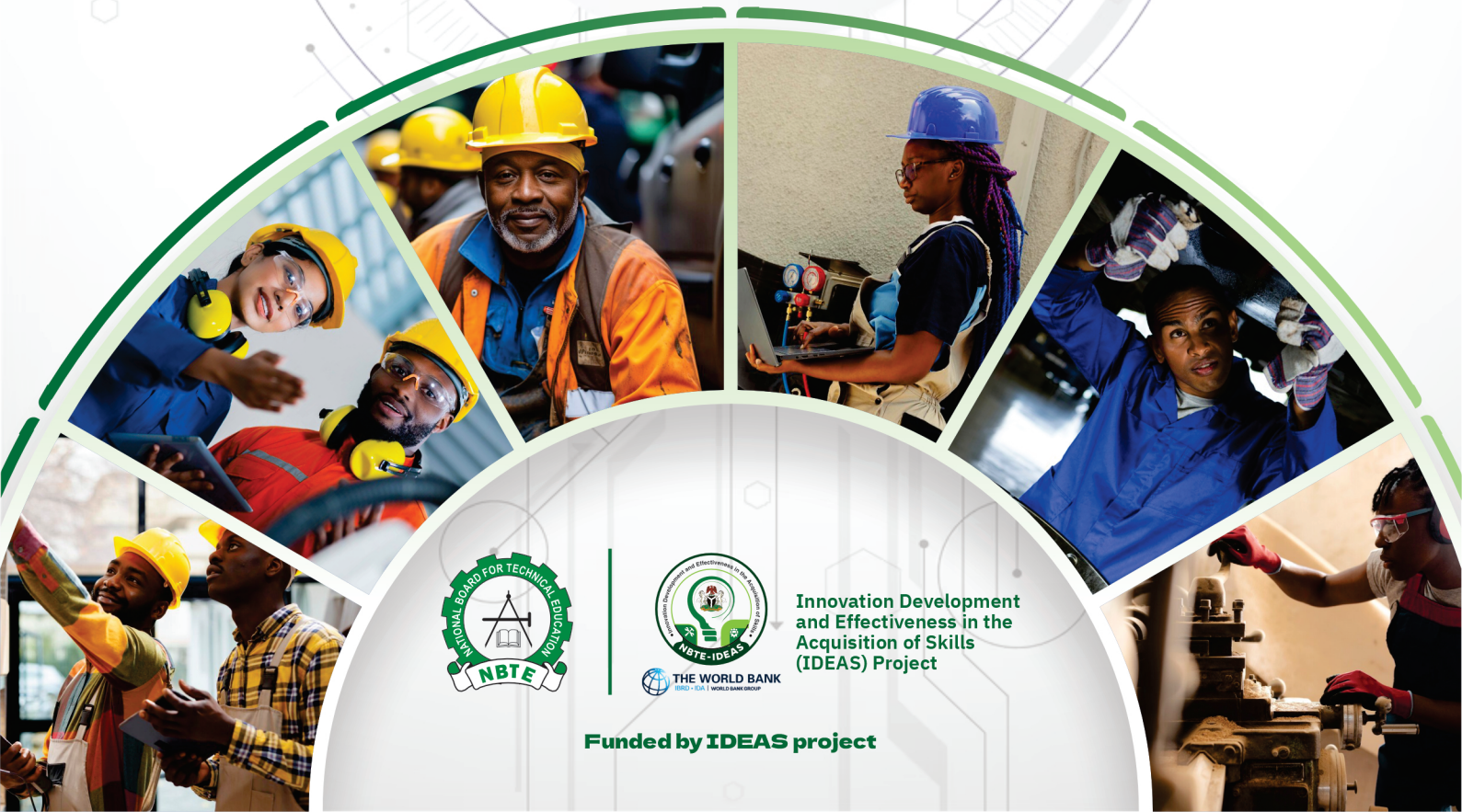
FEDERAL MINISTRY OF EDUCATION

National Skills Qualifications FOR CCTV INSTALLATION AND MAINTENANCE

LEVEL 1, 2 & 3

February, 2025



NATIONAL BOARD FOR TECHNICAL EDUCATION
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Innovation Development and Effectiveness in the Acquisition of Skills
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Innovation Development and Effectiveness in the Acquisition of Skills (IDEAS) Project

Funded by IDEAS project

National Board for Technical Education
Plot B, Bida Road, P.M.B. 2239, Kaduna, Nigeria

NATIONAL SKILLS QUALIFICATION

CCTV INSTALLATION AND MAINTENANCE

LEVEL 1-3

FEBRUARY,2025

Contents

NATIONAL SKILLS QUALIFICATION

CCTV INSTALLATION AND MAINTENANCE

LEVEL 1

FEBRUARY, 2025

NATIONAL SKILLS QUALIFICATION

NSQ LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification is designed to equip individuals with the essential knowledge and skills required to assist in the installation, configuration, maintenance, and troubleshooting of CCTV systems.

QUALIFICATION OBJECTIVES

Upon completion of this qualification, learners should be able to:

i. Observe health and safety protocols in the workplace.
ii. Communicate effectively in a professional environment.
iii. Collaborate efficiently with team members.
iv. Identify CCTV systems, their components, and operational principles.
v. Utilize CCTV installation tools, techniques, and connection methods.
vi. Diagnose and identify common system faults.
vii. Assist in the installation, configuration, maintenance, and troubleshooting of CCTV systems.
viii. Perform video playback, export footage to a USB drive, and initialize the hard drive.

Mandatory Units

Unit No	Reference Number	NOS Title	Credit Value	Guided Learning Hours	Remark
Unit 001	ICT/CCTV/001/L1	Occupational health and safety (CCTV installation & maintenance)	2	20	
Unit 002	ICT/CCTV/002/L1	Teamwork (CCTV installation)	2	20	
Unit 003	ICT/CCTV/003/L1	Communication (CCTV installation & maintenance)	2	20	
Unit 004	ICT/CCTV/004/L1	CCTV Components And Terminologies	3	30	
Unit 005	ICT/CCTV/005/L1	Fundamentals of CCTV Installation	3	30	
Unit 006	ICT/CCTV/006/L1	Fundamentals of CCTV Networking	3	30	
Unit 007	ICT/CCTV/007/L1	Storage Management	3	30	
		TOTAL	18	180	

NOTE:

Mandatory Units

Learners must complete all mandatory units to gain a solid foundation in CCTV installation and maintenance. These units provide essential knowledge and skills necessary for trainees. The credit hours for mandatory units are fixed and must be fulfilled to obtain the qualification.

Total Guided Learning Hours: 180

LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

Unit 1: Occupational Health and Safety (CCTV Installation & Maintenance)

Unit Reference Number: ICT/CCTV/001/L1
NSQ Level: 1
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose: This unit equips learners with the knowledge and skills to identify and mitigate workplace hazards, implement safety protocols, and respond effectively to emergencies during CCTV installation and maintenance tasks.

Unit assessment requirements/ evidence requirements:
Assessments must be conducted in a real workplace environment where learning and human development activities take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 01: OCCUPATIONAL HEALTH AND SAFETY (CCTV INSTALLATION)

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type				Evidence Ref. Page No.			
LO 1: Understand Workplace Health and Safety Regulations	1.1	Explain safe work practices and instructions in the work environment.								
	1.2	Identify safety signs and symbols.								
	1.3	Describe the process for reporting health and safety risks and incidents.								
LO 2: Know Workplace Hazards and Implement Control Measures	2.1	Identify common risks in the work environment, e.g., electrical safety, fall arrest systems, etc.								
	2.2	Assess the severity and likelihood of potential hazards in CCTV installation tasks, including handling tools, wiring, and outdoor installations.								
	2.3	Apply appropriate control measures, such as safe ladder usage, proper cable routing, electrical safety protocols, and the use of personal protective equipment (PPE).								
LO 3: Apply Emergency Procedures and First Aid in the Workplace	3.1	Explain the correct procedures for responding to workplace emergencies, such as electrical shocks, falls, or fire hazards during CCTV installation.								
	3.2	Perform basic first aid techniques, including treating minor injuries, electrical burns, and using first aid equipment.								
	3.3	Communicate effectively with emergency services and other relevant personnel during a workplace incident.								

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

Unit 2: TEAMWORK (CCTV INSTALLATION AND MAINTENANCE)

Unit Reference Number: ICT/CCTV/002/L1
NSQ Level: 1
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose: This unit aims to develop learners' ability to collaborate effectively within a CCTV installation and maintenance team. It promotes teamwork, problem-solving, decision-making, and positive relationships to ensure successful project completion.

Unit assessment requirements/ evidence requirements:

Assessments must be conducted in a real workplace environment where learning and human development activities take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 02: TEAMWORK **(CCTV INSTALLATION AND MAINTENANCE)**

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**				**Evidence Ref. Page No.**			
LO 1: Understand the Roles and Responsibilities within a Team	1.1	Define the term teamwork.								
	1.2	Describe the key responsibilities and contributions of each team member during CCTV installation and setup.								
	1.3	Demonstrate effective collaboration and a positive working relationship within the team.								
LO 2: Foster Positive Working Relationships within a Team	2.1	Describe techniques for effective interpersonal communication and conflict resolution in a CCTV installation team environment.								
	2.2	Actively listen to team members' contributions during the installation process.								
	2.3	Demonstrate inclusivity and collaboration among team members to ensure participation and engagement from all during installations and troubleshooting.								
LO 3: Contribute to Team Problem-Solving and Decision-Making	3.1	Identify common problems related to CCTV installation, such as wiring issues, camera alignment, or system setup.								
	3.2	Support the team in decision-making processes when challenges arise in installation or maintenance tasks.								
	3.3	Evaluate the effectiveness of team decisions regarding installation strategies and propose improvements where necessary.								

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

Unit 3: COMMUNICATION (CCTV INSTALLATION & MAINTENANCE)

Unit Reference Number: ICT/CCTV/003/L1
NSQ Level: 1
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose: This unit equips learners with essential communication skills to effectively convey technical information, use digital communication tools, and listen and respond appropriately in the context of CCTV installation and maintenance.

Unit assessment requirements/ evidence requirements:
Assessments must be conducted in a real workplace environment where learning and human development activities take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 03: COMMUNICATION (CCTV INSTALLATION AND MAINTENANCE)

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Communicate Technical Information Clearly and Accurately	1.1	Explain the term communication.									
	1.2	Identify various means of communication, such as signs, symbols, and charts.									
	1.3	Use appropriate communication methods based on the context, such as written reports, emails, or verbal presentations to clients or team members.									
LO 2: Utilize Digital Communication Tools Effectively	2.1	Use digital communication tools such as email, messaging platforms, and collaboration software (e.g., Slack, Teams) during CCTV installation projects.									
	2.2	Explain best practices for professional digital communication, including appropriate use of media and email etiquette.									
	2.3	Use collaborative tools to share and receive feedback on project updates, installation plans, and troubleshooting guides.									
LO 3: Respond Appropriately in a Professional Context	3.1	Demonstrate active listening skills during team discussions, client meetings, or site assessments for CCTV installation.									
	3.2	Respond to questions, concerns, and feedback clearly and effectively regarding installation procedures, system setup, or troubleshooting.									
	3.3	Respond clearly and effectively to questions, concerns, and feedback related to installation procedures, system setup, or troubleshooting.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

Unit 4: CCTV COMPONENTS AND TERMINOLOGIES

Unit Reference Number: ICT/CCTV/004/L1
NSQ Level: 1
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose: This unit provides learners with essential knowledge and skills related to CCTV systems, including camera types, hardware components, and key terminologies.

Unit assessment requirements/ evidence requirements:
Assessments must be conducted in a real workplace environment where learning and human development activities take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 04: CCTV COMPONENT AND TERMINOLOGIES

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: UNDERSTANDING CCTV CAMERA	1.1	Discuss CCTV systems.									
	1.2	State the importance of CCTV in security.									
	1.3	Explain the basic principles of CCTV.									
	1.4	Identify different applications of CCTV									
LO 2: UNDERSTAND TYPES OF CCTV CAMERA	2.1	Identify analog camera and its parts									
	2.2	Recognize the IP camera and its parts.									
	2.3	Identify wireless camera and its parts									
	2.4	Describe the use of a Pan Tilt Zoom (PTZ) camera.									
	2.5	Explain how infrared (IR) technology enhances low-light visibility.									
	2.6	Explain how the Color-Vu camera provides better night vision.									
LO 3: KNOW CCTV HARDWAR**E**	3.1	Explain the parts of a DVR (Digital Video Recorder).									
	3.2	Explain the parts of the NVR (Network Video Recorder).									
	3.3	Identify the use of a network switch in CCTV.									
	3.4	Identify installation accessories such as BNC connectors, video baluns, and power adapters.									
	3.5	Identify a central power switch.									
	3.6	Identify Power Over Ethernet (PoE) cameras.									
LO 4: OPERATE BASIC CCTV SYSTEMS	4.1	Connect a CCTV system to a DVR/NVR.									
	4.2	Install a hard drive safely in a DVR/NVR.									
	4.3	Explain how to activate a DVR/NVR									
	4.4	Describe the process of video playback									
	4.5	Explain how to export video footage.									
LO 5: KNOW TERMINOLOGY USED TO DESCRIBE CCTV CAMERAS	5.1	Identify common terminologies used in CCTV systems.									
	5.2	Explain key terminologies related to CCTV systems.									
	5.3	Apply CCTV terminologies correctly in practical scenarios.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

Unit 5: CCTV INSTALLATION FUNDAMENTALS

Unit Reference Number: ICT/CCTV/005/L1
NSQ Level: 1
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose: This unit provides trainees with essential knowledge of tools, accessories, and software required for installing and configuring CCTV systems.

Unit assessment requirements/ evidence requirements:

Assessments must be conducted in a real workplace environment where learning and human development activities take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 05: CCTV INSTALLATION FUNDAMENTALS

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: KNOW INSTALLATION TOOLS	1.1	Identify essential tools used for CCTV installation.									
	1.2	Explain how to test cable continuity using a multimeter.									
	1.3	Demonstrate the use of a measuring tape to determine cable run distances.									
Load 2: USE INSTALLATION ACCESSORIES	2.1	Identify various installation accessories used in CCTV setup.									
	2.2	Demonstrate the correct use of installation accessories.									
	2.3	Connect a BNC connector to a coaxial cable.									
	2.4	Connect a video balun to a twisted-pair cable (Cat-6).									
	2.5	Distinguish between a power adapter and a central power supply.									
LO 3: UNDERSTAND APPLICATION SOFTWARES USE IN CCTV	3.1	Identify software used to activate IP (Internet Protocol) cameras.									
	3.2	Explain the process of activating an IP camera.									
	3.3	Demonstrate how to download and install application software for wireless IP cameras.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

Unit 6: CCTV NETWORKING FUNDAMENTALS

Unit Reference Number: ICT/CCTV/006/L1
NSQ Level: 1
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose: This unit provides trainees with knowledge and skills in networking concepts for integrating CCTV systems, troubleshooting common network issues, and implementing security measures.

Unit assessment requirements/ evidence requirements:
Assessments must be conducted in a real workplace environment where learning and human development activities take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 06: CCTV NETWORKING FUNDAMENTALS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: UNDERSTAND NETWORK BASICS	1.1	Identify IP addresses assigned to CCTV cameras.									
	1.2	Explain the role of Power over Ethernet (PoE) in CCTV systems.									
	1.3	Recognize the function of a router in a CCTV network setup									
	1.4	Connect CCTV cameras to a router or network switch.									
LO 2: KNOW COMMON NETWORK ISSUES	2.1	Identify common causes of “no signal” errors (e.g., loose cables, incorrect IP configuration).									
	2.2	Describe the purpose of ping commands for testing network connectivity.									
	2.3	Explain how a factory reset can resolve configuration failures.									
LO 3: UNDERSTAND NETWORK SECURITY FEATURES	3.1	Identify the importance of strong passwords for securing CCTV cameras and NVRs..									
	3.2	Recognize encryption options (e.g., WPA2, WPA3) for securing wireless CCTV cameras.									
	3.3	Perform firmware updates to enhance network security.									

Learners Signature:	Date:
Assessors’ Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 1: CCTV INSTALLATION AND MAINTENANCE

Unit 7: STORAGE MANAGEMENT

Unit Reference Number: ICT/CCTV/007/L1
NSQ Level: 1
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose: This unit is designed to equip learners with knowledge and skills related to storage devices, backup strategies, and video footage management to ensure data retention and security.

Unit assessment requirements/ evidence requirements:

Assessment must be conducted in a real workplace environment where learning and human development activities take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 07: STORAGE MANAGEMENT

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: UNDERSTAND STORAGE BASICS	1.1	Identify factors affecting storage needs (e.g., resolution, retention period, and frame rate).									
	1.2	Recognize different types of storage devices (e.g., HDDs, SD cards).									
	1.3	Distinguish between cloud storage and local storage.									
LO 2: UNDERSTAND BACKUP PROCESSES	2.1	Describe how automatic backups protect CCTV footage.									
	2.2	Explain the importance of restoring lost data from backups.									
	2.3	Recognize the benefits of cloud backup for video storage.									
LO 3: KNOW HOW TO NAVIGATE VIDEO FOOTAGE	3.1	Use playback modes to locate recordings by date and time.									
	3.2	Export video clips to external storage devices (e.g., USB drives) following standard procedures.									
	3.3	Initialize an HDD for video storage in a DVR/NVR system.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

CCTV INSTALLATION AND MAINTENANCE

LEVEL 2

FEBRUARY, 2025

NATIONAL SKILLS QUALIFICATION

NSQ LEVEL - CCTV INSTALLATION AND MAINTENANCE

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification is designed to equip individuals with specialized knowledge and practical skills needed to install, configure, maintain, and troubleshoot CCTV systems.

QUALIFICATION OBJECTIVES

Upon completion of this qualification, learners should be able to:

I. Observe health and safety regulations in the workplace.
II. Communicate effectively in a professional work environment.
III. Collaborate efficiently with team members.
IV. Identify suitable camera placement locations, detect blind spots, and assess environmental factors to ensure optimal surveillance coverage.
V. Develop an installation plan, measure cable lengths, and prepare a bill of quantities to ensure resource efficiency and proper setup.
VI. Operate installation tools such as testers and termination devices to complete a structured cabling system.
VII. Configure CCTV systems, including adjusting camera angles, setting up motion detection zones, and enabling continuous recording on DVR/NVR systems for effective monitoring.
VIII. Organize cameras, cables, and connections to facilitate future maintenance and troubleshooting.

Mandatory Units

Unit No	Reference Number	NOS Title	Credit Value	Guided Learning Hours	Remark
Unit 001	ICT/CCTV /001/L2	Occupational health and safety (CCTV installation and maintenance)	2	20	Mandatory
Unit 002	ICT/CCTV /002/L2	Teamwork (CCTV installation)	2	20	Mandatory
Unit 003	ICT/CCTV /003/L2	Communication (CCTV installation and maintenance)	2	20	Mandatory
Unit 004	ICT/CCTV/004/L2	CCTV system installation and maintenance and configuration	4	40	Mandatory
Unit 005	ICT/CCTV/005/L2	Networking for CCTV systems	3	30	Mandatory
Unit 006	ICT/CCTV/006/L2	Storage management for CCTV systems	3	30	Mandatory
Unit 007	ICT/CCTV/007/L2	Advanced CCTV camera technologies	3	30	Mandatory
Unit 008	ICT/CCTV/008/L2	Maintenance and troubleshooting of CCTV systems	4	40	Mandatory
		TOTAL	23	230	

NOTE:

Mandatory Units

Learners must complete all mandatory units to gain a solid foundation in CCTV installation and maintenance. These units provide essential theoretical knowledge and hands-on skills required for professional work in the security and surveillance industry. The credit hours for mandatory units are fixed and must be completed to achieve the qualification.

Total Credit Hours from Mandatory Units: 230

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 1: OCCUPATIONAL HEALTH AND SAFETY (CCTV INSTALLATION & MAINTENANCE)

Unit Reference Number: ICT/CCTV/001/L2
NSQ Level: 2
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose: This unit equips learners with the knowledge and skills to mitigate workplace hazards, implement safety protocols, and respond effectively to emergencies during CCTV installation and maintenance tasks.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in a real workplace environment where learning and human development take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 01: OCCUPATIONAL HEALTH AND SAFETY (CCTV INSTALLATION)

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Understand Workplace Health and Safety Regulations	1.1	Explain key occupational health and safety (OHS) legislation and regulations relevant to CCTV installation and maintenance.									
	1.2	Identify the roles and responsibilities of individuals and organizations in maintaining a safe work environment.									
	1.3	Describe the process for reporting health and safety risks and incidents.									
LO 2: Know Workplace Hazards and Implement Control Measures	2.1	Identify common hazards in CCTV installation and maintenance work environments, such as working at heights, electrical risks, and cable management.									
	2.2	Assess the severity and likelihood of potential hazards in specific CCTV installation and maintenance tasks, including handling tools, wiring, and outdoor installations.									
	2.3	Implement appropriate control measures, such as safe ladder usage, proper cable routing, electrical safety protocols, and personal protective equipment (PPE).									
LO 3: Apply Emergency Procedures and First Aid in the Workplace	3.1	Demonstrate the correct procedure for responding to workplace emergencies, such as electrical shocks, falls, or fire hazards during CCTV installation and maintenance.									
	3.2	Perform basic first aid techniques, including treating minor injuries, electrical burns, and using first aid equipment.									
	3.3	Communicate effectively with emergency services and other relevant personnel during a workplace incident									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 2: TEAMWORK (CCTV INSTALLATION MAINTENANCE)

Unit Reference Number: ICT/CCTV/002/L2
NSQ Level: 2
Credit Value: 2
Guided Learning Hours: 20
Unit Purpose: This unit develops learners' ability to collaborate effectively within a CCTV installation and maintenance team, promoting positive relationships, problem-solving, and decision-making to ensure successful project completion.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in a real workplace environment.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 02: TEAMWORK (CCTV INSTALLATION AND MAINTENANCE)

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Understand the Roles and Responsibilities within a Team	3.1	Identify the different roles and functions within a CCTV installation and maintenance team (e.g., team leader, technician, safety officer).									
	3.2	Describe the key responsibilities and contributions of each team member during CCTV installation and maintenance.									
	3.3	Recognize the importance of each role in ensuring the successful completion of CCTV installation and maintenance projects.									
LO 2: Know Positive Working Relationships within a Team	3.1	Demonstrate techniques for effective interpersonal communication and conflict resolution in a CCTV installation and maintenance team environment.									
	3.2	Provide constructive feedback and actively listen to others' contributions during the installation process.									
	3.3	Promote inclusivity and collaboration among team members to ensure participation and engagement from all during installations and troubleshooting.									
LO 3: Contribute to Team Problem-Solving and Decision-Making	3.1	Analyze problems related to CCTV installation and maintenance, such as wiring issues, camera alignment, or system setup.									
	3.2	Support team decision-making processes when challenges arise in installation or maintenance tasks.									
	3.3	Evaluate the effectiveness of team decisions regarding installation strategies and propose improvements where necessary.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 3: COMMUNICATION (CCTV INSTALLATION & MAINTENANCE)

Unit Reference Number: ICT/CCTV/003/L2
NSQ Level: 2
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose: This unit equips learners with the necessary communication skills required for CCTV installation and maintenance.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in a real workplace environment.

Assessment methods to be used include:

1. 1Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 03: COMMUNICATION (CCTV INSTALLATION)

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**				**Evidence Ref. Page No.**			
LO 1: Communicate Technical Information Clearly and Accurately	3.1	Explain CCTV installation and maintenance concepts, procedures, and solutions in a manner appropriate to both technical and non-technical audiences.								
	3.2	Apply industry-standard terminology when describing technical processes such as camera placement, wiring, and system configuration.								
	3.3	Adapt communication methods to suit the context, such as written reports, emails, or verbal presentations to clients or team members.								
LO 2: Utilize Digital Communication Tools Effectively	3.1	Use digital tools such as email, messaging platforms, and collaboration software (e.g., Slack, Teams) during CCTV installation and maintenance projects.								
	3.2	Adhere to best practices for professional digital communication, including email etiquette and secure file sharing related to CCTV system documentation.								
	3.3	Use collaborative tools to share and receive feedback on project updates, installation plans, and troubleshooting guides.								
LO 3: Respond in a Professional Context	3.1	Demonstrate active listening skills during team discussions, client meetings, or site assessments for CCTV installation and maintenance.								
	3.2	Respond to questions, concerns, and feedback clearly and effectively regarding installation procedures, system setup, or troubleshooting.								
	3.3	Summarize discussions to ensure mutual understanding among team members or clients.								

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 4: CCTV SYSTEM INSTALLATION AND CONFIGURATION

Unit Reference Number: ICT/CCTV/004/L2
NSQ Level: 2
Credit Value: 4
Guided Learning Hours: 40

Unit Purpose: This unit provides learners with the essential skills and knowledge to assess installation sites, utilize appropriate tools, and configure CCTV systems for effective surveillance and security management.

Unit assessment requirements/ evidence requirements:

Assessment must be carried out in a real workplace environment.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 04: CCTV SYSTEM INSTALLATION AND CONFIGURATION

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Understand how to perform site Assessment	1.1	Identify sensitive areas (e.g., entrances, parking lots) for camera coverage.									
	1.2	Locate blind spots by checking angles and obstructions.									
	1.3	Use weatherproof cameras for outdoor use.									
	1.4	Measure the cable length required									
	1.5	Develop a plan for installation									
	1.6	Develop the bill of quantity for installation									
LO 2: Know how to use installation tools	2.1	Select appropriate tools for CCTV installation and maintenance									
	2.2	Install cable conduits.									
	2.3	Perform the cable test with a multimeter or cable tester.									
	2.4	Carry out cabling and terminations									
LO 3: Know how to configure basic settings	3.1	Locate camera angles to avoid glare or reflections.									
	3.2	Identify motion detection zones in a DVR/NVR.									
	3.3	Identify continuous recording in a DVR/NVR									
	3.4	Indicate cameras and cables for easy identification.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 5: NETWORKING FOR CCTV SYSTEMS

Unit Reference Number: ICT/CCTV/005/L2
NSQ Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose: *This unit equips learners with the essential skills and knowledge required to set up, configure, secure, and troubleshoot network CCTV systems, ensuring reliable remote access and optimal performance.*

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in a real workplace environment in which learning and human development are carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 05: NETWORKING FOR CCTV SYSTEMS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Know CCTV remote access	1.1	Describe the software for remote access									
	1.2	Install software for remote access									
	1.3	Register an account with the software.									
	1.4	Create verification code in the software									
LO 2: Understand how to install IP cameras	2.1	Install software for IP camera									
	2.2	Configure IP camera									
	2.3	Carry out activation of IP camera									
	2.4	Assign IP addresses manually or automatic via DHCP.									
	2.5	Implement a connection between cameras and router or network switch.									
	2.6	Implement PoE injectors to power IP cameras over Ethernet.									
LO 3: Know cables used for IP Cameras	3.1	Recognize different types of cables used in IP camera installations.									
	3.2	Differentiate between shielded and unshielded twisted pair (STP/UTP) cables.									
	3.3	Select appropriate tools for crimping.									
	3.4	Identify wires using standard colour code									
	3.5	Use a cable tester to verify correct wiring and continuity.									
LO 4: Demonstrate how to secure CCTV networks	4.1	Use strong passwords for NVRs.									
	4.2	Enable encryption (WPA2/WPA3) for wireless cameras.									
	4.3	Update firmware to fix security vulnerabilities.									
LO 5: Troubleshoot network issues	5.1	Examine no signal errors (e.g., faulty cables, IP conflicts).									
	5.2	Use ping commands to test device connectivity.									
	5.3	Reset device settings if configurations fail.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 6: STORAGE MANAGEMENT FOR CCTV SYSTEMS

Unit Reference Number: ICT/CCTV/006/L2
NSQ Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose: This unit provides learners with the knowledge and skills to manage storage devices, configure motion detection, and organize video footage efficiently. It ensures optimal recording, backup, and retrieval of surveillance data.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 06: STORAGE MANAGEMENT FOR CCTV SYSTEMS

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Manage storage devices	1.1	Identify camera resolution and pixel requirements.									
	1.2	Calculate the storage capacity needed for a CCTV system.									
	1.3	Replace hard drives in DVRs/NVRs.									
	1.4	Upgrade hard drives in DVRs/NVRs.									
	1.5	Differentiate between cloud storage and local storage, including their advantages and limitations.									
LO 2: Configure motion detection	2.1	Adjust motion detection sensitivity to reduce false alarms.									
	2.2	Define detection zones to ignore non-critical areas.									
	2.3	Configure motion alerts to be sent via email or mobile notifications.									
LO 3: Organize video footage and Backup	3.1	Retrieve recorded footage based on date, time, or motion events.									
	3.2	Export video clips to USB drives or external storage.									
	3.3	Delete unnecessary footage to free up storage space.									
	3.4	Set up automatic backups to external drives or cloud storage.									
	3.5	Restore lost footage from backup files.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 7: ADVANCED CCTV CAMERA TECHNOLOGIES

Unit Reference Number: ICT/CCTV/007/L2
NSQ Level: 2
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose: This unit equips learners with the skills and knowledge to install, configure, and troubleshoot specialized CCTV cameras, including wireless, PTZ, and fisheye cameras, ensuring optimal performance and surveillance coverage.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc

UNIT 07: ADVANCED CCTV CAMERA TECHNOLOGIES

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**				**Evidence Ref. Page No.**			
LO 1: Install wireless cameras	1.1	Set up Wi-Fi cameras using a router, mobile apps, or web interfaces.								
	1.2	Install cameras strategically to minimize signal interference from walls, metal objects, and electronic devices.								
	1.3	Configure security settings, including encryption (WPA2/WPA3) and password protection.								
	1.4	Update firmware and software to ensure optimal performance and security.								
LO 2: Configure PTZ cameras for remote pan/tilt/zoom control.	2.1	Install PTZ cameras to allow a full range of motion without physical obstructions.								
	2.2	Connect the camera to the network.								
	2.3	Assign a unique IP address within the network's range.								
	2.4	Use control protocols (e.g., ONVIF, proprietary protocols) to enable remote pan, tilt, and zoom functionalities.								
	2.5	Configure preset positions and patrol paths for optimal surveillance coverage.								
LO 3: Set up fish-eye cameras for 360° coverage.	3.1	Install fisheye cameras at optimal locations to maximize 360° coverage.								
	3.2	Ensure the mounting surface is level to prevent image distortion.								
	3.3	Configure de-warping settings in the camera software or NVR to produce usable video streams.								
LO 4: Troubleshoot wireless systems	4.1	Change Wi-Fi channels to less congested frequencies to reduce interference.								
	4.2	Identify areas with weak signal coverage in the surveillance environment.								

	4.3	Install Wi-Fi boosters or repeaters to improve signal strength.									
	4.4	Ensure cameras are within the effective range of the Wi-Fi network.									
	4.5	Regularly update firmware for both cameras and networking equipment.									
	4.6	Perform a factory reset on affected cameras if necessary.									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 2: CCTV INSTALLATION AND MAINTENANCE

Unit 8: MAINTENANCE AND TROUBLESHOOTING OF CCTV SYSTEMS

Unit Reference Number: ICT/CCTV/008/L2
NSQ Level: 2
Credit Value: 4
Guided Learning Hours: 40

Unit Purpose: This unit provides learners with the skills and knowledge to perform routine maintenance, diagnose common issues, and upgrade CCTV systems to enhance performance, reliability, and security.

Unit assessment requirements/ evidence requirements:

Assessment must be conducted in a real workplace environment where learning and human development take place.

Assessment methods to be used include:

1. Direct Observation/Oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Personal Statement (PS), etc.

UNIT 08: MAINTENANCE AND TROUBLESHOOTING OF CCTV SYSTEMS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Perform routine maintenance	1.1	Clean camera lenses with microfiber cloths.									
	1.2	Replace faulty adapters.									
	1.3	Inspect IR LEDs to ensure night vision functionality.									
	1.4	Check network cables and connections for integrity.									
	1.5	Verify storage integrity and recording schedules.									
	1.6	Ensure cameras are properly mounted and aligned.									
LO 2: Diagnose common issues	2.1	Fix blurry footage by adjusting focus or cleaning lenses.									
	2.2	Verify that the power source is active and supplying the correct voltage.									
	2.3	Identify and resolve IP conflicts in the network.									
	2.4	Adjust motion detection sensitivity settings to minimize false alarms or missed events.									
	2.5	Restart the router, switch, or NVR to refresh network connections.									
LO 3: Upgrade CCTV systems	3.1	Select cameras with advanced features such as AI analytics, thermal imaging, or 4K resolution.									
	3.2	Check compatibility with existing NVR/DVR systems before upgrading.									
	3.3	Install high-capacity surveillance-grade hard drives for local storage.									
	3.4	Explain how to connect CCTV systems with smart home automation platforms (e.g., alarms, motion sensors).									

Learners Signature:	Date:
Assessors' Signature:	Date:
IQA Signature (if sampled):	Date:
EQA Signature (if sampled):	Date:

NATIONAL SKILLS QUALIFICATION

CCTV INSTALLATION AND MAINTENANCE

LEVEL 3

SATELLITE TV ANTENNA INSTALLATION AND MAINTENANCE

FEBRUARY, 2025

NATIONAL SKILLS QUALIFICATION

NSQ LEVEL 3 - *STAETILLATE TV INSTALLATION SPECIALIST*
GENERAL INFORMATION

QUALIFICATION PURPOSE
This qualification aims at exposing the on competent skills on a comprehensive list of tools, advanced equipment, and technical practices that reflect global standards in satellite technology.

QUALIFICATION OBJECTIVES
The learner should be able to

i. Install, configure, and troubleshoot complex satellite systems, including motorized antennas and Mult switch setups.
ii. Use advanced tools like satellite signal meters and spectrum analyzers for precise installations and diagnostics.
iii. Follow international standards and regulations for satellite installation, delivering compliant and high-quality work.

MANDATORY UNITS

Unit No	Reference Number	NOS Title	Credit Value	Guided Learning Hours	Remark
Unit 001	ICT/SAT/001/L3	Health and Safety	2	20	*Mandatory*
Unit 002	ICT/SAT/002/L3	Communication	2	20	*Mandatory*
Unit 003	ICT/SAT/003/L3	Teamwork	2	20	*Mandatory*
Unit 004	ICT/SAT/004/L3	Tools and Equipment for Satellite Installation	3	30	*Mandatory*
Unit 005	ICT/SAT/005/L3	Advanced Satellite Dish Settings and Configurations	3	30	*Mandatory*
Unit 006	ICT/SAT/006/L3	Testing and Troubleshooting Advanced Satellite Systems	3	30	*Mandatory*
		TOTAL	15	150	

NOTE: *Explain how the learner can achieve the total credit hours from mandatory and optional units*

NATIONAL SKILLS QUALIFICATION

LEVEL 3: *SATELLITE TV INSTALLATION SPECIALIST*

Unit 001: OCCUPATIONAL HEALTH AND SAFETY

Unit Reference Number: ICT/SAT/001/L3
NSQ Level: 3
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit aims to equip Trainees with the essential knowledge and practical skills required to ensure workplace health and safety while conducting satellite TV antenna installation and maintenance tasks.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.
Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 01: OCCUPATIONAL HEALTH AND SAFETY

LEARNING OBJECTIVE (LO) **The learner will:**		**PERFORMANCE CRITERIA** **The learner can:**	**Evidence Type**					**Evidence Ref. Page No.**			
LO 1: Principles and Practices of Health and Safety	1.1	Conduct a detailed risk assessment for satellite installation activities, focusing on potential hazards such as working at heights, electrical risks, and falling objects.									
	1.2	Explain new hazards that may arise from changing weather conditions, site layout, or complex installations (e.g., urban vs. rural environments).									
	1.3	Demonstrate control measures to mitigate identified hazards, including the use of barriers, warning signs, and proper work zoning.									
	1.4	Know importance of implementing control measures through continuous monitoring during the installation process.									
LO 2: Application of Advanced Personal Protective Equipment (PPE) and Safety Gear	2.1	Identify appropriate PPE specific to complex satellite installations, such as full-body harnesses, shock-absorbing lanyards, and insulated gloves for electrical safety.									
	2.2	Demonstrate procedures for inspecting and maintaining PPE to ensure functionality, including checking expiration dates and performing routine equipment inspections.									
	2.3	Explain the importance of ergonomics when selecting PPE for extended periods of use, particularly for tasks involving repetitive movements or working in awkward positions.									
	2.4	Perform a safety drill involving the use of PPE, simulating emergency situations (e.g., a fall or electrical shock) and demonstrating proper response techniques									
LO 3: Emergency Preparedness	3.1	Develop emergency response plans specific to satellite installations,									

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
and Response Procedures		addressing fire, electrical hazards, and working at heights emergencies.									
	3.2	Explain role of emergency evacuation plans and the importance of identifying and maintaining clear escape routes during large installations.									
	3.3	Demonstrate emergency communication devices (e.g., two-way radios, emergency alarms) to notify team members and emergency services during a crisis.									
	3.4	Carry out emergency evacuation drill, where learners practice responding to an incident such as a fire or medical emergency, ensuring all safety protocols are followed.									

Learner's Signature	Date:
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IQA's Signature	Date:
EQA's Signature	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 3: *SATELLITE TV INSTALLATION SPECIALIST*

Unit 002: Communication in workplace

Unit Reference Number: ICT/SAT/002/L3
NSQ Level: 3
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
To develop effective communication skills essential for trainees' interactions within the satellite TV antenna installation industry.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.
Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 002: COMMUNICATION IN A WORKPLACE

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Advanced Professional Communication Techniques	1.1	Demonstrate clear and concise verbal communication to convey technical instructions and safety guidelines during satellite installation projects.									
	1.2	Explain active listening techniques in discussions with team members and clients, ensuring that feedback and concerns are understood and addressed.									
	1.3	Explain tailoring communication to suit the audience, such as using technical language with colleagues and simplified explanations for clients or non-technical personnel.									
	1.4	Role-playing exercise where learners manage communication between team members and clients, focusing on clarity, tone, and professionalism.									
LO 2: Handling Communication in High-Pressure Situations	2.1	Demonstrate maintain composure and use effective communication during high-pressure scenarios, such as project delays or safety incidents.									
	2.2	Explain assertive communication to resolve conflicts within a team or with clients without escalating the situation.									
	2.3	Apply de-escalation techniques when communicating with clients or team members who may be upset or frustrated due to unforeseen project challenges.									
	2.4	Simulate situation where learners must communicate effectively with both their team and clients to resolve a project issue or safety concern.									
LO 3: Digital Communication Tools for Remote Work and Team Coordination	3.1	Use of digital communication tools (e.g., email, project management software, messaging apps) for coordinating remote teams during satellite installations.									
	3.2	Explain the importance of keeping detailed digital communication records, including email chains, project updates,									

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
		and client feedback, to ensure accountability and traceability.									
	3.3	Know Role of video conferencing and virtual collaboration tools in facilitating communication between geographically distributed teams.									
	3.4	Demonstrate monitoring remote satellite installation project using digital communication tools.									

Learner's Signature	Date:
Assessor's Signature	Date:
IQA's Signature	Date:
EQA's Signature	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 3: *SATELLITE TV INSTALLATION SPECIALIST*

Unit 003: TEAMWORK

Unit Reference Number: ICT/SAT/003/L3
NSQ Level: 3
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
The focus is on fostering a culture of collaboration, mutual respect, and accountability to enhance productivity and innovation.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.
Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 003: TEAMWORK

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Advanced Team Dynamics and Leadership Skills	1.1	Explain roles and responsibilities within a satellite installation team.									
	1.2	Demonstrate leadership techniques that promote team cohesion.									
	1.3	Discuss the importance of adaptability within a team.									
	1.4	Conduct a group exercise where learners assume different leadership roles and work on solving a project challenge, applying team dynamics and leadership principles.									
LO 2: Collaborative Problem-Solving in Satellite Installation Projects	2.1	Demonstrate complex satellite installation challenges									
	2.2	Apply critical thinking and collaborative decision-making techniques.									
	2.3	Explain time management in collaborative work.									
	2.4	Perform a group task where trainees must collaboratively solve a technical problem (e.g., a signal issue) using effective communication, resource allocation, and decision-making skills.									
LO 3: Building Trust and Accountability in Teams	3.1	Discuss the role of trust in high-functioning teams and how establishing clear expectations and transparency leads to better collaboration and accountability.									
	3.2	Explain the impact of individual accountability on team success, focusing on how each member's contribution affects the overall project outcome.									
	3.3	Demonstrate techniques for providing constructive feedback and encouraging self-assessment to improve performance and foster accountability in a team setting.									
	3.4	Conduct an activity where learners give and receive feedback within a team, focusing on building trust and									

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
		accountability through open communication and mutual respect.									

Learner's Signature	Date:
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EQA's Signature	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 3: *SATELLITE TV INSTALLATION SPECIALIST*

Unit 004: TOOLS AND EQUIPMENT FOR SATELLITE TV ANTENNA INSTALLATION

Unit Reference Number: ICT/SAT/004/L3
NSQ Level: 3
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
To provide learners with comprehensive knowledge and practical experience to handle standard tools, specialized signal meters, and diagnostic equipment to ensure precise, efficient, and professional installations.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.
Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 004: TOOLS AND EQUIPMENT FOR SATELLITE TV ANTENNA INSTALLATION

LEARNING OBJECTIVE (LO) The learner will:			PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Basic Tools (Standard for All Levels)		1.1	**Describe basic tools such as Screwdrivers (Phillips, flathead), Drills (corded or cordless), Wrenches and Ratchets, Wire cutters/Strippers, Pliers, and cables ties**									
		1.2	Discuss different types and brands of tools. For example, compare cordless vs. corded drills for different installation environments (e.g., residential vs. commercial).									
		1.3	Select tools based on installation needs, including durability, power, and adaptability to different job types.									
LO 2: Understand the procedure of Mounting Satellite TV Equipment		2.1	**Identify the necessary tools, materials, and safety gear required for the installation.**									
		2.2	**Inspect the satellite dish and related equipment for defects or damage.**									
		2.3	**Use appropriate tools to securely mount the dish on walls, poles, or other structures.**									
		2.4	**Use a satellite signal meter or compatible software to locate the satellite and optimize signal strength.**									
		2.5	**Use weather-resistant coaxial cables and connectors for outdoor installations.**									
		2.6	**Connect the satellite receiver to the TV and verify signal input.**									
		2.7	**Use ladders, harnesses, or other equipment to ensure safe working conditions at heights.**									
		2.8	**Demonstrate the ability to troubleshoot minor signal or connectivity issues.**									

LEARNING OBJECTIVE (LO) The learner will:			PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 3: Introduction to Digital and Software Tools for Satellite Alignment		3.1	use digital satellite finders to achieve precise satellite alignment.									
		3.2	Use smartphone apps and software-based tools to calculate azimuth, elevation, and polarization angles based on geographic location.									
		3.3	Compare the accuracy and ease of use between traditional manual tools and digital alignment tools for both commercial and residential installations.									
LO 4: Calibration and Maintenance Tools for Satellite Equipment		4.1	Discuss the importance of regular calibration and maintenance of satellite installation tools, such as **signal meters**, **oscilloscopes**, and **calibration kits**.									
		4.2	Calibrate a **signal strength meter** for accurate readings during dish alignment and maintenance.									
		4.3	Use **electrical test tools** (e.g., multimeters) to diagnose power supply issues and faulty components in satellite receivers and amplifiers.									
		4.4	Perform routine maintenance on installation tools, including testing signal accuracy, recalibrating tools, and ensuring the integrity of cables and connectors.									

Learner's Signature	Date:
Assessor's Signature	Date:
IQA's Signature	Date:
EQA's Signature	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 3: *SATELLITE TV INSTALLATION SPECIALIST*

Unit 005: ADVANCED SATELLITE DISH SETTING AND CONFIGURATIONS

Unit Reference Number: ICT/SAT/005/L3
NSQ Level: 3
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
To develop advanced skills in configuring and aligning satellite dishes for optimal performance, including motorized systems and Mult satellite setups.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.

Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 005: ADVANCED SATELLITE DISH SETTING AND CONFIGURATION

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Understand Dish Alignment and Tracking	1.1	Discuss Dish Alignment with Geostationary Satellite									
	1.2	Discuss Motorized Satellite Antennas (DiSEqC Motor)									
	1.3	Program DiSEqC (Digital Satellite Equipment Control)									
	1.4	Explain Polar Mount Systems									
	1.5	Troubleshooting common issues with polar mount systems, such as misalignment or motor failure									
LO 2: Understand Multiswitch Systems	2.1	Describe Single Satellite to Multiple Receiver Setup									
	2.2	Discuss Multisatellite Configuration									
	2.3	Configure Cascade Systems for Apartment Buildings									
LO 3: **Signal Distribution and Integration**	3.1	Demonstrate Signal Amplification and Attenuation									
	3.2	Diagnose issues related to signal degradation over long cable runs.									
	3.3	Fix issues found in 3.2									
	3.4	Combine Satellite TV with Terrestrial (TV Aerial) Signals									
	3.5	Discuss SMATV (Satellite Master Antenna Television)									
LO 4: Testing and Troubleshooting Advanced Satellite Systems	4.1	Use Spectrum Analyzer for Interference Detection									
	4.2	Identify different types of interference (e.g., electromagnetic, signal overlap) and how to resolve them.									
	4.3	Use Field Strength Meters for signal detection									
	4.4	Perform Satellite Receiver Firmware Updates									
	4.5	Identify Cable Faults									
	4.6	Resolve 4.5									

Learner's Signature	Date:
Assessor's Signature	Date:
IQA's Signature	Date:
EQA's Signature	Date:

NATIONAL SKILLS QUALIFICATION

LEVEL 3: *SATELLITE TV INSTALLATION SPECIALIST*

Unit 006: TESTING AND TROUBLESHOOTING ADVANCED SATELLITE SYSTEMS

Unit Reference Number: ICT/SAT/006/L3
NSQ Level: 3
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:
This unit ensures learners can identify and fix signal problems, cable faults, and system malfunctions, maintaining high-quality performance standards.

Unit assessment requirements/ evidence requirements:
Assessment must be carried out in real workplace environment in which learning and human development is carried out.
Assessment methods to be used include:

1. Direct Observation/oral questions (DO)
2. Question and Answer (QA)
3. Witness Testimony (WT)
4. Assignment (ASS)

UNIT 006: TESTING AND TROUBLESHOOTING ADVANCED SATELLITE SYSTEMS

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Understand Advanced Signal Testing Tools	1.1	Use Advanced Spectrum Analyser for Satellite Systems									
	1.2	Explain Signal Path Analysis and Optimization									
	1.3	Advanced Receiver Diagnostics									
	1.4	Signal Quality and Modulation Schemes									
LO 2: Global Best Practices and Standards	2.1	Discuss Best Practices for Multi-Satellite Systems									
	2.2	Explain Standards for High-Frequency Satellite Systems									
	2.3	Explain Global Standards for Satellite Security									
	2.4	Discuss Environmental and Sustainability Standards for Satellite Installations									
LO 3: Signal Optimization Techniques for Satellite Systems	3.1	Discuss advanced techniques for optimizing signal quality, including the use of **adaptive modulation and coding (ACM)** to adjust for changes in weather and interference.									
	3.2	Explain the role of **error correction methods** like **forward error correction (FEC)** in improving signal integrity and data throughput.									
	3.3	Demonstrate the optimization of satellite dish alignment for **multi-beam satellites** or **high-throughput satellite (HTS)** networks									
	3.4	Explore techniques for optimizing **uplink power control** to minimize interference and maintain signal quality in variable atmospheric conditions.									
LO 4: Advanced Troubleshooting of Satellite Ground Systems	4.1	Explain the process of troubleshooting **uplink and downlink** systems, focusing on signal interference, attenuation, and equipment calibration.									
	4.2	Troubleshoot issues with **satellite modems**, **signal amplifiers**, and **low-noise block downconverters (LNBs)**.									
	4.3	Resolve issues in 4.2									

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
	4.4	Identify common causes of **signal attenuation** in long-distance cable runs and how to mitigate these issues using **repeaters** and **amplifiers**.									
	4.4	Troubleshoot satellite ground equipment									
	4.5	Explore techniques for maintaining **redundancy** in satellite ground systems.									

Learner's Signature	Date:
Assessor's Signature	Date:
IQA's Signature	Date:
EQA's Signature	Date:

National Skills Qualifications

FOR

CCTV INSTALLATION AND MAINTENANCE

LEVEL 1, 2 & 3

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