ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

COMPUTING 9195/2

PAPER 2

NOVEMBER 2011 SESSION 3 hours

Additional materials:
Answer paper

TIME 3 hours

INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces provided on the answer paper/answer booklet.

Answer **all** questions.

Write your answers on the separate answer paper provided.

If you use more than one sheet of paper, fasten the sheets together.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets [ ] at the end of each question or part question.

You are reminded of the need for good English and clear presentation in your answers.

This question paper consists of 5 printed pages and 3 blank pages.

[Turn over

1 **(a)** A typical computer operating system resides in

- External memory
- ROM
- RAM

Explain why and when each type of memory is used by the operating system. [6]

(b) Distinguish between *application software* and *system software* giving **one** example of each. [4]

2 **(a)** State the meaning of the following types of data transmission:

(i) parallel,

(ii) serial,

(iii) half-duplex,

(iv) full-duplex. [4]

(b) Distinguish between the following terms as used in computing:

(i) a file server and a printer server, [2]

(ii) a gateway and a bridge. [2]

3 A systems analyst is designing the human computer interface (HCI) for a control room in a work site.

(a) Describe the factors the systems analyst should consider when designing the interface. [6]

(b) Software developers are now strongly recommended to use prototyping for different reasons in a variety of situations.

(i) Explain the term prototyping. [1]

(ii) Briefly explain two reasons for using prototypes. [2]

(c) Describe any two methods of testing a new software product during the course of its development. [4]

4 **(a)** State what is meant by each of the following computing terms:

(i) a local variable,

(ii) a global variable,

(iii) a parameter passed by value,

(iv) a parameter passed by address. [4]

(b) A software house uses the following items of software when writing programs for its clients.

- compiler
- linker
- editor
- subroutine library
- debugger

Explain briefly the function of each term. [5]

(c) Explain how the use of *procedures* and *functions* contribute to the production of quality software. [4]

5 **(a)** Describe the purpose of the following computing terms.

(i) Database Management System (DBMS) [2]

(ii) Data Description Language (DDL) [2]

(iii) Data Manipulation Language (DML) [2]

(b) Describe the **three** levels of a Database Management System structure. [6]

6 **(a)** State the purpose of each of these registers involved in the fetch-execute cycle.

(i) Memory Buffer Register (MBR) [1]

(ii) Accumulator (AC) [1]

(iii) Memory Address Register (MAR) [1]

(iv) Program Counter (PC) [1]

(b) Bus lines are classified into three functional categories namely, *data bus, address bus* and *control bus*.

Distinguish between these sets of communication lines. [3]

7 **(a)** A customer file is held on a tape and invoices held on a transaction file are sorted and then used to update the master file, creating a new master file.

Draw a systems flow chart to show the process that occurs. [6]

(b) Explain the difference between *user documentation* and *system documentation*. [4]

8 00111101 is the 8-bit representation for the denary number 61.

(a) Write down the twos complement representation for –61. [1]

(b) What is the hexadecimal equivalent of the decimal number 61. [2]

(c) Convert the hexidecimal number 47 into decimal showing all working. [2]

9 Design algorithms in pseudocode to:

(i) insert an item in a stack, [4]

(ii) delete an item from the stack. [4]

Your algorithms should be able to deal with problems of under flow and overflow.

10 **(a)** The marks obtained by a computing candidate in a test are given as follows:

12 5 16 20 3 8 7 19 14

Insert the entire list in a binary tree. [4]

(b) Show how your binary tree can be implemented using an array. [4]

(c) Distinguish between a *stack* and a *queue*, giving **one** example of how each data structure is used in a computer system. [4]

(d) Explain what is meant by the terms *underflow* and *overflow* in relation to a queue. [2]