### 19.2.0 QUANTITATIVE TECHNIQUES

#### 19.2.1 Introduction

This module unit is intended to equip the trainee with necessary knowledge, skills and attitudes that will enable him/her apply quantitative techniques in making business decisions

### 19.2.2 General Objectives

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

- a) discuss the use of quantitative techniques in business
- b) recognise the role of quantitative techniques in decision making
- c) describe the use of network analysis in project management
- d) cope with the emerging trends and issues in quantitative techniques

## 19.2.3 Module Unit Summary and Time Allocation

Code	Sub-Module Units	Content	Time (Hours)
19.2.01	Introduction to Quantitative Techniques	<ul> <li>Development of quantitative techniques</li> <li>Role of quantitative techniques</li> <li>Types of quantitative techniques</li> </ul>	4
19 2 01	Correlation and Regression	<ul> <li>Definition of terms correlation and regression</li> <li>Differences and similarities between correlation and regression</li> <li>Methods of studying correlation</li> <li>Interpretation of correlation coefficient</li> <li>Linear regression equation</li> <li>Forecasting using regression equation</li> </ul>	6



Code Sub-Module Unit			
19 2.03		<ul> <li>Definition of linear programming</li> <li>Assumption of linear programming</li> <li>Requirements of linear programming</li> <li>Formulation of linear equation</li> <li>Formulation of linear programming problems</li> <li>Solving linear programming problems</li> </ul>	(Hours)
19.2.04	Matrices	<ul> <li>Definition of matrices</li> <li>Types of matrices</li> <li>Determination of order of a matrix</li> <li>Matrix operations</li> <li>Determination of determinant of a matrix</li> <li>Inverse of a matrix</li> <li>Solving simultaneous equations using matrices</li> </ul>	8
19.2.05	Index Numbers	<ul> <li>Definition of index numbers</li> <li>Uses of index numbers</li> <li>Types of index numbers</li> <li>Factors to be considered in construction of index numbers</li> <li>Problems encountered when constructing index numbers</li> <li>Computation of index numbers</li> <li>Limitations of index numbers</li> </ul>	8
9.2.06	Time Series	<ul> <li>Definition of time series</li> <li>Objectives of time series analysis</li> <li>Component of a time series</li> <li>Computation of time series</li> <li>components</li> <li>Decomposition of a time series</li> </ul>	8
2.2.07	Network Analysis	<ul> <li>Meaning of network analysis</li> <li>Terms used in network analysis</li> <li>Rules used when drawing networks</li> <li>Construction of project network</li> <li>Critical path and project duration</li> <li>Application of network analysis</li> </ul>	8

19 2 10 Finan  19 2 11 Probat Probat Distrib	ntory Control	<ul> <li>Definition of calculus</li> <li>Differentiation of simple functions</li> <li>Integration of simple functions</li> <li>Application of calculus</li> <li>Definition of basic terms used in inventory control</li> <li>Inventory control limits</li> <li>Minimization of cost of inventories</li> <li>Inventory control models</li> <li>Definition of terms used in financial mathematics</li> </ul>	8 8 8
19210 Finan 19211 Probal Probal Distrib	els	inventory control Inventory control limits Minimization of cost of inventories Inventory control models Definition of terms used in	
19.2 11 Probat Probat Distrib	cial Mathematics	Definition of terms used in	8
Probal Distrib		<ul><li>Present and future values</li><li>Annuities and perpetuities</li></ul>	
	bility and bility butions	<ul> <li>Definition of basic terms used in probability</li> <li>Basic concepts of probability</li> <li>Laws of probability</li> <li>Probability distributions</li> <li>Application of basic probability distribution functions</li> </ul>	8
921   Emergi	Of Hypothesis	<ul> <li>Definition of hypothesis</li> <li>Types of hypothesis</li> <li>Type I and type II errors</li> <li>Critical and acceptance regions</li> <li>Z-test and T-test</li> </ul>	8
Issues i Technic	ng Trends and n Quantitative Jues	<ul> <li>Emerging trends and issues in quantitative methods</li> <li>Challenges posed by emerging trends and issues in quantitative techniques</li> <li>Coping with challenges posed by emerging trends and issues in quantitative techniques</li> </ul>	2.
Total		7-amilian o recinitques	90

19.2.01	INTRODUCTION TO	19.2.0171	Content
	QUANTITATIVE TECHNIQUES	12.2.0111	Definition of quantitative
	rechitques	10.2.0172	techniques
	Theory	19.2.0172	Development of quantitative
19.2.01T	Specific Objectives By the end of the	19.2.0113	techniques Role of quantitative
	sub-module unit, the trainee should be	19.2.01T4	techniques Types of quantitative
	able to:	19.2.0115	techniques Application of
	<ul> <li>a) explain the meaning of quantitative</li> </ul>		quantitative techniques
	techniques b) describe the		Practice
٠	development of quantitative	19.2.01P	Specific Objective By the end of the
	techniques c) explain the role	at.co.	sub-module unit, the trainee should be
	of quantitative techniques	- Jille	able to discuss the applicability of
	d) describe types of quantitative	,00°	quantitative techniques in a
	techniques  e) identify areas  where		business environment
	quantitative		Content .
	techniques are applicable.	19.2.01P1	Applicability of quantitative
19.2.01C	6		techniques in a
19.2.010	Competence The trainee should		business environment
	have the ability to		
	identify areas where		uggested
	quantitative	Te	eaching/Learning
	techniques could be	$R_{\epsilon}$	esources
	applied in a business		Textbooks
	set up.		Use of tables
		- ]	Manuals

	Suggested Teaching Learning Activities Group discussions Lectures Class exercises Group Presentations Suggested Evaluation	19 2 020	Competence The trainee should have the ability to forecast using correlation and regression in a business set up
	Methods		
	- Class assignments	10.2.0221	Content
	- Oral tests	19.2.0271	Definition terms correlation and regression
19.2.02	CORRELATION AND REGRESSION	19 2.0272	Differences and similarities between correlation and
	Theory		A CONTRACTOR OF THE CONTRACTOR
19.2.02T	Specific Objectives	19.2.0213	regression Methods of studying
	By the end of the	19.2.02T4	correlation
	sub-module unit. the	17.2.0214	Interpretation of correlation
	trainee should be	CO.	coefficient
	able to:	19.2 02T5	Linear regression
	a) define the terms		equation
	correlation and	67	- X on Y
	regression	20-	Y on X
	b) explain the	19.2.0276	Forecasting using
	differences and similarities		regression equation
	between correlation and		Practice
	regression	19.2.02P	Specific Objectives
	c) describe		By the end of the
	methods of		sub-module unit the
	studying		trainee should be able
	correlation		to:
	<ul> <li>d) interpret the coefficient of correlation</li> </ul>		a) determine correlation using various methods
	e) formulate linear regression		b) interpret correlation
	equation		coefficient
	f) explain the use of regression equation in		c) compute linear regression
	forecasting.		equation

coefficient of correlation - Scatter diagram - Ranking - Produce Moment Correlation - Coefficient - Coefficient of determination - Correlation - Correlation - Coefficient - Coefficient of determination - Coefficient - Coefficient of correlation - Coefficient - Coefficient of determination - Coefficient - Coefficient of determination - Coefficient - Coefficient of determination - Coefficient of determ	19.2.02P1	Content Determination of	19.2.03	LINEAR
- Scatter diagram - Ranking - Produce Moment Correlation Coefficient - Coefficient - Coefficient of determination Interpretation of correlation coefficient  - Suggested Teaching/Learning Resources - Textbooks - Use of tables - Manuals  Suggested Teaching/ Learning Activities - Group discussions - Lectures - Class exercises - Presentations  Suggested Evaluation Methods - Questions and answers  - Ranking - Produce Moment Sub-module unit, trainee should be unit, trainee should be sub-module unit, trainee		coefficient of		PROGRAMMING Theory
Correlation Coefficient Coefficient Coefficient of determination Interpretation of correlation coefficient Coefficient Coefficient Interpretation of determination Interpretation of correlation Coefficient Interpretation of linear programming coefficient Coefficient Correlation Coefficient Interpretation of determination Interpretation of correlation Coefficient Co		<ul><li>Scatter diagram</li><li>Ranking</li></ul>	19.2.037	Specific Objectives By the end of the
determination  19.2.02P2  Interpretation of correlation coefficient  19.2.02P3  Formulation of linear regression equation  Suggested Teaching/Learning Resources - Textbooks - Use of tables - Manuals  Suggested Teaching/Learning Activities - Group discussions - Lectures - Class exercises - Presentations  Suggested Evaluation Methods - Class assignments - Questions and answers  define inheat programming		Correlation Coefficient		trainee should be able to:
Interpretation of correlation coefficient coefficient linear regression equation coefficient linear regression equation coefficient linear programming regressions linear programming describe the formulation of linear equation of linear learning Activities linear programming problems linear programming problems formulation of linear programming problems for explain how to solve linear programming problems.  Suggested Feaching learning problems for explain how to solve linear programming problems.  Suggested Feaching learning problems for explain how to solve linear programming problems.  Class exercises linear programming problems for explain how to solve linear programming problems.  Cuggested Feaching learning problems for explain how to solve linear programming problems.  Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an				
Formulation of linear regression equation  Suggested Teaching/Learning Resources Textbooks Use of tables Manuals  Suggested Teaching/ Learning Activities Group discussions Lectures Class exercises Presentations  Suggested Evaluation Methods Cuestions and answers  Innear programming programming programming problems  Inear programming programming programming problems  Programming programming problems  Suggested Evaluation Methods 19.2.03C Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an	19.2.02P2	correlation		
Suggested Teaching/Learning Resources Textbooks Use of tables Manuals  Suggested Teaching/ Learning Activities Group discussions Lectures Class exercises Presentations  Suggested Evaluation Methods Questions and answers  Formulation of linear equation describe the formulation of linear programming problems  Suggested Evaluation Methods Formulation of linear programming problems  Suggested Evaluation Methods Formulation of linear programming problems  Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an	19.2.02P3	Formulation of linear		linear programming
Teaching/Learning Resources  Textbooks Use of tables Manuals  Suggested Teaching/ Learning Activities Group discussions Lectures Class exercises Presentations  Suggested Evaluation Methods Questions and answers  Textbooks  describe the formulation of linear programming problems formulation of linear programming problems  solve linear programming problems.  Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an		2000		requirements of
- Use of tables - Manuals  Suggested Teaching/ Learning Activities - Group discussions - Lectures - Class exercises - Presentations  Suggested Evaluation Methods - Class assignments - Questions and answers  Innear equation describe the formulation of linear programming problems  (a) describe the formulation of linear programming problems  (b) explain how to solve linear programming problems.  (c) Competence (c) The trainee should have the ability to optimally allocate scarce resources among competing needs in an		Resources	COLL	programming
Suggested Teaching/ Learning Activities - Group discussions - Lectures - Class exercises - Presentations  Suggested Evaluation Methods - Class assignments - Questions and answers  Formulation of linear programming problems  (a) explain how to solve linear programming problems.  Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an		· Use of tables	ot.	formulation of linear equations
Learning Activities - Group discussions - Lectures - Class exercises - Presentations  Suggested Evaluation Methods - Class assignments - Questions and answers  Programming problems  Suggested Evaluation Methods - Class assignments - Questions and answers  Programming problems  Solve linear programming problems.  Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an		Suggested Teaching/		formulation of
- Class exercises - Presentations  Suggested Evaluation Methods - Class assignments - Questions and answers  19.2.03C  Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an		- Group discussions		programming problems
Suggested Evaluation Methods 19.2.03C Competence - Class assignments The trainee should have the ability to optimally allocate scarce resources among competing needs in an		<ul> <li>Class exercises</li> </ul>		solve linear
Evaluation Methods - Class assignments - Questions and answers  19.2.03C  Competence The trainee should have the ability to optimally allocate scarce resources among competing needs in an		Suggested		
- Questions and have the ability to answers optimally allocate scarce resources among competing needs in an		Evaluation Methods	19.2.03C	
among competing needs in an		<ul> <li>Questions and</li> </ul>		have the ability to optimally allocate
				among competing needs in an
Content 19.2.03T1 Definition of linear			19.2.03T1	Content Definition of linear

programming

19.2.0312	Assumption of linear		Suggested
	programming		Teachmg/Learnmg
19 2 03 ∫3	Requirements		Resources
	of linear		- Textbooks
	programming		- Use of tables
19.2.03T4	Formulation of linear		ese of tables
	equations		Suggested Town
19.2.03T5	Formulation of linear		Suggested Teaching
	programming		Learning Activities
	problems		<ul><li>Group discussions</li><li>Lectures</li></ul>
192 03T6	Solving linear		
	programming		- Class exercises
	problems		- Presentations
	Graphical method		
	Simplex method		Suggested
	Simplex metilod		Evaluation Methods
	Practice		- Continuous
	Tactice		Assessment Tests
19.2.03P	Surviva (1)		<ul> <li>Class assignments</li> </ul>
1.2.2.0.1	Specific Objectives	~	<ul> <li>Questions and</li> </ul>
	By the end of the		answers
	sub-module unit, the		
	trainee should be able	19.2.04	MATRICES
	10:		
	a) form linear		Theory
	equations		
	b) formulate linear	19.2.047	Specific Objectives
	programming		By the end of the
	problems		sub-module unit the
	c) solve linear		trainee should be
	programming		able to:
	problems		a) define a matrix
	C		<ul><li>b) explain types of</li></ul>
19.2.03P1	Content		matrices
17.2.0311	Forming of linear		c) explain the
10 2 0202	equations		determination of
19.2.03P2	Formulating of linear		order of a matrix
	programming		d) describe matrix
10000000	problems		operations
19.2.03P3	Solving of linear		e) explain how to
	programming		determine the
	problems		determinant of a
			matrix

	f) explain how to determine the inverse of a matrix g) explain how to solve simultaneous equations using matrices.		<ul> <li>b) add, subtract and multiply matrices</li> <li>c) find the inverse of a matrix</li> <li>d) solve simultaneous equations</li> </ul>
19.2.04C	Competence	10.2.0403	Content
	The trainee should	19.2.04P1	Determination
	have the ability to	19.2.04P2	of order of matrices
	solve simultaneous	19.4.0412	Adding, subtracting
	equations using		and multiplying of
	matrices given a	19.2.04P3	matrices
	business problem	17.2.041 3	Finding the inverse
		19.2.04P4	of a matrix Solving of
	Content		simultaneous
19.2.04T1	Definition of a	$cO_{I}$	equations
	matrix		equations
19.2.04T2	Types of matrices	Mo	Suggested
19 2.04T3	Determination of	CAL .	Teaching/Learning
19.2.04T4	order of a matrix	0	Resources
13.2.0414	Operations of a		- Textbooks
19.2.0475	matrix Determination of		<ul> <li>Use of tables</li> </ul>
72.2.0	determinant of		- Manuals
19 2.04 76	a matrix		Suggested Teaching/
19.2.0477	Inverse of a matrix Solving		Learning e Activities
77-12-0177	simultaneous		- Group discussions
	equations using		- Lectures
	matrices		- Class exercises
			- Presentations
	Practice		Suggested
			Evaluation Methods
19.2.04P	Specific Objectives		- Continuous
	By the end of the		Assessment Tests
	sub-module unit, the		- Class assignments
	trainee should be		- Term papers
	able to:		L-L-
	a) determine the		
	order of a matrix		

19.2.05	INDEX NUMBERS	19.2.0514	Factors to be
	Theory		considered in the construction of index
19.2.057	Specific Objectives By the end of the	19.2.0575	numbers Problems
	sub-module unit, the		encountered when
	trainee should be able		constructing index
	10:	19.2.05T6	Computation of
	a) define index numbers	720000000000000000000000000000000000000	index numbers
	b) explain the uses	19.2 05T7	Limitations of index
	of index numbers		numbers
	c) explain types of index numbers		Practice
	d) explain factors to	19.2.05P	Specific Objective
	be considered in		By the end of the
	the construction		sub-module unit, the
	of index numbers e) identify problems		trainee should be
	encountered	00	able to compute
	when	X.O	index numbers
	constructing		Content
	index numbers	19 2.05P1	Computation of
	f) explain how to compute index		index numbers
	numbers g) explain		Suggested
	limitations of		Teaching/Learning
	index numbers		Resources - Textbooks
Service Control of the Control of th			- Use of tables
19.2.05C	Competence		- Manuals
	The trainee should		
	have the ability to use index numbers to		Suggested Teaching/
	make business		Learning Activities
	decisions		- Group discussions
			<ul><li>Lectures</li><li>Class exercises</li></ul>
	Content		- Presentations
19.2.05T1	Definition of index		7.05cmanon3
10.2.0572	numbers		
19.2.05T2	Uses of index		
19.2.05T3	numbers Types of index		
12.1.001.1	Types of index numbers		

19.2.06	Suggested Evaluation Methods - Continuous Assessment Tests - Class assignments - Term papers  TIME SERIES	19.2.06T1 19.2.06T2 19.2.06T3	series Objectives of a time series analysis Components of a time series
	Theory	19.2.06T4	Computation of time series components
19.2.06T	Specific Objectives By the end of the sub-module unit, the trainee should be able to: a) define time series b) explain the objectives of time series analysis c) explain the	19.2.06T5	<ul> <li>Free hand method</li> <li>Method of semi-averages</li> <li>Moving averages</li> <li>Exponential smoothing</li> <li>Least square method</li> <li>Decomposition of a time series using various model</li> <li>Additive model</li> <li>Multiplicative model</li> </ul>
	component of a time series  d) explain the computation of time series components  e) explain the decomposition of a time series using various models.	19.2.06P	Practice  Specific Objectives By the end of the sub-module unit, the trainee should be able to:  a) compute components of a time series
19.2.06C	Competence The trainee should have the ability to compute time series components and decompose using times series.	19.2.06P1 19.2.06P2	b) decompose a time series.  Content Computation of time series components Decomposition of a times series

	Suggested Teaching/Learning Resources Textbooks Use of tables Manuals		c) explain how to determine critical path and project duration  f) discuss the application of
	Suggested Teaching/		network analysis.
	Learning Activities - Group discussions - Lectures - Class exercises - Presentations	19.2.07C	Competence The trainee should have the ability to apply network
			analysis to solve business problems
	Suggested		,
	Evaluation Methods		Content
	Continuous Assessment Tests	19.2.07T1	Meaning of network analysis
	<ul> <li>Class assignments</li> </ul>	19.2.07T2	Types used in
	Term papers		network analysis
10 2 07	NIETTYLONY	1920713	Rules used in
19.2.07	NETWORK ANALYSIS	19 2 07T4	network analysis Construction of
	Theory	19 2.0775	network analysis Determining critical
19 2 07T	Specific Objectives By the end of the sub-module unit, the trainee should be able	19.2.07T6	path and project duration Application of network analysis
	to: a) explain the		Practice
	meaning of network analysis b) explain the basic terms used in	19.2.07P	Specific Objectives By the end of the sub-module unit, the
	network analysis c) identify the rules		trainee should be able to:  a) construct project
	used when drawing		networks b) determine the
	networks d) describe the		critical path and project duration.
	construction of project network		, January Control

10 2 0701	Content		d) discuss the
19.2.07PI	a service of		application of
19.2 07P2	project networks Determining of		calculus.
	critical path and	10 2 000	
	project durations	19.2.08C	Competence
	project durations		The trainee should
	Suggested		have the ability to
	Teaching/Learning		apply calculus in
	Resources		solving business
	- Textbooks		problems
	- Use of tables		Content
	- Manuals	19.2.08T1	Definition of
		12.2.0011	calculus
	Suggested Teaching/	19.2.08T2	Differentiation
	Learning Activities	5.50.0-1.00-1.2	
	- Group discussions	19.2.08T3	of simple functions Integration of simple
	- Lectures		functions
	<ul> <li>Class exercises</li> </ul>	19.2.08T4	Application of
	- Presentations		calculus
	_		S. S. S. M. S. Mark
	Suggested	10,	Practice
	Evaluation Methods	12	
	- Continuous	19.2.08P	Specific Objectives
	Assessment Tests		By the end of the
	- Class assignments		sub-module unit, the
	- Term papers		trainee should be able
19.2.08	INTRODUCTION		to:
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	TO CALCULUS		<ul> <li>a) differentiate</li> </ul>
	- o ondeddog		simple functions
	Theory		b) integrate simple
			functions
19.2.08T	Specific Objectives		Content
	By the end of the	19.2.08PJ	Differentiation
	sub-module unit, the		of simple functions
	trainee should be able	19.2.08P2	Integration of simple
	to:		functions
	<ul> <li>a) define calculus</li> </ul>	+1	
	b) explain the		
	differentiation of		
	simple functions		
	c) explain the		
	integration of		
	simple functions		

	Suggested Teaching/Learning Resources - Textbooks - Use of tables - Manuals	19.2 09C	competence The trainee should have the ability to apply inventory control techniques in an organisation
	Suggested Teaching/		Pr.
	Learning Activities - Group discussions - Class exercises - Class Presentations	19.2.0911	Content Definition of basic terms used in
		19.2.09T2	Inventory control Inventory control
	Suggested Evaluation Methods	19.2.09T3	limits Minimization of
	- Class assignments		cost of inventories
	- Term papers	19.2.09 <b>T</b> 4	Inventory control models
19.2.09	INVENTORY CONTROL MODELS	S	Practice
	Theory	19.2.09P	Specific Objectives By the end of the
19.2 09T	Specific Objectives By the end of the	6924	sub-module unit, the trainee should be able to:
	sub-module unit, the trainee should be able to:		a) calculate the inventory control limits
	a) define basic terms used in inventory control		<ul><li>b) minunize cost of, inventories</li></ul>
	b) define inventory control limits c) explain how to		c) manipulate inventory control models.
	minimize cost of inventories	19.2.09P1	Content Calculating
	<ul> <li>d) discuss inventory control</li> </ul>		inventory control
	models.	19.2.09P2	Calculating cost of inventories
		19.2.09P3	Manipulating inventory control model
			1.00

	Suggested Teaching/Learning Resources - Textbooks - Use of tables - Manuals	19.2.10T1 19.2.10T2 19.2.10T3	Comem Definition of terms Present and future values Annuities and perpetuities
	Suggested Teaching/ Learning Activities		Practice
	<ul> <li>Group discussions</li> <li>Class exercises</li> <li>Presentations</li> </ul>	19.2.10P	Specific Objectives By the end of the sub-module unit, the trainee should be able
	Suggested Evaluation Methods - Continuous Assessment Tests - Class assignments - Term papers		a) calculate present and future values b) compute annuities and perpetuities
19.2.10	FINANCIAL MATHEMATICS	19 2.1001	Contem Calculating present
	Theory	19 2 10P2	and future values Computing annuities
19.2.10T	Specific Objectives By the end of the sub-module unit, the trainee should be able to: a) define terms used in financial mathematics b) explain the present and future values c) explain annuities and perpetuities.		Suggested Teaching/Learning Resources - Textbooks - Use of tables - Training Manuals  Suggested Teaching/ Learning Activities - Group discussions - Class exercises
19.2.10C	Competence The trainee should have the ability to apply financial mathematics in decision making		Suggested Evaluation Methods - Term papers - Oral tests

19.2.11	PROBABILITY AND PROBABILITY DISTRIBUTIONS Theory	19.2.1111	Comem Definition of basic terms used in probability - Events - Mutually exclusive
19.2.11T	Specific Objectives By the end of the sub-module unit, the trainee should be able to:  a) define basic terms used in probability b) explain the basic concepts of probability c) explain the laws of probability d) describe probability distributions e) discuss the application of probability distribution functions.	19.2.1173 19.2.1174	events - Equally likely events - Exhaustive events - Dependent and Independent events - Random experiment Basic concepts - Combinations - Permutations Laws of probability Probability distributions - Binomial distributions - Poisson distributions - Normal distributions - Normal distributions Application of probability
19.7 11C	Competence The trainee should have the ability to apply probability distribution concepts in business decisionmaking	19.2.11P	Practice  Specific Objectives By the end of the sub-module unit, the trainee should be able to:  a) solve business problems using basic concepts of probability  b) distinguish between

different events in probability

10.2.1.101	Content		e) explain the
19.2.11PI	Solving business		application of Z-
	problems using basic		tests and T-tests
	concepts of		
10.0.1100	probability	19.2.12C	Competence
19.2.11P2	Distinguishing		The trainee should
	events in probability		have the ability to
			test a hypothesis
	Suggested		when analyzing
	Teaching/Learning		business data
	Resources		
	- Textbooks		Content
	<ul> <li>Use of tables</li> </ul>	19.2.12T1	Definition of
	- Manuals		hypothesis
		19.2.12T2	Types of hypothesis
	Suggested Teaching/	19.2.12T3	Type I and type II
	Learning Activities		errors
	- Group discussions	19.2.12T4	Critical and
	- Class exercises		acceptance regions
		19.2.12T5	Application of Z-
	Suggested		tests and T-tests
	Evaluation Methods		1 10313
	- Oral test	60	Practice
	<ul> <li>Class assignment</li> </ul>		2 7.00.000
		19.2.12P	Specific Objectives
19.2.12	TESTS OF		By the end of the
	HYPOTHESIS	20°	sub-module unit, the
			trainee should be able
	Theory		10:
			a) conduct Z-tests
19.2.127	Specific Objectives		of hypothesis for
	By the end of the		large samples
	sub-module unit, the		b) conduct T-tests
	trainee should be		of hypothesis for
	able to:		small samples
	<ul> <li>a) define the term</li> </ul>	**.	c) determine critical
	hypothesis		and acceptance
	b) explain types of		regions.
	hypothesis		8
	c) define type I and		Content
	type II errors	19.2.12P1	Conducting Z-test
	d) identify critical	19.2.12P2	Conducting T-test
	and acceptance	19.2.12P3	Determination of
	regions	1 Hadysan tareyya (Salasta Tala)	critical and
			acceptance regions
	bonde		-coopiditee regions

	Suggested Teaching Learning Resources - Textbooks - Use of tables - Manuals		coping with the emerging trends and issues in quantitative techniques.
	Suggested Teaching/ Learning Activities - Group discussions - Class exercises  Suggested	19.2.13C	Competence The trainee should have the ability to cope with emerging issues and trends in quantitative techniques in a
	Evaluation Methods - Oral tests		business set up
	- Assignment	19.2.1371	Content Emerging issues and
19.2.13	EMERGING TRENDS		trends in quantitative techniques
	AND ISSUES IN QUANTITATIVE TECHNIQUES	19.2.13T2	Challenges posed by emerging issues and trends quantitative techniques
	Theory	19.2 13T3	Coping with challenges
19.2.13T	Specific Objectives By the end of the sub-module unit, the trainee should be able to:	357	posed by emerging issues and trends in quantitative techniques
	a) identify the emerging trends	10.0.0.0	Practice
	and issues in quantitative techniques b) discuss the challenges posed the emerging trends and issues in quantitative techniques	19.2.13 P	Specific Objective By the end of the sub-module unit, the trainee should be able to discuss the emerging issues and trends in quantitative techniques

c) discuss ways of

19.2 J3P1

Content Class Discussion on emerging trends and issues in quantitative techniques

Suggessed Teaching/Learning Resources

- Textbooks
- Use of tables
- Manuals

Suggested Teaching: Learning Activities

- Group discussions
- Class exercises

Suggested
Evaluation Methods

- Class assignments
- Written report

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### 20.2.0 OFFICE ADMINISTRATION AND MANAGEMENT

### 20.2.1 Introduction

This module is intended to equip the trainee with knowledge, skills and attitude that will enable him/her perform office administration and management functions effectively.

### 20.2.2 General Objectives

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

- a) explain the basic principles and concepts necessary for efficient and effective management of an office
- b) describe the duties and responsibilities of various office personnel
- c) cope with the emerging trends and issues in office administration and management.

# 20.2.3 Module Unit Summary and Time Allocation

Code	Sub-Module Unit	Content	Time (Hours)
20.2.01	Introduction to Office Administration and Management	<ul> <li>Definition of terms office administration and management</li> <li>Distinction between office administration and management</li> <li>Scope of office administration and management</li> </ul>	4
20.2.02	Organisation Structures and Departments	<ul> <li>Types of organisation structures and their charts</li> <li>Various departments in an organisation</li> <li>Functions of various departments</li> <li>Relationship between departments</li> </ul>	- 10
20.2 03	Office Organisation	<ul> <li>Meaning of organisation</li> <li>Principles of organisation</li> <li>Delegation of authority</li> </ul>	10

20.2.04	TI OSS	<ul> <li>Span of control</li> <li>Centralization and decentralization of office services</li> </ul>	
20.2.04	The Office	<ul> <li>Meaning of an office</li> <li>Functions of an office</li> <li>Types of office layout</li> <li>Features of a modern office</li> </ul>	10
20.2.05	The Office Personnel	<ul> <li>Types of office personnel</li> <li>Duties and responsibilities of various office personnel</li> <li>Qualities required of various office personnel</li> <li>Role of human relations in an office</li> </ul>	8
20.2.06	Office Furniture and Stationery	<ul> <li>Meaning of office furniture</li> <li>Types of office furniture and their uses</li> <li>Procuring office furniture</li> <li>Definition of stationery</li> <li>Procuring office stationery</li> <li>Uses of office stationery</li> </ul>	8
20.2.07	Handling Office Correspondence	<ul> <li>Types of office correspondence</li> <li>Procedure of handling incoming correspondence</li> <li>Procedure of handling outgoing correspondence</li> </ul>	6 .
20.2.08	Filing and Storage of Records	<ul> <li>Meaning of filing</li> <li>Various filing systems</li> <li>Methods of classifying documents</li> <li>Uses of filing equipment</li> <li>Follow-up methods in filing and storage of records</li> </ul>	8
20.2.09	Reprography	<ul> <li>Definition of reprography</li> <li>Methods used in</li> </ul>	6