Candidate Name | Centre Number | Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

COMPUTER SCIENCE 4021/2

PAPER 2 Structured

NOVEMBER 2018 SESSION 2 hours 30 minutes

Candidates answer on the question paper.
No additional materials are required.

Allow candidates 5 minutes to count pages before the examination.

This booklet should not be punched or stapled and pages should not be removed.

TIME 2 hours 30 minutes

INSTRUCTIONS TO CANDIDATES

Write your Name, Centre number and Candidate number in the spaces at the top of this page and your Centre number and Candidate number on the top right corner of every page of this paper.

Answer **all** questions.

INFORMATION FOR CANDIDATES

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

This question paper consists of 14 printed pages and 2 blank pages.

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[Turn over

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1 **(a)** Define the terms below, giving **one** example.

(i) Hardware

[2]

(ii) Software

[2]

(b) List any **three** functions of a computer operating system.

1.

2.

3.

[3]

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1 **(c)** Suggest any **three** applications of computers in agriculture.

1. _____

_____

_____

2. _____

_____

_____

3. _____

_____

_____ [3]

(d) State any **three** areas where super computers can be used.

1. _____

_____

2. _____

_____

3. _____

_____ [3]

2 (a) Define the term **Geographical Information System**.

_____

_____

_____

_____ [2]

(b) State **five** components of an expert system.

1. _____

2. _____

3. _____

4. _____

5. _____ [5]

3 (a) Convert the following base 2 numbers to base 10.

(i) 111010

_____

_____

_____ [1]

(ii) 101011

_____

_____

_____ [1]

3 (b) Convert the following base 10 numbers to base 2.

(i) 76

_____

_____

_____ [1]

(ii) 93

_____

_____

_____ [1]

(c) Using the boolean expression

$$\mathbf{AB + \bar{C} = F},$$

(i) draw the corresponding logic diagram.

[3]

(c) (ii) Complete the Truth Table for $AB + \bar{C} = F$.

A	B	C	AB	$\bar{C}$	$AB+\bar{C}$
O	O	O			
O	O	I			
O	I	O			
O	I	I			
I	O	O			
I	O	I			
I	I	O			
I	I	I			

[3]

4 Explain in detail the following network devices.

(a) Router

_____

_____

_____ [2]

(b) Switch

_____

_____

_____ [2]

(b) Bridge

_____

_____

_____ [2]

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5 **(a)** Explain the difference between **data verification** and **data validation.**

_____

_____

_____

_____

_____

_____ [2]

(b) Suggest any **three** measures to safeguard data against cybercrime.

1. _____

2. _____

3. _____ [3]

(c) File permissions can be used as security measure.

List any **five** file permissions.

1. _____

_____

2. _____

_____

3. _____

_____

5 (c) 4. _____

_____

5. _____

_____ [5]

6 (a) Describe any **three** services provided by the internet.

1. _____

_____

2. _____

_____

3. _____

_____ [6]

(b) Explain the following network protocols:

(i) HTTP

_____

_____

_____ [1]

(ii) TCP /IP

_____

_____

_____ [1]

(iii) VoIP

_____

_____

_____ [1]

7 **(a)** Describe the maintenance /review/evaluation stage of the system development life cycle.

_____

_____

_____

_____

_____

_____

_____ [4]

(b) Explain any **three** testing strategies that are used in the development and testing stage.

1. _____

_____

_____ [2]

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7 (b) 2. _____

_____

_____ [2]

3. _____

_____

_____ [2]

8 (a) Compare and contrast the Repeat ----Until and While ---- Endwhile statements.

_____

_____

_____

_____

_____ [4]

(b) Using the two looping structures given in (a), draw the flow charts/ diagrams representing them.

(i) Repeat--- Until While--- Endwhile

[6]

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9 State **three** properties of a database package.

1. _____

2. _____

3. _____ [3]

10 A web page is made up of a number of essential parts, which contribute to the large whole.

Name any **four** essential parts of a web page.

1. _____

2. _____

3. _____

4. _____ [4]

11 Explain any **three** types of errors in programming.

1. _____

_____

_____

_____

11 2. _____

_____

_____

_____

3. _____

_____

_____

_____ [5]

12 (a) The table below represents an extract from a student file from a certain college.

SURNAME	FIRST NAME	REG. No.	SEX	DOB	AGE	ADD 1	ADD 2	ADD 2
TOM	JOHN	R001	M	20/03/83	16	T1 STR	BOX 72	MTRE
ROSA	JANE	ROO7	F	19/04/84	17	M2 STR	BAG 7	HRE

(i) Identify giving reasons, the field which can be used as a primary key.

Primary Key _____

Reason _____

_____ [2]

(i) Suggest **two** reasons why the age field is not necessary

Reason 1 _____

_____

Reason 2 _____

_____ [2]

12 (b) Describe how to use the database in order to search for all students born before 1980.

_____

_____

_____

_____

_____

_____

_____ [3]

13 (a) Explain the meaning of the term **business ethics**.

_____

_____

_____

_____

_____ [3]

[Turn over

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13 (b) Identify any **three** attributes of business ethics.

1. _____

2. _____

3. _____ [3]