

SPECIALITY: COMPUTER MAINTENANCE
OPTION: INDUSTRIAL COMPUTING AND AUTOMATION (ICA)

PAPER : CASE STUDY

PAPER	CASE STUDY		
TYPE OF PAPER	DURATION	PAPER CODE	CREDITS
Written practical	05 hours	ICA18	12

OBJECTIVES: The aim of the case study paper is to evaluate the abilities of the candidate to carry out the analysis or to design of a technical automatic system or one of its parts.

FORMAT OF THE EXAM: This paper is to be written in an ordinary classroom and comprises 3 sections of equal weight organized in such a way that the questions of the different sections should be independent.

EXAM PAPER	SPECIALITY/ OPTION	DIFFERENT SECTIONS OF THE PAPER	DURATION PER SECTION	MARKS ALLO- CATED	PERCENTAGE	CONCERNED COURSES
CASE STUDY	Industrial computing and automation	SECTION A: Industrial programmable logic controller (PLC) control	1H40min	20	33.33%	- Algorithms and PLC programming - Physics of sensors - Industrial automation 1 and 2 - Industrial process control 1 and 2
		SECTION B: Microcontroller control 6809 or any other	1H40min	20	33.33%	- Algorithms and assembling language programming - Home automation Physics of sensors - Microprocessors and peripherals
		SECTION C: Computer control	1H40min	20	33.33%	- Algorithms and programming in C/C++ - Computer architecture - Physics of sensors - Industrial process control 1 and 2
		Total	05H	60	100	

SECTION A: Industrial programmable logic controller (PLC) control (weight = 33.33%, 20mks/600, 1H40)

The case studied in this section should cover the following three topics:

- GRAFCET (Sequential Function chart) Modeling of programmable logic controller systems
- Technology of the PLC control
 - Structure of a PLC
 - Input/Output addressing of the PLC
 - Criteria of choice of the PLC
- Programming of PLCs using normalized languages (*PLC7-1, PLC7-2*)

SECTION B: Microcontroller control(weight = 33.33%, 20mks/60, 1H40)

The case studied in this section should cover the following three topics:

- Architecture of a microprocessor based system
 - Microprocessors
 - Memories
 - Interfaces
 - Buses
- Process control by assembling language programming
 - Addressing modes
 - Configuration of I/O interfaces
 - Parallel interfaces (*PIA6821,8255*)
 - Serial interfaces *ACIA (6850)*
 - Assembling language programming

SECTION C: Computer control(weight = 33.33%, 20mks/60, 1H40min)

The case studied in this section should cover the following three topics:

- Communication interfaces
 - Parallel port (*LPT; 8255*)
 - Serial port (*RS232b*).
- Power control interfaces
 - Transistor relay interfaces
 - Opto-couplers
 - I/O expansion circuits
- C/C++programming

NOTICE: The paper should contain the following elements:

- A marking guide with marks allocation in both sections and questions in each section
- The total number of pages of the paper
- The only evaluation criterion is the mark allocation fixed by the examiner

PAPER: COMPUTER SCIENCES

PAPER	Computer sciences		
TYPE OF PAPER	DURATION	PAPER CODE	CREDITS
Written	03 hours	ICA13	03

OBJECTIVES: The aim of the computer science paper is to evaluate the abilities of the candidate to:

- Explain the general constitution and functioning of computer systems and networks
- Write a computer program to solve a problem
- Design and implement a database management system

FORMAT OF THE EXAM: This paper comprises 3 sections whose contents are taken from the following courses:

EXAM PAPER	SPECIALTY /OPTION	DIFFERENT SECTIONS OF THE PAPER	DURATION PER SECTION	MARK ALLOCATED	PERCENTAGE	CONCERNED COURSES
Computer sciences	ICA	SECTION A: 40 MCQs	1H30 min	20	50	- Digital literacy - Operating systems - Network and data communication - Data base
		SECTION B: computer programming	1H30 min	20	50	- Algorithm and programming - Data base
		Total	03H	40	100	

SECTION A: MCQs(weight = 50%, 20mks/40, 1H30 min)

This section comprises 40 MCQs of 0.5 mk each through which the examiner evaluates the mastering of the following courses by the candidate:

- Digital literacy (10 MCQs)
- Operating systems (05 MCQs)
- Network and data communication (20 MCQs)
- Data base concepts (05 MCQs)

SECTION B: Computer programming(weight = 50%, 20mks/40, 1H30min)

This section comprises **one (01)** exercise or problem evaluating the ability of the candidate to analyze a problem and write the corresponding algorithm or flowchart. The problem should be clearly presented by the examiner as well as the work required.

NOTICE: The paper should contain the following elements:

- A marking guide with marks allocation in both sections and questions in each section

The total number of pages of the paper

PAPER : ELECTRONICS

PAPER	ELECTRONICS		
TYPE OF PAPER	DURATION	PAPER CODE	CREDITS
Written	04 hours	ELN23	05

OBJECTIVES: The aim of the electronic paper is to evaluate the abilities of the candidate to understand and analyze analogue and digital electronic circuits.

FORMAT OF THE EXAM: This paper comprises 4 sections whose contents are taken from the following courses:

EXAM PAPER	SPECIALITY/ OPTION	DIFFERENT SECTIONS OF THE PAPER	DURATI ON PER SECTION	MARK ALLOC ATED	PERC ENTA GE	CONCERNED COURSES
Electronics	ICA	SECTION A: Diode or op- amp circuits	1H00	25	25	Analogue Electronics 1 Analogue Electronics 3
		SECTION B:transistor circuits	1H00	25	25	Analogue Electronics 1 Analogue Electronics 2
		SECTION C:Combinationallogic circuits	1H00	25	25	Digital electronics1
		SECTION D:Sequential logic circuits	1H00	25	25	Digital electronics 2
		Total	04H	100	100	

SECTION A: Diode or op-amp circuits (weight = 25%, 25mks/100, 1H00)

This section comprises one (01) exercise or problem in which the candidate should carry out the analysis of one of the following circuits chosen by the examiner:

- Zener regulated power supply circuit
- Linear op-amp circuit
- Active filters (either 1st order or 2nd order)

SECTION B: Transistors amplifier (weight = 25%, 25mks/100, 1H00)

This section comprises one (01) exercise or problem based on one of the following topics chosen by the examiner:

- Transistor small signal amplifiers (either BJT or FET)
- Power amplifiers
- Sinusoidal oscillators
- Frequency response of amplifiers

SECTION C: Combinational logic circuits (weight = 25%, 25mks/100, 1H00)

This section comprises one (01) exercise or problem in which the candidate will either design or analyze of one of the following logic circuits chosen by the examiner:

- Adder or subtractor

- Comparators
- Encoder or decoder
- Multiplexer or demultiplexer

SECTION D: Sequential logic circuits(weight = 25%, 10mks/40, 1H00)

This section comprises one **(01) exercise or problem** in which the candidate will either design or analyze of one of the following logic circuits chosen by the examiner:

- Technology of logic circuits
- Flip-flops
- Registers
- Counters or decoders

NOTICE: The paper should contain the following elements:

- A marking guide with marks sharing in both sections and questions in each section
- The total number of pages of the paper

PAPER : CIRCUIT THEORY AND CONTROL ENGINEERING

PAPER	CIRCUIT THEORY AND CONTROL ENGINEERING		
TYPE OF PAPER	DURATION	PAPER CODE	CREDITS
Written	03 hours	CTC24	05

OBJECTIVES: The aim of the Circuit theory and Control Engineering paper is to evaluate the abilities of the candidate to:

- Carry out the analysis of electrical circuits both in transient and steady state regime
- Model control systems using block diagrams, evaluate their function and their performances through their time response or their frequency response.

FORMAT OF THE EXAM: This paper comprises 3 sections whose contents are taken from the following courses:

EXAM PAPER	SPECIALITY/ OPTION	DIFFERENT SECTIONS OF THE PAPER	DURATION PER SECTION	MARK ALLOCATED	PERCENTAGE	CONCERNED COURSES
Circuit theory and Control Engineering	Hardware maintenance	SECTION A: Circuit analysis laws and theorems	1H00	30	30	Circuit theory
		SECTION B: Frequency response analysis	1H00	30	30	Control engineering 1
		SECTION C:Time response analysis	1H00	40	40	Circuit theory Control engineering 2
		Total	03H	100	100	

SECTION A: Circuit analysis laws and theorems (weight = 30%, 30mks/100, 1H00)

This section comprises one **(01) exercise or problem** in which the candidate should carry out the analysis of one of the following circuits chosen by the examiner:

- A dc circuit with either independent or dependent sources or both
- An ac circuit in sinusoidal steady state regime
- A capacitor or inductor circuit in ac regime

SECTION B: Frequency response analysis (weight = 30%, 30mks/100, 1H00)

This section comprises **one (01) exercise or problem** based on one of the following topics chosen by the examiner:

- Laplace transformation
- Transfer function and block diagram simplification algebra

- Frequency response analysis (either pole zero diagram, Bode plot or Nyquist plot)
- Stability analysis

SECTION C: Time response analysis (weight = 40%, 40mks/100, 1H00)

This section comprises one **(01) exercise or problem** based on one of the following topics chosen by the examiner:

- Transient response of an electric circuit (either 1st order or second order)
- Time response analysis of a control system and evaluation of the system's performances (stability, speed of response, steady state accuracy)

NOTICE: The paper should contain the following elements:

- A marking guide with marks sharing in both sections and questions in each section
- The total number of pages of the paper

PAPER : PRACTICE OF COMPUTER CONTROL

PAPER	PRACTICE OF COMPUTER CONTROL		
TYPE OF PAPER	DURATION	PAPER CODE	CREDITS
Practical	04 hours	ICA19	08

OBJECTIVES OF THE PAPER: The aim of practice of computer control paper is to evaluate the ability of the candidate to design, analyze and implement a practical computer control system.

FORMAT OF THE EXAM:

- The system studied should be one practical topic of computer control to be handed to the candidate in the industrial computing laboratory.
- The functional description of the system should be clearly presented by the examiner as well as the technical specifications if necessary
- The work required in any section should also be clearly presented by the manufacturer
- The computers of this lab should be equipped of the operating system and programs compatible to the system to be controlled.
- The candidate should be able to analyze the proposed system then write within the time allocated a computer program supposed to properly control it according to the functional logbook given by the examiner.

The paper is organized in 02 sections as shown below:

EXAM PAPER	SPECIALITY/ OPTION	DIFFERENT SECTIONS OF THE PAPER	DURATION PER SECTION	MARK ALLOCA TED	PERCENT AGE	CONCERNED COURSES
Practice of computer control	ICA	SECTION A: Preparation	1H30min	15	35	- Algorithms and programming in C/C++ - Computer architecture - Physics of sensors - Industrial process control 1 and 2
		SECTION B:Manipulation in Laboratory	02H30	25	65	
Total			04H	40	100	

SECTION A: Preparation (weight = 35%, 15mks/40, 1h30min)

After the system is clearly presented, this written part of the paper should comprise oriented questions whose answers are supposed to be the solution to be implemented. The questions may concern the following topics:

- Writing of algorithm
- Sequential function chart (GRAFCET)
- An electrical control diagram
- An electronic control diagram
- The exploitation of technical documents
- The analysis of a program to be implemented

SECTION B: Implementaion of the program, tests and measurements in lab (weight = 65%, 25mks/40, 2H30min)

In this section, the candidate should:

- Edit and compile the program in the PC using either the C compiler or the Turbo Pascal compiler
- Build the wiring for the process control
- Carry out functioning tests after the examiner has verified it.

EVALUATION CRITERIA

- Marking of the preparation according to the mark allocation fixed by the examiner (15mks)
- Editing of the program and wiring (7mks)
- Tests (1st trial =18mks, 2nd trial = 12mks, 3rd trial = 6mks))

NOTICE: The paper should contain the following elements:

- A list of material and apparatus needed for the manipulation
- A marking guide with marks allocation for both section and sub section question
- The total number of pages of the paper

PAPER : PRACTICE OF PROGRAMMABLE LOGIC CONTROLLER CONTROL

PAPER	PRACTICE OF PROGRAMMABLE LOGIC CONTROLLER CONTROL		
TYPE OF PAPER	DURATION	PAPER CODE	CREDITS
Practical	04 hours	ICA21	08

OBJECTIVES OF THE PAPER: The aim of practice of PLC control paper is to evaluate the ability of the candidate to design, analyze and implement a practical PLC control system.

FORMAT OF THE EXAM:

- The system studied should be one practical topic of industrial PLC control to be handed to the candidate in the industrial computing laboratory where the exam is supposed to take place.
- The functional description or logbook of the system should be clearly presented by the examiner as well as the technical specifications of the PLC.
- From the functional logbook of the system given by the examiner, the candidate should be able to analyze the proposed system then write within the time allocated an appropriate PLC program supposed to properly control it according to the functional logbook given by the examiner.
- The work required in any section should also be clearly presented by the manufacturer through a set of questions
- The lab should be equipped of the industrial PLC compatible to the system to be controlled.

The paper is organized in 02 sections as shown below:

EXAM PAPER	SPECIALITY/ OPTION	DIFFERENT SECTIONS OF THE PAPER	DURATION PER SECTION	MARK ALLOCATED	PERCENT AGE	CONCERNED COURSES
Practice of computer control	ICA	SECTION A: Preparation	1H30min	15	35	- Algorithms - programming in normalized languages (PLC7-1, PLC7-2) - Physics of sensors - Industrial process control 1 and 2
		SECTION B:Manipulation in Laboratory	02H30	25	65	
Total			04H	40	100	

SECTION A: Preparation (weight = 35%, 15mks/40, 1h30min)

After the system is clearly presented, this written part of the paper should comprise oriented questions whose answers are supposed to be the solution to be implemented. The questions may concern the following topics:

- Writing of algorithm
- Sequential function chart (GRAFCET)
- An electrical control diagram
- An electronic control diagram
- The exploitation of technical documents
- The analysis of a program to be implemented

SECTION B: Implementaion of the program, tests and measurements in lab (weight = 65%, 25mks/40, 2H30min)

In this section, the candidate should:

- Edit and compile the program in the PLC or in a PLC programming software
- Perform the wiring of the PLC I/O for the process controlled
- Carry out functioning tests after the examiner has verified it.

EVALUATION CRITERIA

- Marking of the preparation according to the mark allocation fixed by the examiner (15mks)
- Editing of the program and wiring of I/O (7mks)
- Tests (1st trial =18mks, 2nd trial = 12mks, 3rd trial = 6mks))

NOTICE: The paper should contain the following elements:

- A list of material and apparatus needed for the manipulation
- A marking guide with marks allocation for both section and sub section question
- The total number of pages of the paper

PAPER : ELECTROTECHNICS AND POWER ELECTRONICS

PAPER	ELECTROTECHNICS AND POWER ELECTRONICS		
TYPE OF PAPER	DURATION	PAPER CODE	CREDITS
Written	04 hours	ICA22	04

OBJECTIVES: The aim of the electrotechnics and power electronics paper is to evaluate the abilities of the candidate to:

- Design or analyze electrical installation circuits
- Analyze power electronic circuits
- Explain the constitution and the functioning of electrical machines

FORMAT OF THE EXAM: This paper comprises 4 sections of equal weight whose contents are taken from the following courses:

EXAM PAPER	SPECIALITY/ OPTION	DIFFERENT SECTIONS OF THE PAPER	DURATIO N PER SECTION	MARK ALLOCATED	PERCEN TAGE	CONCERNED COURSES
Electrotech nics and power electronics	ICA	SECTION A: Installation of electrical circuits	1H00	10	25	Electrical installations
		SECTION B: Electrical machines	1H00	10	25	Electrical machines
		SECTION C: Power electronic components and devices	1H00	10	25	Power electronics1
		SECTION D:Power electronic circuits	1H00	10	25	Power electronics1 Power electronics 2
		Total	04H	40	100	

SECTION A: Installation of electrical circuits(weight = 25%, 10mks/40, 1H00)

This section comprises one (01) exercise or problem evaluating the candidate on at least 2 of the following topics:

- Normalized graphical symbols
- Basic domestic installation diagrams
- Starting of electric motors
- Breaking of electric motors

SECTION B: Electrical machines(weight = 25%, 10mks/40, 1H00)

This section comprises one (01) exercise or problem based on one of the following topics chosen by the examiner:

- Three phase asynchronous motor
- Synchronous motor

SECTION C: Power electronic components and devices(weight = 25%, 10mks/40, 1H00)

This section comprises structural questions intended to evaluate the ability of the candidate to explain the constitution, the functioning and the criteria of choice of power electronic device such as power diodes, SCR, TRIACS, GTO, Power BJT, Power MOSFET and IGBT and their protection circuits.

SECTION D: Power electronic circuits(weight = 25%, 10mks/40, 1H00)

This section comprises one **(01) exercise or problem** in which the candidate will either analyze one of the following logic circuits chosen by the examiner:

- AC to DC converters
- AC – AC converters
- DC to DC choppers
- Inverters

NOTICE: The paper should contain the following elements:

- A marking guide with marks allocation in both sections and questions in each section
- The total number of pages of the paper

Concerning the setting of a sample for each paper, a sample per paper as well as the marking guide was proposed as seen below

SPECIALITY: E-COMMERCE AND DIGITAL MARKETING

PAPER: CASE STUDY

CREDIT VALUE: 16

DURATION: 6 HOURS

NATURE OF EXAM: WRITTEN

EXAMINATION STRUCTURE

OBJECTIVES:

Evaluate the candidate's abilities to:

- Apply an algorithmic procedure to analyze and propose a resolution of a problem
- Translate algorithmic instructions in a structured, event or object oriented programming language
- Analyze, design, develop, test and implement relational database applications.
- Analyze, Design and implement UML Diagrams for a given Software Scenario or Specifications
- Master the basics of web design
- Master the basic concepts of networks, network installation, administration and administration of interconnected systems

FORMAT OF EXAM:

EXAM PAPER	OPTION	SECTIONS	DURATION	MARK ALLOCATED	PERCENTAGE
<u>CASE STUDY</u>	E-COMMERCE / DIGITAL MARKETING	SECTION A: Analysis - Analyze a system using MERISE	02Hs	30	30%
		SECTION B: Database development and administration - Advance Databases concepts - SQL Language	01H	20	20%
		SECTION C : Algorithm and programming - Data Structure and Algorithms - Structural Programming (C Programming) - Object Oriented Programming (C++ or JAVA)	2H30min	40	40%
		SECTION D : Networking - Network Fundamentals - IP Addressing and subnetting - System and Administration	30min	10	10%
	TOTAL			06Hrs	100

MARKS ALLOCATION FOR EACH SECTION OF THE PAPER

SECTION A: Analysis (30 marks)

Analysis constitutes 30 % of the entire case of study paper. This section contains various Information System analysis concepts including the identification of user's needs, the representation of communication and information circulation diagram, drawing of FDG, MCD and LMD.

Section B: Database Development and Administration (20 marks)

Database development and administration constitutes 20% of the entire Case Study paper which include the SQL language, relational algebra.

Section C: Algorithm and Programming (40 marks)

Programming constitutes 40% of the entire Case Study paper. This section contains various programming languages like Algorithms and flowcharts, C programming, C++ programming and Java programming (object oriented Programming) core concepts, translation of MCD into UML class diagram.

Section D: Networking (10 marks)

Networking constitutes 10% of the entire Case Study paper, which include Network fundamentals, topologies, Architecture, subnetting, administration of network

PAPER: PRACTICE OF COMPUTER

CODE: EDM 15

CREDIT VALUE: 8

DURATION: 6 HOURS

NATURE OF EXAM: PRACTICAL

OBJECTIVES:

Evaluate the practical skills of the candidate's:

- Apply an algorithmic procedure to analyze and propose a resolution of a problem
- Translate algorithmic instructions in a structured, event or object oriented programming language
- Analyze, design, develop, test and implement relational database applications.
- Analyze, Design and implement UML Diagrams for a given Software Scenario or Specifications
- Master the basics of web design
- Master the basic concepts of networks, network installation, administration and administration of interconnected systems

FORMAT OF EXAM:

EXAM PAPER	OPTION	SECTIONS	DURATION	MARK ALLOCATED	PERCENT AGE
PRACTICE OF COMPUTER	E-COMMERCE / DIGITAL MARKETING	SECTION A: Database and MERISE - Identify components of a system - Represent LMD and CDM - Normalization - Implementation of database (MySQL as DBMS)	01H	20	20%
		SECTION B: Programming - Event Programming (VB.net or JAVA) - Object Oriented Programming (C++ or JAVA) - Accessing Database	02Hs	35	35%
		SECTION C: Web design - Web Design (HTML5, CSS3, JavaScript/PHP) - Writing PHP scripts and - accessing MySQL Data base	2Hs	35	35%
		SECTION D: NETWORKING - IP Addressing and sub netting - Network Administration	1H	10	10%
TOTAL			05Hrs	100	100%

MARKS ALLOCATION FOR EACH SECTION OF THE PAPER

Section A: Database and MERISE (20 marks)

Database and MERISE constitutes 20% of the entire practical paper which include design of LDM and CDM, Creation of relational database, Manipulation of data using SQL language, and database normalization.

Section B: Programming (35 marks)

Programming constitutes 35% of the entire practical paper. In this section the aptitude of the candidate is evaluated in Event programming (VB.NET or java) object oriented programming (JAVA or C++) and database manipulation.

Section C: Web design (35 marks)

Web design constitutes 35% of the entire paper. Core concepts on HTML5, CSS3, JavaScript, PHP and on the connection in MySQL Database will be examined.

Section D: Networking (10 marks)

Networking constitutes 10% of the entire Case Study paper, which includes network protocol, topologies, architecture, subnetting, and administration of network.

PAPER: DIGITAL MARKETINGEXAM PAPER: **DIGITAL MARKETING**CODE: **EDM 16**CREDIT VALUE: **6**DURATION: **3HOURS**NATURE OF EXAM: **WRITTEN****OBJECTIVES:**

- Define digital marketing
- Computer in digital marketing
- Digitizing information
- Digitizing foundations
- Content marketing
- marketing fundamentals
- Web knowledge
- Digital technology

FORMAT OF EXAM:

EXAM PAPER	OPTION	SECTIONS	DURATION	MARK ALLOCATED	PERCENTAGE
digital marketing	e-commerce and digital marketing	Section A General principle of digital marketing • This part is made up of MCQs and contributes for 20% of the entire paper. For each MCQs, four (04) answers are proposed and <i>only one</i> is correct. • Define digital marketing • Computer in digital marketing • Digitizing information • marketing fundamentals • Web knowledge • Digital technology • This part is made up of structural questions from all the various courses as in first part and it constitute of 30% of the entire question paper	01H	50	50%
		SECTION B: Web and Digital marketing Ask basic questions about the following concept III- Web knowledge • Recognize the basic of the internet • Internet search engine • Web optimization • Social media IV- Digital society • Piracy • Cyber Crimes • Principles of marketing • Display and video advertising • Email marketing • Digital strategy	01H	50	50%
TOTAL			3Hrs	100	100%

PAPER: E-COMMERCE TECHNOLOGY

EXAM PAPER: E-COMMERCE

CODE: EDM 17

CREDIT VALUE: 6

DURATION: 3 HOURS

NATURE OF EXAM: WRITTEN

OBJECTIVES:

- Define E-commerce
- Electronic commerce goals
- Fundamentals of E-commerce
- Impact of E-commerce in business

FORMAT OF EXAM:

EXAM PAPER	OPTION	SECTIONS	DURATION	MARK ALLOCATED	PERCENTAGE
E-COMMERCE	e-commerce and digital marketing	Section A: General principle of E-COMMERCE I) MCQ This part is made up of MCQs and contributes for 20% of the entire paper. For each MCQs, four (04) answers are proposed and <i>only one</i> is correct. II) STRUCTURAL QUESTIONS • Define E-COMMERCE • Electronic commerce goals • Fundamentals of E-commerce • Impact of E-commerce in business This part is made up of structural questions from all the various courses as in first part and it constitute of 30% of the entire question paper	01H	50	50%
		SECTION B: E-commerce Technology Ask basic questions about the following concept I) E-commerce infrastructure • E-commerce advertising • E-commerce retailing and services			

EXAM PAPER	OPTION	SECTIONS	DURATION	MARK ALLOCATED	PERCENTAGE
		• Online media • Electronic data exchange • Electronic payment system II) E-commerce and ethics • Piracy • Cyber Crimes • Intellectual property right • Branding strategies • Building own site • Privacy protection III) E-commerce management • Digital economy • Strategic management • small scale business management • Planning for electronic commerce			
TOTAL			3Hrs	100	100%

PAPER: DISCRETE MATHEMATICS

CODE: EDM 18

CREDIT VALUE: 10

DURATION: 3HOURS

NATURE OF EXAM: WRITTEN

OBJECTIVES:

- Understand the core concepts discrete mathematics,
- Understand and apply concepts related to
- Analysis
- Statistics
- Probability

FORMAT OF EXAM: This paper is divided into two sections. Section A MCQs which is chosen from all parts of the syllabus. Section B is structural.

EXAM PAPER	OPTION	SECTIONS	DURATION	MARK ALLOCATED	PERCENTAGE
DISCRETE MATHEMATICS	E-COMMERCE / DIGITAL MARKETING	Section A MCQs This section is made up of 40 MCQs and contributes for 20% of the entire paper. For each MCQ, four (04) answers are proposed and <i>only one</i> is correct. • 5 MCQ questions should come from each of the areas listed above	01H	20	20%
		Section B: structural This section is made up of structural questions from all the various courses as in section A and it constitute of 60% of the entire question paper. Divided as follows: • 30% Analysis • 30% Statistics • 20% Probability	03H	80	80%
TOTAL			04H	100	100%

PAPER: TECHNICAL COMMUNICATION

CODE: EDM 19

CREDIT VALUE: 8

DURATION: 3HOURS

NATURE OF EXAM: WRITTEN

OBJECTIVES:

- Structure of technical communication
- Planning and communication
- Content development
- Editing and publishing

FORMAT OF EXAM:

EXAM PAPER	OPTION	SECTIONS	DURATION	MARK ALLOCATED	PERCENTAGE
Technical communication	EDM	Section A: Introduction to communication means • This part is made up of MCQs and contributes for 20% of the entire paper. For each MCQs, four (04) answers are proposed and <i>only one</i> is correct. • Structure of technical communication • Planning and communication • Content development • Editing and publishing • This part is made up of structural questions from all the various courses as in first part and it constitute 30% of the entire question paper	01H30min	50	50%
		SECTION B: Project tools Ask basic questions about the following concepts • Project planning • Project analysis • Content development • Organizational design • Content management • Production and delivery	01H30min	50	50%
TOTAL			3Hrs	100	100%

TRAVERSAL PAPERS

PAPER: ENGLISH LANGUAGE

Field: ALL

Specialty: ALL

Option: ALL

Credit Value: 1 CREDIT

Duration: 2 HOURS

Objectives of the paper: To test students' aptitude in English grammar, vocabulary, comprehension, speech, business correspondence, and appropriate use of the language in their various specialties.

Nature of the Exam: WRITTEN

Paper Format:

Exam Paper	Option	Different sections of the paper	Duration per Section	Mark Allocated	Percentage
English Language	All	Section A: Reading Comprehension	30 minutes	20	20
		Section B: Grammar and Vocabulary	20 minutes	30	30
		Section C: Spoken English	10 minutes	20	20
		Section D: Writing	1 hour	30	30
		Total Mark	2 Hours	100	100

PAPER: FRENCH LANGUAGE

Objective/s of the Paper: _____ *At the end of the course, learners should have a good knowledge of French, in _____ compliance with the national policy of bilingualism to better fit in the socio-professional world _____*

Format of the Exam:

Exam Paper	Option	Different sections of the Paper	Duration per section	Mark allocation	Percentage
LONE	ALL	SECTION ONE – MCQs	40 mins	40	40
		SECTION TWO – Comprehension	40mins	30	30
		SECTION THREE – Essay	40mins	30	30
		TOTAL MARK		100	100

Contents of the different sections of the Exam

STRUCTURE de l'épreuve de FRENCH

(Configuration Proposée)

A- STRUCTURE : Elle comprendra trois parties à savoir ;

- I. Questions à choix multiples (QCM) 40%
- II. Compréhension écrite 30%
- III. Expression libre 30%

PREMIERE PARTIE : LES QUESTIONS A CHOIX MULTIPLES (QCM) (40%)

40 questions réparties sur les aspects de la langue (grammaire, expression, vocabulaire, phonologie, traduction, etc. – 24questions) et de la vie (la culture générale : culture, politique, sport, agriculture, etc. – 06questions)

DEUXIEME PARTIE : COMPREHENSION ECRITE (30%)

- a- Texte de longueur variant entre 250–350 mots, sur un sujet d'actualité des domaines divers (affaires, politique, sport, science, culture, emplois, etc.)
- b-
 - i. Questions de type compréhension, définitions, synonymie, QCM, etc.
 - ii. On peut aussi intégrer des questions sur l'exploitation grammaticale, le syntaxe, la phonologie, etc.

TROISIEME PARTIE : EXPRESSION LIBRE (30%)

Trois types de sujets (ouvert/fermé)

- a) Correspondance
- b) Narration, reportage
- c) Argumentation

NB : sujets se situant dans les domaines divers de la vie.

NB : Les changements effectués sur l'ancien programme

1. Cette épreuve comprendra trois (03) parties, soit un rabais des quatre (04) de l'ancien.
2. La présente intègre une partie des questions à choix multiples qui teste le programme entier.
3. La section de la traduction supprimée est techniquement absorbée par la section des QCM.

OBSERVATION :

Le temps attribué à l'enseignement du French est largement insuffisant pour permettre la réalisation des objectifs visés, vu le bagage très bas des apprenants en matière de la langue française !

Sector: ALL

PAPER: LAW AND CITIZENSHIP EDUCATION (LCE10)

Field: TRAVERSAL PAPER

Specialty: ALL SPECIALTIES

Option: ALL HND OPTIONS

Credit Value: 2

Objective/s of the paper:

- ❖ To test the candidate's knowledge of legal aspects of business, enterprise creation, labour relations, civic education, ethics and Human Rights.
- ❖ To test the critical and analytical thinking of the candidates on legal issues relating to aspects of business, enterprise creation, labour relations, civic education, ethics and Human Rights.
- ❖ In order to ensure that candidates are tested on all the aspects of the paper, the paper shall be divided into six sections with each section made up of a course.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different sections of the Paper	Duration per section	Mark Allocated	Percentage
Law and Citizenship Education (LCE10)	Transversal Paper	Introduction to Law and Fundamental Rights	24	20	20
		Civics, Ethics and Moral Education, Citizenship Education	24	20	20
		Labour Law	24	20	20
		Business Law	24	20	20
		Company Law	24	20	20
TOTAL MARK				100	

Contents of the different sections of the paper:

The law and Citizenship Education paper shall comprise of the following courses and topics;

A. Introduction to Law and Fundamental Rights:

- Definition of Law,
- History of the Cameroon legal system,
- Differences between Common Law and Civil Law,
- Fundamental Principles underlying the administration of Justice in Cameroon,
- Sources of Law,
- Classification of Law
- Laws and Texts of application,
- Concept of corporate or legal personality,
- Some key aspects of Cameroon Penal Law,
- Civil Responsibility and Criminal responsibilities
- Judicial Organization in Cameroon (Courts & competence)

B. Civics, Ethics and Moral Education:

- Definition of concepts,
- Foundations of Ethics,
- General and professional Ethics,
- Moral consciousness and Moral figures,
- Climate change and environmental protection,
- Definition and Sources of Human Rights,
- International Human Rights Instruments,
- Municipal System of Protection of Human Rights in Cameroon,
- The Cameroonian National commission on Human Rights and Liberties,
- The Civil society, and the Protection of Human Rights,
- CONAC and Fight Against Corruption in Cameroon

C. Citizenship Education:

- Definition of Citizenship,
- Types of Citizenship,
- How to acquire Cameroon citizenship,
- Child adoption Law in Cameroon
- Rights and responsibilities of Cameroonians,
- Notion of Civic responsibility,
- Key ideas related to Civic responsibility,
- History of Cameroon National Anthem,
- Description and meaning of Cameroon flag,
- National Symbols of Cameroon,
- National Monuments
- Historic figures of Cameroon,
- Cameroon electoral system,
- Cameroon Constitutional evolution and separation of powers

D. Labour Law:

- Definition of Labour Law
- **Historical evolution of Labour Law in Cameroon,**
- Labour Codes from 1952 to present day,
- Probationary Labour Contract,
- Types of Labour Contract,
- **Execution of Labour Contract,**
- Rights and duties of parties to a Labour Contract,
- Termination of Labour Contract,
- **Collective Labour Relations,**
- Trade Unionism,
- The role of the Staff Representative,
- Collective Labour disputes,
- Collective Agreements,
- **Wages and Social Insurance**
- Components of Wage,
- Protection of Wage,
- Payment of wage,
- Categories of Social Insurance,

- Conditions to benefit from Social Insurance,
- The role of Labour and Social Insurance Inspector,
- The role of the National Labour Advisory Board,
- The role of the National Commission on Industrial Health and Safety

E. Business Law:

- Arbitration Law
- Banking law
- Law of Taxation
- Insurance law
- Intellectual Property Law
- Contracts and ingredients of valid contract

F. Company Law:

- Definition of company Law,
- Historical evolution of Cameroon Company Law
- Genesis of the OHADA Treaty,
- Forms of company recognized by the OHADA law
- Conditions for the formation of business entities in Cameroon
- Object of the company and the ultra-vires doctrine
- The registration of companies and other business entities
- The Principle of corporate personality
- Lifting the veil of incorporation
- Organs of a company
- Management of a company
- The principle of majority rule
- Winding-up, liquidation and dissolution

PAPER: COMPUTER STUDIES

Sector: ALL

Field: ALL

Specialty: ALL

Option: ALL

Credit Value: 1

Objectives of the paper: At the end of the course, the student should be able to:

- Know related computing concepts.
- Give definition of terms and acronyms.
- Have practical hands on using computers.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different section of the paper	Duration	Mark allocated	Percentage
COS11 Computer studies	All	Section A	24Mins	20	20
		Section B	36Mins	30	30
		Section C	60Mins	50	50
Total			2 Hours	100	100

INSTRUCTION TO CANDIDATES

Answer **ALL** the questions in the answer booklet provided. Use the pages provided for rough work only for that purpose. Start answering questions only in the section labelled **WRITING PAPER**.

For Sections A write just the **letter** corresponding to the right answer against the question number. At section C start each question on a **fresh page**.

FORMAT, TYPOLOGY and TOPICS

The Question Paper shall be constructed on 100marks from the general computer science comprising of hardware, software standards and computing principles in accordance to the following elements:

FORMAT	Nature of questions	Number of questions	Weight in the paper	Mark allocation per question	Topics to be covered	Objective to be tested
Section A	MCQS	20	20%	1 each	ALL TOPICS	Knowledge
Section B	Structural Questions	5 to 10	30%	Maximum of 6Marks	✓ Historical background of the Computer. ✓ Types of computers and application areas; ✓ Impact of computers on society; ✓ Explanatory definitions and examples of basic hardware, software, networks and internet;	Knowledge and Comprehension
Section C	Key	3	50%	15, 15, 20	✓ Outline computer organization (block	Knowledge,

C	Application questions			marks	structure of computers); ✓ Explanatory definitions and examples of basic hardware, software and networking; ✓ Explanatory definitions and procedures in using Computer systems and windows ✓ Office automation, introductory use of word processor, graphics and spread sheet packages, database access;	Compre- hension and Application
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PAPER: ENTERPRISE CREATION AND ENTREPRENEURSHIP

Field: Common PAPER

Specialty: ALL HND SPECIALTIES

Option: ALL HND OPTIONS

Credit Value: 1

Exam duration: 2

Paper Code: ECE21

Nature of the Exam: Written.

Objective/s of the paper:

- ❖ To test the candidate's knowledge of aspects of general economics, enterprise creation, organization and functioning of enterprises, enterprise management, and company law.
- ❖ To test the critical and analytical thinking of the candidates on general economics, enterprise creation, organization and functioning of enterprises, enterprise management, and company law .
- ❖ In order to ensure that candidates are tested on all the aspects of the paper, the paper shall be divided into three sections with each section made up of a course as follows: Section one shall cover all topics in Entrepreneurship. Section two shall cover topics in general economics, while section three shall cover topics in Company Law.

Nature of the Exam: Written.

Format of the Exam:

Exam Paper	Option	Different sections of the Paper	Duration per section	Mark Allocated	Percentage
Entrepreneurship Development Code: ECE21	All HND Options	Section 1: Entrepreneurship	40 Minutes	34	34
		Section 2:General Economics	40 minutes	33	33
		Section3: Company Law	40 minutes	33	33
				100	

A. ENTREPRENEURSHIP

At the end of this course the student must understand the following: Business Entrepreneurial Skills, Business Infrastructure Setting, Business General Set Up, Business Market, Business Finance, Business Plan, and Business Money Banking. Other topics include:

- Conceptual definition of entrepreneurs and entrepreneurship,
- Historical development of entrepreneurship,
- Entrepreneurial practice,

- The importance of small business and entrepreneurial economy,
- Type of Entrepreneurship,
- Entrepreneur and small business,
- Features and types of businesses and entrepreneurs,
- The role of entrepreneurship in economic development,
- Innovation and entrepreneurship,
- The life cycle of a small company,
- Small business sector in Cameroon,
- Forms of entrepreneurial organization,
- Sources of capital and entrepreneurial process,
- Entrepreneurial strategies,
- Starting a new company,
- Buying an existing business and franchising,
- Family business,
- entrepreneurial venture and entrepreneurial development chain,
- Writing a clear, concise, and compelling business plan for a new venture.
- Identify appropriate sources of financing for an entrepreneurial business plan.
- Develop a compelling sales pitch to acquire financing necessary to a new venture.
- Basics of Venture Marketing,
- Fundamentals of entrepreneurial management,
- Product design, operational art, and stock management,
- Technical and technological analysis of entrepreneurial projects.
- Designing a business investment. Knowledge Economy,
- Strategic guidelines and objectives for the development of SMEs in Cameroon

B. General Economics:

- Nature and scope of Economics,
- Methodology of economics
- Positive and Normative aspects of Economics,
- Production possibilities curve
- Economic systems,
- price theory(demand and supply analysis),
- Demand and supply
- Concepts of elasticity,
- Theory of consumer behavior (cardinal and ordinal approach)
- Indifference curve theory
- Production theory
- Cost of production
- Profit maximization
- Market structures,
- Factor price determination
- Introductory aspects (definition, macroeconomic objectives, macroeconomic indicators, macroeconomic policy and policy instruments)
- Measurement of National income,
- Circular flow of National Income (Equilibrium output determination)
- Aggregate demand and its components
- The multiplier and Accelerator concepts
- Money and its evolution
- Demand and Supply of money
- Changes in the value of money.
- Credit creation by commercial Banks

- Sources Government revenue and Expenditure
- Problems of unemployment and economic growth and development
- Organizational structure, management and the financing of the enterprise
- Decision making process

C. Company Law:

- Definition of company Law,
- Historical evolution of Cameroon Company Law
- Genesis of the OHADA Treaty,
- OHADA Uniform Acts ,
- Forms of company recognized by the OHADA law
- Conditions for the formation of companies and other business entities in Cameroon
- Object of the company and the ultra-vires doctrine
- The registration of companies and other business entities (Procedure and required documents)
- The Principle of corporate personality
- Lifting the veil of incorporation
- Organs of a company and other economic interest groups
- Management of a company (Meetings and quorum)
- Dissolution and Liquidation of Business Entities