



# ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Advanced Level

## COMPUTING

PAPER 1: Structured Theory

9195/1

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.

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**This question paper consists of 4 printed pages.**

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- (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]
- (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]
- (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 root 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]