REPUBLIC OF KENYA

NATIONAL OCCUPATIONAL STANDARDS

FOR

AN ELECTRICAL INSTALLATION ARTISAN

LEVEL 3

TVET CDACC
P.O BOX 15745-00100
NAIROBI

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FOREWORD

The provision of quality education and training is fundamental to the Government's overall strategy for social economic development. Quality education and training will contribute to achievement Kenya's development blue print and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution and this resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training. The policy document requires that training in TVET shall be competency based, curriculum development shall be industry led, certification shall be based on demonstration of competence and mode of delivery shall allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Electrical Technician level 3. These Occupational Standards will also be the basis for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for the Electrical sector's growth and sustainable development.

PRINCIPAL SECRETARY, VOCATIONAL AND TECHNICAL TRAINING
MINISTRY OF EDUCATION

PREFACE

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These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Electrical installation level 3. These Occupational Standards will also be the bases for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for the Electrical sector's growth and sustainable development.

CHAIRPERSON, TVET CDACC

ACKNOWLEDGMENT

These Occupational Standards were developed through combined effort of various stakeholders from private and public organizations. I am sincerely thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided inputs towards the development of these Standards.

I thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to the Electrical Engineering Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards. I thank all the individuals and organizations who participated in the validation of these Standards.

My gratitude also goes to CAP Youth Empowerment Institute who cooperated with TVET CDACC in financing the development of these Standards.

I acknowledge any other institution which in one way or another contributed to the success of development of these Standards but has not been mentioned.

CHAIRPERSON ELECTRICAL ENGINEERING SECTOR SKILLS
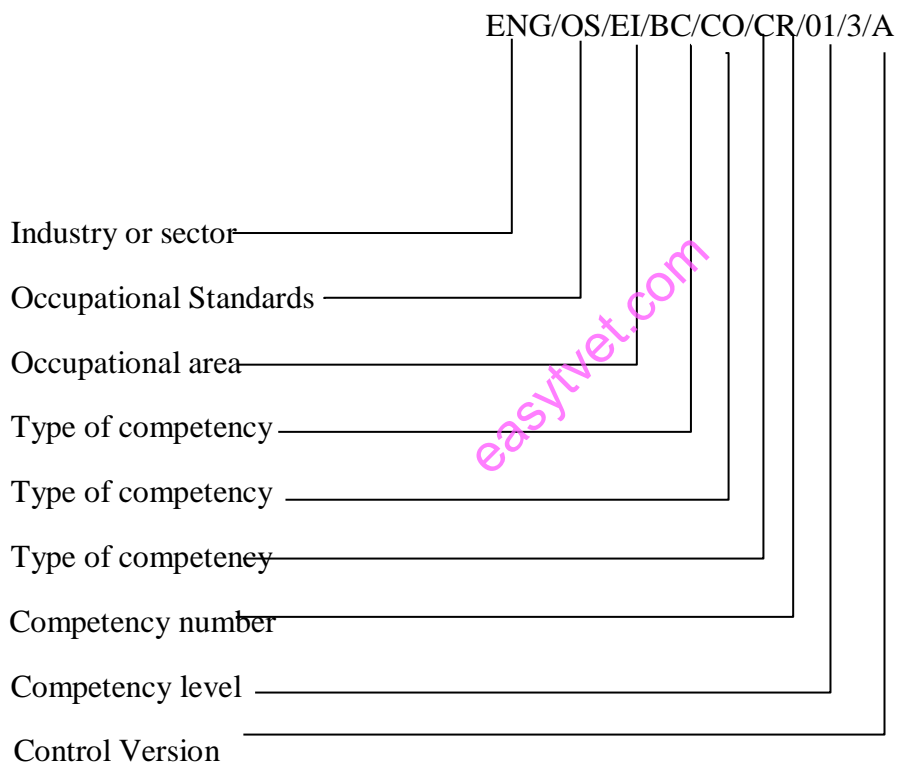**ADVISORY COMMITTEE**

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ACRONYMNS AND ABBREVIATIONS

BC	Basic Competency
IEE	Institute of Electrical Engineers
EE	Electrical Engineering
PC	Personal Computer
CDACC	Curriculum Development, Assessment and Certification Council
CPU	Central Processing Unit
CR	Core Competency
NCA	National Construction Authority
PVC	Polyvinyl Chloride
ICT	Information Communication Technology
KCPE	Kenya Certificate of Primary Education
KCSE	Kenya Certificate of secondary Education
KNQA	Kenya National Qualifications Authority
NEMA	National Environmental Management Authority
OS	Occupational Standards
OSHA	Occupation Safety and Health Act
OSHS	Occupation Safety and Health Standards
PPE	Personal Protective Equipment
SOPs	Standard Operating Procedures
SSAC	Sector Skills Advisory Committee
TVET	Technical and Vocational Education and Training
A	Control Version

KEY TO UNIT CODE

ENG/OS/EI/BC/CO/CR/01/3/A

Industry or sector

Occupational Standards

Occupational area

Type of competency

Type of competency

Type of competency

Competency number

Competency level

Control Version

OVERVIEW

Electrical Installation Certificate Level 3 qualification consists of competencies that an individual must achieve to enable the individual install and maintain electrical wiring, lighting, power circuits and related equipment in domestic premises.

The units of competency comprising Electrical Installation Level 3 Qualification include the following:

BASIC COMPETENCIES

Unit of Competency Code	Unit of Competency Title
ENG/OS/ET/BC/01/3/A	Demonstrate Communication skills
ENG/OS/ET/BC/02/3/A	Demonstrate Numerical skills
ENG/OS/ET/BC/03/3/A	Demonstrate Entrepreneurial skills
ENG/OS/ET/BC/04/3/A	Demonstrate Employability skills
ENG/OS/ET/BC/05/3/A	Demonstrate Environmental literacy
ENG/OS/ET/BC/06/3/A	Demonstrate Occupational safety and health practices
ENG/OS/ET/CC/07/3/A	Demonstrate Digital Literacy

CORE COMPETENCIES

Unit Code	Unit Title
ENG/OS/ET/CR/01/3/A	Perform PVC sheathed cabling, conduiting, trunking and cable trays laying
ENG/OS/ET/CR/02/3/A	Perform single phase electrical installation and maintenance
ENG/OS/ET/CR/03/3/A	Perform fixing and maintenance of light fittings, power outlets, and basic appliances

BASIC UNITS OF COMPETENCY

DEMONSTRATE COMMUNICATION SKILLS

UNIT CODE: ENG/OS/EI/BC/01/3/A

UNIT DESCRIPTION

This unit specifies the competencies required to demonstrate communication skills. It involves, obtaining and conveying workplace information, speaking English at a basic operational level, participating in workplace meetings and discussions and completing relevant work-related documents.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	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. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from ***appropriate sources*** 1.2 Effective questioning, active listening and speaking skills are used to gather and convey information 1.3 Appropriate ***medium*** is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and ***storage*** of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Speak English at a basic operational level	2.1 Simple conversations on familiar topics with work colleagues is participated 2.2 Simple verbal instructions or requests are responded to according to workplace guidelines 2.3 Simple requests are made in accordance with workplace procedure 2.4 **Routine procedures** are described in accordance with workplace policy 2.5 Likes, dislikes and preferences are expressed 2.6 Different forms of expression in English are identified
3. Participate in workplace meetings and discussions	3.1 Team meetings are attended on time 3.2 Own opinions are clearly expressed and those of others are listened to without interruption 3.3 Meeting inputs are consistent with the meeting purpose and

	established *protocols*
	3.4 *Workplace interactions* are conducted in a courteous manner
	3.5 Questions about simple routine workplace procedures and maters concerning working conditions of employment are asked and responded to
	3.6 Meetings outcomes are interpreted and implemented
4. Complete relevant work-related documents	4.1 Range of forms relating to conditions of employment are completed accurately and legibly
	4.2 Workplace data is recorded on standard workplace forms and documents
	4.3 Basic mathematical processes are used for routine calculations
	4.4 Errors in recording information on forms/ documents are identified and properly acted upon
	4.5 Reporting requirements to supervisor are completed according to organizational guidelines

RANGE

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

Variable	Range
Appropriate Sources include but not limited to:	• Various department heads, • organization documents
Medium include but not limited to:	Method of communication • Physical media • Mechanical media
Routine procedures include but not limited to:	• Day to day activities
Protocols include but not limited to:	• Procedures for doing a task
Workplace interactions include but not limited to:	• Official inter relations

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills
The individual needs to demonstrate the following skills:
• Analytical

- Listening
- Attention to detail
- Communication
- Report writing
- Interpretation
- Basic Information Technology (IT)

Required Knowledge

The individual needs to demonstrate knowledge of:

- Minutes
- Meetings
- Report writing

EVIDENCE GUIDE

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

1. Critical aspects of Competency	1. Assessment requires evidence that the candidate: 1.1 Prepared written communication following standard format of the organization 1.2 Accessed information using communication equipment 1.3 Spoken English at a basic operational level 1.4 Made use of relevant terms as an aid to transfer information effectively 1.5 Conveyed information effectively adopting the formal or informal communication
2. Resource Implications	2.1 Telephone 2.2 Writing materials 2.3 Internet
3. Methods of Assessment	3.1 Direct Observation 3.2 Oral interview and written test
4. Context of Assessment	2. Competency may be assessed individually in the actual workplace or through accredited institution
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE NUMERACY SKILLS

UNIT CODE: ENG/OS/EI/BC/02/3/A

UNIT DESCRIPTION:

This unit covers the competencies required to identify and undertake simple numerical processes. The person who is competent in this unit shall be able to use / work with whole numbers and money up to one hundred thousand; Locate, compare and use highly familiar measurement; Use highly familiar maps and diagrams; Identify and use some common 2D shapes; and locate specific Information in highly familiar tables, graphs and charts for work.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	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. Use whole numbers and money up to one hundred thousand for work	1.1 Whole numbers and money amount up to 100,000 in highly familiar workplace documents and tasks are named and read 1.2 Understanding of place value and the role of zero is demonstrate 1.3 Halves are recognised and understood in workplace 1.4 Whole numbers and money amounting up to 100,000 are organised in size order and are compared 1.5 Counting done in number groups 1.6 Addition and subtraction of whole numbers and money up to 100,000 done in accordance with workplace requirement 1.7 Links between operations of addition and subtraction are clearly described 1.8 Reasonableness of outcome with prompting and support is checked 1.1 Numerical information is recorded, and the result of the task is communicated using informal language and symbolism
2. Locate, compare and use highly familiar measurement for work	2.1 Measurements in highly familiar workplace documents and tasks are located 2.2 Different units of measurements and their uses are identified 2.3 The comparative relationship between the units of measurement identified 2.4 Understanding of conservation of amounts is demonstrated 2.5 Informal language is used to compare measurements 2.6 Digital time is well read and am and pm used in reference to time

	2.7 Calendar used appropriately to record information 2.8 Basic measurement information is well read and recorded 2.9 Additions and subtraction of simple quantities done in workplace
3. Use highly familiar maps and diagrams for work	3.1 Familiar items or places are in highly familiar maps and diagrams 3.2 Simple symbols and pictorial representations are identified in highly familiar maps and diagrams 3.3 Simple oral directions are given to locate objects 3.4 Simple oral directions followed to locate objects 3.5 Understanding of informal directional language is demonstrated
4. Identify and use some common 2D shapes for work	4.1 Familiar two-dimensional shapes are identified and named 4.2 Common objects are described in terms of size and shape 4.3 Common, every day, informal language is used to compare objects 4.4 Common objects are grouped based on shape, size, colour and features
5. Locate specific Information in highly familiar tables, graphs and charts for work	5.1 Features of simple tables identified 5.2 Specific numerical information located in highly familiar tables using grid movement (up and down columns and across rows) and key 5.3 Numerical information and data in highly familiar tables compared using appropriate informal language 5.4 Information related to relevant workplace tasks 5.5 Features of simple graphs and charts identified 5.6 Specific numerical information located in highly familiar graphs and charts 5.7 Numerical information and data compared using appropriate informal language

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
Measuring instruments include but not limited to:	• Rulers • Watches/clocks • Scales • Thermometers • AVO meter
Common two - dimensional shapes include but not limited to:	• Round/circle • Square • Rectangular

	• Triangle

REQUIRED SKILLS AND KNOWLEDGE
This section describes the skills and knowledge required for this unit of competency.

Required Skills

The individual needs to demonstrate the following skills:
- Applying Fundamental operations (addition, subtraction, division, multiplication)
- Using calculator
- Using different measuring tools

Required knowledge
The individual needs to demonstrate knowledge of:
- Types of common shapes
- Differentiation between two dimensional shapes / objects
- Formulae for calculating area and volume
- Types and purpose of measuring instruments
- Units of measurement and abbreviations
- Fundamental operations (addition, subtraction, division, multiplication)
- Rounding techniques
- Types of fractions
- Different types of tables and graphs
- Meaning of graphs, such as increasing, decreasing, and constant value
- Preparation of basic data, tables & graphs

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate:
	1.1 Measured objects or materials as per job requirements
	1.2 Used calculator to perform the four fundamental operations
	1.3 Performed calculations involving money up to one hundred thousand
	1.4 Performed conversions between hours, minutes and seconds
	1.5 Calculated area and volume of regular shapes
	1.6 Created tables and graphs to represent and interpret information
2. Resource Implications	2.1 Calculator 2.2 Basic measuring instruments
3. Methods of	Competency may be assessed through:

Assessment	3.1 Written Test	
	3.2 Interview/Oral Questioning	
	3.3 Demonstration	
4. Context of Assessment	Competency may be assessed in an off the job setting	
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.	

DEMONSTRATE DIGITAL LITERACY

UNIT CODE: ENG/OS/EI/BC/03/3/A

UNIT DESCRIPTION

This unit covers the competencies required to effectively demonstrate digital literacy in a working environment. It entails identifying and using digital devices such as smartphones, tablets, laptops and desktop PCs for purposes of communication and performing work related tasks at the work place.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function	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. Identify computer software and hardware	1.1 ***Computer software*** are identified according to manufacturer's specification 1.2 ***Appropriate computer hardware*** is identified according to manufacturer's specification
2. Apply security measures to data, hardware, software	2.1 ***Data security and privacy are classified*** in accordance with the technological situation 2.2 ***Security and control measures*** are applied in accordance with laws governing protection of ICT 2.3 Computer threats and crimes are detected. 2.4 Protection against computer crimes is undertaken in accordance with laws governing protection of ICT
3. Apply computer software in solving tasks	3.1 Basic ***word processing concepts*** are applied in resolving workplace tasks 3.2 ***Word processing utilities*** are applied in accordance with workplace procedures 3.3 Data is manipulated on worksheet in accordance with office procedures
4. Apply internet and email in communication at workplace	4.1 Electronic mail is applied in workplace communication in accordance with office procedures 4.2 Office internet functions are defined and executed in accordance with office procedures 4.3 ***Network configuration*** and uses are determined in accordance with office operations procedures

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.

Range	Variable
Computer software include but not limited to:	• A collection of instructions that enable the user to interact with a *computer*, its hardware, or perform tasks. • Computer tools that will help *computer* users interact with the hardware in a *computer*.
Computer hardware may include but not limited to:	Collection of physical parts of a computer system. • Computer case • Monitor • Keyboard • Mouse and all the parts inside the computer case, such as the hard disk drive, motherboard, video card etc.
Data security and privacy include but not limited to:	• Confidentiality • Cloud computing • Confidentiality • Cyber terrorism • Integrity -but-curious data serving
Security and control measures may include but not limited to:	• Countermeasures and risk reduction • Cyber threat issues • Risk management
Word processing concepts may include but not limited to:	Using a special program to create, edit and print documents
Network configuration may include but not limited to:	Organizing and maintaining information on the components of a computer network

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Analytical skills
- Interpretation
- Typing
- Communication
- Computing (applying fundamental operations such as addition, subtraction, division and multiplication)
- Using calculator
- Basic ICT skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Input and output devices
- Central processing Unit (CPU)
- Peripherals
- Storage Media
- Software concept
- Types of concept
- Function of computer software
- Data security and privacy
- Security threats and control measures
- Computer crimes
- Detection and protection of computer crimes
- Laws governing protection of ICT
- Word processing;
  - ✓ Functions and concepts of word processing.
  - ✓ Documents and tables creation and manipulations
  - ✓ Mail merging
  - ✓ Word processing utilities
- Spread sheet;
  - ✓ Meaning, formulae, function and charts, uses, layout, data manipulation and application to cell
- Networking and Internet;
  - ✓ Meaning, functions and uses of networking and internet.
  - ✓ Electronic mail and world wide web
- Emerging trends and issues in ICT;
  - ✓ Identify and apply emerging trends and issues in ICT
  - ✓ Challenges posed by emerging trends and issues

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	3. Assessment requires evidence that the candidate:
	1.1 Identified input, output, CPU and storage media devices of computers in accordance to computer specification
	1.2 Identified concepts, types and functions of computer software according to operation manual
	1.3 Identified and controlled security threats
	1.4 Detected and protected computer crimes
	1.5 Applied word processing in office tasks
	1.6 Prepared work sheet and applied data to the cells in accordance to workplace procedures
	1.7 Used Electronic Mail for office communication as per workplace procedure
	1.8 Applied internet and World Wide Web for office tasks in

		accordance with office procedures
		1.9 Applied laws governing protection of ICT
2.	Resource Implications	2.1 Smartphones
		2.2 Tablets
		2.3 Laptops
		2.4 Desktop computers
		2.5 Calculators
		2.6 Internet
		2.7 Operation Manuals
3.	Methods of Assessment	Competency may be assessed through:
		3.1 Written Test
		3.2 Demonstration
		3.3 Practical assignment
		3.4 Interview/Oral Questioning
		3.5 Demonstration
4.	Context of Assessment	4. Competency may be assessed in an off and on the job setting
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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DEMONSTRATE ENTREPRENEURIAL SKILLS

UNIT CODE : ENG/OS/EI/BC/04/3/A

UNIT DESCRIPTION

This unit specifies the competencies required to demonstrate Entrepreneurial skills. It involves developing entrepreneurial culture, identifying entrepreneurial opportunities, starting a small business, operating a small business and growing a small business.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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. Develop entrepreneurial culture	1.1 **Entrepreneurship terminologies** are defined following established procedures. 1.2 Contribution of entrepreneurship towards national development is identified in accordance to national development goals 1.3 Self-employment benefit are identified and emphasized to help create a positive attitude 1.4 Cultural factors that promote or inhibit entrepreneurial development **are *identified and emphasis made on entrepreneurial promotion*** 1.5 Ways of managing factors that inhibit development of entrepreneurial culture are identified in accordance with cultural background and national social economic situation
2. Identify entrepreneurial opportunities	2.2 Myths associated with entrepreneurship, types of entrepreneurs and characteristics of entrepreneurship are determined in accordance with the set procedures 2.3 Identification of *sources of business ideas*, generation of business ideas is undertaken in accordance with the existing procedure 2.4 Evaluation of business opportunities is undertaken according to prevailing office procedures 2.5 Competencies are matched with business opportunities in accordance with business practices.
3. Start a small business	3.1 Factors to consider when starting a small business are identified according to business sector. 3.2 *Forms of business ownership* are identified and procedure of starting a small business stipulated according to relevant legal requirements

		3.3 Procedure of starting a small business is identified as per the legal requirements
		3.4 Challenges faced when starting a small business are identified and mitigating factors provided for in accordance prevailing legal and regulatory requirement
		3.5 *Resource requirement* for a small business are specified according to nature of business
		3.6 *Business life cycle* is projected as per the nature of business and national social economic situation
4.	Operate a small business	4.1 *Relevant terms* are defined in accordance with the set rules
		4.2 Small business record is maintained in accordance with office procedures
		4.3 *Business support services* are set up in accordance with the nature and size of business
		4.4 *Marketing activities* are effected according to the nature and size of business
		4.5 Small enterprise business plan is prepared depending on the size and nature of business and the client specification
		4.6 Small business resources are run for efficiency and profitability
		4.7 Small business records are kept for decision making purposes
		4.8 Word processing concepts are applied in the management of small business according to office procedures
		4.9 Basic computer application software and emerging trends and concerns are applied in small business management in accordance with office procedures
5.	Grow a small business	5.1 Methods of growing/expanding a small business are identified and implemented in accordance with growth schedule
		5.2 Resources for growing small business are identified and implementing
		5.3 Small business growth plans are prepared according to growth schedule
		5.4 ICT and small business growth schedule is prepared in accordance with office procedures
		5.5 Use of computers and technology is incorporated in small scale business growth schedule in accordance with technological trends
		5.6 Social media is used for business growth and profitability
		5.7 Emerging issues and trends are considered in

	accordance with business growth schedule and activities
	5.8 Community interest is built in product/service according to growth plan
	5.9 Business communication is enhanced according to business *communication plan* and profitability
	5.10 Basic business growth strategies are identified and implemented for increased profitability
	5.11 Word processing concepts are applied in growing of small business according to office procedures
	5.12 Basic computer application software, programming and emerging trends and concerns are applied in small business growth in accordance with office procedures for growth and profitability

RANGE

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

Entrepreneurship terminologies include but not limited to:	• Entrepreneurship • Enterprise • Business vision. Mission, core values, objectives
Sources of business ideas include but not limited to:	• Brainstorming • Personal hobbies • Newspapers, magazines, • Friends and relatives • Accounting/Administrative work • Modern trends and concerns
Forms of business ownership include but not limited to:	• Sole proprietorship • Partnership • Limited Company • Unlimited Company
Resource requirement include but not limited to:	• Human • Equipment • Finance
Business life cycle include but not limited to:	• Start-up • Growth • Expansion • Decline of a business

Relevant terms include but not limited to:	• Seed capital • Business startup
Marketing activities include but not limited to:	• Digital marketing • Social media marketing

REQUIRED SKILLS AND KNOWLEDGE

Required Skills
This section describes the skills and knowledge required for this unit of competency.
The individual needs to demonstrate the following skills:
- Individual marketing skills
- Using basic advertising (posters/ tarpaulins, flyers, social media,
- Basic bookkeeping/ accounting skills
- Communication skills

Required Knowledge
The individual needs to demonstrate knowledge of:
- Public relations concepts
- Basic product promotion strategies
- Basic market and feasibility studies
- Basic business ethics
- Building customer relations
- Business models and strategies
- Types and categories of businesses
- Business internal controls
- Relevant national and local legislation and regulations
- Basic quality control and assurance concepts
- Building relations with customer and employees
- Building competitive advantage of the enterprise

EVIDENCE GUIDE
This section describes the required skills which supports performance. These skills will need to be considered in the learning and assessment process.

1. Critical aspects of Competency	5. Assessment requires evidence that the candidate: 1.1 Demonstrated basic entrepreneurial skills 1.2 Demonstrated ability to conceptualize and plan a micro/small enterprise 1.3 Demonstrated ability to manage/operate a micro/small-scale business 1.4 Demonstrated basic marketing skills
2. Resource Implications	The following resources should be provided: 2.1 Case problems on micro/small-scale enterprises 2.2 Materials and location relevant to the proposed activity and

		tasks
3.	Methods of Assessment	Competency in this unit may be assessed through: 3.1 Case problems 3.2 Oral Questioning 3.3 Portfolio
4.	Context of Assessment	Competency may be assessed in workplace or in a simulated workplace setting. Assessment shall be observed while tasks are being undertaken whether individually or in-group

DEMONSTRATE EMPLOYABILITY SKILLS

UNIT CODE: ENG/OS/EI/BC/05/3/A

UNIT DESCRIPTON

This unit covers competencies required to demonstrate employability skills. It involves conducting self-management, demonstrating critical safe work habits, demonstrating workplace learning and workplace ethics.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	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. Conduct self-management	1.1 Personal vision, mission and goals are formulated based on potential and in relation to organization objectives 1.2 Emotions are handled as per workplace requirements 1.3 Assertiveness is developed and maintained based on the requirements of the job. 1.4 Accountability and responsibility for own actions are demonstrated. 1.5 Self-esteem and a positive self-image are developed and maintained. 1.6 Time management, attendance and punctuality are observed as per the organization policy. 1.7 Interpersonal communication demonstrated 1.8 Information is shared as per communication structure
2. Demonstrate critical safe work habits	2.1 Stress is managed in accordance with workplace procedures. 2.2 Punctuality and time consciousness is demonstrated in line with workplace policy. 2.3 ***Feedback*** on performance is collected based on established ***team*** learning process 2.4 Abstinence from ***drug and substance abuse*** is observed as per workplace policy. 2.5 Awareness of HIV and AIDS is demonstrated in line with workplace requirements. 2.6 Safety consciousness is demonstrated in the workplace based on organization safety policy. 2.7 ***Emerging issues*** are dealt with in accordance with organization policy.
3. Demonstrate workplace learning	3.1 Personal training needs are identified in line with the requirements of the job 3.2 Learning opportunities are identified based on job requirement and in line with organization policy.

	3.3 Contribution to the learning community at the workplace is carried out.
	3.4 Application of learning is demonstrated in both technical and non-technical aspects based on requirements of the job
	3.5 Enthusiasm for ongoing learning is demonstrated
	3.6 Willingness to learn in different context is demonstrated based on available learning opportunities arising in the workplace.
	3.7 Awareness of personal role in workplace *innovation* is demonstrated.
4. Demonstrate workplace ethics	4.1 Policies and guidelines are observed as per the workplace requirements
	4.2 Self-worth and profession is exercised in line with personal goals and organizational policies
	4.3 Code of conduct is observed as per the workplace requirements
	4.4 Commitment to jurisdictional laws is demonstrated as per the workplace requirements

RANGE

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

Range	Variable
Drug and substance abuse includes but not limited to:	Commonly abused • Alcohol • Tobacco • Miraa • Over-the-counter drugs • Cocaine • Bhang • Glue
Feedback includes but not limited to:	• Verbal • Written • Informal • Formal
Team includes but not limited to:	• Small work group • Staff in a section/department • Inter-agency group
Innovation include but not limited to:	• New ideas • Original ideas • Different ideas • Methods/procedures

	• Processes • New tools
Emerging issues include but not limited to:	• Terrorism • Social media • National cohesion • Open offices

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Personal hygiene practices
- Intra and Interpersonal skills
- Communication skills
- Knowledge management
- Interpersonal skills
- Critical thinking skills
- Observation skills
- Organizing skills
- Negotiation skills
- Monitoring skills
- Evaluation skills
- Record keeping skills
- Problem solving skills
- Decision Making skills
- Resource utilization skills
- Resource mobilization skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Work values and ethics
- Company policies
- Company operations, procedures and standards
- Occupational Health and safety procedures
- Fundamental rights at work
- Personal hygiene practices
- Workplace communication
- Concept of time
- Time management
- Decision making
- Types of resources
- Work planning
- Resources and allocating resources

- Organizing work
- Monitoring and evaluation
- Record keeping
- Workplace problems and how to deal with them
- Negotiation
- Assertiveness
- Team work
- Gender mainstreaming
- HIV and AIDS
- Drug and substance abuse
- Leadership
- Safe work habits
- Professional growth and development
- Technology in the workplace
- Learning
- Creativity
- Innovation
- Emerging issues
    - Social media
    - Terrorism
    - National cohesion

EVIDENCE GUIDE

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

1. Critical aspects of Competency	6. Assessment requires evidence that the candidate: 1.1 Conducted self-management 1.2 Demonstrated critical safe work habits 1.3 Demonstrated workplace learning 1.4 Demonstrated workplace ethics
2. Resource Implications	The following resources should be provided: 2.1 Case studies/scenarios
3. Methods of Assessment	Competency in this unit may be assessed through: 3.1 Oral Interview 3.2 Observation 3.3 Third Party Reports 3.4 Written
4. Context of Assessment	4.1 Competency may be assessed in workplace or in a simulated workplace setting 4.2 Assessment shall be observed while tasks are being undertaken whether individually or in-group
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE ENVIRONMENTAL LITERACY

UNIT CODE : ENG/OS/EI/BC/06/3/A

UNIT DESCRIPTION

This unit specifies the competencies required to follow procedures for environmental hazard control, follow procedures for environmental pollution control and comply with workplace sustainable resource use.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	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. Control environmental hazard	1.1 *Storage and handling methods* for environmentally *hazardous* materials are strictly followed according to environmental regulations and OSHS. 1.2 *Disposal methods* of hazardous wastes are followed at all times according to environmental regulations and OSHS. 1.3 *PPE* is used according to OSHS.
2. Control environmental Pollution	2.1 *Environmental pollution control measures* are complied with following standard protocol. 2.2 Procedures for solid waste management are observed according Environmental Management and Coordination Act 1999 2.3 Methods for minimizing *noise pollution* complied following environmental regulations.
3. Demonstrate sustainable resource use	3.1 Methods for minimizing wastage are complied with. 3.2 *Waste management procedures* are employed following principles of 3Rs (Reduce, Reuse, Recycle) 3.3 Methods for economizing or reducing *resource* consumption are practiced.

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. PPE may include but are not limited to:	1.1 Mask 1.2 Gloves 1.3 Goggles 1.4 Safety hat 1.5 Overall 1.6 Hearing protector
2. Environmental pollution control measures may include but are not limited to:	2.1 Methods for minimizing or stopping spread and ingestion of airborne particles 2.2 Methods for minimizing or stopping spread and ingestion of gases and fumes 2.3 Methods for minimizing or stopping spread and ingestion of liquid wastes
3 Waste management procedures may include but are not limited to:	3.1 Sorting 3.2 Storing of items 3.2 Recycling of items 3.3 Disposal of items
4 Resources may include but are not limited to:	4.1 Electric 4.2 Water 4.3 Fuel 4.3 Telecommunications 4.4 Supplies 4.5 Materials
5 Workplace environmental hazards may include but are not limited to:	5.1 Biological hazards 5.2 Chemical and dust hazards 5.3 Physical hazards

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Following storage methods of environmentally hazardous materials
- Following disposal methods of hazardous wastes
- Using PPE
- Practicing OSHS
- Complying environmental pollution control
- Observing solid waste management
- Complying methods of minimizing noise Pollution
- Complying methods of minimizing wastage
- Employing waste management procedures
- Economizing resource consumption

Required Knowledge

The individual needs to demonstrate knowledge of:
- Storage methods of environmentally hazardous materials
- Disposal methods of hazardous wastes
- Usage of PPE Environmental regulations
- OSHS
- Types of pollution
- Environmental pollution control measures
- Different solid wastes
- Solid waste management
- Different noise pollution
- Methods of minimizing noise pollution
- Solid Waste Act
- Methods of minimizing wastage
- Waste management procedures
- Economizing of resource consumption
- Principle of 3Rs

EVIDENCE GUIDE

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

1.	Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Controlled environmental hazard 1.2 Controlled environmental pollution 1.3 Demonstrated sustainable resource use
2.	Resource Implications	The following resources should be provided: 2.1 Workplace with storage facilities 2.2 Tools, materials and equipment relevant to the tasks (ex. Cleaning tools, cleaning materials, trash bags, etc.) 2.3 PPE 2.4 Manuals and references
3	Methods of Assessment	Competency in this unit may be assessed through: 3.1 Demonstration 3.2 Oral questioning 3.3 Written examination
4	Context of Assessment	Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.
5	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

DEMONSTRATE OCCUPATIONAL SAFETY AND HEALTH PRACTICES

UNIT CODE: ENG/OS/EI/BC/07/3/A

UNIT DESCRIPTION

This unit specifies the competencies required to practice and promote safety and health at work.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace function.	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. Prepare to practice safety and health at work	1.1 Awareness of legislation that outlines the minimum standards for occupational safety and health requirements/ regulations are emphasized 1.2 Benefits of implementing an occupational safety and health program are identified 1.3 ***Safety requirements/ regulations*** of own work and of other workers are familiarized 1.4 Workplace standards and procedures for incidents and Emergencies are determined 1.5 ***Prevention and control measures***, including use of ***safety gears/PPE*** (Personal Protective Equipment) to avoid accident, injuries and sickness are identified
2. Comply and promote compliance of workers to organization's occupational safety and health instructions and requirements	2.1 Safety instructions and safety signs are followed and disseminated to co-workers 2.2 Safe handling of tools, equipment and materials is learned and shared with co-workers 2.3 Execution of own work and of co-workers is monitored in according to safe work procedures 2.4 Use of safe guards and safety devices is monitored 2.5 Hazards, incidents, injuries and sickness in the workplace are reported properly following standards and procedures

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. Safety requirements / regulations may include but are not limited to:	1.1 Building code 1.2 Permit to Operate 1.3 Occupational Safety and Health Standards
2. Incidents and emergencies may include but are not limited to:	2.1 Chemical spills 2.2 Equipment/vehicle accidents 2.3 Explosion 2.4 Fire 2.5 Gas leak 2.6 Injury to personnel 2.7 Structural collapse 2.8 Toxic and/or flammable vapors emission.
3. Prevention and control measures may include but are not limited to:	3.1 Eliminate the hazard (i.e., get rid of the dangerous machine 3.2 Isolate the hazard (i.e. keep the machine in a closed room and operate it remotely; barricade an unsafe area off) 3.3 Substitute the hazard with a safer alternative (i.e., replace the machine with a safer one) 3.4 Use administrative controls to reduce the risk (i.e. give trainings on how to use equipment safely; OSH-related topics, issue warning signages, rotation/shifting work schedule) 3.5 Use engineering controls to reduce the risk (i.e. use safety guards to machine) 3.6 Use personal protective equipment 3.7 Safety, Health and Work Environment Evaluation 3.8 Periodic and/or special medical examinations of workers
4. Safety devices/ PPEs (personal protective equipment) May include but are not limited to:	5.1 Arm/Hand guard, gloves 5.2 Eye protection (goggles, shield) 5.3 Hearing protection (ear muffs, ear plugs) 5.4 Hair Net/cap/bonnet 5.5 Hard hat 5.6 Face protection (mask, shield) 5.7 Apron/Gown/coverall/jump suit 5.8 Anti-static suits 5.9 High-visibility reflective vest

REQUIRED SKILLS AND KNOWLEDGE

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

Required Skills

The individual needs to demonstrate the following skills:

- Communication skills
- Knowledge management

- Interpersonal skills
- Troubleshooting skills
- Critical thinking skills
- Observation skills
- Monitoring skills
- Reporting skills

Required Knowledge

The individual needs to demonstrate knowledge of:

- Elements of an effective occupational safety and health program
- Benefits of implementing an occupational safety and health program
- Safety requirements of own work and of other workers
- Standard emergency plan and procedures in the workplace
- Different OSH control measures
- General OSH principles
- Work standards and procedures
- Safe handling procedures of tools, equipment's and materials
- Standard emergency plan and procedures in the workplace
- Different OSH control measures
- Standard accident and illness reporting procedures in the workplace
- Monitoring system on compliance to work safety and health

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate:
	1.1 Emphasizes awareness of OSH legislations
	1.2 Identifies benefits of implementing OSH program
	1.3 Identifies safety requirements of own work and of co-workers
	1.4 Identifies and shares with co-workers OSH control measures and emergency plan in the workplace
	1.5 Identifies and shares with co-workers the *control measures* to prevent accident, injuries and sickness
	1.6 Follows and disseminate to co-workers the safety instructions and safety signs at work
	1.7 Learns and shares with co-workers the learnings on safe handling of tools, equipment and materials
	1.8 Monitors safe execution of own work and of co-workers
	1.9 Monitors compliance to safety measures
	1.10 Reports hazards, incidents, injuries and sickness following workplace procedures
2. Resource Implications	The following resources should be provided:
	2.1 Facilities, materials tools and equipment necessary for the activity

3. Methods of Assessment	Competency in this unit may be assessed through:
	3.1 Observation/Demonstration with oral questioning
	3.2 Third party report
4. Context of Assessment	Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment.
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

CORE UNITS OF COMPETENCY

PERFORM PVC SHEATHED CABLING, CONDUITING, TRUNKING AND CABLE TRAYS LAYING
UNIT CODE: ENG/OS/EI/BC/01/3/A

UNIT DESCRIPTION

This unit covers the competencies on the performance of basic metal w o r k s , installation of P V C sheathed cables, PVC conduits, metallic conduits, wire ways, mounting of trunking and laying of cable trays. It also involves competencies to install consumer units, distribution boards and auxiliary components frames.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT 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 basic metal works	1.1 Correct PPE are identified and selected in line with safety requirements. 1.2 Tools and equipment are selected as per job requirements. 1.3 Perform measuring, marking, cutting, filling, drilling, threading, cutting and folding of metals as per the required standards.
2. Install PVC Sheathed cables	2.1 Correct PPE are identified and selected in line with safety requirements. 2.2 Tools and equipment are selected as per job requirements. 2.3 Perform the installation of lighting and power using PVC sheathed cable in line with the IEE regulations.
3. Install PVC and metallic conduits	3.1 Correct PPE are identified and selected in line with safety requirements. 3.2 Drawings are interpreted based on job requirements. 3.3 Sizes and quantities of conduits, fittings and accessories are determined as per job requirements. 3.4 Tools and equipment are selected as per job requirements. 3.5 Conduit is assembled ensuring that fittings are fully inserted and tightened as per job requirements 3.6 Conduit is bent as per job requirements and IEE regulations. 3.7 Conduit couplings and elbows are installed as per job requirements and IEE regulations. 3.8 Conduit is threaded in line with job requirements and IEE regulations. 3.9 Conduit is terminated to the fitting in line with job requirements and IEE regulations.

ELEMENT 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***
	3.10 Safety procedures are followed in line with standard operating procedures (SOPs).
4. Install wire ways, trunking and cable trays	4.1 Drawings are interpreted based on job requirements. 4.2 Sizes and quantities of materials are selected as per job requirements. 4.3 Tools and equipment are selected as per job requirements. 4.4 Wire ways, trunkings and cable trays are installed as per job requirements. 4.5 Safety procedures are followed in line with SOPs
5. Install distribution board, consumer control unit and auxiliary components	4.1 Drawings are interpreted as per job requirements. 4.2 Correct quantities of materials are selected as per job requirements. 4.3 Tools and equipment are selected as per job requirements. 4.4 Distribution board, consumer control unit and auxiliary components are installed as per job requirements. 4.5 Safety procedures are followed in line with SOPs.
6. Complete performance of conduiting, trunking and cable tray works	4.1 Final checks are made to ensure that work conforms with instructions and job requirements. 4.2 Supervisor is notified upon completion of work. 4.3 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures 4.4 Wire ways are secured with draw wires and against blockage, moisture and water. 4.5 Work area is cleaned up and made safe according to OSH regulations. 4.6 Reports are prepared in accordance with work place procedures.

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. Personal Protective Equipment (PPE) include but not limited:	• Working gloves • Overalls • Safety shoes • Helmet

Variable	Range
	• Safety harness
2. Metallic conduits/non-metallic conduits include but not limited to:	• Metallic Heavy and light gauge • Polyvinyl Chloride Pipe (PVC) • Heavy and light gauge • Flexible
3. Fittings include but not limited to:	• Couplers • Lock nut and bushing • Bends • Saddles and clips
4. Tools and equipment include but not limited to:	• Spirit level, hack saw, plumb bob • and line, steel files, stock and die, metal pipe bender, bending springs, electric drill, chisels, mason's hammer • Electrical power tools • Power drills • Portable grinder
5. Auxiliary components include but not limited to:	• Draw boxes • Inspection boxes • Cable glands

REQUIRED KNOWLEDGE AND UNDERSTANDING

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

• Interpretation of electrical installation diagrams and architectural drawings • Types of electrical conduits • Proper uses and installation of conduits • Techniques in installing and bending of conduits and fittings • Proper Installation for maintenance accessibility	• Use of materials, tools and equipment • Proper uses and installation of wire ways and cable trays • Proper procedure in installation of distribution boards and auxiliary components • Good housekeeping • Safe use of adhesives • Proper use of safety harness (PPE)

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:

• Reading skills required to interpret work drawing and instructions • Preparation, handling and storage of materials, tools and equipment • Laying out of conduits, trunkings and cable trays • Bending of conduits	• Effective communication skills • Effective use of measuring devices • Installing different types of distribution boards • Report writing and record keeping • Cutting skills

EVIDENCE GUIDE

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

1. Critical Aspects of Competency.	Assessment requires evidence that the candidate: 1.1 Observed safety precautions 1.2 Interpreted drawings. 1.3 Prepared list of materials, tools and equipment. 1.4 Installed electrical metallic/ non- metallic (PVC conduit). 1.5 Installed wire ways and cable trays. 1.6 Installed distribution boards and auxiliary components. 1.7 Secured wire ways. 1.8 Prepared work report and kept records.
2. Resource Implications.	Resources relevant to this unit of competence. This includes; • Workplace location • Tools and equipment appropriate to conduiting, trunking and cable tray laying • Materials relevant to the proposed activity • Drawings and specifications relevant to the task
3. Methods of Assessment.	Competency may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written test 3.4 Portfolio of Evidence 3.5 Interview 3.6 Third party report
4. Context of Assessment.	Competency may be assessed in an off and on the job setting. Assessment shall also be done while the tasks are being undertaken either individually or as part of a team under limited supervision
5. Guidance information for assessment.	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

PERFORM SINGLE PHASE ELECTRICAL INSTALLATION AND MAINTENANCE

UNIT CODE: ENG/OS/EI/CC/02/3/A

UNIT DESCRIPTION

This unit covers the competencies for selecting correct types and sizes of cables, perform cable jointing and termination, installing lighting, power points, consumer's control unit and power intake point and then repair and maintenance.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT 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. Select correct types and sizes of cables	1.1 Drawings are read and interpreted to determine job requirements. 1.2 Correct type, size and quantity of cables and related consumables are determined in line with job requirements. 1.3 Tools and equipment are selected in line with job requirements. 1.4 Correct PPE are identified and selected in line with safety requirements
2. Perform cable jointing and termination	2.1 Correct PPE are identified and selected in line with safety requirements. 2.2 Tools and equipment are selected in line with job requirements. 2.3 IEE regulations are adhered to. 2.4 Perform various types of cable joints Conduct various types of cable termination.
3. Install cables for lighting and power points	3.1 Safety procedures are followed based on safety regulations 3.2 Wiring of lighting and power points are performed according to job requirements and IEE regulations 3.3 Lighting and power points are grounded in accordance with IEE regulations 3.4 Schedule of work is followed based on agreed time, quality standard and minimum wastage 3.5 Further instructions are sought and recorded if unplanned events or conditions occur 3.6 On-going checking of quality of work is done in accordance with instructions and requirements
4. Install power intake point	4.1 Safety procedures are followed based on safety regulations 4.2 Tools, equipment and materials are selected in line with

ELEMENT 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***
	job requirements 4.3 Correct PPE are identified and selected in line with safety requirements 4.4 Wiring of meter box components is performed according to job requirements 4.5 Lead-in pipe is installed as per job requirements and IEE requirements 4.6 Consumer main earthing terminal bonding is performed according to IEE regulations 4.7 Work area is cleaned up and made safe according to OSH regulations
5. Install consumer's control unit	5.1 Safety procedures are followed based on safety regulations 5.2 Tools, equipment and materials are selected in line with job requirements 5.3 Correct PPE are identified and selected in line with safety requirements 5.4 Consumer's control unit is identified according to job requirements 5.5 Wiring of consumer's control unit is performed according to job requirements and IEE regulations 5.6 Work area is cleaned up and made safe according to OSH regulations
6. Complete the installation	6.1 Final checks and tests are made to ensure that installation conforms with instructions, requirements and IEE regulations 6.2 Supervisor is notified upon completion of installation 6.3 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures 6.4 Work area is cleaned up and made safe according to OSH regulations
7. Repair and maintain the installation	7.1 Safety procedures are followed based on safety regulations 7.2 Tools, equipment and materials are selected in line with job requirements 7.3 Correct PPE are identified and selected in line with safety requirements 7.4 Faulty components are identified and replaced 7.5 Routine checks are carried out and acted upon according to IEE regulations

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes which make up workplace functions.	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_**
	7.6 Waste is disposed in accordance with environmental regulations

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
Consumables include but not limited to:	• Insulating tapes • Strip connectors • Sleeves
Tools and equipment include but not limited to:	• Pliers • Screwdrivers • Electrician knives • Steel tapes • Measuring tapes • Hack saw and blades
Personal Protective Equipment (PPE) include but not limited to:	• Working gloves • Overalls • Safety shoes • Helmet • Safety harness
Safety procedures include but not limited to:	• IEE regulations • Building Code • Safety standards
Lighting and power points include but not limited to:	• Connections to switches, sockets, light fittings

REQUIRED KNOWLEDGE AND UNDERSTANDING

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

• Interpretation of drawings	• Storage of tools
• Materials specifications	• Maintenance of tools
• Types and uses of tools and equipment	• Report writing and record keeping
• Proper PPEs	• Good housekeeping
	• Installation procedures

REQUIRED SKILLS

The individual needs to demonstrate the following foundation skills:

• Observation of safety requirements	• Drawing in cables for lighting and

	Interpreting architectural plans and electrical drawings • Identification of lighting and power points • Identification and handling of materials, tools and equipment	power points • Communication • Report writing and record keeping

EVIDENCE GUIDE

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

1. Critical Aspects of Competency.	Assessment requires evidence that the candidate: 1.1 Correctly interpreted work instructions and drawings 1.2 Followed safety procedures 1.3 Selected appropriate tools, equipment and materials 1.4 Selected and used correct PPE 1.5 Carried out installation of lighting and power points 1.6 Cleaned worksite, tools and equipment 1.7 Stored surplus materials 1.8 Prepared reports and kept records
2. Resource Implications.	Resources relevant to this unit of competence. This include; • Workplace location • PPEs • Tools and equipment appropriate for installation of lighting and power points • Materials relevant to the proposed activity • Drawings relevant to the task
3. Methods of Assessment.	Competency may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written test 3.4 Portfolio of Evidence 3.5 Interview 3.6 Third party report
4. Context of Assessment.	Competency may be assessed in an off and on the job setting. Assessment shall be observed while the tasks are being undertaken either individually or as part of a team under limited supervision
5. Guidance information for assessment.	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

PERFORM FIXING AND MAINTENANCE OF LIGHT FITTINGS, POWER OUTLETS AND BASIC APPLIANCES

UNIT CODE: ENG/OS/EI/CR/01/3/A

UNIT DESCRIPTION

This unit covers the competencies on fitting, mounting and installing wiring devices, installing lighting fixtures/switches, notifying completion of work, mounted outlets, auxiliary outlets and maintenance.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *(Bold and italicised terms are elaborated in the Range)*
1. Select wiring devices and basic appliances	1.1 Drawings are read and interpreted to determine job requirements. 1.2 Correct type and quantity of wiring devices and consumable items are identified in line with job requirements. 1.3 Tools and equipment are selected in line with job requirements 1.4 Correct PPE are identified and selected in line with safety requirements.
2. Install wiring devices and basic appliances	2.1 Safety procedures are followed based on safety regulations 2.2 Installation of wiring devices and basic appliances are performed in line with job requirements 2.3 Wiring devices and basic appliances are grounded in accordance with IEEE regulations 2.4 Schedule of work is followed based on agreed time, quality standard and minimum wastage 2.5 Further instructions are sought in case of unplanned events or conditions. 2.6 Changes are recorded according to work place procedures. 2.7 Identification and labeling of circuits is carried out. 2.8 On-going checking of quality of work is done in accordance with instructions and requirements 2.9 Reports are prepared in accordance with work

ELEMENT These describe the key outcomes which make up workplace function.	PERFORMANCE CRITERIA These are assessable statements which specify the required level of performance for each of the elements. *(Bold and italicised terms are elaborated in the Range)*
	place procedures
3. Install lighting fixtures	3.1 Safety procedures are followed. 3.2 Installation of light fixtures are performed in line with job requirements. 3.3 Schedule of work is followed to ensure work is completed in an agreed time, to a quality standard and with a minimum waste. 3.4 Further instructions are sought from a supervisor if unplanned events or conditions occur. 3.5 Changes are recorded according to work place procedures. 3.6 On-going checks of quality of work are undertaken in accordance with instructions and requirements. 3.7 Reports are prepared in accordance with work place procedures.
4. Complete installation of wiring devices, basic appliances and lighting fixtures	4.1 Final checks are made to ensure that work conforms with instructions and to requirements 4.2 Supervisor is notified upon completion of work 4.3 Tools, equipment and any surplus resources and materials are, where appropriate, cleaned, checked and returned to storage in accordance with established procedures 4.4 Work area is cleaned and made safe
5. Perform basic repair and maintenance of installation and appliances	5.1 Tools and equipment are selected in line with job requirements. 5.2 Correct PPE are identified and selected in line with safety requirements. 5.3 Identify the fault and perform the repair in line with the IEE regulations. 5.4 Perform repair on the appliance in line with the manufacture's manual. 5.5 Maintain the installation and appliances in line with the set standards

RANGE

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

Variable	Range
Wiring devices include but not limited to:	• Socket outlets • Cooker units • Double pole switches • Circuit breakers
Light fixtures include but not limited to:	• Light fittings • Light switches
Consumables include but not limited to:	• Insulating tapes • Strip connectors • Sleeves
Basic appliances include but not limited to:	• Cookers • Instant water heaters • Water pumps • Hand dryers • Fans • Air conditioners
Tools and equipment include but not limited to:	• Pliers • Screwdrivers • Electrician knives • Clipping tools • Spirit levels • Spanners • Drills • Wrenches • Tape measures
Personal protective equipment (PPE) include but not limited to:	• Working gloves • Safety shoes • Helmet • Overalls and aprons Safety harness Googles • Nose masks
Safety procedures include but not limited to:	• IEEE regulations • Building Code • Safety standards

REQUIRED KNOWLEDGE AND UNDERSTANDING

The individual needs to demonstrate knowledge and understanding of:

• Interpretation of drawings • Materials specification • Types and uses of electrical wiring devices, tools and equipment • Proper PPEs • Types of lighting fixtures and installation techniques	• Installation procedures of various wiring devices, lighting fixtures and basic appliances • Ratings of lighting fixtures • Maintenance of tools • Storage of tools • Report writing and record keeping • Good housekeeping

FOUNDATION SKILLS

The individual needs to demonstrate the following foundation skills:

• Interpreting plans and drawings • Handling and storage of materials, tools and equipment • Observing safety standards	• Installing wiring devices, lighting fixtures and basic appliances • Communication • Report writing and record keeping

EVIDENCE GUIDE

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

1. Critical Aspects of Competency	Assessment requires evidence that the candidate: 1.1 Observed safety standards 1.2 Correctly interpreted drawings and work instructions 1.3 Selected appropriate tools, equipment and materials for installing wiring devices, lighting fixtures and basic appliances 1.4 Selected and used correct PPE 1.5 Demonstrated correct procedures for installation of wiring devices and lighting fixtures and basic appliances 1.6 Cleaned worksite, tools and equipment 1.7 Stored surplus materials 1.8 Prepared reports and kept records
2. Resource Implications	Resources the same as that of workplace are advised to be applied including: • Workplace location • Tools and equipment appropriate for installation of wiring devices, lighting fixtures and basic appliances • Materials relevant to the proposed activity • Drawings and specifications relevant to the task
3. Methods of Assessment	Competency may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Written test 3.4 Portfolio of Evidence

		3.5 Interview
		3.6 Third party report
4.	Context of Assessment	Competency may be assessed individually 4.1 In the actual workplace 4.2 Simulated environment of the work place
5.	Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.

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