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DISTRIBUTION:

- Permanent Secretary-Ministry of Primary and Secondary Education
- All ZIMSEC Regional Managers
- All Provincial Education Directors-Ministry of Primary and Secondary Education
- All District Education Officers-Ministry of Primary and Secondary Education
- Heads of Advanced Level Examination Centres

ASSESSMENT OF CANDIDATES IN COMPUTER SCIENCE SYLLABUS (6023) AND SOFTWARE ENGINEERING SYLLABUS (6044)

This circular brings to your attention procedures for the assessment of Advanced Level Computer Science (6023) and Software Engineering (6044) candidates.

1. **The Project (6023/3 and 6044/3)**

   Candidates will be expected to present a project. The expectations of the project were sent out in 2017 (see Appendix 1) and copies will be kept at Regional Offices for centres to photocopy if they find that to be more convenient.

   A contents page should be prepared to indicate the location of sections of the project. The candidate's project should contain the individual assessment mark sheet (See Appendix 2) with all the teacher's marks indicated.

   The project document should contain the project assessment form (See Appendix 3) with all candidates' marks recorded. In addition, the teacher should submit a soft copy of the candidates' work in the form of a CD. Each candidate should have a folder on the CD, where his/her project has been saved. The folder should have the candidate's name and number.

   The project should be completed by 05 October 2018 and the projects should be submitted to ZIMSEC Regional Offices or ZIMSEC Cluster Collection Centres by 26 October 2018.

2. **The Practical Examination (6023/2 and 6044/2)**

   Each registered candidate will sit for a practical examination as indicated in the syllabus. The duration of the Practical Examination is 3 hours. Please note that the 3 hours does not include

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printing time. Therefore, candidates will be allowed to print their work after 3 hours of writing.

In the case where the number of candidates exceeds the number of computers/machines the centre has, the centre will be allowed to have two sessions. A maximum of 1 hour is allowable for the change over to the second session. The subject teacher and other invigilators should make sure that all the machines have been cleared of documents before the second group starts writing. The two sessions would require that the subject teacher creates candidate accounts for them to log in and save their documents.

Each candidate will be expected to submit a hard copy and a soft copy on CD. The CD should bear the School Name, Candidate Name and the full Candidate Number. Candidates should not use passwords on CDs.

2.1 Preparations Before the Practical Examination

Heads of Centres should make sure that adequate preparations have been made for the practical examination. Preparations should include the following:

- Servicing of machines
- Ordering enough stationery; bond paper and printer cartridges
- Ordering enough CDs
- Having a standby power source e.g generator
- Clearing machines of saved documents
- Creating candidate accounts in the case of two sessions
- Removing papers on the walls of the computer laboratory
- Cleaning the laboratory in general.

2.2 During the Examination

There is need for thorough supervision when the examination is written. The subject teacher should be available for consultation but not in the examination room. Other invigilators will supervise the candidates as usual.

2.3 After the Examination

After the examination, candidates should be allowed to print their work. Printing time is outside the 3 hours. Candidates should tie their printouts together and submit both the hard copy and soft copy. The work is treated as examination material and should therefore be submitted in the normal way as the other scripts.



E. Masiri (Mrs)
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APPENDIX 1

COMPUTER SCIENCE (6023/3) and SOFTWARE ENGINEERING (6044/3): PROJECT

PROJECT GUIDELINE

Examination Centres are advised to encourage candidates to identify real life problems within their environment and develop solutions in line with the project guide lines. This will require candidates to have practical computer science skills, with a bias towards designing, electronic, programming or networking based projects. Knowledge of programming language syntax will be examined in this project report. The higher ability candidates are encouraged to extend their practical programming beyond the scope of these tasks. The project work should be carried out from term two in Form 5 to end of term 2 Form 6.The marked project reports including the compiled mark schedule will be submitted to ZIMSEC.

The project must not exceed 50 pages excluding appendices. The project must include the following layout:

1 Cover Page

2 Table of Contents

3 Appendices

The Appendices to include any **two** of the following

- Samples of completed questionnaires
- Sample of interview questions with respondent answers
- Sample documents

NB. The project must be spiral bound.

6023/3 and 6044/3: PROJECT

SECTION A (25 marks)
SELECTION, INVESTIGATION AND ANALYSIS

- **Define a problem [3]**
  - Choice of problem area and background analysis.
- **Investigation of the current system [5]**
  - Data analysis using DFDs, flow charts and ERDs
  - Research instruments e.g.questionnaire, record inspection, interviews and observation.

- Identify problems with the current system
- **Feasibility study [5]**
- **Requirementsspecification [4]**
  - User
  - Software
  - Hardware
- **Aims and objectives [5]**
- **Evidence that the research has been carried out [3]**
  - Examples are filled in questionnaires, interviews with respondent answers, sample documents and write up on observation.

SECTION B (25 marks)
DESIGN

- **Consideration of alternative method [5]**
  - Justification of proposed solution
- **Input design [4]**
  - Appropriate data capture forms and screen layouts
- **Data Structures/File design [5]**

OR

- **Object Oriented Design**
  - Class diagrams
  - Use Case diagrams
  - Sequence diagrams
- **Overall Plan [3]**
- **Output Design [5]**
  - Specification and design of the required output
  - Interface design (on screen commands)
- **Test Strategy/Test Plan [3]**
  - Select test plan and justify

SECTION C (25 marks)
SOFTWARE DEVELOPMENT

- **Techniques that improve the structure, appearance and clarity of the code [10]**
  - Procedures
  - Functions
  - Scope of variables (local and global)
  - Use of comments
  - Blank lines
  - Indentation
- **Technical documentation [7]**
  - Algorithms
    - Pseudo codes
    - flowcharts for modules
  - codes/program listings
- **User documentation [8]**

- Installation
- Starting the systems
- Navigation of the system
- Exiting the system

SECTION D (15 marks)
TESTING AND EVALUATION

- **User Testing [5]**
  - Design and select test data
  - Test for standard, extreme and abnormal/invalid data
  - Evidence of testing to be shown through sample runs and error message
- **System Testing [5]**
  - Ease of use
    - Clarity of instruction to the user
  - Reliability
    - Produce reliable results, there should be no bugs
  - Effectiveness
    - The system shouldwork efficiently
  - Produce results with minimum delay
- **Evaluation limitations of the system [5]**
  - Extent of success in meeting the system objectives as stated in the system requirement specifications
  - Achievements
  - Limitations
  - Evaluate results against the system objectives – achievements and limitations
  - Opportunities for future development

SECTION E (10 marks)
GENERAL EXPECTATIONS

- **Depth of Knowledge and Understanding [2]**
  - Reflects the degree of computing in the project
  - Is the code fairly standard?
  - Different techniques implemented
- **Degree of Originality [2]**
  - Imagination and innovation
  - Has an attempt been made to do something different/unique?
- **Overall conduct of the project [1]**
  - Is the work carefully organized? The degree of help to be reflected
- **Quality of the completed report [5]**
  - Written report should be easy to follow
  - Defined sections page numbers and an index.

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APPENDIX 2

ZIMSEC 'A' LEVEL INDIVIDUAL RECORD CARD

CENTRE NUMBER & NAME	
CANDIDATE NUMBER	
NAME OF CANDIDATE	

	SECTION A: SELECTION, INVESTIGATION & ANALYSIS						**SECTION B: DESIGN**						**SECTION C: SOFTWARE DEVELOPMENT**			**SECTION D: TESTING AND EVALUATION**			**SECTION E: GENERAL EXPECTATIONS**				
	25 marks						**25 marks**						**25 marks**			**15 marks**			**10 marks**				
	Problem definition	Investigation of thre current system	Feasibility	Requirements/specifications	Aims and objectives	Evidence of research	Consideration of alternative methods	Input design	Data structures/file design	Overall plan	Output design	Test strategy/Test plan	Structure, appearance and clarity of the code	Technical documentation	User documentation	User testing	System testing	Evaluation of limitations of the system	Depth of knowledge and understanding	Degree of originality	Overall conduct of the project	Quality of the completed report	Total
Possible mark	3	5	5	4	5	3	5	4	5	3	5	3	10	7	8	5	5	5	2	2	1	5	**100**
Internal mark																							
External mark																							

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APPENDIX 3

CENTRE NUMBER AND NAME																							
	SECTION A: SELECTION, INVESTIGATION & ANALYSIS						SECTION B: DESIGN						SECTION C: SOFTWARE DEVELOPMENT			SECTION D: TESTING AND EVALUATION			SECTION E: GENERAL EXPECTATIONS				Total
	25 marks						25 marks						25 marks			15 marks			10 marks				
Candidate Number	3	5	5	4	5	3	5	4	5	3	5	3	10	7	8	5	5	5	2	2	1	5	100

ZIMSEC 'A' LEVEL SUMMARY SHEET