



Republic of Botswana

**Ministry of Education**

in collaboration with

**The University of Cambridge Local Examinations Syndicate**

**BOTSWANA GENERAL CERTIFICATE OF SECONDARY  
EDUCATION**

**SECONDARY ASSESSMENT SYLLABUS FOR  
COMPUTER STUDIES**

**BECOMES EFFECTIVE FOR FIRST EXAMINATION IN 2003**

UNIVERSITY *of* CAMBRIDGE  
Local Examinations Syndicate

## TABLE OF CONTENTS

<b>Section</b>	<b>Page</b>
Foreword	i
Acknowledgements	ii
1 Introduction	1
2 Aims	1
3 Assessment Objectives	2
4 Scheme of Assessment	3
5 Content	4
6 The Project	11
6 Grade Descriptions	12
7 Appendix A Criteria for Marking the Project	13

## FOREWORD

The Ministry of Education is pleased to authorise the publication of this senior secondary syllabus which marks a watershed in the development of the public education system in Botswana and signals another milestone of progress in fulfilment of the goals set by the Revised National Policy on Education, Government Paper No. 2 of 1994.

In this era of widespread and rapid technological change and an increasingly inter-dependent global economy, it is essential that all countries foster human resources by preparing children adequately of their future. Survival in the coming millennium will depend on the ability to accommodate change and to adapt to environmental needs and emerging socio-economic trends. It is the wish of Government to prepare Botswana for future growth and adaptation to ongoing change in the socio-economic context; specifically the transition from an agro-based economy to a more broadly based industrial economy, which we are aiming at.

The Senior Secondary Programme builds on the Ten Year Basic Education Programme and seeks to provide quality learning experiences. It aims to prepare our students for the world of work, further education and lifelong learning. However, secondary education must also pay attention to the all-round development of the individual. It should provide not only for the acquisition of those skills needed for economic, scientific and technological advancement. It should also provide for the development of cultural and national identity and the inculcation of attitudes and values which nurture respect for oneself and for others.

Critical to the success of our secondary education programme is the recognition of individual talents, needs and learning styles. Hence, the role of the teacher in the classroom has changed. S/he must be a proficient manager and facilitator; a director of learning activities. S/he should be conscious of students' needs to take on board a measure of accountability and responsibility for their own learning. S/he must also take into account the widening range of ability of the student body and the different levels of achievement, which they aspire to. This means active participation for all and the creation of rich and diverse learning environments.

It is important then that we value the student's own experiences, build upon what they know and reward them for positive achievement. At the same time, we must be prepared to offer them guidance and counselling at all levels; assisting them to make the best decisions in keeping with their own interests, career prospects and preferences. In that way we shall prevail in nurturing at the roots of our system, the national ideals of democracy, development, self-reliance, unity and social harmony.

The syllabus document is the outcome of a great deal of professional consultation and collaboration. On behalf of the Ministry, I wish to record my appreciation and thank sincerely those who contributed to and were involved in the production of this syllabus.



P. T. Ramatsui  
Permanent Secretary  
Ministry of Education

## ACKNOWLEDGEMENTS

The Examinations Research and Testing Division (ERTD) wishes to express its gratitude to all colleagues who contributed in different ways to the planning, development and production of this Senior Secondary Computer Studies syllabus. Special thanks must go to all members of the Computer Subjects Task Force whose names are listed below.

ERTD feels that this Computer Studies syllabus reflects the outcome of a genuinely collaborative work across a broad educational spectrum and reiterates its gratitude to all individuals and organisations who contributed in any way to the production of this syllabus.

The Division would also like to acknowledge the technical support provided by the University of Cambridge Local Examinations Syndicate (UCLES) in the production of this syllabus.

## 1. INTRODUCTION

As a component of the Botswana General Certificate of Secondary Education (BGCSE) Programme, the Computer Studies Assessment Syllabus is designed to assess candidates who have completed a two year course based on the BGCSE Computer Studies Teaching Syllabus.

This syllabus aims to assess positive achievement at all levels of ability and candidates will be assessed in ways that encourage them to show what they know, understand and can do. Differentiation will be achieved by task and outcome rather than by tiered papers.

Candidate will be graded on a scale of A\* - G. As a guide of what might be expected of a candidate's performance, grade descriptions are given in Section 7.

This syllabus should be read in-conjunction with:

1. The BGCSE Teaching Syllabus;
2. The specimen papers and mark schemes.

## 2. AIMS

On completion of a two year Computer Studies Course Candidates should:

- be able to use computer systems for monitoring, controlling and decision making;
- have developed skills for use in research;
- have developed skills in using computers to store, retrieve and communicate information;
- have acquired knowledge and understanding about how computer systems work;
- have developed awareness of how computers are used in business, home and industry;
- have developed lifelong learning skills to be able to solve real life problems;
- have an understanding of a range of techniques and knowledge required in the use of computers;
- have developed critical and logical thinking , self-reliance and initiative which will serve as the basis for further training and positive work habits in the use of computers;
- As far as possible, the Aims will be reflected in the Assessment Objectives. However, some of them cannot be readily assessed.

### **3. ASSESSMENT OBJECTIVES**

There are three main Assessment Objectives:

- 1 Knowledge and Understanding**
- 2 Information Handling and Problem Solving**
- 3 Investigation and Experimentation**

For assessment purposes, the objectives have been broken down into smaller units.

#### **1 Knowledge and Understanding**

Candidates should be able to:

- 1.1 identify facts, terms, concepts, principles and techniques which relate to computers, and outline their uses;
- 1.2 demonstrate appropriate knowledge of facts, concepts, principles and techniques in Computers Studies;
- 1.3 demonstrate understanding of appropriate knowledge through numeracy, literacy, interpretation and presentation.

#### **2 Information Handling and Problem Solving**

Candidates should be able to:

- 2.1 distinguish between fact and opinion in order to make informed judgement;
- 2.2 determine computer solution by algorithm representation;
- 2.3 explain situations by comparing uses of computers.

#### **3 Investigation and Experimentation**

Candidates should be able to:

- 3.1 propose a number of solutions and choose the most appropriate to solve computer problems;
- 3.2 set an objective, plan and carry-out an investigation of a particular system;
- 3.3 use computers to select, analyse, interpret and evaluate data from a variety of sources.

#### 4. SCHEME OF ASSESSMENT

Candidates may be assessed on two written papers and a project.

All candidates will be graded on a scale A\* to G. All candidates who fail to achieve grade G will be Unclassified (U) and no grade will appear on their certificate.

##### **Paper 1**

**Practical Paper**

**1 hour 30 minutes**

**30 marks**

This is a written practical paper with **three** compulsory questions. Candidates produce a printed copy of their work which is assessed. The paper tests Assessment Objectives 1 and 2.

##### **Paper 2**

**Written**

**2 hours 30 Minutes**

**100 marks**

The paper will have **between 15 and 20** structured and short answer questions. All questions are compulsory. The paper will assess Assessment Objectives 1, 2, and 3.

##### **Paper 3**

**Project**

**70 marks**

This paper is in the form of a project which candidates will complete over a period of three terms starting in the Third Term of Form 4. Candidates are required to produce a written solution to an identified problem in the form of an open-ended report. The Project is intended to test Assessment Objectives 1, 2 and 3.

#### **Assessment Grid**

The following table summarises the Assessment Objectives to be assessed in each paper.

<b>Assessment Objectives</b>	<b>Paper 1</b>	<b>Paper 2</b>	<b>Paper 3</b>
Knowledge and understanding	✓	✓	✓
Information Handling and Problem Solving	✓	✓	✓
Investigation and Experimentation		✓	✓

#### **Weighting of the Papers**

<b>PAPER</b>	<b>WEIGHT</b>
1	15%
2	50%
3	35%

## 5. CONTENT

The content is organised in 7 sections as follows:

- 1 **Computer Hardware and Software;**
- 2 **Computer Applications**
- 3 **Social and Economic Implications of the use of Computers;**
- 4 **Systems Development Life Cycle**
- 5 **Programming Concepts**
- 6 **Data and File Management**
- 7 **Systems and Communications**

### SECTION 1: COMPUTER HARDWARE AND SOFTWARE

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Software</b>	acquire knowledge of the different types of software.	<ul style="list-style-type: none"><li>- define the term software;</li><li>- identify different categories of software;</li><li>- compare different categories of software.</li></ul>
	understand the functions of systems software.	<ul style="list-style-type: none"><li>- define functions of systems software;</li><li>- distinguish between the different user interfaces.</li></ul>
	demonstrate knowledge of application software.	<ul style="list-style-type: none"><li>- identify a range of uses for application software;</li><li>- identify main features of application software;</li><li>- describe the tasks for which application software are best used;</li><li>- describe advantages and disadvantages of different application packages.</li></ul>
	demonstrate knowledge of a range of data processing packages.	<ul style="list-style-type: none"><li>- utilise basic features of a word processing application to create documents. ( font type/size/style, page setup, text alignment, editing features, headers and footers, page numbers, proofing tools, text wrap, graphics, mail merge);</li><li>- create documents using basic features of a spread sheet application;</li><li>- utilise basic mathematical functions of a spread sheet (sum, count, average, maximum, minimum, what if analysis);</li><li>- create and interpret graphs using a spread sheet;</li><li>- utilise basic features of a database application to store and retrieve information;</li><li>- manipulate information in a data base (add/delete/amend records, sort, query, import data, simple calculations, produce reports).</li></ul>

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Hardware</b>	acquire knowledge and understanding of hardware concepts.	<ul style="list-style-type: none"> <li>- define the term hardware;</li> <li>- identify the hardware components of the computer system.</li> </ul>
	demonstrate an understanding of the microprocessor.	<ul style="list-style-type: none"> <li>- state the components of the Central Processing Unit (CPU);</li> <li>- state the functions of components of CPU.</li> </ul>
	be familiar with the different categories of computers.	<ul style="list-style-type: none"> <li>- list different categories of computers;</li> <li>- compare and contrast different categories of computers;</li> <li>- state the area of use for the each category of computers.</li> </ul>
	demonstrate knowledge of input devices.	<ul style="list-style-type: none"> <li>- describe the use of input devices;</li> <li>- identify the uses of input devices;</li> <li>- describe the use of specialised input devices.</li> </ul>
	demonstrate knowledge of output devices.	<ul style="list-style-type: none"> <li>- describe the use of output devices;</li> <li>- identify the uses of output devices;</li> <li>- compare different types of printers suitable for specific situations;</li> <li>- compare the suitability of display devices for specific situations;</li> <li>- identify the suitability of output devices to specific situations.</li> </ul>
	demonstrate knowledge of storage devices.	<ul style="list-style-type: none"> <li>- describe data storage units;</li> <li>- describe the difference between primary storage and secondary storage;</li> <li>- differentiate between types of memory;</li> <li>- identify different types of secondary storage devices with their associated media;</li> <li>- identify the suitability of storage devices for specific situations.</li> </ul>
	demonstrate proper care and maintenance of computer Equipment.	<ul style="list-style-type: none"> <li>- take good care of computer equipment;</li> <li>- identify effects of negligence to equipment;</li> <li>- describe the effects of negligence to equipment.</li> </ul>

## SECTION 2 COMPUTER APPLICATIONS

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>General and Commercial use</b>	<ul style="list-style-type: none"> <li>- demonstrate an understanding of the use of computers in different situations.</li> </ul>	<ul style="list-style-type: none"> <li>- state the areas in which computers are used;</li> <li>- identify a range of commercial and general data processing packages;</li> <li>- describe how data processing is used in organisations;</li> <li>- identify the use of computers in a range of scientific, technical and industrial applications.</li> </ul>
<b>Monitoring and control systems</b>	show understanding of different monitoring and control systems.	<ul style="list-style-type: none"> <li>- list examples of monitoring and control systems;</li> <li>- identify the implications of monitoring and control systems;</li> <li>- identify how microprocessors are used in domestic appliances;</li> <li>- discuss how automation is used in day to day life;</li> <li>- identify how microprocessors are used in industrial processes;</li> <li>- discuss how robotics is used in day to day life.</li> </ul>
<b>Artificial Intelligence (AI)</b>	appreciate the use of AI in different situations.	<ul style="list-style-type: none"> <li>- state the different features of an expert system;</li> <li>- list a range of AI applications;</li> <li>- describe how organisations can use AI to make decisions.</li> </ul>
<b>Other applications</b>	be aware of the use of computers in education and entertainment.	<ul style="list-style-type: none"> <li>- describe and use Computer Aided Instruction (CAI);</li> <li>- describe and use Computer Aided Learning (CAL);</li> <li>- describe how computers are used in entertainment.</li> </ul>
<b>Computer System security and data protection</b>	appreciate the need for data protection.	<ul style="list-style-type: none"> <li>- identify the need for data protection.</li> <li>- describe the ways in which data can be protected.</li> <li>- choose an appropriate method of security for specific applications.</li> <li>- outline the content of data protection legislation.</li> <li>- state the implications of failing to comply with data protection legislation.</li> </ul>
	appreciate the need for computer systems security.	<ul style="list-style-type: none"> <li>- identify different types of computer crime.</li> <li>- describe reasons why computer crime exists.</li> <li>- state how data protection legislation fights against computer crime.</li> <li>- identify physical system security methods.</li> <li>- explain the need for physical security systems.</li> <li>- choose an appropriate security system.</li> </ul>
	appreciate the need for backing up data.	<ul style="list-style-type: none"> <li>- identify the need for backup procedures;</li> <li>- describe the methods used in backing up data;</li> <li>- choose an appropriate backup procedure for different applications;</li> <li>- demonstrate the use of backup procedures.</li> </ul>
<b>Computer System security and data protection (cont)</b>	acquire knowledge of computer viruses.	<ul style="list-style-type: none"> <li>- identify the effects of viruses;</li> <li>- identify ways of infection;</li> <li>- describe methods of eradication;</li> <li>- describe methods of protection against viruses.</li> </ul>

<b>Communications and information systems (C&amp;I)</b>	demonstrate knowledge and understanding of a range of C&I systems.	<ul style="list-style-type: none"> <li>- list a number of C&amp;I systems;</li> <li>- describe a number of C&amp;I systems;</li> <li>- state the purposes for which C&amp;I systems are used;</li> <li>- use a range of C&amp;I systems.</li> </ul>
	demonstrate an understanding of communication services.	<ul style="list-style-type: none"> <li>- describe the various communication services available;</li> <li>- describe the internet;</li> <li>- describe the most common uses of the internet;</li> <li>- identify required resources to access the internet;</li> <li>- compare the intranet and internet;</li> <li>- discuss the implications of using the internet.</li> </ul>

### SECTION 3 SOCIAL AND ECONOMIC IMPLICATIONS OF THE USE OF COMPUTERS

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Social Implications of the use of Computers</b>	be familiar with the positive and negative effects of computers on people.	<ul style="list-style-type: none"> <li>- identify health risks associated using computers;</li> <li>- practice proper safety precautions when using computers;</li> <li>- describe effects of computers on people;</li> <li>- analyse the positive and negative effects on people.</li> </ul>
<b>Economic implications</b>	be familiar with the positive and negative effects of computers on organisations.	<ul style="list-style-type: none"> <li>- describe positive effects of using computers in organisations;</li> <li>- analyse positive effects of using computers in organisations;</li> <li>- describe the negative effects of using computers in organisations;</li> <li>- analyse negative effects of using computers in organisations;</li> <li>- describe the needs for skills upgrading;</li> <li>- outline the ways in which skills upgrading can be achieved.</li> </ul>

### SECTION 4 SYSTEMS DEVELOPMENT LIFE CYCLE

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>System Development Life Cycle</b>	acquire knowledge on conducting an initial study.	<ul style="list-style-type: none"> <li>- identify the problem.</li> <li>- list system objectives.</li> <li>- state consequences of identified problems.</li> </ul>
	be familiar with components of a feasibility study report.	<ul style="list-style-type: none"> <li>- identify and compare alternative solutions;</li> <li>- identify costs and benefits;</li> <li>- determine whether a solution is acceptable;</li> <li>- determine whether a solution is technically feasible;</li> <li>- propose a recommended solution.</li> </ul>

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>System Development Life Cycle (cont)</b>	acquire knowledge and skills of analysing an existing system.	<ul style="list-style-type: none"> <li>- describe data gathering techniques;</li> <li>- establish current data processing used;</li> <li>- identify existing output;</li> <li>- identify existing input used;</li> <li>- identify current information storage facilities;</li> <li>- describe the current system;</li> <li>- state the strengths and weakness of current system.</li> </ul>
	acquire knowledge to design an information system.	<ul style="list-style-type: none"> <li>- list output requirement for recommended system;</li> <li>- list input requirement for recommended system;</li> <li>- formulate file structure for the recommended system;</li> <li>- determine storage requirement for recommended system;</li> <li>- describe processing for recommended system;</li> <li>- identify system backup requirement;</li> <li>- describe required validation and verification techniques;</li> <li>- identify hardware required;</li> <li>- identify software required;</li> <li>- identify an appropriate user interface.</li> </ul>
	acquire knowledge and skills of creating an information system.	<ul style="list-style-type: none"> <li>- create a workable solution based on the recommended system;</li> <li>- test the system for accuracy of input and output;</li> <li>- produce the user documentation for the system;</li> <li>- collate technical documentation for the system.</li> </ul>
	acquire knowledge of various implementation strategies.	<ul style="list-style-type: none"> <li>- describe the various implementation strategies;</li> <li>- identify an implementation strategy for the system;</li> <li>- identify user training needs.</li> </ul>
	show an understanding of how to evaluate and maintain an information system.	<ul style="list-style-type: none"> <li>- review the system against initial objectives;</li> <li>- update documentation in line with usage;</li> <li>- identify future development of the system;</li> <li>- determine user support needs.</li> </ul>

## SECTION 5 PROGRAMMING CONCEPTS

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Programming Concepts</b>	demonstrate knowledge of programming techniques.	<ul style="list-style-type: none"> <li>- describe structured programming techniques;</li> <li>- state the advantages of using structured programming techniques.</li> </ul>
	apply algorithm tools in solving problems.	<ul style="list-style-type: none"> <li>- draw program flowcharts;</li> <li>- represent algorithms using pseudo code;</li> <li>- check algorithm logic using trace table;</li> <li>- describe the use of procedures/subroutines;</li> <li>- outline the importance of program annotations;</li> <li>- use annotation in pseudo code.</li> </ul>

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Programming Concepts (cont)</b>	show understanding of different programming languages.	state the differences between low level language and high level language.
	show understanding of program translators.	differentiate between program translators; state the benefits of using different program translators.

## SECTION 6 DATA AND FILE MANAGEMENT

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Data and information</b>	demonstrate knowledge of the data concepts.	<ul style="list-style-type: none"> <li>- distinguish between analogue data and digital data;</li> <li>- identify the need for data converters;</li> <li>- describe how data is represented in the computer;</li> <li>- differentiate between data types;</li> <li>- suggest uses for different data types.</li> </ul>
	demonstrate knowledge of data entry techniques.	<ul style="list-style-type: none"> <li>- describe methods of data collection;</li> <li>- describe methods of data capture;</li> <li>- state the reasons for using codes;</li> <li>- state advantages and disadvantages of different data entry methods;</li> <li>- identify suitable data entry methods for specific situations.</li> </ul>
	appreciate the use of data entry checks.	<ul style="list-style-type: none"> <li>- distinguish between verification and validation;</li> <li>- state the importance of data entry checks;</li> <li>- perform validation checks.</li> </ul>
	understand the relationship between data and information.	<ul style="list-style-type: none"> <li>- differentiate between data and information;</li> <li>- identify different ways presenting information.</li> </ul>
<b>File organisation</b>	show understanding of files.	<ul style="list-style-type: none"> <li>- distinguish between different file components;</li> <li>- describe different types of file access with regard tapes and discs;</li> <li>- describe different type of files.</li> </ul>

## SECTION 7 SYSTEMS AND COMMUNICATIONS

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Data communication</b>	acquire knowledge and understanding of network concepts.	<ul style="list-style-type: none"> <li>- define the network concepts;</li> <li>- state the reasons for having networks;</li> <li>- list the disadvantages of having networks;</li> <li>- identify the differences between LAN and WAN.</li> </ul>

TOPIC	GENERAL OBJECTIVES	SPECIFIC OBJECTIVES
	<i>Learners should be able to:</i>	<i>Learners should be able to:</i>
<b>Data communication (cont)</b>	show understanding of the use of communication hardware.	<ul style="list-style-type: none"> <li>- describe the uses of communication hardware;</li> <li>- describe communication media;</li> <li>- compare the suitability of data transmission methods for specific situations.</li> </ul>
	show understanding of network protocols.	<ul style="list-style-type: none"> <li>- define the term protocol;</li> <li>- describe the need for network protocol.</li> </ul>
	acquire knowledge of network topologies.	<ul style="list-style-type: none"> <li>- describe with the aid of diagrams types of network topology;</li> <li>- state advantages and disadvantage of network topologies.</li> </ul>
<b>Systems</b>	be familiar with the different types of operating systems.	<ul style="list-style-type: none"> <li>- distinguish between the different types of operating systems;</li> <li>- describe characteristics of real time system;</li> <li>- identify applications suitable for real time system;</li> <li>- state what a single user system is;</li> <li>- state what a multi-user system is;</li> <li>- explain how a multi-user system works;</li> <li>- identify application suitable for multi-user systems;</li> <li>- identify uses of data logging;</li> <li>- describe a control system;</li> <li>- identify the common features of a control system;</li> <li>- identify areas of application of control systems;</li> <li>- describe the minimum specification of a multimedia system;</li> <li>- describe areas of application of multimedia systems.</li> </ul>

## 6. THE PROJECT

Projects should be problem solving ideas of practical life applications, and the solution should be computer based. Teachers should be able to give necessary guidance and supervision to students in the choice and development of the project through all stages. Projects will be assessed by the Centre and moderated by ERTD.

The project may be divided into the two sections, as follows:

**(a) The Problem**

This is where the student gathers information about the problem. The student should be able to demonstrate:

- Knowledge and understanding of the problem
- Analysis of the problem
- Evaluation of solutions to the problem

**(b) The Solution**

This is where the student develops a solution to the problem. The student should be able to demonstrate:

- The solution of the problem
- Communication
- Analysis
- Realisation
- User documentation
- Technical documentation
- Evaluation
- Technical Skill

### **Moderation**

**(a) Internal Moderation**

When several teachers in a Centre are involved in internal assessment, arrangements must be made within the centre for all candidates to be assessed to a common standard. It is important that the marks for each skill awarded by different teachers are moderated internally for the whole centre entry. The centre assessments will then be subject to external moderation by ERTD.

**(b) External Moderation**

The Individual Candidate Assessment Form and Coursework Assessment Summary Forms must be received by ERTD not later than 31 October along with all coursework portfolio submitted by the candidates.

## **7. GRADE DESCRIPTIONS**

Grade Descriptions are provided to give a general indication of the standards of achievement expected of candidates for the award of particular grades. The grade awarded will depend on the extent to which the candidate has met the Assessment Objectives.

### **Grade A**

The candidate should be able to:

- show an excellent grasp of the subject content and apply knowledge to new situations;
- demonstrate a systematic approach to analysing and solving problems leading to innovative solutions;
- demonstrate skilful handling of information.

### **Grade C**

The candidate should be able to:

- show an acceptable grasp of the subject content and apply knowledge to known situations,
- demonstrate ability to solve problems using pre-determined methods,
- handle information satisfactorily.

### **Grade F**

The candidate should be able to:

- show little grasp of the subject content,
- demonstrate ability to solve simple problems, through guidance,
- handle basic information with some assistance.

## 8. APPENDICES

### APPENDIX A

#### CRITERIA FOR MARKING THE PROJECT

Candidates' Projects should be assessed according to the following criteria.

- |          |   |                |
|----------|---|----------------|
| <b>1</b> | <b>Identification of the problem</b>  | <b>2 marks</b> |
| 1.1      | Must be a very clear statement of the problem;  |                |
| 1.2      | Must contains a statement to say how the problem was encountered;                                   |                |
| 1.3      | One paragraph only.   |                |
| <b>2</b> | <b>Statement of specific objectives</b>   | <b>2 marks</b> |
| 2.1      | Unambiguous statements;   |                |
| 2.2      | Should relate to the problem;   |                |
| 2.3      | Written in list form rather than paragraph.   |                |
| <b>3</b> | <b>Description of data flow</b>   | <b>3 marks</b> |
| 3.1      | Clear input->process-> output statements;   |                |
| 3.2      | Flowcharts and pseudocode to improve clarity.   |                |
| <b>4</b> | <b>Broad description of existing solution</b>   | <b>3 marks</b> |
| 4.1      | Clear description of what is going on in the present system;  |                |
| 4.2      | Should have perspectives of anyone within the system;   |                |
| 4.3      | Should include all "failsafes" within the system;   |                |
| 4.4      | Diagram would help here – system flowcharts showing various departments and how they interact.      |                |
| <b>5</b> | <b>Evaluation of existing solution</b>  | <b>2 marks</b> |
| 5.1      | All good points should be expressed as well as the bad points;                                      |                |
| 5.2      | All points should be backed-up with reasons, consequences and reasons;                              |                |
| 5.3      | Comment, reason, example.   |                |
| <b>6</b> | <b>Evaluation of alternative solutions</b>  | <b>2 marks</b> |
| 6.1      | As 5 but directed at proposed solutions;  |                |
| 6.2      | At least two solutions to be looked at for full marks.  |                |
| <b>7</b> | <b>Clarity of plan of action</b>  | <b>2 marks</b> |
| 7.1      | Has the candidate clearly stated what she/ he plans to do in order to resolve the problems?;        |                |
| 7.2      | The problem should have been split into stages (modules) and software recommended with reasons why; |                |
| 7.3      | All plans should relate to the problem and objectives.  |                |

- 8 Use of separate modules** **2 marks**
- 8.1 Each module should be thoroughly explained;  
 8.2 All fields/ cells should be listed with description of what they hold;  
 8.3 Any calculation scripts in fields/ cells should be listed;  
 8.4 Any macro scripts should be listed and annotated to show what each scrip step does.
- 9. Clarity of algorithms** **3 marks**
- 10. Explanation of need for hardware** **3 marks**
- 10.1 All hardware used must be explained each piece associated with its requirement solution.  
 10.2 All back-up requirements must be listed.
- 11. Algorithms related to system requirements** **2 marks**
- 12 Plausibility of algorithms** **3 marks**
- 12.1 How plausible is the overall design?  
 12.2 Do the methods used work fully?  
 12.3 Does the solution actually solve the problems?
- 13 Appropriateness of tools and techniques** **3 marks**
- 13.1 Was the choice of software the best choice?  
 13.2 Has the software been used well?  
 13.3 Would a different approach have yielded better results?
- 14 Testing of standard and extreme data** **3 marks**
- 14.1 Sample runs showing standard data being entered and the expected results being achieved.  
 14.2 Sample runs showing that extreme data has been checked.  
 14.3 Validation of unacceptable entries, ie numeric/ text/ date etc field validation, range checks, etc.
- 15. Testing of abnormal data** **2 marks**
- 16. Simplicity of user documentation** **2 marks**
- 17. Usefulness of sample runs** **2 marks**
- 18. Usefulness of technical documentation** **2 marks**
- 19. Candidate's evaluation of the solution** **2 marks**
- 19.1 This should be objective, ie fair, impersonal and open-minded.  
 19.2 Should contain references to the problem and specific objectives.
- 20. Reference to opportunities for development** **2 marks**
- 20.1 A statement or so about things that could be done given more time, access to technology, greater soft/ hardware, knowledge etc.

**21. Technical skill and mastery**

**3 marks**

21.1 How well has the software been used?

21.2 Has effort been shown to understand and use some of the more powerful aspects of the software?