



ZIMBABWE SCHOOL EXAMINATIONS COUNCIL
General Certificate of Education Advanced Level

COMPUTING
PAPER 1

9195/1

SPECIMEN

3 hours

Additional materials:
Answer paper

TIME 3 hours

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number on the answer paper/answer booklet provided.

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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Question 1

- (a) Most developed countries are living as cashless societies
- (i) Describe three characteristics of a cashless society [3]
 - (ii) List three disadvantages of such a society [3]
- (b) To gain access to the server room at a local bank, a retina scan is done.
- (i) Explain how a retina scan works. [4]
 - (ii) Name two possible devices used in this system. [2]
- (c) (i) Describe two features of a virtual company. [2]
- (ii) Give two advantages of a virtual company [2]
- (d) Computerisation is used extensively in industries to monitor and control production processes.
- (i) Outline the importance of sensors in these processes. [2]
 - (ii) With reference to inputs, processes and outputs, describe a named monitoring or control system which implements sensors. [9]

Question 2

- (a) What is a database? [1]
- (b) Define the following database terms
- (i) Data Description Language (DLL) [1]
 - (ii) Data Manipulation Language (DML) [1]
 - (iii) Database Management System (DBMAS) [1]
 - (iv) Data dictionary [1]
- (c) Outline the role of a Database Administrator [1]
- (d) Compare and contrast databases and conversional files. [4]

Question 3

- (a) Define a relational database [1]
- (b) Explain the following terminology associated with files.
- (i) File generation
 - (ii) Updating
 - (iii) Merging
 - (iv) End of File (EOF) [4]

Question 4

- (a) Define a key field [1]
- (b) Explain the role of the following files in a computer system
- (i) Master file
 - (ii) Transaction file
 - (iii) Reference file [3]

Question 5

- (a) Explain how to change a record on sequential file held on a magnetic tape?
(For example if you have got Shingai's birthday wrong.) [4]
- (b) A binary tree is a data structure used to represent data.
Explain the following terms in relation to binary trees.
- (i) Branches
 - (ii) Leaf notes
 - (iii) Parent [3]
- (c) The series of characters K, G, I, Y, R, Y, U are entered into a binary tree in the order given.
Draw a diagram to show how these values will be stored. [7]

- (d) Convert the following expression to Reverse Polish (Postfix) expressions

$$S * R \mid (K \quad P) * L \quad [4]$$

- (e) Consider the Matrix M

$$M = \begin{pmatrix} 1 & 3 & 2 & 1 & 1 \\ 2 & 0 & 0 & 1 & 4 \\ 4 & 7 & 9 & 3 & 2 \end{pmatrix}$$

Use row-by-row mapping to represent the matrix M. [3]

Question 6

A new shop is building a point of sale system. The manager is not sure on which type of system to use between a batch and an online system.

- (a)(i) Suggest a system for the manager [1]
- (ii) Give three reasons to justify your choice [3]
 - (iii) Choose an application suitable for the other system and justify your choice [2]
- (b) State four ways in which multimedia systems are used in the entertainment systems. [4]
- (c) What hardware device would be appropriate for the following tasks?

- (i) Recording the time of arrival and departure of employees. [1]
- (ii) Extracting money from the bank automatic cash machine. [1]
- (iii) Stock taking in a Supermarket [1]

Question 7

- (a)(i) State situations where serial data transmission is preferred over parallel transmission. [2]
- (b) Given a new 128 bit computer
 - (i) State one advantage of this computer. [1]
 - (ii) Explain possible challenges that could be experienced with such a machine [1]
- (c) A company wishes to join two of its local network so that they enhance resource sharing since one of the networks is linked to the internet.

Describe how each of these elements would be used.

- (i) Switch
- (ii) Modem
- (iii) Bridge [6]
- (d) Outline three advantages of using an intranet over the internet. [3]
- (e) Explain how an extranet can be integrated into this system. [2]

Question 8

When data is first entered into the system, it is validated and verified.

Explain the following terms

- (a) Validation [1]
- (b) Verification [1]