* Optional: Only when required by the hiring institution

3.5 TRAINING FACILITIES

Recommended space requirements for the various teaching/learning areas are as follows:

TEACHING/LEARNING AREAS	SIZE IN METERS (M)	AREA IN SQ. M	QTY	TOTAL AREA IN SQ. M
Lecture Area	6 x 5	30	1	30
Laboratory Area	10x10	100	1	100
Learning Resource Area	4 x 5	20	1	20
Tool Room/Storage Area	4 x 4	16	1	16
Wash ,Toilet & Locker Room	2 x 5	10	2	20
Total				116
Facilities / Equipment / Circulation*				35
Total Area				**151**

Area requirement is equivalent to 30% of the total teaching/learning areas

3.6 TRAINERS QUALIFICATIONS

- Must be a holder of TESDA Telecom Installation (Fiber Optic Cable) NC II or equivalent
- Must be a holder of National TVET Trainers Certificate
- * Must have at least 5-years relevant industry experience.
- Must be physically & mentally fit.

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3.7 ASSESSMENT

Institutional assessment is undertaken by trainees to determine their achievement of units of competency. A certificate of achievement is issued for each unit of competency.

As a matter of policy, graduates of programs registered with TESDA under these training regulations are required to undergo mandatory national competency assessment upon completion of the program.

SECTION 4: NATIONAL ASSESSMENT AND CERTIFICATION ARRANGEMENTS

4.1 To attain the National Qualification of **Telecom OSP Installation (Fiber Optic Cable) NC II**, the candidate must demonstrate competency in all the units listed in Section 1. Successful candidates shall be awarded a **National Certificate II** signed by the TESDA Director General.

4.2 The qualification of **Telecom OSP Installation (Fiber Optic Cable) NC II** may be attained through demonstration of competence through a single comprehensive project-type assessment covering all required units of competency of the qualification.

4.3 Assessment shall focus on the core units of competency. The basic and common units shall be integrated or assessed concurrently with the core units.

4.4 The following are qualified to apply for assessment and certification:

4.4.1. Graduate of formal, non-formal, and informal, including enterprise-based, training programs.

4.4.2. Experienced workers (wage employed or self employed)

4.5 The guidelines on assessment and certification are discussed in detail in the "Procedures Manual on Assessment and Certification" and "Guidelines on the Implementation of the Philippine TVET Qualification and Certification System (PTQCS)".

DEFINITION OF TERMS

GENERAL

1) **Certification -** is the process of verifying and validating the competencies of a person through assessment

2) **Certificate of Competency (COC)** – is a certification issued to individuals who pass the assessment for a single unit or cluster of units of competency

3) **Common Competencies** - are the skills and knowledge needed by all people working in a particular industry

4) **Competency** - is the possession and application of knowledge, skills and attitudes to perform work activities to the standard expected in the workplace

5) **Competency Assessment -** is the process of collecting evidence and making judgments on whether competency has been achieved

6) **Competency Standard (CS)** - is the industry-determined specification of competencies required for effective work performance

7) **Context of Assessment** - refers to the place where assessment is to be conducted or carried out

8) **Core Competencies -** are the specific skills and knowledge needed in a particular area of work - industry sector/occupation/job role

9) **Critical aspects of competency -** refers to the evidence that is essential for successful performance of the unit of competency

10) **Elective Competencies -** are the additional skills and knowledge required by the individual or enterprise for work

11) **Elements** - are the building blocks of a unit of competency. They describe in outcome terms the functions that a person performs in the workplace.

12) **Evidence Guide** - is a component of the unit of competency that defines or identifies the evidences required to determine the competence of the individual. It provides information on critical aspects of competency, underpinning knowledge, underpinning skills, resource implications, assessment method and context of assessment

13) **Level -** refers to the category of skills and knowledge required to do a job

14) **Method of Assessment** - refers to the ways of collecting evidence and when, evidence should be collected

15) **National Certificate (NC)** – is a certification issued to individuals who achieve all the required units of competency for a national qualification defined under the Training Regulations. NCs are aligned to specific levels within the PTQF

16) **Performance Criteria** - are evaluative statements that specify what is to be assessed and the required level of performance

17) **Qualification** - is a cluster of units of competencies that meets job roles and is significant in the workplace. It is also a certification awarded to a person on successful completion of a course in recognition of having demonstrated competencies in an industry sector

18) **Range of Variables** - describes the circumstances or context in which the work is to be performed

19) **Recognition of Prior Learning (RPL)** – is the acknowledgement of an individual's skills, knowledge and attitudes gained from life and work experiences outside registered training programs

20) **Resource Implications -** refers to the resources needed for the successful performance of the work activity described in the unit of competency. It includes work environment and conditions, materials, tools and equipment

21) **Basic Competencies -** are the skills and knowledge that everyone needs for work

22) **Training Regulations (TR)** – refers to the document promulgated and issued by TESDA consisting of competency standards, national qualifications and training guidelines for specific sectors/occupations. The TR serves as basis for establishment of qualification and certification under the PTQF. It also serves as guide for development of competency-based curricula and instructional materials including registration of TVET programs offered by TVET providers

23) **Required Knowledge -** refers to the competency that involves in applying knowledge to perform work activities. It includes specific knowledge that is essential to the performance of the competency

24) **Required Skills** - refers to the list of the skills needed to achieve the elements and performance criteria in the unit of competency. It includes generic and industry specific skills

25) **Unit of Competency** – is a component of the competency standards stating a specific key function or role in a particular job or occupation; it is the smallest component of achievement that can be assessed and certified under the PTQF

SECTOR SPECIFIC

1. **Buffer tube cutter** – used to cut and separates buffer from FO strands

2. **Cable** – is used for the distribution to provide communication.

3. **Cable Slitter** - tool used to slit or open FO cable

4. **Cleaver** – use to cut fiber strands

5. **Crimping** – proper preparation of cable, appropriate type of connectors.

6. **Drop cable** – a small-diameter cable leading from the tap-off in the cable plant to the subscribers' TV receivers. A drop cable used by the CATV system should be either RG-59 or RG-6, 75-ohms coaxial cable (foam).

7. **Environment -** The area surrounding the work site which can be directly or indirectly affected by occurrences at the work site. It includes the atmosphere, soils, drains, underground water tables, and the ecosystem. Protection of the environment would require the proper disposal of waste materials, restriction of burning off, the correct handling of toxic substances, the containment of CFCs and the like.

8. **Established procedures -** Formal arrangements of an organization, enterprise or statutory authority of how work is to be done.

9. **Fiber optics** - a technology that transmits light rather than electricity through a fiber made of thin, flexible glass or plastic. Fiber optic cables are replacing older copper cables for most telecommunications applications.

10. **Fiber optic cable** - A group of individual optical fibers bundled together. Fiber optic cables have higher bandwidth than standard copper cable.

11. **Fiber Optic Stripper** - used to strip fiber coating .

12. **Hazardous materials -** Flammable gases and vapors and combustible dusts.

13. **Headend** – is the main site at which all the signals from the various program sources are received, assembled, processed and combined for transmission through the distribution network. It is the originating point for all services carried on a cable television system

14. **Mechanical Connector**- connectors used to join fiber through mechanical crimping method.

15. **Modifications -** To make changes to the physical parameters or operational function of a device, component or piece of equipment or apparatus.

16. **Notification (notified) -** Can include verbal, written, electronic or recorded information at completion of work which may be required to be completed in accordance with established procedures.

17. **OH&S policies and procedures -** Arrangements of an organization or enterprise to meet their legal and ethical obligations of ensuring the workplace is safe and without risk to health.

18. **Outside Plant (OSP)** – is a part of telephone network system that provides for the distribution of voice and data channels to the paying subscribers

19. **OTDR** – Optical Time Domain Reflectometer used to test, locate fiber optic faults

20. **Requirements -** That to which equipment and procedures and their outcomes must conform and includes statutory obligations and regulations and standards called-up by legislation or regulations.

21. **Servicing -** Undertaking routine inspection, repair and maintenance of circuits, systems or apparatus. Maintaining, fault finding and repair of equipment, plant and machinery.

22. **Splicing** - the act or process of creating a physical connection between two separate pieces of optical fiber. Optical fibers should only be spliced by a technician who possesses the required skills and interconnection technology.

23. **Standards -** Technical documents, which set out specifications and other criteria for equipment, materials, and methods to ensure them consistently, perform as intended.

24. **Subscriber** – a person who pays a fee for voice and data services.

25. **Subscriber terminal** – the telephone network system terminal to which a subscriber's equipment is connected.

26. **Supervised Industry Training** – similar to on-the-job training – an approach in training designed to enhance the knowledge and skills of the trainee through actual experience in the workplace to acquire specific competencies prescribed in the training regulations.

27. **System -** A group or combination of inter-related, inter-dependent or interlocking elements forming a collective entity. Includes circuits, apparatus, equipment and the like.

28. **Telecom** – refers to Telecommunication. It is the process of transmitting information to a receiver by means of electric current or pulses of light.

29. **Termination -** The act by means of which an electrical connection to an apparatus is established; specifically a prepared joint or connection between a cable, cord or conductor and a point in an electrical circuit such as a terminal or connection point. Such terminations include soldering, crimping, clamping, wire wrapping, insulation piercing/compression.

30. **Testing devices -** Devices and instruments used to ensure safety requirements and operational functions are met, and to diagnose faults in apparatus, circuits or systems.

31. **Visual Fault Locator** – used to locate/trace fibers fault(open fault)

ANNEX A - ICT COMPETENCY MAP

TELECOM OSP INSTALLATION (FIBER OPTIC CABLE) NC II

BASIC COMPETENCIES

Receive & Respond to Workplace Communication	Work with Others	Demonstrate work values	Practice basic housekeeping procedures	**Participate in Workplace Communication**
Work in a Team Environment	**Practice career professionalism**	**Practice occupational health & safety procedures**	Lead Workplace Communication	Lead Small Team
Develop and practice negotiation skills	Solve Problems Related to Work Activities	Use mathematical concepts and techniques	Use relevant technologies	Utilize Specialist Communication Skills
Develop Team and Individuals	Apply Problem Solving Techniques in the Workplace	Collect, analyze and organize information	Plan and Organize Work	Promote environmental protection

COMMON COMPETENCIES

Use Hand Tools	Perform Mensuration and Calculation	Prepare and Interpret Technical Drawing	**Apply Quality Standards**	**Operate a Personal Computer**
Terminate & Connect Electrical Wiring and Electronic Circuits	Perform Computer Operations			

CORE COMPETENCIES

Render Service Excellence to Customers	Install Mast and Accessories	Install and Lay Out Cables	Install and Configure CPE
Install Pole Hardware and Accessories	Lay Out and Install Fiber-Optic/ Coaxial Cables	Install Active and Passive Devices and Accessories	Install Subscriber Drop Lines and CPE
Install Cables and Devices for MDU	Operate CATV system	Implement preventive maintenance of CATV system	Perform CATV system troubleshooting and repair
Commission CATV system	Perform CATV outside plant expansion works	Install pole hardware, cable terminal, line wire and accessories	Perform main cable installation
Splice/Joint cable terminal to main aerial and/or underground copper cable splice	Perform basic troubleshooting and correction of cable fault and error	Install POTS subscriber line	Install Digital Subscriber Line (DSL)
Install and Splice Aerial/Underground Fiber Optic Cables	**Perform optical testing and repair**		

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- **THE MANAGEMENT AND STAFF OF TESDA SECRETARIAT**

  - QUALIFICATIONS AND STANDARDS OFFICE (QSO)

    - Competency Standards Division (CSD)
    - Curriculum and Training Aids Division (CTAD)