REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

NETWORK SYSTEM TECHNICIAN

KNQF LEVEL 5

PROGRAMME CODE: 0612454A

DESIGN COMPUTER NETWORK

UNIT CODE: 0612 451 05A

UNIT DESCRIPTION

This unit covers the competencies required to Design a computer network. It involves the following: Perform computer network site survey, Design Computer network topology and Document Computer network design.

Elements *These describe the key outcomes which make up workplace functions*	**Performance Criteria** *These are assessable statements which specify the required level of performance for each of the elements* ***(Bold and italicized terms are elaborated in the range)***
1. Perform computer network site survey.	1.1.Current infrastructure is evaluated as per work procedure
	1.2 ***Network needs*** are identified as per the organization's policy.
	1.3 Fundamental ***Network Design goals*** are determined as per work procedure.
	1.4 Computer network site layout is designed as per industry standards.
	1.5 ***Transmission media*** is identified as per IEEE 802.11, 802.3
	1.6 ***E-waste*** is managed as per work standards.
	1.7 ***Green energy sources*** are identified as per work procedure
2 Design Computer network topology.	2.1 Network Floor plan is designed as per work procedure.
	2.2 Computer ***network active components*** are determined as per work procedure.
	2.3 Network device locations are determined as per IEEE 802.11, 802.3
	2.4 ***Computer network topology*** is designed as per work procedure.
3 Document Computer network design.	3.1 Computer ***Network report*** is created as per organizational standards.
	3.2 Network topology diagram is generated as per work procedure.

	3.3 Device names, roles and IP addresses are documented as per work procedure.

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environments and situations that will affect performance.

VARIABLE	RANGE
1. Network needs may include but not limited to;	● Communication ● Resource sharing ● Data sharing and collaboration ● Internet access ● Data back-up and recovery ● Security ● Fault tolerance and Redundancy
2. Network design goals may include but not limited to;	● Scalability ● Reliability ● Performance ● Security ● Flexibility ● QOS ● Accessibility
3. *Transmission media* may include but not limited to;	● Coaxial cable ● Fibre Optic ● Twisted pair ● Satellite ● Microwave
4. E-waste may include but not limited to;	● Obsolete servers ● Obsolete switches and routers ● Networking cables and connectors ● Obsolete computers and computer accessories
5. *Network active component*s may include but not limited to;	● Router ● Switch ● Firewall
6. Green energy sources may include but not limited to;	● Renewable energy sources ● Energy efficient hardware ● Virtualization and Consolidation

	● Energy aware routing ● Energy monitoring and reporting
7. ***Computer network topology*** may include but not limited to;	● Star ● Ring ● Bus ● Mesh ● Hybrid
8. Network report may include but not limited to;	● Network performance report ● Security report ● Inventory report ● Usage report ● Incident report

REQUIRED KNOWLEDGE AND SKILLS

This section describes the knowledge and skills required for this unit of competency.

Required knowledge

- Network architecture
- Network components and devices
- Safety awareness
- Project management
- Environmental conservation
- Workplace safety and health

Required skills

- Computer Literacy
- Critical thinking
- Communication skills
- Problem-solving skills
- Analytical skills
- Creativity and innovation

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

1. Critical aspects of competency	Assessment requires evidence that the candidate: 1.1 Performed Computer Network Site Survey as per work procedure

	1.2 Designed computer network topology as per work procedure 1.3 Documented Computer network design as per work procedure
2. Resource implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proposed activities or tasks; including computers, media, routers, switches, ports etc.
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Portfolio of evidence 3.4 Interviews 3.5 Third party report 3.6 Practical assessment 3.7 Written tests
4. Context of assessment	This Competency may be assessed in a workplace or a simulated workplace
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.