

**REPUBLIC OF KENYA**

**COMPETENCY BASED MODULAR CURRICULUM**

**FOR**

**ELECTRICAL INSTALLATION TECHNOLOGY**

**KNQF LEVEL 3**

**PROGRAMME ISCED CODE: 0713 254A**

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**Council Secretary/CEO/Chief Principal**

**………………………………….**

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**FOREWORD**

Provision of quality education and training is fundamental to the Government’s overall strategy for socio-economic development. Quality education and training contribute to achievement focused on Kenya’s development blueprint and sustainable development goals.

Reforms in the education and training sector are necessary for achievement of Kenya Vision 2030 and meeting the provisions the Constitution of Kenya. The education sector had to be aligned to the Constitution and this resulted in formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 1 of 2019). A key feature of this policy is the change in the design and delivery of TVET training. This policy document requires that training in TVET be competency based, curriculum development be industry led, certification be based on demonstration of competence and mode of delivery that allows for multiple entry and exit in TVET programs.

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 this Curriculum has been developed.

It is my conviction that this curriculum will play a great role towards development of competent human resource for the ……….. sector’s growth and sustainable development.

**PRINCIPAL SECRETARY**

**STATE DEPARTMENT FOR TVET**

**MINISTRY OF EDUCATION**

**PREFACE**

Kenya Vision 2030 aims to transform the country into a newly industrializing, middle-income country providing high quality life to all its citizens by the year 2030. Kenya intends to create a globally competitive and adaptive human resource base to meet requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills and worker behaviour necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency Based Education and Training (CBET).

The Technical and Vocational Education and Training Act No. 29 of 2013 and the Sessional Paper No. 1 of 2019 on Reforming Education and Training in Kenya, emphasized the need toreform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

This curriculum has been developed in adherence to the Kenya National Qualification Framework and CBETA standards and guidelines. The curriculum is designed and organized into Units of Learning with Learning Outcomes; suggested delivery methods, training/learning resources and methods of assessing the trainee’s achievement. The curriculum is competency-based and allows multiple entry and exit to the course.

I am grateful to the Council Members, Council Secretariat, ……... NSSC, expert workers and all those who participated in the development of this curriculum.

**ACKNOWLEDGEMENT**

This curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support was received from industry and various organizations.

I appreciate National Sector Skills Committee who enabled the development of this curriculum. I recognize with appreciation the role of the SSC in ensuring that competencies required by the industry are addressed in this curriculum.

I also thank all stakeholders in the Electricity and Energy sector for their valuable input and all those who participated in the process of developing this curriculum.

I am convinced that this curriculum will go a long way in ensuring that workers in Electricity and Energy sector will acquire competencies that will enable them perform their work more efficiently.

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# ABBREVIATIONS AND ACRONYMS

BOQ Bill of Quantities

EHS Environment, Health and Safety

IET Institute of Electrical and electronics Engineers

KP Kenya Power

SOP Standard operating procedure

NCA National Construction Authority

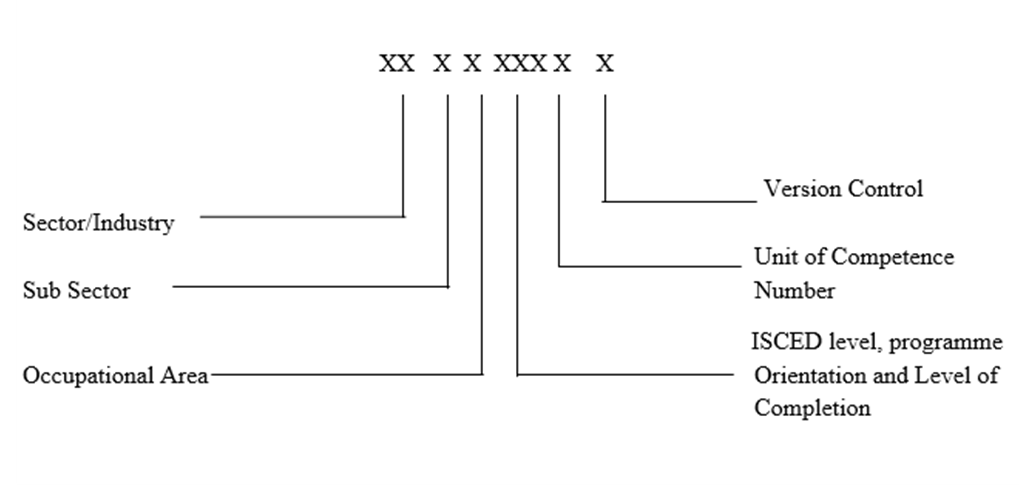
OSHA Occupational Safety and Health Act

PPE Personal Protective Equipment

PV Photo Voltaic

TVET Technical and Vocational Education and Training

# KEY TO ISCED UNIT CODE



# COURSE OVERVIEW

This Electrical Installation Technology Level 3 qualification consists of competences that an individual must achieve to install electrical wiring systems. It involves installing PVC sheathed cable systems, trunking system and conduit system.

**Table 1: Summary of Units of** **Learning**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Unit of Code** | **Unit Category** | **Unit** | **HRS** | **Credit Factor** |
| 0713 251 23A | Core | PVC Sheathed Cable System Installation | 100 | 10.0 |
| 0713 251 24A | Core | Trunking System Installation | 100 | 10.0 |
| 0713 251 25A | Core | Conduit System Installation | 100 | 10.0 |
| **TOTAL** | | | **300** | **30.0** |
| Industrial Attachment | | | 240 | 24.0 |
| **TOTALS** | | | **510** | **51.0** |

The core units of learning are independent of each other and may be taken independently.

The total duration of the **course is 510 hours** (13 weeks at 40 hours per week) inclusive of industrial attachment.

## Industrial attachment

An individual enrolled in this course will be required to undergo an industrial attachment in an Electrical firm for a minimum period of 240 hours.

**Entry Requirements**

An individual entering this course should have any of the following minimum requirements:

1. Kenya Certificate of Primary Education (K.C.P.E.); Junior secondary education or Completion of KNQF level 1 & 2.

**Trainer qualification**

A trainer for this course must:

1. Have a minimum of KNQF Level 5 qualification or its equivalent in a trade area related to this course.
2. Be registered by TVETA.
3. License by EBK/ KETRB

**Industry Training**

An individual enrolled in this course will be required to undergo Industry training for a minimum period of 240 hours in Electrical and Energy sector. The industrial training may be taken after completion of all units for those pursuing the full qualification or be distributed equally in each unit for those pursuing part qualification. In the case of dual training model, industrial training shall be as guided by the dual training policy.

**Assessment**

The course shall be assessed formatively and summatively:

1. During formative assessment all performance criteria shall be assessed based on performance criteria weighting.
2. Number of formative assessments shall minimally be equal to the number of elements in a unit of competency.
3. Theoretical and practical weighting for each unit of learning shall be 10 :90 for level 3
4. Formative and summative assessments shall be weighted at 60% and 40% respectively in the overall unit of learning score
5. For a candidate to be declared competent in a unit of competency, the candidate must meet the following conditions:
6. Obtained at least 40% in theory assessment in formative and summative assessments.
7. Obtained at least 60% in practical assessment in formative and summative assessment where applicable.
8. Obtained at least 50% in the weighted results between formative assessment and summative assessment where the former constitutes 60% and the latter 40% of the overall score.
9. Assessment performance rating for each unit of competency shall be as follows:

|  |  |
| --- | --- |
| **MARKS** | **COMPETENCE RATING** |
| 80 -100 | Attained Mastery |
| 65 - 79 | Proficient |
| 50 - 64 | Competent |
| 49 and below | Not Yet Competent |
| Y | Assessment Malpractice/irregularities |

1. Assessment for Recognition of Prior Learning (RPL) may lead to award of part and/or full qualification.

**Certification**

A candidate will be issued with a Certificate of Competency upon demonstration of competence in a core Unit of Competency. To attain Kenya National TVET Certificate in Electrical Installation Technology Level 3, the candidate must demonstrate competence in all the Units of Competency as given in the qualification pack. Statement of Attainment certificate may be awarded upon demonstration of competence in certifiable element within a unit.

These certificates will be issued by ……… (QAI)

# CORE UNITS OF COMPETENCY

## PVC SHEATHED CABLE SYSTEM INSTALLATION

**UNIT CODE: 0713 251 23A**

**UNIT DURATION: 100 Hours**

**Relationship to Occupational Standards**

This unit addresses the unit of competency: install PVC sheathed cable system

**UNIT DESCRIPTION**

This unit specifies the competences required to install PVC sheathed cable system for a single-phase electrical installation. It involves; identifying electrical cables and accessories, making cable joints, interpreting electrical symbols, fixing electrical accessories, perform test and inspection.

**Summary of Learning Outcomes**

By the end of this unit of learning the trainee will be able to:

|  |  |  |
| --- | --- | --- |
| **S/ NO** | **Learning Outcome** | **Duration (Hours)** |
|  | Identify cables and accessories | **10** |
|  | Make cable joints | **5** |
|  | Interpret electrical symbols | **10** |
|  | Fix electrical accessories | **60** |
|  | Perform Test and Inspection | **15** |
| **TOTAL** | | **100** |

**Learning Outcomes, Content and Suggested Assessment Methods:**

| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| --- | --- | --- |
| 1. Identify cables and accessories | * 1. Workplace safety      1. Basic Workshop rules      2. Types of PPEs      3. Housekeeping (cleaning of the workplace after work)   2. Electrical cable colour coding   3. Electrical ***cable types and sizes***      1. Types of cables         1. Single core         2. Twisted         3. Flex         4. Twin with Earth (TWE)   4. Cables Size      1. 1.0 mm2      2. 1.5 mm2      3. 2.5 mm2      4. 4.0 mm2      5. 6.0 mm2   5. Electrical accessories      1. Lighting accessories         1. Switches         2. Lamp holders         3. Electrical lamps      2. Power accessories         1. Sockets      3. General accessories         1. Joint boxes/junction boxes/inspection boxes         2. Pattress         3. Circuit breakers/MCB         4. C.C.U         5. Cut- outs (1ᴓ)         6. Energy meters(1ᴓ)         7. Earth rods         8. Metre box         9. Switch fuse (1ᴓ) | * Written tests * Practical assessment * Oral questioning * Third party report * Portfolio of evidence |
| 1. Make cable joints | * 1. Electrical tools and equipment:      1. Measuring tools e.g.         1. Tape measure         2. Tri-square         3. Steel rule         4. Spirit level      2. Cutting tools e.g.         1. Hacksaw         2. Stripping knife         3. Side cutter         4. Pliers      3. Fixing tools e.g.         1. Hammers         2. Screw drivers         3. Crimping tool   2. Equipment      1. Multimeter      2. Insulation resistance meter      3. Earth resistance meter      4. Clamp meter      5. Drill etc.   3. Storage of electrical tools   4. Electrical cable joints      1. Britannia      2. Married      3. Tee      4. Straight twist      5. Scarf   5. Housekeeping activities | * Written tests * Practical assessment * Oral questioning * Interviews * Project * Third party report * Portfolio of evidence |
| 1. Interpret electrical symbols | 1. Electrical symbols 2. Types of Wiring diagrams    * 1. Single phase wiring diagrams      2. Three phase wiring diagrams    1. Electrical components | * Written tests * Practical assessment * Oral questioning * Third party report * Portfolio of evidence |
| 1. Fix electrical accessories | 1. Electrical single-phase intake point installation    * 1. Cut- outs (1ᴓ)      2. Energy meters(1ᴓ)      3. C.C.U      4. Earth rods      5. Switch fuse (1ᴓ)    1. Electrical final circuits installation       1. Lighting          1. One way          2. Two way          3. Intermediate          4. Looping in methods at ceiling rose, joint boxes, switches    2. Power       1. Socket outlets (ring and radial).       2. Cooker units.       3. Water heaters.      * 1. Housekeeping activities      1. General cleanliness | * Written tests * Practical assessment * Oral questioning * Interviews * Project * Third party report * Portfolio of evidence |
| 1. Perform Test and Inspection | * 1. Visual inspection   2. Testing methods      1. Continuity      2. Polarity      3. Ring test | * Project * practical * Third party report. * Written assessment. * Oral assessment |

**Suggested Methods of Instruction**

* Discussions
* Project
* Direct instructions
* Demonstration by trainer
* Practice by the trainee
* Field trips
* On-job-training

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** |  |  |  |
|  | Textbooks | B. Scaddan Electrical installation work  J. Hyde Electrical installation Principles and Practices | 5 pcs | 1:5 |
|  | Installation manuals | IEEE regulation  BS3939  NEMA regulations  OSHA | 5 pcs | 1:5 |
|  | Charts | Single line diagram  Circuit diagrams  Colour codes | 1 pcs for each | 1:25 |
|  | Power point presentations | For trainer’s use | 1 | 1:25 |
| **B** | **Learning Facilities & infrastructure** |  |  |  |
|  | Lecture/theory room | 50m2 | 1 | 1:25 |
|  | Workshop | 150m2 | 1 | 1:25 |
|  | Site |  |  |  |
| **C** | **Consumable materials** |  |  |  |
|  | Electrical cables | 1.5mm2(TWE) | 5 rolls | 1:5 |
| 2.5mm2(TWE) | 5 rolls | 1:5 |
| 4.0mm2(TWE) | 3 rolls | 1:10 |
| 6.0 mm2 (TWE) | 2 rolls | 1:12 |
| 10 mm2(TWE) | 2 rolls | 1:12 |
|  | Insulation tapes |  | 25 pcs | 1:1 |
|  | Wood screws |  | 50 pcs | 1:1 |
| **D** | **Accessories** | | | |
|  | Switches, sockets, Junction boxes, Consumer units, Lamp holders, Patress boxes, Circuit breakers, Energy meters(1ᴓ), Earth rods, Switch fuse (1ᴓ), wood screws, assorted cable clips |  | 25 pcs | 1:1 |
| **D** | **Tools and Equipment** |  |  |  |
|  | Striping knives |  | 25 pcs | 1:1 |
|  | Side cutters |  | 25 pcs | 1:1 |
|  | Pliers |  | 25 pcs | 1:1 |
|  | Tape measure |  | 25 pcs | 1:1 |
|  | Try Square |  | 25 pcs | 1:1 |
|  | Spirit level |  | 25 pcs | 1:1 |
|  | Assorted Screw driver |  | 25 pcs | 1:1 |
|  | Assorted hammers |  | 25 pcs | 1:1 |
|  | Crimping tools |  | 5 pcs | 1:5 |
|  | PPEs |  | 25 pcs | 1:1 |
|  | Multimeters |  | 5 pcs | 1:5 |
|  | Clamp meters |  | 5 pcs | 1:5 |
|  | Earth resistance meter |  | 5 pcs | 1:5 |
|  | Drilling machines |  | 5 pcs | 1:5 |
|  | Work stations |  | 25 | 1:1 |
|  | Installation boards | 1.2 by 1m | 13 pcs | 1:2 |

**TRUNKING SYSTEM INSTALLATION**

**UNIT CODE: 0713 251 24A**

**UNIT DURATION: 100 Hours**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: Install Trunking system.

**Unit Description**

This unit covers competences required in installing trunking system. It involves; identifying trunking accessories, preparing trunking work pieces, mounting trunking work pieces, installing electrical cables and accessories and perform test and inspection.

**Summary of Learning Outcomes**

By the end of this unit of learning the trainee will be able to:

|  |  |  |
| --- | --- | --- |
| **S/ NO** | **Learning Outcome** | **Duration (Hours)** |
|  | Identify trunking accessories | **10** |
|  | Prepare trunking work pieces | **10** |
|  | Mount trunking work pieces | **30** |
|  | Install electrical cables and accessories | **40** |
|  | Perform Test and Inspection | **10** |
| **TOTAL** | | **100** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| * + - 1. Identify trunking accessories | * 1. Workplace safety      1. Importance of workplace safety      2. Basic Workshop rules      3. Types of PPEs      4. Housekeeping (cleaning of the workplace after work)   2. Trunking types      1. PVC      2. Metallic      3. Galvanized iron   3. Trunking sizes      1. 16mm x 16mm      2. 25mm x 16mm      3. 25mm x 25mm      4. 40mm x 25mm   4. Trunking accessories      1. Sockets      2. Switches      3. Lamp holders      4. Joint boxes      5. Pattress      6. Circuit breakers      7. C.C.U      8. Cut- outs (1ᴓ)      9. Energy meters(1ᴓ)      10. Earth rods      11. Switch fuse (1ᴓ) | * Practical demonstration * Projects * Written tests * Oral test |
| * + - 1. Prepare trunking work pieces | * 1. Electrical tools and equipment      1. Cutting tools      2. Fastening tools      3. Measuring tools      4. Marking tools      5. Measuring instruments   2. Measurements   3. Housekeeping activities      1. General cleanliness      2. Tools and equipment storage | * Practical demonstration * Projects * Written tests * Oral test |
| * + - 1. Mount trunking work pieces | * 1. Marking mounting points   2. Trunking angles e.g. 45º,90º   3. Mounting Trunking work pieces   4. Housekeeping activities      1. General cleanliness      2. Tools and equipment storage | * Practical demonstration * Projects * Written tests * Oral test |
| * + - 1. Install electrical cables and accessories | * 1. Electrical cable colour code identification   2. Electrical ***cable sizes*** identification      1. 1.0mm2      2. 1.5 mm2      3. 2.5 mm2      4. 4.0 mm2      5. 6.0 mm2   3. Cable laying      1. Single core cables   4. Electrical single-phase intake point installation      1. Cut- outs (1ᴓ)      2. Energy meters(1ᴓ)      3. C.C.U      4. Earth rods      5. Switch fuse (1ᴓ)   5. Electrical final circuits installation      1. Lighting      2. One way      3. Two way      4. Intermediate      5. Looping in methods at ceiling rose, joint boxes, switches   6. Power      1. Socket outlets (ring and radial).      2. Cooker units.      3. Water heaters.      * 1. Housekeeping activities      1. General cleanliness      2. Tools and equipment storage | * Practical demonstration * Projects * Written tests * Oral test |
| * + - 1. Perform Tests and Inspection | * 1. Visual inspection   2. Test      1. Continuity      2. Polarity      3. Ring test | * Project * practical * Third party report. * Written assessment. * Oral assessment |

**Suggested Methods of Instruction**

* Projects
* Written tests
* Oral questions
* Portfolio of evidence
* Third party evidence
* Discussions
* Demonstration by trainer
* Practice by the trainee
* Direct instructions
* Field trips
* On-job-training

**Recommended Resources for 25 trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** |  |  |  |
|  | Textbooks | B. Scaddan Electrical installation work  J. Hyde Electrical installation Principles and Practices | 5 pcs | 1:5 |
|  | Installation manuals |  | 5 pcs | 1:5 |
|  | Charts | Single line diagram  Circuit diagrams  Colour codes | 1 pc for each | 1:25 |
|  | Power point presentations | For trainer’s use | 1 | 1:25 |
| **B** | **Learning Facilities & infrastructure** |  |  |  |
|  | Lecture/theory room | 50m2 | 1 | 1:25 |
|  | Workshop | 150m2 | 1 | 1:25 |
|  | Laboratory | 100m2 | 1 | 1:25 |
|  | Site |  |  |  |
| **C** | **Consumable materials** |  |  |  |
|  | Electrical cables | 1.5mm2(red, black green) | 5 rolls | 1:5 |
| 2.5mm2(red, black green) | 5 rolls | 1:5 |
| 4.0 mm2(red, black green) | 3 rolls | 1:10 |
| 6.0 mm2(red, black green) | 2 rolls | 1:12 |
| 10 mm2(red, black green) | 2 rolls | 1:12 |
|  | Insulation tapes |  | 25 pcs | 1:1 |
|  | Wood screws |  | 50pcs | 1:1 |
| **D** | Accessories | Switches, sockets, Junction boxes, Consumer units, Lamp holders, Patresses boxes, Circuit breakers | 25 pcs | 1:1 |
|  | Trunkings | Mini trunking | 25 pcs | 1:1 |
| **E** | **Tools and Equipment** |  |  |  |
|  | Hacksaws |  | 25 pcs | 1:1 |
|  | Striping knives |  | 25 pcs | 1:1 |
|  | Side cutters |  | 25 pcs | 1:1 |
|  | Pliers |  | 25 pcs | 1:1 |
|  | Tape measure |  | 25 pcs | 1:1 |
|  | Try Square |  | 25 pcs | 1:1 |
|  | Spirit level |  | 25 pcs | 1:1 |
|  | Assorted Screw driver |  | 25 pcs | 1:1 |
|  | Assorted hammers |  | 25 pcs | 1:1 |
|  | PPEs |  | 25 pcs | 1:1 |
|  | Multimeters |  | 5 pcs | 1:5 |

## CONDUIT SYSTEM INSTALLATION

**UNIT CODE:** **0713 251 25A**

**UNIT DURATION: 100 Hours**

**Relationship to Occupational Standards**

This unit addresses the Unit of Competency: install conduit system

**Unit Description**

1. This unit covers competences required in installing conduit system. It involves identifying conduit accessories, preparing conduit work pieces, mounting conduit work pieces, installing electrical cables and accessories and perform test and inspection.

**Summary of Learning Outcomes**

By the end of this unit of learning the trainee will be able to:

|  |  |  |
| --- | --- | --- |
| **S/ NO** | **Learning Outcome** | **Duration (Hours)** |
|  | Identify conduit accessories | **10** |
|  | Prepare conduit work pieces | **10** |
|  | Mount conduit work pieces | **30** |
|  | Install electrical cables and accessories | **40** |
|  | Perform Test and Inspection | **10** |
| **TOTAL** | | **100** |

**Learning Outcomes, Content and Suggested Assessment Methods**

|  |  |  |
| --- | --- | --- |
| **Learning Outcome** | **Content** | **Suggested Assessment Methods** |
| 1. Identify conduit accessories | * 1. Workplace safety      1. Basic Workshop rules      2. Types of PPEs      3. Housekeeping (cleaning of the workplace after work)   2. Conduit types identification      1. PVC      2. Metallic   3. Conduit sizes identification      1. 20mm2      2. 25mm2      3. 32mm2   4. Conduit accessories identification      1. Sockets      2. Switches      3. Lamp holders      4. Strip connectors      5. Ceiling roses      6. Circular connectors      7. Junction boxes      8. Saddles and saddle clips      9. Bushes      10. Couplers      11. Switch boxes      12. Circuit breakers      13. C.C.U      14. Cut- outs (1ᴓ)      15. Energy meters(1ᴓ)      16. Earth rods      17. switch fuse (1ᴓ) | * Practical demonstration * Projects * Written tests * Oral test |
| 1. Prepare conduit work pieces | * 1. Electrical tools and equipment      1. Cutting tools      2. Fastening tools      3. Measuring tools      4. Marking tools      5. Measuring instruments   2. Measurements interpretation   3. Conduit work pieces cutting e.g. 450 &900   4. Housekeeping activities      1. General cleanliness      2. Tools and equipment storage | * Practical demonstration * Projects * Written tests * Oral test |
| 1. Mount conduit work pieces | * 1. Marking mounting points   2. Conduit bends e.g. 45º,90º, offsets   3. Mounting conduit work pieces   4. Housekeeping activities      1. General cleanliness      2. Tools and equipment storage | * Practical demonstration * Projects * Written tests * Oral test |
| 1. Install electrical cables and accessories | * 1. Electrical cable colour code identification   2. Electrical ***cable sizes*** identification      1. 1.0 mm2      2. 1.5 mm2      3. 2.5 mm2      4. 4.0 mm2      5. 6.0 mm2   3. Cable laying      1. Single core cables   4. Electrical single-phase intake point installation      1. Cut- outs (1ᴓ)      2. Energy meters(1ᴓ)      3. C.C.U      4. Earth rods      5. Switch fuse (1ᴓ)   5. Electrical final circuits installation      1. Lighting      2. One way      3. Two way      4. Intermediate      5. Looping in methods at ceiling rose, joint boxes, switches   6. Power      1. Socket outlets (ring and radial).      2. Cooker units.      3. Water heaters.   7. Housekeeping activities      1. General cleanliness      2. Tools and equipment storage | * Practical demonstration * Projects * Written tests * Oral test |
| 1. Perform Tests and Inspection | * 1. Visual inspection   2. Test      1. Continuity      2. Polarity      3. Ring test | * Project * practical * Third party report. * Written assessment. * Oral assessment |

**Suggested Methods of Instruction**

* Discussions
* Projects
* Demonstration by trainer
* Practice by the trainee
* Direct instructions
* Field trips
* On-job-training

**Recommended Resources for 25 Trainees**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/No.** | **Category/Item** | **Description/ Specifications** | **Quantity** | **Recommended Ratio**  (Item: Trainee) |
| **A** | **Learning Materials** |  |  |  |
|  | Textbooks | B. Scaddan Electrical installation work  J. Hyde Electrical installation Principles and Practices | 5 pcs | 1:5 |
|  | Installation manuals | IEEE regulation  BS3939  NEMA regulations  OSHA | 5 pcs | 1:5 |
|  | Charts | Single line diagram  Circuit diagrams  Colour codes | 1 pcs for each | 1:25 |
|  | Power point presentations | For trainer’s use | 1 | 1:25 |
| **B** | **Learning Facilities & infrastructure** |  |  |  |
|  | Lecture/theory room | 50m2 | 1 | 1:25 |
|  | Workshop | 150m2 | 1 | 1:25 |
|  | Laboratory | 100m2 | 1 | 1:25 |
|  | Site |  |  |  |
| **C** | **Consumable materials** |  |  |  |
|  | Electrical wires | 1.0mm2(red, black green) | 5 rolls | 1:5 |
| 1.5mm2(red, black green) | 5 rolls | 1:5 |
|  | Insulation tapes |  | 25 pcs | 1:1 |
|  | Accessories | Switches, sockets, Junction boxes, Consumer units, Lamp holders, Patrice boxes, Circuit breakers, relays, transformers | 25 pcs | 1:1 |
|  | Pipes | PVC conduits, Metallic conduits | 25 pcs | 1:1 |
|  | Wood screws |  | 50 pcs | 1:1 |
| **D** | **Tools and Equipment** |  |  |  |
|  | Hacksaws |  | 25 pcs | 1:1 |
|  | Striping knives |  | 25 pcs | 1:1 |
|  | Side cutters |  | 25 pcs | 1:1 |
|  | Pliers |  | 25 pcs | 1:1 |
|  | Tape measure |  | 25 pcs | 1:1 |
|  | Draw wire |  | 25 pcs | 1:1 |
|  | Try Square |  | 25 pcs | 1:1 |
|  | File |  | 5 pcs | 1:5 |
|  | Spirit level |  | 25 pcs | 1:1 |
|  | Assorted Screw driver |  | 25 pcs | 1:1 |
|  | Assorted hammers |  | 25 pcs | 1:1 |
|  | Crimping tools |  | 5 pcs | 1:5 |
|  | PPEs |  | 25 pcs | 1:1 |
|  | Multimeters |  | 5 pcs | 1:5 |
|  | Clamp meters |  | 5 pcs | 1:5 |
|  | Earth resistance meter |  | 5 pcs | 1:5 |
|  | Bending spring |  | 5 pcs | 1:5 |
|  | Drilling machines |  | 5 pcs | 1:5 |
|  | Work stations |  | 25 | 1:1 |
|  | Installation boards |  | 13 pcs | 1:2 |
|  | Bending machine |  | 5 pcs | 1:5 |
|  | Bench vice |  | 5 pcs | 1:5 |
|  | Stock and die |  | 5 pcs | 1:5 |
|  | Oil cans |  | 5 pcs | 1:5 |