



# **ZIMBABWE SCHOOL EXAMINATIONS COUNCIL**

**General Certificate of Education Advanced Level**

**COMPUTING**  
**PAPER 1**

**9195/1**

**NOVEMBER 2016 SESSION**

**3 hours**

Additional materials:

Answer paper

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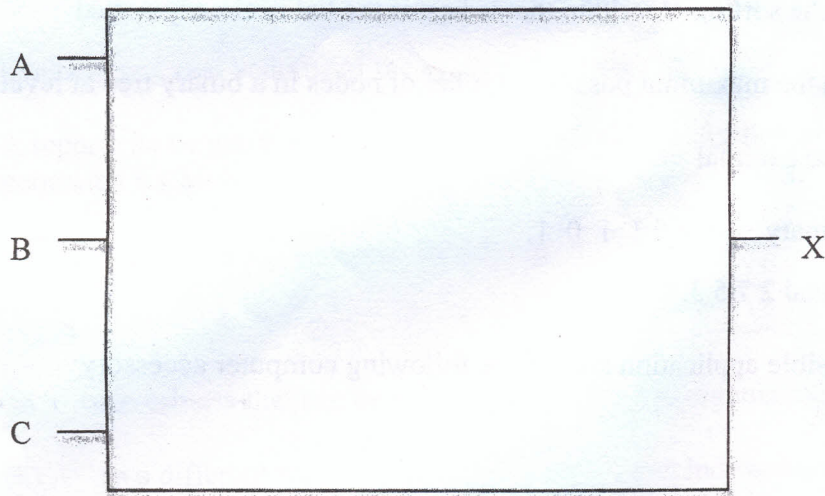
**This question paper consists of 4 printed pages.**

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- 1 (a) Explain why banks hold customer account information online. [2]
- (b) (i) Outline any **two** possible threats to a computer system. [2]
- (ii) Explain how to provide security to counter threats in **b (i)**. [2]
- 2 A car rental club has computerised its accounts. Membership for the club is renewed annually and each member is issued with a swipe card. When renting a car, the client swipes on terminals at the reception of the club outlet and the members will be required to settle their monthly bills by cheque.
- (a) Illustrate how the swipe card system collects and processes data relating to a member's expenditure. [5]
- (b) Evaluate any **two** benefits of the system to the club. [2]
- (c) A report can be generated which identifies monthly utilisation and income generated for each car.
- Draw a possible detailed layout for this report. [4]
- 3 (a) Suggest
- (i) the criteria that can be used in choosing a file organisation type, [4]
- (ii) **two** different ways in which the records in an indexed sequential file may be accessed. [4]
- (b) Outline the purposes and the main steps in
- (i) backups, [3]
- (ii) archiving. [3]
- 4 (a) Explain what is meant by
- (i) primary key, [1]
- (ii) candidate key. [1]
- (b) Write the relationship between
- (i) teacher and student [1]
- (ii) class and student. [1]
- (c) Illustrate the relationships identified in **b(i)** and **b(ii)** using entity-relationship diagrams. [6]

- 5 (a) (i) Distinguish between static and dynamic data structure. [2]
- (ii) Outline any **one** benefit that would be gained from using a dynamic data structure to implement a binary tree. [1]
- (iii) An initially empty tree has the following items added in the order: melon, peer, banana, orange.
- Draw the binary tree after the four items have been added. [3]
- (b) Differentiate the terms *nibble* and *byte*. [2]
- 6 (a) Analyse the sorting algorithm that is best if the list is already sorted. [3]
- (b) Compute the maximum possible number of nodes in a binary tree at level 6. [2]
- (c) Convert to decimal
- (i) binary 1 0 1 0 1 1 0 1, [1]
- (ii) octal 2 7 5 3. [1]
- 7 Determine a possible application area of the following computer accessory:
- (a) joystick [1]
- (b) scanner [1]
- (c) bar code recorder [1]
- (d) touch screen [1]
- (e) plotter [1]
- 8 (a) Outline any **three** main purposes of an operating system. [3]
- (b) With the aid of a diagram, illustrate any **three** major activities of an operating system with regard to memory management. [6]
- (c) Describe any **two** features of a multi-tasking operating system. [4]
- (d) Evaluate any difficulty that a programmer must overcome in writing an operating system for a real time environment. [2]

- 9 (a) Outline the advantages of computer networks. [5]
- (b) Explain any **three** benefits of using fibre optic cable as transmission medium. [6]
- (c) With the aid of a diagram, illustrate a mesh topology. [3]
- 10 (a) Draw the logic circuit corresponding to  
 $X = 1$  if (A is 1 and B is 1) OR (B is 1 or C is NOT 1).



- (b) Come up with the truth table for the logic statement in (a). [4]
- [6]