ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

COMPUTING 9195/1

PAPER 1: Structured Theory

NOVEMBER 2017 SESSION 3 hours

Additional materials:
Answer paper
Non-programmable electronic calculator

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 4 printed pages.

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[Turn over

1 **(a)** State the functions of the following computer components:

(i) Processor [2]

(ii) Main memory [2]

(iii) Secondary storage [2]

(b) Define a *register* in computing context. [1]

2 **(a)** Identify any **five** general application areas of computers. [5]

(b) **(i)** Explain how it is possible to protect computer data from

1. physical damage
2. theft and misuse. [3]

(ii) Discuss the techniques that can be used to prevent unauthorised access to computer systems. [9]

3 **(a)** Explain any **four** functions of a computer operating system. [8]

(b) **(i)** Define *serial data transmission*. [1]

(ii) Explain the difference between *serial* and *parallel* data transmission. [2]

(iii) Identify the circumstance where it would be appropriate to use parallel data transmission. [1]

(iv) Justify the need for protocols in data communication. [2]

4 **(a)** Give any **two** differences between *dynamic* and *static* data structures. [2]

(b) The following data items are to be entered into a binary search tree in the order given:

Harare, London, Paris, Rome, Berlin, Amsterdam, Lisbon, Madrid, Lilongwe.

(i) Draw a diagram to show how these values (data items) will be stored and circle the roof node. [5]

(ii) If Madrid is being searched for in this binary tree, list the data items which will have to be accessed. [1]

5 **(a)** Perform the following arithmetic:

(i) $10000000_2 - 1001100_2$ [2]

(ii) A73 + B412 + 52D [2]

(b) Convert the hexadecimal number ABCD to Octal. [2]

(c) Represent 101010_2 using BCD. [2]

6 **(a)** Describe the following terms in computing:

(i) system software [2]

(ii) antivirus [2]

(iii) disk formatting [2]

(iv) defragmentation [2]

(v) file compression [2]

(b) Translators are essential in computing.

Give the differences in the way in which the **three** main translators translate data. [6]

(c) Compiling is done in a number of stages.

Outline what happens at each stage of compilation, in the correct sequence. [5]