REPUBLIC OF KENYA

PUBLIC SERVICE COMMISSION OF KENYA

EXAMINATION SYLLABUS AND REGULATIONS FOR ASSISTANT LEGAL METROLOGY OFFICERS PARTS I & II

REVISED 2010

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1.0 Preamble

The objective of the Weights and Measures service under the Weights and Measures Act Cap 513 is to provide legal metrology services that promote fair trade and ensure consumer protection. The service requires skilled and competent personnel. There is a training structure and programmes for this purpose.

The changes in weighing and measuring technology coupled with the paradigm shift in government service delivery necessitated the revision of curriculum for Assistant Legal Metrology Officers.

2.0 General Objectives

By the end of this course, the trainee should be able to:-

a) Promote uniformity of measurement;
b) Regulate weighing and measuring equipment in use for trade for compliance with the established standards;
c) Promote ethical practices in trade;
d) Ensure compliance with the regulations for the sale of goods;
e) Understand the environment in which Assistant Legal Metrology Officers operate;
f) Develop positive attitudes in handling customers; and
g) Appreciate the changing technology within the metrology service industry.

3.0 Mode of Training

The training structure for this programme is divided into parts I and II and the mode of training is as follows:

a) Pre-service training

Pre-service training is to be organized for a period of five months by the administrator of the scheme of service for legal metrology officers for part I of the syllabus. This training should be undertaken on recruitment.

b) On-the-job training

The officers are deployed to field stations where they undergo on-the-job training under supervision of senior officers.

A guideline for on-the-job training should be developed and circulated to the supervisors.

c) In-service training

A programmed in-service training is to be organized periodically by the administrator of the scheme of service for Assistant Legal Metrology Officers to cover Part II of the syllabus. The syllabus should be covered within a period of 480 hours.

The administrator of the scheme of service should develop a detailed guideline for the implementation of the programme.

4.0 Examination Regulations

4.1 Eligibility for Registration for the Examinations

4.1.1 Eligibility for Assistant Legal Metrology Officer Examination Part I

To be eligible for the Assistant Legal Metrology Officer examination Part I, the officer must have:

a) Kenya Certificate of Secondary Education (KCSE) Mean grade C (Plain) with at least a C- (minus) in Physics/Physical Science/Computer Studies or Mathematics or its equivalent qualification from a recognized institution; and

b) A Diploma in any of the following Mechanical/Electrical/Chemical or Electronics Engineering or equivalent qualification from a recognized institution.

c) Must have served as Assistant Legal Metrology Officer III for 18 months

4.1.2 Requirements for Registration for Assistant Legal Metrology Officer Examination Part I

For an officer to be registered for the examination, he/she should produce certified copies of the following:

(i) Appointment letter as an Assistant Legal Metrology Officer III

(ii) Academic certificates

(iii) Two passport size photographs

4.2 Eligibility for Assistant Legal Metrology Officers Examination Part II

To be eligible for the Assistant Legal Metrology Officers Examination Part II, the officer must have:

a) Passed the Assistant Legal Metrology Officers Examination Part I

b) Served for four (4) years since joining the service

4.2.1 Requirements for Registration for Assistant Legal Metrology Officers Examination Part II

For an officer to be registered for the examination, he/she should produce certified copies of the following:

(i) Appointment letter as an Assistant Legal Metrology Officer III

(ii) Evidence that the officer passed the Assistant Legal Metrology Officers Examination part I

(iii) Two passport size photographs

4.3 Registration Fees

Registration fees for Parts I and II will be determined by the Public Service Commission of Kenya from time to time.

4. 4 Administration of the Examination

The administration of the examination for Assistant Legal Metrology Officers is the responsibility of the Public Service Commission of Kenya.

4.5 Frequency of Examinations

The examination for Assistant Legal Metrology Officers Parts I and II shall be conducted once every year.

4.6 Examination Centers

Examination Centers will be determined by the Public Service Commission of Kenya from time to time.

4.6 Examination Structure

4.6.1 Part I Subjects

The examination for Part I will consist of the following subjects:

1. Weighing and Measuring Technology I – Theory paper and practical paper
2. Electronics
3. Materials Technology
4. Law I
5. Governance and Civil Service Regulations

4.6.2 Part II Subjects

The examination for Part II will consist of the following subjects:

1. Weighing and Measuring Technology II - Theory paper and practical paper
2. Law II
3. Organization and Functions of Government
4. Public Relations / Customer Care
5. Effective Communication

4.7 Examination Paper Structure and Duration

4.7.1 The table below gives the examination paper structure and duration for Part I.

PAPER CODE	SUBJECT	DURATION	PAPER STRUCTURE
101A	Weighing and Measuring Technology I	$2^1/_2$ hours – (100 marks) **Theory Paper**	The paper will consist of 2 sections: A and B. Section **A (40 Marks)** will consist of two (2) compulsory extended response questions of twenty (20) marks each. Section **B (60 Marks)** will consist of five (5) extended response questions of 20 marks each. Candidates will be expected to answer three (3) questions.
101B		3 hours – (100 marks)	**Practical Paper:** Will consist of five (5) compulsory questions of twenty (20) marks each.
102	Electronics	$2^1/_2$ hours – (100 marks)	The paper will consist of 2 sections A and B. Section **A (40 Marks)** will consist of one compulsory question (case study). Section **B (60 Marks)** will consist of five (5) extended response questions. Candidates will be expected to answer three (3) questions.
103	Materials Technology	$2^1/_2$ hours – 100 marks	The paper will consist of seven (7) extended response questions of twenty (20) marks each. Candidates will be expected to answer five (5) questions.
104	Law I	$2^1/_2$ hours – 100 marks	The paper will consist of six (6) extended response questions of twenty (20) marks each. Candidates will be expected to answer five (5) questions.
105	Governance & Civil Service Regulations	$2^1/_2$ hours – 100 marks	The paper will consist of five (5) compulsory questions requiring extended response. Each question carries twenty (20) marks.

4.7.2 The table below gives the examination paper structure and duration for Part II.

PAPER CODE	SUBJECT	DURATION	PAPER STRUCTURE
201A	Weighing and Measuring Technology II	$2^1/_2$ hours – 100 marks	**Theory Paper:** The paper will consist of seven (7) extended response questions of twenty (20) marks each. Candidates will be expected to answer five (5) questions.
201B		3 hours – 100 marks	**Practical Paper:** Will consist of five (5) compulsory questions of twenty (20) marks each.
202	Law II	$2^1/_2$ hours – 100 marks	The paper will consist of 2 sections: A and B. Section **A (40 Marks)** will consist of one (1) compulsory question (case study). Section **B (60 Marks)** will consist of five (5) extended response questions of twenty (20) marks each. Candidates will be expected to answer three (3) questions.
203	Organization and Functions of Government	$2^1/_2$ hours – 100 marks	The paper will consist of six (6) extended response questions of twenty (20) marks each. Candidates will be expected to answer five (5) questions.
204	Public Relations/ Customer Care	$2^1/_2$ hours – 100 marks	The paper will consist of six (6) extended response questions of twenty (20) marks each. Candidates will be expected to answer five (5) questions.
205	Effective Communication	$2^1/_2$ hours – 100 marks	This paper will consist of 2 sections: A and B. Section **A (40 Marks)** will consist of two (2) compulsory questions of twenty (20) marks each. Section **B (60 Marks)** will consist of five (5) extended response questions of twenty (20) marks each. Candidates will be expected to answer three (3) questions.

4.8 Examination Results

Candidates will be informed of the results through a circular to the authorized officer and publishing the results in the Kenya Gazette.

4.9 Award of Certificates

Every candidate who passes all the subjects will be awarded a certificate by the Commission.

4.10 Referrals

Assistant Legal Metrology officers who do not pass a paper will be referred in that same paper.

4.11 Exemptions

There will be no exemption in any subject for Parts I and II.

CURRICULUM FOR ASSISTANT LEGAL METROLOGY OFFICERS PART I

5.0 WEIGHING AND MEASURING TECHNOLOGY I

5.0.1 Introduction

This course unit is intended to equip the trainee with necessary knowledge and skills to enable him/her verify basic weighing and measuring equipment in accordance with the relevant regulations.

5.0.2 General Objectives

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

a) Understand the process of weighing and measuring.
b) Understand the principle of construction and operation of basic weighing and measuring equipment.
c) Examine weighing and measuring equipment to ascertain compliance with the regulations
d) Test weighing and measuring equipment
e) Stamp weighing and measuring equipment

5.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC	Contact Hours
5.1	Concept of weighing and measuring	• Meaning of weighing and measuring • Importance of weighing and measuring • Historical development of weighing and measuring	4
5.2	Fundamentals of weighing and measuring	• States of matter • Properties of matter • Pressure, volume and temperature • Mass, volume and density • Newton's law of motion • Archimedes Principle	12
5.3	Basic principle of	• Meaning of a lever	14

	levers and its application to weighing	• Principle of the lever • Classification of levers • Application of levers in weighing	
5.4	Principles of the spring as applied to weighing	• Principles of the spring • Properties of spring materials • Types of springs • Application of the spring in weighing	10
5.5	Spring balances	• Types of spring balances • Components of various categories of spring balances • Functions of components of various categories of spring balances • Principles of construction and operation of various types of spring balances • Verification of spring balances according to relevant regulations.	22
5.6	Introduction to units of measurement	• Unit of measurement • SI base units • Supplementary units • Derived units • Relationship between base units and derived units.	6
5.7	Standards of measurement	• Standards of measurement • Types of standards • Hierarchy of standards • Denomination of standards • Process of care and maintenance of standards	22
5.8	Testing	• Meaning and purpose	

	equipment	• Types of testing equipment • Procedure of testing	14
5.9	Counter machine	• Types of counter machines • Components of counter machines • Functions of the various components of counter machines • Principle of construction and operation of counter machines • Verification of the counter machine in accordance with relevant regulations	26
5.10	Traders' weights	• Accuracy classes of weights • Types and shapes of weights • Verification of weights	12
5.11	Traders' linear measures	• Types of linear measures • Material for construction of linear measures • Verification of linear measures	14
5.12	Traders' measures of capacity not exceeding 20 litres	• Capacity measures • Verification of capacity measures	12
5.13	Beer measuring instruments	• Types and components of beer measuring instruments • Functions of various components of beer measuring instruments • Principle of construction and operation • Verification of beer measuring instruments	16
5.14	Spirit measuring	• Types and components	

	instruments	• Functions of the various components • Principle of construction and operation • Verification of spirit measuring instruments in accordance with relevant regulations	16
5.15	Introduction to dispensing pumps	• Meaning of dispensing pumps • Physical components of a dispensing pump • Principle of construction and operation • Verification of dispensing pumps	44

5.1 Concept of Weighing and Measuring

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning of weighing and measuring
b) Explain the importance of weighing and measuring
c) Describe the historical development of weighing and measuring

Sub Topics

5.1.1 Meaning of weighing and measuring

5.1.2 Importance of weighing and measuring

5.1.3 Historical development of weighing and measuring

5.2 Fundamentals of weighing and measuring

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain different states of matter
b) Explain properties of matter
c) Explain the relationship between pressure, volume and temperature
d) Explain the relationship between mass, volume and density
e) Relate Newton's Law of motion to weighing
f) Explain the Archimedes Principle and its application in weighing

Sub Topics

5.2.1 States of matter

5.2.2 Properties of matter

5.2.3 Pressure, Volume and Temperature

5.2.4 Mass, Volume and Density

5.2.5 Newton's Law of motion

- Force, momentum, gravity and friction
- Rolling and sliding friction
- Effects of friction on accuracy of weighing

5.2.6 Archimedes Principle

- Buoyancy
- Floatation
- Application of Archimedes Principle to weighing

5.3 Basic Principle of Levers and its Application in Weighing

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the meaning of a lever

b) Explain the principle of the working of levers

c) Explain the different classes of levers

d) Demonstrate the application of levers in weighing

Sub Topics

5.3.1 Meaning of a lever

5.3.2 The Principle of the Lever

- Equilibrium
- Moment of force
- Moment arm

5.3.3 Classification of levers

- First order
- Second order

- Third order

5.3.4 Application of levers in weighing

- The beam
- The compound lever

5.4 Principles of the Spring as Applied to Weighing

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the principles of the spring

b) Explain the properties of spring materials

c) Explain the types of springs

d) Explain the application of the spring in weighing

Sub Topics

5.4.1 Principles of the spring

- Young's Modulus of elasticity
- Hooke's Law
- Limits of proportionality
- Elastic limit

5.4.2 Properties of spring materials

5.4.3 Types of springs

- Extension
- Compression
- Cantilever spring
- Disc spring

5.4.4 Application of the spring in weighing

5.5 Spring Balances

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify different types of spring balances

b) Identify the various components of the spring balances

c) Explain the functions of various components of spring balances

d) Explain the principles of construction and operation of spring balances

e) Verify spring balances according to relevant regulations.

Sub Topics

5.5.1 Types of spring balances

- Tubular
- Suspended
- Pedestal

5.5.2 Components of various types of spring balances.

5.5.3 Functions of components of various types of spring balances

5.5.4 Principles of construction and operation of various types of spring balances.

5.5.5 Verification of spring balances according to relevant regulations.

- Examination
- Testing
- Stamping

5.6 Introduction to Units of Measurement

Specific objectives

By the end of this topic, the trainee should be able to:

a) Define the term unit of measurement

b) Explain the base units of International System (S.I) of measurement

c) Explain the supplementary units of measurement

d) Explain the derived units of measurement

e) Explain the relationship between the base units and derived units.

Sub Topics

5.6.1 Unit of measurement

5.6.2 S.I base units

5.6.3 Supplementary units

5.6.4 Derived units

5. 6.5 Relationship between base units and derived units

5.7 Standards of Measurement

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the meaning of Standards of Measurement according to the Weights and Measures Act
b) Explain the types of Standards
c) Explain the hierarchy of Standards of Measurement
d) State the different denominations of Standards of Measurement
e) Demonstrate the process of care and maintenance of Standards

Sub Topics

5.7.1 Standards of Measurement

5.7.2 Types of Standards

- Mass
- Length
- Volume/Capacity

5.7.3 Hierarchy of Standards

- Primary
- Primary Reference
- Secondary
- Secondary Reference
- Working Standards

5.7.4 Denomination of Standards

5.7.5 Process of care and maintenance of Standards

- Handling
- Cleaning
- Testing Records of Standards
- Storage

5.8 Testing Equipment

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the meaning and purpose of testing equipment according to the Weights and Measures Act
b) Identify different types of testing equipment
c) Demonstrate the process of testing the test equipment

Sub Topics

5.8.1 Testing equipment

- Meaning
- Purpose

5.8.2 Types of testing equipment

5.8.3 Procedure of testing

- Test weights
- Roller weights
- Beam scales
- Proving tanks
- Petrol test measures

5.9 Counter Machines

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Identify different types of counter machines
b) Identify the components of various counter machines

c) Explain the functions of the various components of counter machines
d) Explain the principle of construction and operation of counter machines
e) Verify counter machines in accordance with relevant regulations

Sub Topics

5.9.1 Types of counter machines

5.9.2 Components of counter machines

5.9.3 Functions of the various components of counter machines

5.9.4 Principle of construction and operation of counter machines

5.9.5 Verification of the counter machines in accordance with relevant regulations

- Examination
- Testing
- Stamping

5.10 Traders' Weights

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Categorize traders' weights according to the various accuracy classes
b) Identify various types and shapes of weights.
c) Verify weights in accordance with relevant regulations

Sub Topics

5.10.1 Accuracy Classes of weights

5.10.2 Types and shapes of weights

5.10.3 Verification of weights

- Examination
- Testing and adjusting
- Stamping

5.11 Traders' Linear Measures

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify the different types of linear measures

b) Identify materials for construction of linear measures.

c) Verify the linear measures according to relevant regulations.

Sub Topics

5.11.1 Types of linear measures

5.11.2 Material for construction of linear measure.

5.11.3 Verification of linear measure.

- Examination
- Testing
- Stamping

5.12 Traders' Measures of Capacity not Exceeding 20 Litres.

Specific Objectives

By the end to this topic, the trainee should be able to:

a) Identify different types and denominations of capacity measures

b) Verify the various types of capacity measures according to relevant regulations

Sub Topics

5.12.1 Capacity measures

- Types
- Denominations

5.12.2 Verification of capacity measures

- Examination
- Testing
- Stamping

5.13 Beer Measuring Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify types of beer measuring instruments
b) Identify the various components of beer measuring instruments.
c) Explain the functions of various components of beer measuring instruments.
d) Explain the principle of construction and operations of beer measuring instruments.
e) Verify the beer measuring instruments in accordance with the relevant regulations.

Sub Topics

5.13.1 Beer measuring instruments

5.13.2 Components of beer measuring instruments.

5.13.3 Functions of various components of beer measuring instruments.

5.13.4 Principle of construction and operation of beer measuring instruments.

5.13.5 Verification of beer measuring instruments.

- Examination
- Testing
- Stamping

5.14 Spirit Measuring Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify different types of spirit measuring instruments
b) Identify the various components of spirit measuring instruments
c) Explain the functions of the various components
d) Explain the principle of construction and operation
e) Verify spirit measuring instruments in accordance with relevant regulations

Sub Topics

5.14.1 Spirit measuring instruments

5.14.2 Components of spirit measuring instruments

5.14.3 Functions of the various components of spirit measuring instruments

5.14.4 Principle of construction and operation of spirit measuring instruments

5.14.5 Verification of spirit measuring instruments according to relevant regulations

- Examination
- Testing
- Stamping

5.15 Introduction to Mechanical Dispensing Pumps

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the meaning of the term dispensing pump according to Weights and Measures Act Cap 513

b) Identify the components of a dispensing pump

c) Explain the principle of construction and operation of various components of a dispensing pump

d) Verify dispensing pumps according to relevant regulations.

Sub Topics

5.15.1 Meaning of dispensing pump

5.15.2 Components of a dispensing pump

5.15.3 Principle of construction and operation of dispensing pump

5.15.4 Verification of dispensing pump.

- Examination
- Testing
- Stamping

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3. Collect, C.V, Hope, A.D, (1964), Metrology for Engineers; London.
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6.0 ELECTRONICS

6.0.1 Introduction

This course unit is intended to equip the trainee with necessary knowledge, skills and attitudes to enable him/her understand the application of electronics in weighing and measuring.

6.0.2 General Objectives

By the end of this course unit, the trainee should be able to:-

a) Understand the fundamentals of electronics and electricity
b) Understand the application of electronics in weighing and measuring technology.
c) Understand the various electronic components and devices used in electronic weighing and measuring equipment.
d) Understand the use of digital electronics and binary number system in weighing and measuring equipment.

6.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC	Contact Hours
6.1	Introduction to electricity and electronics	• Meaning • Elements of electricity • Electrical properties of materials • Basic electrical units of measurements and their interrelationship	2
6.2	Basic electrical and electronic circuits	• Types of components • Characteristics of components • Application of Ohm's Law • Principle of construction and operation of each component and devices • Application of each component in weighing and measuring equipment	20
6.3	Power supplies	• Types of power supply • Magnetism • Transformers • Voltage rectification and filtering	6
6.4	Motors	• Types and characteristics of motors	

		• Construction and operation of motors • Control of speed of motors • Use of motors in weighing and measuring instruments	16
6.5	Switch operation by weighing and measuring mechanisms	• Mechanical switches • Electrical and electronic switches • Advantages and disadvantages	16
6.6	Digital electronics and number systems	• Digital electronics and number systems • Binary numbers • Logic gates • Types of logic gates • Conversion of analogue signals to digital signals	20
6.7	Display devices and systems used in weighing and measuring instruments	• Types of display devices • Principle of construction and operation of display devices • Types of display systems • Comparative advantages and disadvantages	20

6.1 Introduction to Electricity and Electronics

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the meaning of electricity and electronics

b) Describe the elements of electricity and their characteristics

c) Describe the electrical properties of materials

d) Describe the basic electrical units of measurement and their relationship

Sub Topics

6.1.1 Meaning

- Electricity
- Electronics

6.1.2 Elements of electricity

- Charge
- Current

- Electromotive force
- Potential Difference
- Characteristics of electricity

6.1.3 Electrical properties of materials

- Resistance
- Capacitance
- Conductance
- Inductance
- Insulators

6.1.4 Basic electrical units of measurements and their interrelationship

- Ampere
- Volt
- Ohm

6.2 Basic Electrical and Electronic Circuits

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Identify various types of electronic components used in electrical and electronic circuits
b) Describe the characteristics of each electronic component
c) Demonstrate the application of Ohm's Law in electrical and electronic circuits.
d) Describe the principle of construction and operation of each electronic component and devices
e) Explain the application of various electronic components and devices in weighing and measuring equipment.

Sub Topics

6.2.1 Types of components

- Resistors

- Capacitors
- Diodes
- Transistors
- Inductors
- Transducers

6.2.2 Characteristics of each component

6.2.3 Application of Ohm's Law

- Simple calculations of current, voltage and resistance in a circuit based on Ohm's law.
- Series and parallel resistor circuits.
- Calculation of energy and power in circuits.
- Resistor bridge circuit's (e.g. Wheatstone bridge)

6.2.4 Principle of construction and operation of each component and devices

6.2.5 Application of each component in weighing and measuring equipment

6.3 Power Supplies

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Describe the various types of power supplies
b) Explain the concept of magnetism as used in power transformers
c) Explain the construction and use of transformers
d) Explain the concept of voltage rectification and filtering

Sub Topics

6.3.1 Types of power supply

- Alternating Current (A.C)
- Direct Current (D.C)

6.3.2 Magnetism

- Magnetic field
- Poles attraction and repulsion
- Properties of lines of forces in a magnetic field
- Effect of magnetic field on a conductor carrying an electric current.
- Mutual induction between conductors and/or coils self-induction
- Induction of electro-magnetic force (e.m.f.)

6.3.3 Transformers

- Basic construction and use in power supplies
- Types of Transformers

6.3.4 Voltage rectification and filtering

- Rectification
  - Half wave
  - Full wave rectification
  - Bridge rectifier circuits
- Filtering
  - Smoothing circuits

6.4 Motors

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Describe various types of motors and their characteristics.
b) Explain the construction and operation of motors
c) Explain methods of controlling speed of motors.
d) Explain the use of motors in weighing and measuring instruments.

Sub Topics

6.4.1 Types of motors

- Direct Current (D.C)
- Alternating Current (A.C)
- Induction

6.4.2 Characteristics of motors

- Speed
- Torque

6.4.3 Construction and operation of motors

6.4.4 Control of speed of motors

- By resistors
- By thrusters

6.4.5 Use of motors in weighing and measuring instruments

6.5 Switch Operation by Weighing and Measuring Mechanisms

Specific Objectives:

By the end of this topic, the trainee should be able to:-

a) Describe the mechanical switches used in weighing and measuring equipment
b) Describe the electrical/ electronic switches used in weighing and measuring equipment
c) Explain the advantages and disadvantages of mechanical and electrical switches.

Sub Topics

6.5.1 Mechanical switches

- Relay – operated
- Micro switches
- Fine wire
- Mercury-in-glass type

6.5.2 Electrical/Electronic switches

- Transistor operated
- Switching logic
- Bi-stable switching circuits
- Multi-vibrator switching circuits

6.5.3 Advantages and disadvantages

- Mechanical
- Electrical/electronic switches

6.6 Digital Electronics and Number Systems

Specific Objectives:

By the end of this topic, the trainee should be able to:

a) Explain the meaning of digital electronics and number systems
b) Explain the meaning and use of binary numbers
c) Explain the meaning and use of logic gates
d) Explain the types of logic gates
e) Explain the conversion of analogue signals to digital signals and vice versa.

Sub Topics

6.6.1 Digital electronics and number systems**.**

6.6.2 Binary numbers.

- Meaning
- Use

6.6.3 Logic gates

- Meaning
- Use

6.6.4 Types of logic gates

6.6.5 Conversion of analogue signals to digital signals and vice versa

6.7 Display Devices and Systems used in Weighing and Measuring Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Describe the types of display devices used in electronic weighing and measuring instruments.

b) Explain the principles of construction and operation of display devices
c) Describe the various types of display systems used in weighing and measuring instruments.
d) Explain comparative advantages and disadvantages of digital versus analogue display systems.

Sub Topics

6.7.1 Types of display devices

- Light emitting diode (L.E.D)
- Seven-segment display
- Liquid crystal display (L.C.D)
- Gas discharge tube

6.7.2 Principle of construction and operation of display devices.

6.7.3 Types of Display systems

- Digital
- Analogue

6.7.4 Comparative advantages and disadvantages of:-

- Digital systems
- Analogue systems

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Learning Resources

1. Equipped laboratory
2. Industrial visits
3. Materials and equipment
    - Various electrical/electronic components, devices and materials.
    - Multimeters/ohmmeters/voltmeters/testers/signal generators/oscilloscopes

7.0 MATERIALS TECHNOLOGY

7.0.1 Introduction

This course unit is intended to equip the trainee with the knowledge, skills and attitudes that will assist him/her understand the materials commonly used in the construction of weighing and measuring equipment for ease of verification.

7.0.2 General Objectives

By the end of this course unit, the trainee should be able to:-

a) Understand the properties of various materials used in construction of weighing and measuring equipment
b) Understand treatment processes of various materials used in construction of weighing and measuring equipment.
c) Appreciate the materials used in construction of weighing and measuring equipment for purposes of carrying out verification

7.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC	Contact hours
7.1	Introduction to materials technology	• Meaning of material technology • Materials used in weighing and measuring technology • Classification of materials • Properties	10
7.2	Manufacturing processes	• Manufacturing processes	30
7.3	Materials treatment processes	• Types of materials treatment • Processes of materials treatment	30
7.4	Materials testing	• Tests for materials • Processes of materials testing	16
7.5	Accuracy	• Measure of accuracy in component production	4
7.6	Materials inspection	• Purpose of materials inspection • Types of defects in materials • Method of detections • Procedures for material inspection	10
7.7	Safety in industry	• Potential risks in trading premises • Protective measures	2

7.1 Introduction to Materials Technology

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the meaning of materials technology.

b) Identify materials used in weighing and measuring technology

c) Classify materials into their appropriate categories

d) Describe the properties of various materials

Sub Topics

7.1.1 Meaning of material technology

7.1.2 Materials used in weighing and measuring technology

7.1.3 Classification of materials

- Ferrous materials
  - Iron
  - Steel
- Non-ferrous materials
  - Metal
  - Non-metal

7.1.4 Properties

- Strength
- Ductility
- Malleability
- Rigidity
- Elasticity

7.2 Manufacturing Processes

Specific objective

By the end of this topic, the trainee should be able to describe manufacturing processes of various materials.

Sub Topic

7.2.1 Manufacturing processes

- Casting
  - sand casting
  - die-casting
- Presswork
- Forging and extrusion
- Fabrication and milling
- Lathework
  - Drilling
  - Broaching
  - Grinding
  - Shaping
  - Planning
  - Gear cutting and slotting
- Vanishing

7.3 Materials Treatment Processes

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Identify different types of materials treatment.
b) Describe the processes of materials treatment.

Sub Topics

7.3.1 Types of materials treatment

- Heat treatment
- Enameling
- Protective finishes

7.3.2 Processes of materials treatment

- Heat treatment
  - Annealing

- Normalizing
- Hardening
- Tempering
- Malleability
- Carburizing
- Spherodizing

- Enameling
  - Electroplating
  - Anodizing
  - Chemical blacking
- Protective finishes
  - Bouldering
  - Lacquering
  - Painting

7.4 Materials Testing

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify the various tests for materials.

b) Describe the various processes of materials testing

Sub Topics

7.4.1 Tests for materials

- Tensile strength
- Compression strength
- Torsional strength
- Fatigue
- Hardness

7.4.2 Processes of materials testing

- Equipment used
- Stages in each process

7.5 Accuracy

Specific Objective

By the end of this topic, the trainee should be able to describe degree of accuracy in component production.

Sub Topic

7.5.1 Measure of accuracy in component production

- Interchangeability
- Gauging
- Precision

7.6 Materials Inspection

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the purpose of materials inspection
b) Identify types of defects in materials.
c) Explain the methods of detecting materials defects.
d) Describe the procedures of carrying out materials inspection.

Sub Topics

7.6.1 Purpose of materials inspection

7.6.2 Types of defects in materials

7.6.3 Methods of detecting materials defects

- Visual
- Mechanical
- Electrical
- Acoustic sound
- X-ray

7.6.4 Materials inspection

7.7 Safety in Industry

By the end of this topic, the trainee should be able to:

a) Identify potential risk areas in trading premises and workshops.

b) Explain appropriate protective measures as prescribed under Labour Institutions Act.

Sub Topics

7.7.1 Potential risks in trading premises.

7.7.2 Protective measures

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8.0 LAW I

8.0.1 Introduction

This course unit is intended to equip the trainee with knowledge, skills and attitudes that will enable him/her ensure compliance with and enforcement of the law relating to metrology and consumer protection.

8.0.2 General objectives:

By the end of this course unit, the trainee should be able to:

a) Understand the nature and the sources of law in Kenya
b) Understand the Kenyan court structure
c) Enforce the relevant laws relating to Weights and Measures in accordance with the provisions of the Criminal Procedure Code and Penal Code
d) Understand the importance of Weights and Measures legislations in promoting fair trade practices

8.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC	Contact hours
8.1	Introduction to Law	• Definition of law • Purpose of law • Sources of law • Civil law • Criminal law • Law of Tort	12
8.2	Court structure	• Types and structure of courts • Jurisdiction of courts	8
8.3	Criminal law	• Definition of crime • Principles of criminal liability • Classification of offences • General defences	12
8.4	Weights and measures Act	• Units of measurement • Standards of measurement • Offences relating to weighing and measuring for trade • Offences relating to obstruction • Rules made under Section 33 of the Act	54

CODE	TOPIC	SUB-TOPIC	Contact hours
8.5	Other relevant legislations	• Sale of Goods Act Cap 31 • Standard's Act Cap 496 • Anti-Counterfeit Act 2008 • Petroleum Act Cap 116 • Traffic Act Cap 403 • Occupational Safety and Health Act, 2007 • Other relevant legislations that may be in force.	

8.1 Introduction to Law

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning of law

b) Explain the purpose of law

c) Explain the nature and different sources of law in Kenya

d) Distinguish between criminal law and civil law

e) Apply the principles of the law of Torts

Sub Topics

8.1.1 Definition of law

8.1.2 Purpose of law

8.1.3 Sources of law

8.1.4 Civil and Criminal law

8.1.5 Law of Tort

- Definition
- Principles of Tortious liability
- Types of Torts
- The rule in Stevenson - Vs - Donogue
- Defences available in Tort

8.2 Court Structure

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Describe types and structure of courts in Kenya

b) Explain the jurisdiction of the various courts in Kenya.

Sub Topics

8.2.1 Structure, types and jurisdiction of courts

Superior courts

- Supreme court
- Court of appeal
- High court/special courts

Subordinate courts

- Magistrates courts
- Kadhis courts
- Courts martial
- Others courts/Local tribunal

8.3 Criminal Law

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Define the term crime

b) Explain the principles of criminal liability

c) Classify the different types of criminal offences.

d) Identify the general defences available to the accused person under Weights and Measures Act and Trade Descriptions Act.

Sub Topics

8.3.1 Definition of crime

8.3.2 Principles of criminal liability

8.3.3 Classification of offences

- Misdemeanor

- Felony
- Against Property
- Against Public order
- Against Person

8.3.4 General defences

8.4 Weights and Measures Act

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Differentiate the various units of measurements

b) Classify the various standards of measurement

c) Explain the various offences relating to weighing and measuring for trade.

d) Explain offences relating to obstruction under the Act.

e) State the rules made under section 33 of the Act.

Sub Topics

8.4.1 Units of measurement

8.4.2 Standards of measurement

8.4.3 Offences relating to weighing and measuring for trade

8.4.4 Offences relating to obstruction

8.4.5 Rules made under Section 33 of the Act.

8.5 Other Legislations promoting fair trade

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Identify other legislations promoting fair trade practice

b) Apply relevant provisions of the legislation promoting fair trade

Sub Topics

8.5.1 Sale of Goods Act. CAP 31

8.5.2 Standards Act Cap 496. Preamble, section 2-4, 6-7, 9-10 and 16

8.5.3 Anti Counterfeit Act, 2008. Preamble, 2, 22-28, 30-33 and 35

8.5.4 Petroleum Act Cap 116

Preamble, section 2- interpretation, section3 – transport and storage, section 4- power to make rules, section 5-10-penal sections.

Rules

Rule 2- interpretation

Rule 4- exemption

Part II – transport of petroleum by road

Rule 6-14, 17, 19, 20-30, and 68

8.5.5 Traffic Act Cap 403

Preamble, section 56-58, rules 4 and 12th schedule

8.5.6 The Occupational Safety and Health Act, 2007

Preamble, section 43-44, fourth schedule

8.5.7 Any other relevant legislation that may be in force

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13. Petroleum Act
14. Anti-Counterfeit Act
15. Traffic Act
16. Occupational Safety and Health Act

9.0 GOVERNANCE AND CIVIL SERVICE REGULATIONS

9.0.1 Introduction

This course unit is intended to equip the trainee with the knowledge, skills and attitudes that will enable him/her provide effective weights and measures services in accordance with the laid down regulations and stipulated standards of conduct.

9.0.2 General Objectives

By the end of this course unit, the trainee should be able to:

a) Understand the need for good governance and participate in its realization.
b) understand the provisions of the Constitution that impact on performance of his/her duties
c) Appreciate the importance of civil service regulations in providing legal metrology services.
d) Understand the application of relevant civil service regulations in public service delivery.
e) Comply with the requirements of the regulations in the provision of legal metrology services.

9.0.3 Course Unit Summary (40 Hours)

CODE	TOPIC	SUB-TOPIC	DURATION
9.1	Constitutionalism and Governance	• Meaning and purpose of Constitution • Meaning and importance of Constitutionalism • Governance • Meaning and importance of Good governance • Constitutionalism and good governance • Principles of good governance.	**6 Hours**
9.2	Human Rights	• Meaning and importance of human rights. • Aspects of the human rights that relate to public service in Kenya • Kenya National Human Rights and Equality	**8 Hours**

CO DE	TOPIC	SUB-TOPIC	DURATION
		Commission	
9.3	Ethics and Integrity	• Definition of terms • Ethical conduct in the public service. • National values. • National values in the Constitution.	**6 Hours**
9.4	Performance Management	• Meaning and importance of performance management. • Performance evaluation • Objectives of performance appraisal • Performance appraisal process • Values and competences.	**6 Hours**
9.5	Introduction to civil Service Regulations	• Meaning of service regulations • Civil service regulations • Circulars guiding legal metrology services	**2 Hours**
9.6	Human Resource Management Regulations	• Human resource regulations • Human resource functions	**4 Hours**
9.7	Supply Chain Management Regulations	• Supply Chain Management regulations • Supply Chain Management functions	**2 Hours**
9.8	Government Financial Management Regulations	• Regulations governing government financial management • Government financial management functions	**2 Hours**
9.9	Records Management Regulations	• Regulations governing records management • Records management functions	**2 Hours**
9.10	Institutions Responsible for Enforcement of Civil Service Regulations	• Enforcement of civil service regulations • Functions of each of the institutions	**2 Hours**

9.1 Constitutionalism and Governance

By the end of this topic, the trainee should be able to:

a) Explain the meaning and purpose of a constitution.
b) Explain the meaning and importance of constitutionalism.
c) Explain the concept of governance.
d) Explain the meaning and importance of good governance.
e) Explain the importance of constitutionalism for good governance.
f) Explain the principles of good governance.

Sub Topics

9.1.1 Constitution

- Meaning
- Purpose

9.1.2 Constitutionalism

- Meaning
- Importance

9.1.3 Governance

9.1.4 Good governance

- Meaning
- Importance

9.1.5 Constitutionalism and good governance

9.1.6 Principles of good governance.

9.2 Human Rights

By the end of this topic, the trainee should be able to:

a) Explain the meaning of human rights.
b) Explain the importance of human rights in the country.
c) Describe aspects of the human rights that relate to public service in Kenya in accordance with the Constitution.
d) Explain the role of Kenya National Human Rights and Equality Commission.

Sub Topics

9.2.1 Human rights.

- Meaning

- Importance

9.2.2 Aspects of the human rights that relate to public service in Kenya

- Equality and freedom from discrimination
- Freedom of conscience, religion, belief and opinion
- Freedom of expression
- Access to information
- Freedom of association
- Labour relations
- Fair administrative action
- Access to justice
- Fair hearing
- Consumer rights
- Rights of arrested persons
- Rights of person detained, held in custody or imprisoned
- Protection of right to property
- Freedom and security of the person
- Privacy

9.2.3 Kenya National Human Rights and Equality Commission

9.3 Ethics and Integrity

By the end of this topic, the trainee should be able to:

a) Define common terms in relation to ethics.
b) Describe the manifestations of ethical conduct in the public service.
c) Explain the concept of national values.
d) Describe the national values as stated in the Constitution.

Sub Topics

9.3.1 Definition of terms

- Integrity
- Ethics
- Corruption
- Values

9.3.2 Ethical conduct in the public service.

9.3.3 National values.

- Meaning
- importance

9.3.4 National values in the Constitution.

9.4 Performance Management

By the end of this topic, the trainee should be able to:

a) Explain the meaning of performance management.
b) Explain the importance of performance management in the public service.
c) Explain the concept of performance evaluation.
d) Explain the objectives of performance appraisal in the public service.
e) Describe the performance appraisal process in the public service.
f) Identify values and competences which are appraised in the public service.

Sub Topics

9.4.1 Performance management.

- Meaning
- Importance

9.4.1 Performance evaluation

- Meaning
- Importance

9.4.2 Objectives of performance appraisal

9.4.3 Performance appraisal process

- Individual work planning
- Target setting
- Performance reporting
- Performance evaluation
- Rewards and sanctions

9.4.4 Values and competences.

9.5 Introduction to Civil Service Regulations

Specific Objectives

By the end of this topic, the trainee should be able to:

(a) Explain the meaning of service regulations

(b) Explain the purpose of civil service regulations

(c) Classify types of civil service regulations

(d) Describe the circulars that guide the operations of the legal metrology services.

Sub Topics

9.5.1 Meaning of service regulations

9.5.2 Civil service regulations

- Purpose
- Classification

9.5.3 Circulars guiding legal metrology services

- Open directives
- Legal amendments

9.6 Human Resource Management Regulations

Specific Objectives

By the end of this topic, the trainee should be able to:

(a) Identify the regulations that govern the human resource functions in the public service.

(b) Explain the areas of application of human resource regulations to the legal metrology personnel.

Sub Topics

9.6.1 Human resource regulations

9.6.2 Human resource functions

- Terms and conditions of service
- Occupational health and safety

- Discipline
- Pay and benefits
- Retirement
- Leave
- Transport
- Training and examinations
- Deployment
- Medical benefits
- Housing

9.7 Supply Chain Management Regulations

Specific objectives

By the end of this topic, the trainee should be able to:

a) Identify the regulations that govern the supply chain management functions in the public service.

b) Explain the areas of application of supply chain management regulations to the legal metrology services.

Sub Topics

9.7.1 Supply Chain Management regulations

9.7.2 Supply Chain Management functions

- Requisitioning
- Store keeping
- Inventory
- Verification/inspection
- Disposal of stores

9.8 Government Financial Management Regulations

Specific objectives

By the end of this topic, the trainee should be able to:

a) Identify the regulations that govern the government financial management functions in the public service.
b) Explain the areas of application of government financial management regulations to the legal metrology services.

Sub Topics

9.8.1 Regulations governing government financial management

9.8.2 Government financial management functions

- Imprest requisition and surrender
- Appropriation in Aid

9.9 Records Management Regulations

Specific objectives

By the end of this topic, the trainee should be able to:

a) Identify the regulations that govern the records management functions in the public service.
b) Explain the areas of application of records management regulations to the legal metrology services.

Sub Topics

9.9.1 Regulations governing records management

9.9.2 Records management functions

- Filing
- Retrieval
- Classification
- Archiving
- Disposal

9.10 Institutions Responsible for Enforcement of Civil Service Regulations

Specific objectives

By the end of this topic, the trainee should be able to:

a) Identify the various institutions charged with the responsibility of enforcing civil service regulations.
b) Explain the functions of each of the institutions.

Sub Topics

9.10.1 Enforcement of civil service regulations

- Public Service Commission of Kenya
- State department responsible for public service
- The Treasury
- State department responsible for Labour
- Authorized officers

9.10.2 Functions of each of the institutions

References

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CURRICULUM FOR ASSISTANT LEGAL METROLOGY OFFICERS PART II

10.0 WEIGHING AND MEASURING TECHNOLOGY II (280 HOURS)

10.0.1 Introduction

This course unit is intended to make the trainee acquire the necessary knowledge, skills and attitudes to enable him/her understand the mechanisms of weighing and measuring equipment for the purpose of their proper verification.

10.0.2 General Objectives

By the end of this course unit, the trainee should be able to:

a) Understand the principle of construction and operations of various weighing and measuring equipment.
b) Carry out verification of the weighing and measuring equipment
c) Manage the process of carrying out verification exercises.
d) Educate the public on ethical use of weighing and measuring equipment in use for trade.

10.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC
10.1	Categories of weighing instruments	• Categorization of weighing instruments
10.2	Lever based weighing instruments	• Types of lever based instruments • Components of lever based weighing instruments • Functions of the components • Principles of construction and operation • Verification of different categories of lever based weighing instruments

10.3	Automatic weighing instruments	• Types of automatic weighing instruments • Components of various automatic weighing instruments • Principles of construction and operation • Verification of automatic weighing instruments
10.4	Egg-grading machines	• Types of egg-grading machines • Components of egg-grading machines • Functions of components of egg-grading machine • Principles of construction and operation • Verification of egg-grading machine
10.5	Electronic based weighing instruments	• Types of electronic based weighing instruments • Components of various electronic based weighing instruments • Use of various electronic components in weighing instruments • Principles of construction and operation • Types of tests • Verification of electronic based weighing instruments.
10.6	Electronic weighing systems	• Types of electronic weighing systems

		• Principles of operation
10.7	Categories of measuring instruments	• Classification of measuring instruments
10.8	Electronic dispensing pump	• Types • Component of electronic dispensing pump • Functions of various components of dispensing pump • Principles of operation • Verification of dispensing pump
10.9	Bulk meters	• Types • Functions of various components of bulk meters • Principle of construction and operation • Verification of bulk meters
10.10	Area measuring instruments	• Types • Components of area measuring instruments • Functions of various components • Principles of construction and operation • Verification of area measuring instruments
10.11	Length measuring instruments	• Types • Components of length measuring instruments • Functions of various components • Principles of construction and operation

		• Verification of length measuring instruments
10.12	Volumetric filling machines	• Types • Components • Functions of various components • Principles of construction and operation • Verification of volumetric filling machines
10.13	measures of capacity exceeding 20 litres	• Classification of measures of capacity
10.14	Bulk measures	• Types of bulk measures • Components of bulk measures • Functions of various components • Principle of construction and operation Verification of bulk measures
10.15	Proving tanks	• Types of proving tanks • Components of proving tanks • Functions of proving tanks • Principle of construction and operation • Verification of proving tanks
10.16	Petrol pump check measures	• Construction of petrol pump check measures • Verification of petrol pump check measures.
10.17	Metrological controls of pre-packaged goods	• Sampling methods • Standard quantities • Determination of quantities

10.1 Categories of Weighing Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Categorize the weighing instruments into their appropriate principle of construction and operations
b) Categorize the weighing instruments into their accuracy classes according to their metrological characteristics

Sub Topics

10.1.1 Categories of weighing instruments

- Lever based
- Spring-based
- Automatic
- Electricity and electronic based
- Egg grading

10.1.2 Accuracy Classes based on metrological characteristics

- Class 1
- Class 2
- Class 3
- Class 4

10.2 Lever Based Weighing Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify the various types of lever based weighing instruments
b) Identify the various components of the lever based weighing instruments.
c) Explain the functions of the various components.
d) Explain the principles of construction and operation of lever based instruments.
e) Verify the lever-based weighing instruments according to relevant regulations

Sub Topics

10.2.1 Identify of lever based instruments

- Non-self indicating
- Semi-self indicating
- Self indicating

10.2.2 Components of lever based weighing instruments

10.2.3 Functions of the components

10.2.4 Principles of construction and operation of lever based weighing instruments.

10.2.5 Verification of different categories of lever based weighing instruments.

- Examination
- Testing
- Stamping

10.3 Automatic Weighing Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify types of automatic weighing instruments
b) Identify various components of automatic weighing instruments.
c) Explain the functions of various components of automatic weighing instruments.
d) Explain the principles of construction and operation of automatic weighing instruments.
e) Verify automatic weighing instruments in accordance with the relevant regulations.

Sub Topics

10.3.1 Types of automatic weighing instruments

10.3.2 Components of various automatic weighing instruments.

10.3.3 Functions of components of automatic weighing instruments.

10.3.4 Principles of construction and operation of automatic weighing instruments.

10.3.5 Verification of automatic weighing instruments.

- Examination
- Testing
- Stamping

10.4 Egg–grading Machines

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify types of egg grading instruments
b) Identify various components of egg grading instruments.
c) Explain the functions of various components of egg-grading instruments.
d) Explain the principles of construction and operation of egg-grading instruments.
e) Verify the egg-grading machines according to relevant regulations.

Sub Topics

10.4.1 Types of egg-grading machines

- Type A
- Type B

10.4.2 Components of egg-grading machines

10.4.3 Functions of components of egg-grading machines

10.4.4 Principles of construction and operation of egg-grading machines

10.4.5 Verification of egg-grading machines

- Examination
- Testing
- Stamping

10.5 Electronic Based Weighing Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify types of electronic based weighing instruments
b) Identify various components of electronic based weighing instruments.
c) Explain the use of various electronic components in weighing instruments.
d) Explain the principles of construction and operation of electronic based weighing instruments.
e) Explain the various tests applied to electronic weighing and measuring instruments.
f) Verify electronic weighing instruments in accordance with the relevant regulations.

Sub Topics

10.5.1 Types of electronic based weighing instruments

10.5.2 Components of various electronic based weighing instruments.

10.5.3 Use of various electronic components in weighing instruments.

10.5.4 Principles of construction and operation of electronic based weighing instruments.

10.5.5 Types of tests

- Weighing performance test
- Eccentricity
- Discrimination
- Repeatability
- Tilting

10.5.6 Verification of electronic based weighing instruments.

- Examination
- Testing
- Stamping

10.6 Electronic Weighing Systems

Specific Objectives:

By the end if this topic, the trainee should be able to:

a) Identify the different types of electronic weighing systems

b) Explain the principle of operation of each electronic weighing systems

Sub Topics

10.6.1 Types of Electronic weighing systems

- Electromagnetic force balance
- Electronic load balancing
- Electronic taring and adjustment
- Electronic pulse generation and integration

10.6.2 Principles of operation of electronic weighing systems

- Electromagnetic force balance
- Electronic load balancing
    - Equilibrium detection
- Electronic taring and adjustment
    - Remote calibrated balance and adjustment
    - Automatic taring
- Electronic pulse generation and integration

10.7 Categories of Measuring Instruments

Specific Objectives

By the end of this topic, the trainee should be able to classify measuring instruments based on their operation and use.

Sub Topics

10.7.1 Classification of measuring instruments

- Electronic dispensing pumps
- Bulk meters
- Area measuring instruments

- Beer measuring instruments
- Length measuring instruments
- Volumetric filling machines

10.8 Electronic Dispensing Pump

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Identify models of electronic dispensing pump
b) Identify the electronic components of dispensing pump
c) Explain the functions of various electronic components of dispensing pump
d) Explain the principle of operation of electronic dispensing pump
e) Verify dispensing pumps according to relevant regulations.

Sub Topics

10.8.1 Models of electronic dispensing pump

10.8.2 Electronic Components of an electronic dispensing pump

10.8.3 Functions of various components

10.8.4 Principle of operation of electronic dispensing pump

10.8.5 Verification of electronic dispensing pump**.**

- Examination
- Testing
- Stamping

10.9 Bulk Meters

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify the models of bulk meters
b) Identify various components of bulk meters.
c) Explain the functions of various components of bulk meters.
d) Explain the principle of construction and operation of bulk meters.
e) Verify bulk meters in accordance with the relevant regulations.

Sub Topics

10.9.1 Models of bulk meters

10.9.2 Components of bulk meters.

10.9.3 Functions of various components of bulk meters.

10.9.4 Principle of construction and operation of bulk meters.

10.9.5 Verification of bulk meters.

- Examination
- Testing
- Stamping

10.10 Area Measuring Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify the various types of area measuring instruments

b) Identify various components of area measuring instruments.

c) Explain the functions of various components of area measuring instruments.

d) Explain the principle of construction and operation of area measuring instruments.

e) Verify the area measuring instruments in accordance with the relevant regulations.

Sub Topics

10.10.1 Types of area measuring instruments

- Electronic
- Mechanical

10.10.2 Components of area measuring instruments

10.10.3 Functions of various components of area measuring instruments.

10.10.4 Principle of construction and operation of area measuring instruments.

10.10.4 Verification of area measuring instruments.

- Examination

- Testing
- Stamping

10.11 Length Measuring Instruments

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify the various types of length measuring instruments
b) Identify various components of length measuring instruments.
c) Explain the functions of various components of length measuring instruments.
d) Explain the principle of construction and operation of length measuring instruments.
e) Verify the length measuring instruments according to relevant regulation

Sub Topics

10.11.1 Types of length measuring instruments
- Linear
- Fabric

10.11.2 Components of length measuring instruments.

10.11.3 Functions of various components of length measuring instruments.

10.11.4 Principle of construction and operation of length measuring instruments.

10.11.5 Verification of length measuring instruments.
- Examination
- Testing
- Stamping

10.12 Volumetric Filling Machines

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Identify the various types of volumetric filling machines

b) Identify various components of volumetric filling machines.
c) Explain the functions of various components of volumetric filling machines.
d) Explain the principle of construction and operation of volumetric filling machines
e) Verify the volumetric filling machines according to relevant regulations.

Sub Topics

10.12.1 Types of volumetric filling machines

10.12.2 Components of volumetric filling machines

10.12.3 Functions of volumetric filling machines

10.12.4 Principle of construction and operation of volumetric filling machines

10.12.5 Verification of volumetric filling machines

- Examination
- Testing
- Stamping

10.13 Measures of Capacity Exceeding 20 Litres

Specific Objective

By the end of this topic, the trainee should be able to classify measures of capacity on the basis of construction and use.

Sub Topic

10.13.1 Measures of capacity exceeding 20 litres

- Bulk measures
- Proving tanks

10.14 Bulk Measures

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify various types of bulk measures
b) Identify various components of bulk measures.
c) Explain the functions of various components of bulk measures.

d) Explain the principle of construction and operation of the bulk measures

e) Verify the bulk measure according to relevant regulations**.**

Sub Topics

10.14.1 Types of bulk measures

10.14.2 Components of bulk measures.

10.14.3 Functions of various components of bulk measures.

10.14.4 Principle of construction and operation of bulk measures

10.14.5 Verification of bulk measures.

- Examination
- Testing
- Stamping

10.15 Proving Tanks

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify various types of proving tanks.

b) Identify various components of proving tanks.

c) Explain the functions of various components of proving tanks.

d) Explain the principle of construction and operation of proving tanks.

e) Verify the proving tanks according to relevant regulations

Sub Topics

10.15.1 Types of proving tanks.

- Open proving tanks
- Closed proving tanks
- Portable proving tanks
- stationary proving tanks

10.15.2 Components of proving tanks

10.15.3 Functions of proving tanks

10.15.4 Principle of construction and operation.

10.15.5 Verification of proving tanks

- Examination
- Testing
- Stamping

10.16 Petrol Pump Check Measures

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the construction of petrol pump check measures.

b) Verify the petrol pump check measures in accordance with the relevant regulations.

Sub Topics

10.16.1 Construction of petrol pump check measures.

10.16.2 Verification of petrol pump check measures.

- Examination
- Testing
- Stamping

10.17 Metrological Controls of Pre-packaged Goods

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Describe the sampling methods used in metrological control of pre-packaged goods

b) Explain the importance of standardizing quantities used in control of pre-packaged goods

c) Describe the process of metrological determination of quantities of pre-packaged goods

Sub Topics

10.17.1 Sampling methods

10.17.2 Importance of standardizing quantities

10.17.3 Determination of quantities

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11.0 LAW II (100 HOURS)

11.0.1 Introduction:

This course unit is intended to equip the trainee with knowledge, skills and attitudes that should enable him/her carry out inspection, investigation and adduce evidence in court effectively.

11.0.2 General Objectives

By the end of this course unit, the trainee should be able to:–

a) Understand the aspects of inspection, investigation and prosecution process
b) Understand the importance of applying the rules of criminal procedure in inspection, investigation and prosecution in enforcement of consumer protection and fair trade
c) Enforce the provisions of Weights and Measures Act , Trade Description Act and their subsidiary Legislation
d) Understand the importance of applying the rules of evidence in prosecution

11.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC
11.1	Law of evidence	• Definition of evidence • Classification of evidence • Evidence collection and preservation • Examination of witnesses • Rules of evidence
11.2	Criminal Procedure Code	• Receiving complaints • Analyzing complaints • Planning and execution of an investigation • Conducting a search • Effecting an arrest • Preparation of cases • Participate in court process • Conduct prosecution

CODE	TOPIC	SUB-TOPIC
11.3	Weights and Measures Act	• The provisions of the Act and rules relating to transaction in goods • Exemptions • Offences relating to transactions in goods and penalties • Defences • Testing of goods • Conduct investigations • Disposal of seized goods • Powers of a weights and measures inspector
11.4	Trade Descriptions Act	• Definition of terms • Offences • Penalties • defences
11.5	Criminal liability in business organizations	• types of business organizations • aspects of criminal liabilities

11.1 Law of Evidence

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Define the term evidence
b) Classify evidence
c) Collect and preserve evidence
d) Examine witnesses
e) Apply rules of evidence when testifying

Sub Topics

11.1.1 Definition of Evidence

11.1.2 Classification of Evidence

- Documentary
- Oral
- Direct
- Circumstantial
- Expert

11.1.3 Evidence collection and preservation

- Seizure
- Search with/without warrant
- Recording statements
- Interviewing of witnesses
- Preservation of exhibits

11.1.4 Examination of witnesses

- Examination in chief
- Cross examination
- Re-examination

11.1.5 Rules of Evidence

- Materiality
- Relevance
- Admissibility
- Burden of proof
- Hearsay rule
- Perjury
- Competence and Compellability

11.2 Criminal Procedure Code

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Receive and analyze complaints
b) Plan and carry out an investigation
c) Conduct searches
d) Effect an arrest
e) Prepare cases
f) Participate in the court process
g) Conduct prosecutions

Sub Topics

11.2.1 Receiving complaints

11.2.2 Analyzing complaints

11.2.3 Planning and Execution of an investigation

11.2.4 Conducting a search

11.2.5 Effecting an arrest

11.2.6 Preparation of cases

- Drafting of charges
- Preparation of a case file
- Filing of cases

11.2.7 Participating in court process

- Summons
- Service of summons
- Affidavit of service
- Effecting arrest
- Testifying

11.2.8 Conducting prosecution

- Application of summons
- Taking of a plea
- Examination of witnesses
- Submissions
- Application for court orders

11.3 Weights and Measures Act

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Apply the provisions of the Act and the rules relating to the transaction in goods.
b) Explain grant of exemptions under various sections of the Act
c) Describe the offences and their corresponding penalties as prescribed in the Act.
d) Explain various defences available to the accused according to the Act.
e) Explain the provisions relating to testing of goods
f) Conduct investigation in accordance with the provision of the Act.
g) Explain the procedure of disposing seized goods.
h) Explain the powers accorded to a weights and measures inspector by the Act.

Sub Topics

11.3.1 The provisions of the Act and Rules relating to transaction in goods

11.3.2 Grant of exemptions

11.3.3 Offences and penalties

- Transaction in goods
- Weighing and measuring for trade

11.3.4 Defences

11.3.5 Testing of goods

11.3.6 Conduct investigations

- Process
- Entry
- Searches
- Seizures
- Arrest

11.3.7 Disposal of seized goods

- Procedure
- Methods

11.3.8 Powers of an inspector

11.4 Trade Descriptions Act

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the terms used in the Trade Descriptions Act
b) Explain the offences under the Act
c) State the penalties as provided for under the Act
d) Explain various defences provided for under the Act.

Sub Topics

11.4.1 Definition of terms:-

- Trade Description
- False Trade Description
- Other terms in the Act

11.4.2 Offences

11.4.3 Penalties

11.4.4 Defences

11.5 Criminal Liability in Business Organizations

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Identify the various types of business organizations
b) Explain the various aspects of criminal liability in respect to each type of business

Sub Topics

11.5.1 Types of Business Organizations

- Sole proprietorship
- Partnerships
- Limited liability companies
- Cooperatives

11.5.2 Aspects of criminal liability

- Strict
- Vicarious

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7. Republic of Kenya, (1987), The Criminal Procedure Code Cap 75, Nairobi; Government Printer.
8. Republic of Kenya, (), Evidence Act Cap 80, Nairobi; Government Printer.

Learning activities /experiences

- Intensive training
- Mock courts
- Visits to law courts : registry, court in session
- Visits to business premises, police stations, supermarkets, factories, retail outlets, calibration centres and scale manufacturing companies.

12.0 ORGANISATION AND FUNCTIONS OF GOVERNMENT (30 HOURS)

12.0.1 Introduction

This course unit is intended to equip the trainee with the knowledge, skills and attitudes to enable him/her understand the structure and operations of government and the work environment in which he/she operates.

12.0.2 General Objectives

By the end of this course unit, the trainee should be able to:

a) Understand the organizational structure of government
b) Understand the functions of various institutions within the government as they relate to the Weights and Measures Unit
c) Appreciate the role of the relevant state corporations whose activities relate to the Weights and Measures Unit.

12.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC
12.1	Structure and Functions of Government	• Concept of government • Devolved system of government in Kenya • Arms of government • Composition and functions of the components of each arm of the government
12.2	Commissions and Independent Offices	• Rationale for establishment of Commissions and Independent Offices. • Commissions and Independent Offices • Functions of Commissions and Independent Offices
12.3	National Government	• The structure of national government • Structure of a state department • Role of a principal secretary • Role of the civil service • Structure of the weights and measures unit • Role of the weights and measures unit in service delivery • Complementary role of other national institutions to weights and measures services
12.4	County Government	• Rationale for the devolution of government • Structure of a county government • Composition and functions

		• Relationship between national and county government. • Categories of urban areas and cities • Management structure of urban areas and cities • Complementary role of institutions in the • • government to weights and measures services
12.5	The Public Service	• Definition of terms associated with public service • Composition of the public service • Values and principles of public service • Role of the Public Service Commission • Human resource functions carried out by a County government
12.6	State Corporations	• State Corporations (meaning and importance) • State Corporations that impact on the functions of weights and measures unit • Complementary role of identified state Corporations to weights and measures unit

12.1 Structure and Functions of Government

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the concept of government

b) Describe the devolved system of government in Kenya

c) Describe the various arms of the government.

d) Describe the composition of each of the arms of government

e) Explain the functions of the components of each arm of the government.

Sub Topics

12.1.1 Concept of government

- Meaning
- Functions

12.1.2 Devolved system of government in Kenya

- National government
- County government
- Role of each level of government

12.1.3 Arms of government

- Executive
- Legislature
- Judiciary

12.1.4 Composition and functions of the components of each arm of the government

(i) National Executive

- The President
- The Deputy President
- The Cabinet
    - The President
    - The Deputy President
    - The Attorney General
    - The Cabinet Secretaries
    - Secretary to the cabinet

(ii) Legislature

Parliament

- National Assembly
- Senate

(iii) Judiciary

Superior courts

- Supreme court
- Court of appeal
- High court/special courts

Subordinate courts

- Magistrates courts

- Kadhis courts
- Courts martial
- Others courts/Local tribunal

12.2 Commissions and Independent Offices

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the rationale for establishing Commissions and Independent Offices in Kenya.
b) Identify the Commissions and Independent Offices.
c) Explain the functions of various Commissions and Independent Offices.

Sub Topics

12.2.1 Rationale for establishment of Commissions and Independent Offices.

12.2.2 Commissions and Independent Offices

12.2.3 Functions of Commissions and Independent Offices

- Judicial Service Commission
- National Police Service Commission
- The Auditor General
- The Controller of Budget

12.3 National Government

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Describe the structure of national government
b) Describe the organizational structure of a state department.
c) Explain the role of a principal secretary in a state department.
d) Explain the role of the civil service.
e) Describe the organizational structure of weights and measures unit
f) Explain the role of the weights and measures unit in government service delivery.
g) Explain the complementary role of other national government institutions to weights and measures services.

Sub Topics

12.3.1 The structure of national government

12.3.2 Structure of a state department

12.3.3 Role of a principal secretary

12.3.4 Role of the civil service

12.3.5 Organizational structure of weights and measures unit

12.3.6 Role of the weights and measures unit in government service delivery.

12.3.7 Complementary role of other national government institutions to weights and measures services.

- National Police Service
- The Treasury
- Transport and Communication
- Judiciary
- Director of Public Prosecutions
- Government Chemist
- Immigration and Citizenship
- Registrar of companies

12.4 County Government

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the rationale for devolution of government

b) Describe the structure of a county government.

c) Explain the composition and functions of the organs of a county government.

d) Explain the relationship between the national government and a county government

e) Identify categories of urban areas and cities.

f) Describe the management structure of urban areas and cities.

g) Explain the complementary role of institutions in the county government to weights and measures services.

Sub Topics

12.4.1 Rationale for devolution of government

12.4.2 Structure of a county government

- A County Assembly
- County Executive

12.4.3 Composition and functions

- County Assembly
- County Executive Committee

12.4.4 Relationship between the national government and a county government

12.4.5 Categories of urban areas and cities

12.4.6 Management structure of urban areas and cities

12.4.7 Complementary role of institutions in the county government to weights and measures services.

12.5 The Public Service

Specific Objectives

By the end of this topic, the trainee should be able to:

(a) Define terms associated with public service

(b) Describe the composition of the public service

(c) Explain the values and principles of public service

(d) Explain the role of the Public Service Commission

(e) Explain the human resource functions carried out by a county government

Sub Topics

12.5.1 Definition of terms associated with public service

- Public officer
- State officer
- Public service
- State office
- Public office
- State organ

12.5.2 Composition of the public service

12.5.3 Values and principles of public service

12.5.4 Role of the Public Service Commission

12.5.5 Human resource functions carried out by a county government

12.6 State Corporations

Specific Objectives

By the end of this topic, the trainee should be able to:

a) Explain the meaning of the term state corporation.
b) Explain the importance of state corporations.
c) Identify the state corporations that impact on the functions of the weights and measures unit.
d) Explain the complementary role of each of the state corporations to the weights and measures unit in service delivery.

Sub Topics

12.6.1 State Corporations

- Meaning
- Importance

12.6.2 State Corporations.

- Kenya Bureau of Standards
- National Environmental Management Authority
- Kenya Industrial Research Development Institute
- Kenya Plant Health Inspectorate Services
- Kenya National Trading Corporation
- National Cereals and Produce Board
- Kenya Industrial Property Institute
- Kenya Revenue Authority
- Anti-counterfeit Agency
- Kenya Airport Authority
- Kenya Ports Authority

12.6.3 Complementary role of the identified state corporations.

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3. Republic of Kenya, (2006), Handbook for Civil Service Staff Induction: Government printer
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13.0 PUBLIC RELATIONS AND CUSTOMER CARE (30 HOURS)

13.0.1 Introduction

This course unit is intended to equip the trainee with knowledge, skills and positive attitudes that will enable him/her establish and maintain understanding and goodwill with the publics for effective service delivery.

13.0.2 General Objectives

By the end of this course unit, the trainee should be able to: -

a) Appreciate the role of public relations and customer care at the work place for effective service delivery

b) Understand the nature of publics of the Weights and Measures Department and develop strategies of handling them effectively

c) Uphold ethical standards in the course of service delivery in order to portray positive image of the government

13.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC
13.1	Introduction to public relations for weights and measures	• Meaning and importance of public relations • Objectives of public relations • Functions of public relation's • Importance of public relations skills
13.2	Publics of weights and measures department	• Types of publics • Relationship with publics
13.3	Planning public relations activities	• Types of public relations activities

		• Planning public relation activities • Implementing public relations programmes • Evaluating of public relations activities
13.4	Media of public relations activities in weights and measures	• Meaning of media of public relations activities • Types of media of public relations activities • Factors influencing choice of media of public relations activities
13.5	Corporate image and identity	• Meaning of corporate image and identity • Types of image • Importance of a positive corporate image • Strategies for enhancing corporate image
13.6	Customer care	• Meaning of terms • Importance of customer care • Role of customer care • customer care skills • Indicators of customer satisfaction

		• Handling various customers
13.7	Customer service delivery	• Meaning of customer service delivery standards • Importance of setting customer service delivery standards • Ethical issues in customer care
13.8	Customer feedback	• Meaning and importance of customer feedback • ways of obtaining customer feedback • handling complaints

13.1 Introduction to Public Relations for Weights and Measures

Specific Objectives

By the end of this topic, the trainee should be able to: -

a) Explain the meaning and importance of public relations

b) Explain the objectives of public relations

c) Explain the functions of public relations

d) Explain the importance of public relations skills in carrying out weights and measures activities

Sub Topics

13.1.1 Public relations

- Meaning
- Importance

13.1.2 Objectives of public relations

13.1.3 Functions of public relations

13.1.4 Importance of public relations skills

13.2 Publics of Weights and Measures Department

Specific objectives

By the end of this topic, the trainee should be able to: -

a) Explain the types of publics of the Weights and Measures Department

b) Describe the relationship between the department and its publics

Sub Topics

13.2.1 Types of publics

- Internal publics
- External publics

13.2.2 Relationship with publics

- Internal publics
- External publics

13.3 Planning and Implementation of Public Relations Activities

Specific Objectives

By the end of this topic, the trainee should be able to: -

a) Identify the types of public relation activities in the Weights and Measures Department

b) Explain the process of planning public relations activities

c) Explain the process of implementing public relations programme

d) Assess the effectiveness of the public relation activities undertaken by the Weights and Measures Department

Sub Topics

13.3.1 Types of public relation activities

- Events
- Trade shows
- Exhibitions

13.3.2 Planning public relations activities

13.3.3 Implementing public relations programmes:
13.3.4 Evaluating public relations activities

13.4 Media of Public Relations Activities in Weights and Measures Department

Specific Objectives

By the end of this topic, the trainee should be able to: -

a) Explain the meaning of media of public relations activities

b) Explain the types of media of public relations activities in weights and measures

c) Explain the factors influencing the choice of media of public relations activities

Sub Topics

13.4.1 Meaning of media

13.4.2 Types of media

- Print media
- Electronic media

13.4.3 Factors influencing choice of media of public relations activities

13.5 Corporate Image and Identity

Specific Objectives

By the end of this topic, the trainee should be able to: -

a) Explain the concept of corporate image and identity

b) Describe the different types of image

c) Explain the importance of a positive corporate image

d) Explain the strategies of enhancing corporate image

Sub Topics

13.5.1 Concept of corporate image and identity

13.5.2 Types of image e.g.

- Corporate
- Mirror
- Current

13.5.2 Importance of a positive corporate image

13.5.3 Strategies for enhancing corporate image

13.6 Customer Care

Specific Objectives

By the end of this topic, the trainee should be able to: -

a) Explain the meaning and importance of customer care

b) Explain the role of customer care in service delivery

c) Explain the customer care skills required for the provision of quality service

d) Explain the indicators of customer satisfaction

e) Explain the ways of handling various customers

Sub Topics

13.6.1 Customer care

- Meaning
- Importance

13.6.2 Role of customer care

13.6.3 Customer care skills

13.6.4 Indicators of customer satisfaction

13.6.5 Handling various customers

13.7 Customer Service Delivery

Specific Objectives

By the end of this topic, the trainee should be able to: -

a) Explain the meaning and importance of customer service delivery standards

b) Explain the guidelines of customer service delivery standards

c) Explain ethical issues relating to customer care

Sub Topics

13.7.1 Customer service delivery standards

- Meaning
- Importance

13.7.2 Guidelines of customer service delivery standards

- Service charter
- Quality policy statement
- Performance standards

13.7.3 Ethical issues in customer care e.g**.**

- Confidentiality
- Integrity
- Honesty

13.8 Customer Feedback

Specific Objectives

By the end of this topic, the trainee should be able to: -

a) Explain the meaning and importance of customer feedback

b) Describe the mechanisms of obtaining customer feedback

c) Explain the mechanisms of handling customer complaints

Sub Topics:

13.8.1 Customer feedback

- Meaning
- Importance

13.8.2 Mechanisms of obtaining customer feedback

13.8.2 Handling customer complaints

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14.0 EFFECTIVE COMMUNICATION (40 HOURS)

14.0.1 Introduction

This course unit is intended to equip the trainee with knowledge, skills and attitudes to enable him/her effectively communicate with the publics.

14.0.2 General Objectives

By the end of this course unit, the trainee should be able to:-

a) Understand the purpose and process of communication
b) Apply communication skills at work
c) Appreciate the importance of modern tools of communication.

14.0.3 Course Unit Summary

CODE	TOPIC	SUB-TOPIC
14.1	Introduction to communication	• Meaning of communication • Components of communication • Principles of communication • Importance of Communication
14.2	Communication Cycle	• Communication cycle • Barriers to effective communication • Overcoming Communication barriers
14.3	Types and forms of communication	• Types of Communication • Forms of communication • Advantages and disadvantages • Factors influencing the choice of medium of communication
14.4	Internal communication	• Channels of communication • Barriers to each channel of communication
14.5	Interpersonal	• Meaning and importance

	Communication	Interpersonal communication • Listening skills • Non-verbal communication • Johari window • Barriers to interpersonal communication • Enhancing interpersonal communication
14.6	Business Correspondence	• Official letter • Memorandum
14.7	Report writing	• Reports • Types and format of a report • Principles of report writing • Report writing
14.8	Meetings	• Meaning and purpose of meetings • Types of meetings • Terms used in meetings • Parties to a meeting • Notice of meetings and agenda • Procedure in meetings • Prepare minutes
14.9	Interviews	• Meaning importance of interview • Importance of interviews • Types of Interview • Methods of conducting interviews • Stages of an interview

14.10	Electronic Communication	• Electronic communication • Forms of electronic communication • Advantages and disadvantages of each form of electronic communication
14.11	Presentation skills	• Types of presentation • Preparation for a presentation • Conduct during presentation • Feedback

14.1 Introduction to Communication

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning of the term communication
b) Explain the components of communication
c) Explain the principles of communication
d) Explain the importance of communication

Sub Topics

14.1.1 Meaning of communication**.**

14.1.2 Components of communication.

14.1.3 Principles of communication

14.1.4 Importance of communication

14.2 Communication Cycle

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Describe the communication cycle
b) Explain the barriers to effective communication
c) Explain ways of overcoming barriers to effective communication

Sub Topics

14.2.1 Communication cycle

- Sender
- Encoding and decoding process
- Channel
- Receiver
- Feedback

14.2.2 Barriers to effective communication

14.2.3 Overcoming communication barriers

14.3 Types and Forms Communication

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the types of communication
b) Explain the forms of communication
c) Explain the advantages and disadvantages the different forms of communication
d) Explain factors influencing the choice of medium of communication

Sub Topics

14.3.1 Types of communication

- Formal Communication
- Informal Communication

14.3.2 Forms of Communication

- Written
- Verbal
- Visual

14.3.3 Advantages and disadvantages

14.3.4 Factors influencing the choice of medium of communication

14.4 Internal Communication

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the channels of internal communication
b) Explain the barriers within each channel of communication

Sub Topics

14.4.1 Channels of communication

- Vertical channel
- Horizontal
- Diagonal

14.4.2 Barriers to each channel of communication

14.5 Interpersonal Communication

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning and importance of interpersonal communication
b) Explain the importance of effective listening in interpersonal communication
c) Explain the importance of non-verbal communication
d) Apply the Johari window in interpersonal communication
e) Explain the barriers to interpersonal communication
f) Explain ways of enhancing interpersonal communication

14.5.1 Interpersonal communication

- Meaning
- Importance

14.5.2 Listening skills

14.5.3 Non-verbal communication

14.5.4 Johari window

14.5.5 Barriers to interpersonal communication

14.5.6 Enhancing interpersonal communication

14.6 Business Correspondence

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning and purpose of an official letter
b) Explain the essentials of an official letter
c) Describe the parts of an official letter
d) Describe the styles of an official letter
e) Explain the meaning and purpose of memorandum
f) Explain the features of a memorandum
g) Describe the layout of an internal memorandum

Sub Topics

14.6.1 Official Letter

- Meaning and purpose
- Essentials of an official letter
- Parts of an official letter
- Letter styles/formats

14.6.2 Memorandum

- Meaning and purpose
- Features
- Layout of internal memorandum

14.7 Report Writing

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning and purpose of reports
b) Describe the types and format of a report
c) Explain the principles of report writing
d) Prepare a report

Sub Topics

14.7.1 Reports

- Meaning
- Purpose

14.7.2 Types and format of a report

14.7.3 Principles of report writing

14.7.5 Report writing

14.8 Meetings

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning and purpose of meetings
b) Describe types of meetings
c) Explain the terms used in meetings
d) Explain the role of the parties to a meeting
e) Prepare a notice and agenda of a meeting
f) Describe the procedure of conducting a meeting
g) Prepare minutes of a meeting

Sub Topics

14.8.1 Meaning and purpose of meetings

14.8.2 Types of meetings

- Formal
- Informal

14.8.3 Terms used in meetings

14.8.4 Parties to a meeting

14.8.5 Notice of meetings and agenda

14.8.6 Procedure in meetings

14.8.7 Prepare minutes

14.9 Interviews

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning and purpose of interview.
b) Explain the importance of interviews
c) Describe types of interviews
d) Describe the methods for conducting interviews
e) Describe the stages of an interview

Sub Topic

14.9.1 Interview

- Meaning
- Purpose

14.9.2 Importance of interviews

14.9.3 Types of interviews

14.9.4 Methods of conducting interviews

14.9.5 Stages of an interview

- Pre-interview
- Interview
- Post-interview

14.10 Electronic Communication

Specific Objectives

By the end of this topic, the trainee should be able to:-

a) Explain the meaning and importance of electronic communication
b) Describe various forms of electronic communication
c) Explain the advantages and disadvantages of each form of electronic communication

Sub Topics

14.10.1 Electronic communication

- Meaning
- Importance

14.10.2 Forms of electronic communication

- Internet
- E-mail
- Teleconferencing and videoconferencing
- Facsimile

14.10.3 Advantages and disadvantages of each form of electronic communication

14.11 Presentation Skills

Specific objectives

By the end of this topic, the trainee should be able to:-

a) Describe the different types of presentation
b) Explain the preparations for a presentation

c) Describe the appropriate conduct during the presentation

d) Explain the importance of feedback in a presentation

Sub Topics

14.11.1 Types of presentation

14.11.2 Preparation for a presentation

- Content planning
- Venue
- Resource materials

14.11.3 Conduct during a presentation

14.11.4 Feedback

- Importance
- Mechanisms

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