13.1.0 ELECTRICAL INSTALLATION TECHNOLOGY

13.1.01 Introduction

This module unit is designed to equip the trainee with the knowledge, skills and attitudes necessary to carry out Electrical Installation work in domestic premises.

13.1.02 General Objectives

At the end of this module unit, the trainee should be able to:

a) Appreciate the necessary safety precautions in electrical workshop and environs
b) Use and care for electrical tools appropriately
c) Understand the Methods of cable installation
d) Apply acquired knowledge to trace faults in domestic installations
e) Maintain and service wiring systems and equipment

13.1.03 Module Unit Summary and Time Allocation

Electrical Installation Technology I

Code	Module Unit	Content	Time Hrs
13.1.1	Safety	• Workshop safety hazards • Electrical safety • First aid	4
13.1.2	Electrical Tools	• Tools used in Electrical • Care and maintenance of tools	6
13.1.3	Electrical Power Supply	• Electrical power sources • Typical layout for a hydro power generating plant • Electrical power transmission and distribution systems	8
13.1.4	Electrical Instruments and Measurements	• Types of measuring instrument • Instruments and their quantities of measurement • Interpretation of instrument's scales • Methods of performing electrical measurements	6

13.1.5	Conductors and Cables Joints	• Types of cables • Sizes and ratings. • Definition of a joint • Properties of a good joints • Types of joints • Methods of making permanent joints • Methods of making temporary joints • IEEE regulations on cables and cable joints	6
13.1.6	Wiring System and Accessories	• Types of wiring system • Factors affecting choice • Application of given systems • Types of accessories	14
13.1.7	Domestic Lighting and Power Circuits	• Final sub-circuits • Sequence of control for domestic installations • Ring and radial final sub-circuits • Wiring methods for lighting final sub-circuits • Cooker and water heater final sub-circuits	20
13.1.8	Earthing and Protection	• Terms used in earthing • Purpose for earthing • Parts of an earthing system • Different methods of earth • Over current protection • Tests for an earthing system • Relevant IEE regulations	14
13.1.9	Battery Charging	• Charging methods • Battery maintenance	10
13.1.10	Bell and Alarm Circuits	• Types of electrical bells • Components of a bell circuit • Bell indicators • Burglar alarm circuits • Fire alarm circuits	12
13.1.11	Tests and Inspection	• Need for testing • Tests on completed installations and major extensions and alterations • IEE regulations requirements for bell circuits	7

		• Inspection of completed installations	
13.1.12	Structured Cabling	• Structured cabling system (SCs) • Entrance facilities (EFs) • Types of cabling • Types of topologies • Applications of SCs	10
Total Time			**117**

13.1.1 SAFETY

Theory

13.1.1T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) identify workshop safety hazards
b) identify electrical safety hazards
c) explain correct procedures of handling accidents

Content

13.1.1T1 Identification of workshop safety hazards

i) Protective clothing
ii) Care and maintenance of tools, materials and equipment
iii) Location and operation of safety equipment
iv) First aid box
v) Fire extinguishers
vi) Safe working habits

13.1.1T2 Identification of electrical safety hazards

i) Dangers of electricity
ii) Fire
iii) Burns
iv) Electric shock
v) Sources of electrical hazards
vi) Bare wires
vii) Carelessness in handling electrical equipment

13.1.1T3 Correct procedure for handling accidents in cases of:

i) Cuts
ii) Fire
iii) Electric shock
iv) Burns

Practice

13.1.1P0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) care and maintain of workshop tools and equipment
b) carry out first aid
c) demonstrate safe working procedures

Content

13.1.1P1 Maintenance of tools and equipment

- Location of safety equipment

13.1.1P2 First aid

i) First aid
ii) Artificial respiration
iii) Dressing of wounds and cuts

13.1.1T3 Safe working procedures

i) Proper clothing
ii) Acceptable behaviour in the workshop

13.1.1C Competence

The trainee should have the ability to:

i) Observe and apply safety regulations in workshops
ii) Carry out artificial respiration
iii) Maintain workshop tools and equipment

Competence

The trainee should have the ability to:

- Demonstrate knowledge of safety in their workplaces
- Perform first aid

- Prevent accidents in the workshop and other work places
- Extinguish all classes of fire

Suggested Teaching/Learning Activities

- Discussions
- Demonstration
- Role play
- Practical exercises

Suggested Teaching/Learning Resources

- First aid kits
- Electrical tools and equipment
- Fire extinguishers
- Charts on safety
- Resources personnel for fire fighting drills

Suggested Evaluation Methods

- Oral tests
- Timed practical tests
- Assignment
- Timed written tests

13.1.2 ELECTRICAL TOOLS

Theory

13.1.2T0 Specific Objectives

By the end of the sub module unit, the trainee should be able to:

a) list tools commonly used in Electrical and Electronics Engineering
b) explain the maintenance of tools

Content

13.1.2T1 Tools used in Electrical and Electronics Technology.

13.1.2T2 Explaining care and maintenance of tools caring cleaning techniques Servicing (oiling / greasing)

Practice

13.1.2P0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) demonstrate safe application of tools commonly used in electrical and electronic engineering field
b) perform maintenance of tools in the workshop and other working places
c) store materials using appropriate methods

Content

13.1.2P1 Safe application of tools used in Electrical and Electronics Technology.
i) Cutting tools
ii) Stripping tools
iii) Fastening tools
iv) Fixing tools
v) Measuring tools
vi) Holding tools
vii) Other general purpose tools

13.1.2P2 Maintenance of tools right tool for the right job
i) Caring
ii) Cleaning techniques
iii) Servicing (oiling/greasing)

13.1.2P3 Storage of electrical workshop materials and tools

13.1.2C Competence

The trainee should have the

ability to:
- Select the right tools for the right job
- Maintain various tools in the electrical field

Suggested Teaching Methods
- Practical exercises
- Discussion
- Demonstration on safe handling of hand tools

Suggested Learning Resources
- Various tools in the electrical field
- Tools' cleaning and maintaining aids

Suggested Assessment Methods
- Oral test
- Practical tests
- Assignment

13.1.3 ELECTRICAL POWER SUPPLY

13.1.3T0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

a) explain the types of electrical power sources
b) describe typical layout for a hydro power generating plant
c) outline electrical power transmission and distribution systems

Content

13.1.3T1 Electrical power sources
- i) Hydro-electric
- ii) Thermal
- iii) Diesel
- iv) Gas
- v) Nuclear
- vi) Geo-thermal
- vii) Magneto-Hydro
- viii) Solar
- ix) Battery
- x) Emerging technology

13.1.3T2 Typical layout for a hydro-power generating plant

13.1.3T3 Electrical power transmission and distribution systems

13.1.3P0 *Specific Objectives*

By the end of the sub-module unit, the trainee should be able to:

a) Sketch a layouts for a hydropower generating plant
b) Draw a line diagram for grid transmission and distribution system

Content

13.1.3P1 Layout of generating stations
- i) Hydro
- ii) Thermal
- iii) Diesel
- iv) Gas
- v) Nuclear
- vi) Geothermal
- vii) Magneto-hydro

13.1.3P2 Operating sequence of generating stations
- i) Hydro
- ii) Thermal
- iii) Diesel
- iv) Gas
- v) Nuclear
- vi) Geothermal
- vii) Magneto-hydro

Competence

The trainee should have the ability to:

i) Draw power station schematics
ii) Carry out operating sequence for generating stations in model form

Suggested Teaching/Learning Resources

- Power station model
- Overhead projector
- Field visit to various power generating stations

Suggested Evaluation Methods

- Oral tests
- Timed written tests
- Assignments
- Timed practical tests

13.1.4 ELECTRICAL INSTRUMENTS AND MEASUREMENTS

13.1.4T0 Specific Objectives

By the end of the sub module unit, the trainee should be able to:

a) name types of measuring instruments
b) list the instrument used for measuring each electrical quantity
c) interpret instruments' scales
d) outline the methods of performing electrical measurements.

Content

13.1.4T1 Types of measuring instrument as:

i) Ammeters
ii) Voltmeters
iii) Ohmmeters
iv) Multi meters
v) Watt meter types of measuring instruments for each quantity and unit:
vi) Current
vii) Voltage
viii) Resistance
ix) Power
x) Energy

13.1.4T1 Interpretation of instrument's scales

i) scale spans
   - Fractional units/representation
   - scale reading

13.1.4T1 Methods of performing electrical measurements

i) measurement of resistance
ii) Measurement of voltage
iii) Measurement of current
iv) Measurement of power
v) Measurement of energy
   - Wattmeter

Practice

13.1.4P1 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) identify types of instruments
b) perform measurements using instruments
c) interpret instrument scales

Content

13.1.4P1 Identification of various types of measuring instruments

i) Ammeters
ii) Voltmeters

iii) Multimeters
iv) Ohmmeters
v) Wattmeter

13.1.4P2 Performing measurements for:
i) Current
ii) Voltage
iii) Resistance
iv) Power

13.1.43 Interpretation of instruments scales

13.1.4C Competence

The trainee should have the ability to:
i) Interpret readings from instrument indication
ii) Use various types of electrical measuring instruments
iii) Set instrument calibration ready for measurements
iv) Perform experiments using instruments.
v) Write a laboratory report on experiments carried out.

Suggested Teaching Methods
- Demonstration
- Practical exercises
- Discussion

Suggested Learning Resources
- Measuring instruments
- Electrical components
- Bread boards

Suggested Assessment Methods
- Oral tests
- Practical tests
- Assignments

13.1.5 CONDUCTORS AND CABLES

Theory

13.1.5T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:
a) describe types of cables by construction and size
b) determine the rating of a cable given the size.
c) define a joint
d) state the properties of a good joint
e) explain the methods of making permanent joints
f) explain the methods of making temporary joints
g) state the relevant I.E.E regulations

Content

13.1.5T1 Types of cables
i) PVC sheathed
ii) PCP sheathed
iii) PVC SWA
iv) MIMS cable
v) PIL SWA
vi) Cable sizes
- Conductor, Insulation sheath, number of cores.

13.1.5T2 Determination of cables current rating
- Factors that affect cable current rating.

13.1.5T3 Definition of a joint
i) Types of joints

13.1.5T4 Properties of a good joint
i) Permanent
ii) Temporary

13.1.5T5 Making permanent joints by Soldering
i) Married joint
ii) Tee Joint
iii) Telegraphic joint

iv) Pot and ladle technique

13.1.5T6 Making temporary joints
i) Use of bolts and nuts
ii) Screws

Practice

13.1.5P0 *Specific Objectives*
By the end of the sub module unit, the trainee
Should be able to:
a) Identify electrical cables
b) Perform cable joints

Content

13.1.5P1 Identification of electrical cables

13.1.5P2 Cable joints
i) Tools and materials for cable joints
ii) Cable preparation
iii) Performing the joints
iv) Methods of cable joints
v) Types of cable joints
- Married
- Telegraph
- Bell hanger's

vi) T –Married
vii) Quality control

13.1.5C **Competence**
The trainee should have the ability to: make electrically and mechanical sound cable joints

Suggested teaching/Learning Activities
i) Illustration
ii) Demonstration
iii) Note taking
iv) Observation
v) Practical exercise

Suggested Teaching /Learning Resources
i) Cable pieces
ii) Solder
iii) Electrical tool kit
iv) Wire brush
v) Assorted Files

Suggested Evaluation Methods
i) Oral tests
ii) Timed written tests
iii) Assignments
iv) Timed practical tests
v) Project
vi) Project Report writing and presentation

13.1.5C Competence
Ability to make electrically and mechanically sound cable joints

13.1.6 WIRING SYSTEMS

Theory

13.1.6T0 *Specific objectives*
By the end of the sub module unit, the trainee should be able to:
a) define wiring systems
b) describe the various wiring systems and their associated fittings
c) explain factors that affect choice of wiring systems
d) select appropriate wiring systems for a given situations

Content

13.1.6T1 Definition of wiring systems

13.1.6T2 Wiring systems and the associated fittings

13.1.6T3 Factors affecting the choice of an appropriate wiring system.

13.1.6T4 Wiring systems and their accessories

i) PVC sheathed wiring system
ii) Metallic Conduits
iii) Steel
iv) Aluminium
v) Copper
vi) Flexible steel
vii) Plastic conduits
viii) Plastic Conduits
ix) Cable Trunking
x) PVC mini trunking
xi) Metallic trunking
xii) Busbar trunking
xiii) Rising trunking
xiv) Overhead
xv) Cable ducts
xvi) Manhole, casting and dispection
xvii) MIMS Cables
xviii) Cable tray
xix) PILC SWA Cables
xx) PVC SWA Cables
xxi) Overhead Wiring System
xxii) Bare overhead system
xxiii) Catenary wiring

Practice

13.1.6P0 *Specific objectives*

By the end of the sub module unit, the trainee should be able to perform electrical installations using various types of wiring systems

Content

13.1.6P1 Installations using various wiring systems

i) PVC sheathed wiring system
ii) Metallic Conduits
iii) Steel
iv) Aluminium
v) Copper
vi) Flexible steel
vii) PVC Conduits
viii) Cable Trunking
ix) PVC mini trunking
x) Metallic trunking
xi) Busbar trunking
xii) Rising trunking
xiii) Overhead
xiv) Cable ducts
xv) Manhole, casting and dispection
xvi) MIMS Cables
xvii) Cable tray
xviii) PILC SWA Cables
xix) PVC SWA Cables
xx) Overhead Wiring System
xxi) Bare overhead system
xxii) Catenary wiring

13.1.6C Competence

The trainee should have the ability to: choose a suitable wiring system for various applications

Suggested teaching/Learning Resources

i) Various samples of materials used in various wiring systems
   - PVC
   - Steel conduit

- Trunking
- Mineral insulated cables

ii) Assorted accessories associated with various wiring systems

Suggested teaching/Learning Activities

- Illustration
- Demonstration
- Note taking
- Practical exercise
- Project work
- Visits to industries

Suggested Evaluation Methods

- Oral tests
- Timed written tests
- Assignments
- Timed practical tests
- Project

13.1.7 DOMESTIC LIGHTING AND POWER CIRCUITS

Theory

13.1.7T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) identify groups of final sub-circuits
b) explain the sequence of control for a domestic installation
c) explain the ring and radial final sub-circuits
d) explain the wiring methods for lighting final sub-circuits
e) explain the operations of the cooker and water heater final sub-circuits

Content

13.1.7T1 Grouping of final sub-circuits

13.1.7T2 Sequence of control at the power Intake point
- Equipment at the intake point distribution board, rating of final sub-circuits.

13.1.7T3 Ring and radial final sub-circuits

13.1.7T4 Wiring methods for lighting final sub-circuits
- Switching methods

13.1.7T5 Operation of cooker and water heater final sub-circuits
i) Rating
ii) Use of simmerstat
iii) Thermostat
iv) Three heat switch.
v) Relevant IEE regulations.

Practice

13.1.7P0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:

a) design electrical lighting and power lay out diagrams
b) interpret lay out diagrams for lighting
c) install and wire lighting and power circuits according to the lay out diagram
d) observe safety, IEEE regulations, code of practice and standards

when installing lighting and power circuits

Content

13.1.7P1 Lay out diagrams for lighting and power circuits
- i) Electrical symbols in wiring diagrams
- ii) Lighting circuits switching circuits

13.1.7P2 Interpretation of electrical wiring diagrams

13.1.7P3 Methods of connecting lighting and power circuits
- i) Lighting circuits
  - Loop in method
  - Ceiling rose method
- ii) Power circuits
  - Radial circuits
  - Ring circuits

13.1.7C **Competence**
- i) Complete a domestic installation
- ii) Perform electrical tests on completed installations
- iii) Diagnose and repair faults domestic installations

Suggested teaching/Learning Activities
- Illustration
- Demonstration
- Note taking
- Observation
- Practical exercise
- Project work
- Visits to industries

Suggested Teaching/Learning Resources
- First aid kits
- Electrical tools and equipment
- Fire extinguishers

Suggested Evaluation Methods
- Oral tests
- Timed written tests
- Assignments
- Timed practical tests

13.1.8 EARTHING AND PROTECTION

Theory

13.1.8T0 *Specific Objectives*

By the end of the sub module unit, the trainee should be able to:
a) define the terms 'earthing' and 'protection'
b) state the purpose of earthing in an installation
c) state the parts of an earthing system
d) explain the various methods of earthing
e) describe the construction and operation of over current and earth leakage protective devices.
f) Explain the procedure for carrying earth tests on an installation
g) state I.E.E regulation requirements

Content

13.1.8T1 Defining of 'earthing' and 'protection'

13.1.8T2 Purpose of earthing and protection in an installation

13.1.8T3 Parts of an earthing system

i) Earthing continuity
ii) Conductor
iii) Earthing lead
iv) Earth electrode

13.1.8T4 Methods of earthing an installation
i) Direct earthing,
ii) Protective multiple earthing

13.1.8T5 Construction and operation of various protective devices

13.1.8T6 Types of excess current protection
i) Fuses
ii) Circuit breakers
iii) Earth leakage circuit breakers
iv) Advantages and disadvantages.

13.1.8T7 Relevant IEE requirements

Practice

13.1.8P0 *Specific objectives*
By the end of the sub module unit, the trainee should be able to:
a) perform earthing on various types of installations
b) test residual current circuit breakers
c) install residual current circuit breakers in an installation
d) measure earth loop impedance
e) measure earth resistance area
f) perform earth tests on a completed installation

Content

13.1.8P1 Earthing of installation
i) Earth continuity conductor
ii) Earthing lead
iii) Earth electrode

13.1.8P2 Tests on residual current circuit breaker
i) Contacts
ii) Coil
iii) Reset button

13.1.8P3 Installation of residual current circuit breaker

13.1.8P4 Measurement of earth loop impendance

13.1.8P5 Measurement of earth resistance area

13.1.8P6 Earth tests

13.1.8C Competence
The trainee should have the ability to:
i) Select suitable circuit protective devices
ii) Perform all earthing requirements for an installation to the regulatory boards standards and all other authorities

Suggested teaching/Learning Activities
- Illustration
- Demonstration
- Note taking
- Observation
- Practical exercise
- Visits to industries

Suggested teaching/Learning Resources
- Earthing devices and materials
- Residual current circuit breakers

Suggested Evaluation Methods

- Oral tests
- Timed written tests
- Assignments
- Timed practical tests

13.1.9 BATTERY CHA RGING

Theory

13.1.9T0 *Specific objectives*

By the end of the sub module unit the trainee should be able to:

a) explain the constant voltage charging method
b) describe the maintenance of various batteries

Content

13.1.9T1 Constant voltage battery charging circuit

i) Charging circuit
ii) Constant current charging
iii) Floating battery charging
iv) Trickle

13.1.9T2 Maintenance of batteries

i) Lead-acid cells
ii) Alkaline
iii) Zinc air

Practice

13.1.9P0 *Specific objectives*

By the end of the sub module unit, the trainee should be able to:

a) Identify rechargeable batteries
b) Set up rechargeable batteries for charging
c) Test rechargeable batteries

Content

13.1.9P1 Identification of batteries
13.1.9P1 Setting up batteries for charging
13.1.9P2 Testing of batteries

13.1.9C Competence

The trainee should have the battery to charge a battery

Suggested teaching/Learning Activities

- Illustration
- Demonstration
- Note taking
- Observation
- Practical exercise
- Visits to industries

Suggested teaching/Learning Resources

- Battery charging units
- Rechargeable batteries
- Electrical tool equipment

Suggested Evaluation Methods

- Oral tests
- Timed written tests
- Assignments
- Timed practical tests

13.1.10 BELL AND ALARM CIRCUITS

Theory

13.1.10T0 Specific Objectives

By the end of the sub module unit, the trainee should be able to:

a) describe the construction and operation of various types of bells
b) explain the function of various components of a basic bell circuit
c) describe the construction and application of bell indicators
d) explain the construction and operation of burglar alarm circuit
e) explain the construction and operation of fire alarm systems

Content

13.1.10T1 Construction and operation of:

i) Simple stroke bell
ii) Trembler bell
iii) Continuous ringing bell
iv) Door chimes
v) Buzzer
vi) Polarized
vii) Electronic bells

13.1.10T2 Function of various component of basic bell circuits

i) Relay
ii) Bell Transformers
iii) Batteries

13.1.10T3 The construction and application of bell indicators

i) Electromagnetic
ii) Luminous
iii) Electronic
iv) Types of indicator devices

13.1.10T4 Construction and operation of burglar and fire alarm circuits

i) Normally open burglar alarm / fire alarm
ii) Normally closed burglar alarm / fire alarm
iii) Zone of protection

13.1.10T4 Construction and operation of fire alarm systems

Practice

13.1.10P0 *Specific objectives*

By the end of the sub module unit, the trainee should be able to:

a) Identify and select various types of bells for various applications
b) Identify and select suitable accessories for use with various types of bells
c) Install bell and alarm circuits
d) Test bell and alarm circuits

Content

13.1.10P1 Identification and selection of bells

13.1.10P2 Identification of bell accessories

13.1.10P3 Installation of bell and alarm circuits

13.1.10P4 Tests on bell and alarm circuits

13.1.10C **Competence**
The trainee should have the ability to: install, maintain and diagnose faults in bell circuits

Suggested teaching/Learning Activities
- Illustration
- Demonstration
- Note taking
- Observation
- Practical exercise
- Project work

Suggested teaching/Learning Resources
- Assorted types of bells and alarm devices
- Assorted types of cables
- Electrical and electronic tool kit
- Wiring boards

Suggested Evaluation Methods
- Oral tests
- Timed written tests
- Assignments
- Timed practical tests
- Project

13.1.11 TESTING AND INSPECTION OF ELCETRICAL INSTALLATIONS

Theory

13.1.11T0 *Specific Objectives*
By the end of the sub module unit the trainee should be able to:
a) explain the need for testing
b) explain the various tests in an installation
c) state the I.E.E regulation requirements
d) explain visual inspections on an installation

Content

13.1.11T1 Purpose of, testing. I.E.E regulation requirements

13.1.11T2 Procedure for testing
i) Polarity
ii) Insulation resistance
iii) Effectiveness of earthing
iv) Ring circuit continuity

13.1.11T3 I.E.E regulations requirements

13.1.11T4 Inspection on an installation
i) Causes of lose connections e.g. poor joints
ii) Parts that require maintenance in an installation
iii) Colour coding of cables
iv) Quantities of materials specified

13.1.11T5 Quality and standard of materials

13.1.11T6 Workmanships

Practice

13.1.11P0 *Specific objectives*
By the end of the sub module unit, the trainee should be able to:

a) Identify test instruments
b) Perform electrical installations inspection and tests

Content

13.1.11P1 Test instruments
Ohmmeter
i) Bell and battery
ii) Insulation resistance tester
iii) Earth loop impedance tester
iv) Multimeter

13.1.11P2 Electrical installation tests
i) Procedure for testing installations
- Polarity tests
- Insulation resistance tests
- Effectiveness of the earthing tests
- Ring circuit continuity tests

13.1.11C Competence
The trainee should have the ability to: test an installation for proper and safe operation.

Suggested teaching/Learning Activities
- Illustration
- Demonstration
- Note taking
- Observation
- Practical exercise
- Visits to industries

Suggested teaching/Learning Resources
- Electrical Measuring instruments

Suggested Evaluation Methods
- Oral tests
- Timed written tests
- Assignments
- Timed practical tests
- Project

13.1.12 STRUCTURED CABLING

Theory

13.1.12T0 *Specific Objectives*
By the end of the sub module unit the trainee should able to:
a) describe generic structured cabling system (SCs)
b) explain entrance facilities (EFs) for SCs
c) explain types of topologies in cabling systems
d) explain applications for structure cabling systems

Content

13.1.12T1 Structured cabling systems (SCS)
i) Architectural structure of building
ii) Connecting hardware
iii) Standardization

13.1.12T2 Entrance facilities (EFs)
i) Underground
ii) Buried
iii) Aerial

13.1.12T3 Types of cabling
i) Backbone
ii) Horizontal

13.1.12T4 Types of topologies
i) Star

ii) Bus
iii) Ring
iv) Hybrid
v) Star-wired
vi) Clustered star
vii) hierarchical

13.1.12T5 Types of Installation
i) Electrical power
ii) Telecommunications
iii) Data and computer

Practice

13.1.12P0 *Specific objectives*
By the end of the sub module unit, the trainee should be able to perform cabling for various

Content

13.1.12P1 Structured cabling systems (SCS)
i) Electrical power
ii) Telecommunications
iii) Data and computer

13.1.12C **Competence**
The trainee should have the ability to: do cabling for all types of installations and data networking systems

Suggested teaching/Learning Activities

- Illustration
- Demonstration
- Note taking
- Observation
- Practical exercise
- Calculations
- Project work
- Role play
- Visits to industries

Suggested teaching/Learning Resources

i) Electrical and electronic tool kit
ii) Assorted types of cables to include cables for:
- Electrical works
- Telecommunications systems
- Data and computer systems

Suggested Evaluation Methods

- Oral tests
- Timed written tests
- Assignments
- Timed practical tests
- Project
- Project Report writing and presentation