NATIONAL SKILLS QUALIFICATION

LEVEL 4

TITLE:
NETWORK SUPPORT SPECIALIST

YEAR:2024

NATIONAL SKILLS QUALIFICATION

NSQ LEVEL 4: NETWORK SUPPORT SPECIALIST

GENERAL INFORMATION

QUALIFICATION PURPOSE

This qualification is designed to develop proficient network support specialists, capable of effectively managing, maintaining, and troubleshooting computer networks across diverse industries.

QUALIFICATION OBJECTIVES

The learner should be able to:

1. Design network infrastructure
2. Configure network services.
3. Troubleshoot networks.
4. Provide technical support to end users.
5. Configure Network Switches and Routers
6. Secure networks

To obtain the certificate, a minimum 35 credit is required and may be achieved by passing all the mandatory NOS tracks.

Mandatory Units

Unit No	Reference Number	NOS Title	Credit Value	Guided Learning Hours	Remark
Unit 01	ICT/NSS/01/L4	Health and Safety in Network Support	2	20	Mandatory
Unit 02	ICT/NSS/02/L4	Teamwork	2	20	Mandatory
Unit 03	ICT/NSS/03/L4	Communication	2	20	Mandatory
Unit 04	ICT/NSS/04/L4	Network Media: Wireless and wired media	6	60	Mandatory
Unit 05	ICT/NSS/05/L4	Network devices: Configuration and interconnection	7	70	Mandatory
Unit 06	ICT/NSS/06/L4	Network Switching and Routing	5	50	Mandatory
Unit 07	ICT/NSS/07/L4	Network Security: Firewall and access control lists	6	60	Mandatory
Unit 08	ICT/NSS/08/L4	Network Management and troubleshooting	6	60	Mandatory
Unit 09	ICT/NSS/09/L4	Cloud Networking	5	50	Mandatory
TOTAL			**35**	**350**	

Optional Units

Unit No	Reference Number	NOS Title	Credit Value	Guided Learning Hours	Remark
Unit 10	ICT/NSS/10/L4	Network Optimization	3	30	
Unit 11	ICT/NSS/11/L4	Network Identity and Access Management	3	30	
Unit 012	ICT/NSS/12/L4	IoT Networking	3	30	

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LEVEL 4: CERTIFICATE IN INFORMATION TECHNOLOGY – NETWORK SUPPORT SPECIALIST

Unit 1: Health and Safety in Network Support

Unit Reference Number: ICT/NSS/01/L4
NSQ Level: 4
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose:

This unit aims to provide learners with essential knowledge and skills to maintain a safe working environment within network installation and support

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network media should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

Unit 1: Health and Safety in Network Support

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1 Understand Health and Safety Regulations and Requirements	1.1	Identify key legislation, regulations, and standards relevant to health and safety in the workplace.									
	1.2	Explain the roles and responsibilities of both employers and employees									
	1.3	Describe the legal consequences of non-compliance with health and safety regulations in network-related work.									
LO 2 Be Able to Identify and Mitigate Workplace Hazards	2.1	Conduct a risk assessment to identify potential hazards within a network installation site or work area.									
	2.2	Recommend appropriate control measures to mitigate identified risks, including the use of signage, barriers, and equipment.									
	2.3	Monitor work practices to ensure the consistent application of safety protocols during network installation and maintenance activities.									
LO 3 Implement Safe Working Practices and Emergency Procedures	3.1	Demonstrate the correct use of personal protective equipment (PPE) and tools while working in a network environment.									
	3.2	Follow proper procedures for responding to emergencies									
	3.3	Develop and communicate a safety plan that includes reporting incidents and unsafe conditions to the appropriate authorities.									

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

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Unit 2: Teamwork

Unit Reference Number: ICT/NSS/02/L4
NSQ Level: 4
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose:

This unit aims to equip learners with the knowledge and skills necessary to work effectively as part of a team in a network support environment.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network media should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

5. Direct Observation/oral questions (DO)
6. Question and Answer (QA)
7. Witness Testimony (WT)
8. Assignment (ASS), etc.

Unit 2: Teamwork

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1 Understand the Principles of Effective Teamwork	1.1	Identify the characteristics of a successful team and the roles each member plays within a network support team.									
	1.2	Explain the importance of clear communication, active listening, and mutual respect in a team setting.									
	1.3	Describe different team dynamics, including collaboration, decision-making, and accountability in network-related tasks.									
LO 2 Demonstrate Problem-Solving and Conflict Resolution Skills in Team Settings	2.1	Participate in team discussions to analyze network-related problems and propose solutions collaboratively.									
	2.2	Address conflicts that arise within the team in a professional manner, using mediation and negotiation techniques to reach a resolution.									
	2.3	Evaluate the effectiveness of team problem-solving strategies and suggest improvements to enhance team performance in future projects.									
LO 3 Exhibit Leadership and Support Team Development	3.1	Take initiative in organizing team tasks, delegating responsibilities according to team members' strengths and skills.									
	3.2	Provide constructive feedback and support to team members, encouraging continuous improvement and skill development.									
	3.3	Foster a positive team environment by promoting inclusivity, recognizing individual contributions, and motivating the team to achieve set goals.									

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Unit 3: Communication

Unit Reference Number: ICT/NSS/03/L4
NSQ Level: 4
Credit Value: 2
Guided Learning Hours: 20

Unit Purpose:

This unit equips learners with the communication skills necessary to interact effectively with colleagues, clients, and stakeholders in a professional network support environment, focusing on both verbal and written communication, active listening, and the use of communication tools.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network media should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

Unit 3: Communication

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1 Understand the Importance of Effective Communication in the Workplace	1.1	Explain the impact of clear and concise communication on team performance, project success, and client satisfaction.									
	1.2	Identify barriers to effective communication in a technical workplace and strategies to overcome them.									
	1.3	Describe how cultural differences, language, and technical jargon can influence communication in a diverse workplace.									
LO 2 Demonstrate Effective Verbal and Non-Verbal Communication Skills	2.1	Use appropriate tone, clarity, and technical language when communicating with different stakeholders (e.g., team members, clients, management).									
	2.2	Demonstrate active listening by accurately interpreting and responding to verbal and non-verbal cues during discussions and meetings.									
	2.3	Apply non-verbal communication techniques, such as body language and eye contact, to enhance message delivery and understanding.									
LO 3 Be Able to Use Digital Tools for Professional Communication	3.1	Select and use appropriate digital communication tools (e.g., email, instant messaging, project management platforms) to exchange information effectively within a network support team.									
	3.2	Compose clear and professional emails, reports, and other written correspondence to ensure effective communication with stakeholders.									
	3.3	Ensure confidentiality and security of sensitive information when communicating through digital platforms, adhering to organizational policies and regulations.									

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LEVEL 4: CERTIFICATE IN INFORMATION TECHNOLOGY – NETWORK SUPPORT SPECIALIST

Unit 4: Network Media: Wireless and Wired media

Unit Reference Number: ICT/NSS/04/L4
NSQ Level: 4
Credit Value: 6
Guided Learning Hours: 60

Unit Purpose:

This unit teaches about the physical layer of computer networks. It helps learners design, implement, and manage networks.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network media should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

Unit 4: Network Media: Wireless and Wired media

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1 **Know Cabling Techniques**	1.1	Identify cable types									
	1.2	Strip and clean various cable types.									
	1.3	Recognize cable color codes, connectors and organization									
	1.4	Terminate cables									
	1.5	Select the appropriate testing tools for specific cable type and issue									
	1.6	Test the cable using the selected tool									
LO 2 **Configure wireless networks**	2.1	Configure the wireless network name (SSID) and broadcast settings									
	2.2	Configure wireless security									
	2.3	Configure wireless network segmentation									
	2.4	Install Access Point (AP) for coverage and performance									
	2.5	Configure Quality of Service (QoS) settings to prioritize traffic and ensure network performance.									
LO 3 **Troubleshoot wired and wireless network issues.**	3.1	Identify wired network troubleshooting tools									
	3.2	Identity wireless network troubleshooting tools									
	3.3	Analyse network connection problems									
	3.4	Isolate the issue to a specific device, cable, or network segment.									
	3.5	Resolve network issues using the appropriate tools and techniques									
	3.6	Provide guidance on preventive measures.									
LO 4 **Use network analysis tools**	4.1	Select appropriate network analysis tools									
	4.2	Analyse network signal strength and quality									
	4.3	Identify connected devices to detect rogue devices.									
	4.4	Generate network analysis reports									

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type		Evidence Ref. Page No.
Learner's Signature			Date		
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Unit 5: Network devices: Configuration and interconnection

Unit Reference Number: ICT/NSS/02/L4
NSQ Level: 4
Credit Value: 7
Guided Learning Hours: 70

Unit Purpose:

Provide students with the skill required to configure and interconnect devices within a networked environment.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network devices: configuration and interconnection should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 05: Network Devices: Configuration and Interconnection

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Use Networking devices	1.1	Analyse network devices									
	1.2	Interconnect networking devices									
	1.3	Analyse network device ports									
	1.4	Use appropriate cable types to login to devices (router, switch, access points etc)									
	1.5	Interconnect devices using cables									
	1.6	Troubleshoot device connection issues									
LO 2: Use Network device tools	2.1	Install network configuration tools									
	2.2	Understand the network configuration GUI									
	2.3	Configure network devices using command lines									
	2.4	Configure backup and recovery									
	2.5	Troubleshoot configuration errors									
LO 3: Know Network addressing	3.1	Explain network addressing: IPv4 and IPv6									
	3.2	Manage network addressing table									
	3.3	Configure IP addresses on network devices									
	3.4	Perform network subnetting									
	3.5	Use network addresses tools									
LO 4: Setup Local Area Network	4.1	Design a Local Area Network (LAN)									
	4.2	Configure devices within a LAN									
	4.3	Interconnect LANs									
	4.4	Integrate services within a LAN									
	4.5	Troubleshoot connection related issue within LANs									
LO 5: Design Wide Area Networks	4.1	Identify WAN interfaces									
	4.2	Identify WAN links									
	4.3	Integrate WAN related devices									
	4.4	Configure routers and switches									
	4.5	Interconnect routers and switches									
Learner's Signature			Date								
Assessor's Signature			Date								
IQA's Signature			Date								

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type		Evidence Ref. Page No.
EQA's Signature			Date		

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Unit 6: Network Switching and Routing

Unit Reference Number: ICT/NSS/03/L4
NSQ Level: 4
Credit Value: 5
Guided Learning Hours: 50

Unit Purpose:

Provide students with the skill required to configure network routers and switches within a networked environment.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network Switching and Routing should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 06: Network devices: Configuration and interconnection

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Know Routing Protocols	1.1	Identify various routing protocols									
	1.2	Match routing protocol to specific network design									
	1.3	Understand routing metrics									
	1.4	Test various routing protocols									
	1.5	Perform route summarization									
	1.6	Perform route aggregation									
LO 2: Be able to Configure Switch	2.1	Login to network switches									
	2.2	Identify switch layers and functions									
	2.3	Perform Virtual Local Area Network (VLAN) Configurations.									
	2.4	Perform inter-VLAN routing									
	2.5	Perform trunk configuration									
LO 3: Be able to Configure a Router	3.1	Match routing protocols with specific devices and topology									
	3.2	Initial configuration of routers									
	3.3	Configure basic routing protocols									
	3.4	Configure router security features									
	3.5	Troubleshoot router and switch configuration issues									
Learner's Signature			Date								
Assessor's Signature			Date								
IQA's Signature			Date								
EQA's Signature			Date								

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Unit 7: Network Security: Firewall and Access Control Lists

Unit Reference Number: ICT/NSS/04/L4
NSQ Level: 4
Credit Value: 6
Guided Learning Hours: 60

Unit Purpose:

Provide students with the skill required to secure network devices within a networked environment.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network Security should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 07: Network Security: Firewall and access control lists

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Know Network Security Fundamentals	1.1	Explain network security principles									
	1.2	Identify network vulnerabilities									
	1.3	Describe network security devices									
	1.4	Configure passwords for network devices									
	1.5	Perform network penetration testing									
LO 2: Be able to Configure Firewalls	2.1	Know network firewalls									
	2.2	**Configure** network firewall for routers and switches									
	2.3	**Configure** network firewalls on routers and switches									
	2.4	Setup network firewalls on personal computers									
	2.5	Test network firewall behaviour									
LO 3: Be able to Configure Access Control Lists (ACL)	3.1	Understand ACL mechanism									
	3.2	Identity inbound and outbound implementation of ACL									
	3.3	Setup ACLs mechanism for routers									
	3.4	Implement ACLs on routers									
	3.5	Test ACLs on routers									
LO 4: Be able to Setup VPNs	4.1	**Explain** VPN client server configuration									
	4.2	Configure a VPN server									
	4.3	Establish a VPN connection									
	4.4	Troubleshoot VPN connection issues									
	4.5	Integrate VPN with Other Technologies									
LO 5: Encryption techniques	5.1	Use network encryption tools									
	5.2	Implement IPSec									
	5.3	Use OpenSSL									
	5.4	Configure SSL/TLS									
	5.5	Configure Full-Disk Encryption									

Learner's Signature	Date
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Unit 8: Network Management and Troubleshooting

Unit Reference Number: ICT/NSS/05/L4
NSQ Level: 4
Credit Value: 6
Guided Learning Hours: 60

Unit Purpose:

Provide students with the skill required to manage and troubleshoot network within an organization.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network Security should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 08: Network Management and troubleshooting

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Know Network Management Protocols	1.1	Explain Simple Network Management Protocol (SNMP) architecture and component									
	1.2	Describe SNMP versions (v1, v2c, v3) and their differences									
	1.3	Use SNMP management software (Nagios, SolarWinds) **etc** to monitor networks									
	1.4	Understand SNMP security features (authentication, encryption)									
	1.5	Configure SNMP on network devices									
LO 2: Be able to Use Network Management Tools	2.1	Describe popular configuration management tools (Cisco Works, Ansible, Puppet)									
	2.2	**Demonstrate** secure management interfaces (HTTPS, SSH)									
	2.3	Integrate network management protocols with other network management tools									
	2.4	Automate configuration backups and changes									
	2.5	Use protocol analysis tools (Wireshark, NMap)									
LO 3: Implement network monitoring and alerting	3.1	Describe Remote Monitoring (RMON) types (RMON1, RMON2)									
	3.2	Use RMON to monitor network traffic and performance									
	3.3	Configure NetFlow on network devices									
	3.4	Use NetFlow analysis tools (Cisco NetFlow, Splunk) to monitor network traffic									
	3.5	Monitor protocol-related security logs and alerts									
LO 4: Know Network performance metrics	4.1	Describe common network performance metrics (throughput, latency, jitter etc)									
	4.2	**Explain** metric units and calculations (e.g., bits per second, milliseconds)									
	4.3	Identify tools for measuring network performance metrics (e.g., Wireshark,									

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
		NetFlow, ping)									
	4.4	Use tools like Ping or Traceroute to measure latency between devices									
	4.5	Use tools like Wireshark or NetFlow to measure jitter between devices									
LO 5: Optimize network performance	5.1	Use performance monitoring tools to identify optimization opportunities									
	5.2	Configure caching servers									
	5.3	Configure content delivery networks (CDNs)									
	5.4	Configure load balancing and link aggregation on network devices									
	5.5	Implement network acceleration and optimization policies for remote sites									
	5.6	Use traffic shaping and rate limiting to prevent network congestion									
	5.7	Configure QoS policies on network devices									
Learner's Signature			Date								
Assessor's Signature			Date								
IQA's Signature			Date								
EQA's Signature			Date								

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Unit 6: Cloud Networking

Unit Reference Number: ICT/NSS/06/L4
NSQ Level: 4
Credit Value: 5
Guided Learning Hours: 50

Unit Purpose:

Provide students with the skill required to configure and manage cloud networks

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network Security should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 09: Cloud Networking

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.				
LO 1: Know Cloud Networking	1.1	Set up a cloud account (AWS, Azure, Google Cloud)										
	1.2	Create a virtual network										
	1.3	Configure cloud network settings (IP addresses, subnets, routing)										
	1.4	Launch a virtual machine (VM) and connect to the cloud network										
LO 2: Setup cloud networks	2.1	Implement a cloud network architecture using diagrams and templates										
	2.2	Configure cloud network topology										
	2.3	Set up cloud network segmentation										
	2.4	Configure cloud network services (DNS, DHCP, load balancing)										
LO 3: Manage cloud networks	3.1	Monitor cloud network services using cloud provider tools **such as Proton mail, Azura etc.**										
	3.2	Implement cloud network automation and orchestration using templates and script										
	3.3	Use cloud networking protocols (HTTP/2, QUIC) for performance optimization										
	3.4	Analyse cloud networking logs and metrics										
	3.5	Identify and troubleshoot cloud networking issues										
LO 4: Configure cloud network security	4.1	Implement cloud security measures (firewalls, access control, encryption)										
	4.2	Configure cloud compliance and regulatory requirements (HIPAA, PCI-DSS)										
	4.3	Conduct cloud security risk assessments										
	4.4	Implement cloud networking best practices										

Learner's Signature	Date
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Unit 10: Network Optimization

Unit Reference Number: ICT/NSS/07/L4
NSQ Level: 4
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:

Provide students with the skill required to optimize a network

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network Security should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 07: Cloud Networking

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Know network optimization	1.1	Identify bottlenecks and optimization opportunities in network traffic									
	1.2	Understand network optimization approaches									
	1.3	Use network optimization tools									
	1.4	Document network optimisation data									
LO 2: Design network optimization procedure	2.1	Define network optimization goals and objectives									
	2.2	Identify key performance indicators (KPIs) for network optimization									
	2.3	Conduct network assessments (traffic analysis, performance monitoring)									
	2.4	Implement optimization solutions									
	2.5	Validate optimization results (KPIs, metrics)									
LO 3: Network security optimization	3.1	Conduct network security assessments: vulnerability scanning and penetration testing									
	3.2	Identify security optimization opportunities and threats									
	3.3	Implement security optimization techniques									
	3.4	Configure access control lists (ACLs) and group policy objects (GPOs)									
	3.5	Configure intrusion detection and prevention systems (IDS/IPS)									

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Unit 11: Network Identity and Access Management

Unit Reference Number: ICT/NSS/08/L4
NSQ Level: 4
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:

Provide students with the skill required to control access to network.

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network Security should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 08: Network identity and access management

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.				
LO 1: Know Network Access Management	1.1	Know identity management concepts										
	1.2	Implement identity management systems (Active Directory, LDAP)										
	1.3	Configure identity management protocols (Kerberos, RADIUS)										
	1.4	Configure access management protocols (TACACS+, Diameter)										
	1.5	Define access policy goals and objectives										
LO 2: Be able to Design an Access Management Policy	2.1	Identify access policy requirements (security, compliance, business needs)										
	2.2	Understand access control models (MAC, DAC, RBAC, ABAC)										
	2.3	Select appropriate access control model for network access policy										
	2.4	Implement compliance and regulatory requirements in network access policy										
	2.5	Determine policy review and update procedures										
LO 3: Implement network access management approach	3.1	Implement authentication protocols (Multi-Factor Authentication, Single Sign-On)										
	3.2	Configure IAM system components (authentication servers, authorization servers)										
	3.3	Create and manage ACLs and firewall rules										
	3.4	Design and implement network segmentation (VLANs, VPNs, subnets)										
	3.5	Implement AAA protocols (RADIUS, TACACS+, Kerberos)										

Learner's Signature	Date
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Unit 12: IoT Networking

Unit Reference Number: ICT/NSS/09/L4
NSQ Level: 4
Credit Value: 3
Guided Learning Hours: 30

Unit Purpose:

Provide students with the skill required to manage IoT based networks

Unit Assessment Requirements/ Evidence Requirements:

Assessments for Network Security should be conducted in a real workplace environment where learning and human development are actively taking place.

Assessment methods to be used include:

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

UNIT 09: Network identity and access management

LEARNING OBJECTIVE (LO) The learner will:		PERFORMANCE CRITERIA The learner can:	Evidence Type					Evidence Ref. Page No.			
LO 1: Explain IoT Device communication	1.1	Explain the basics of IoT networking									
	1.2	Determine IoT networking requirements									
	1.3	Understand IoT network protocols (CoAP, MQTT, HTTP)									
	1.4	Determine IoT network topology and architecture requirements									
	1.5	Identify IoT integration options (APIs, SDKs, gateways),**etc**									
LO 2: Configure IoT devices	2.1	Identify device configuration tools (web interfaces, command-line interfaces, mobile apps), **etc**									
	2.2	Configure device network settings (IP address, subnet mask, gateway)									
	2.3	Set up device wireless connectivity (Wi-Fi, Bluetooth, cellular)									
	2.4	Configure device network security (firewall, encryption, access control)									
	2.5	Register devices with IoT platforms (cloud, on-premise)									
LO 3: Integrate IoT devices within networks	3.1	Design network architecture for IoT device integration (LAN, WAN, wireless)									
	3.2	Configure network protocols for IoT device communication (TCP/IP, HTTP, CoAP)									
	3.3	Register devices with network management systems (NMS)									
	3.4	Configure data transmission and reception between devices and network									
	3.5	Implement security measures for IoT device integration									

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