Candidate Name	Centre Number	Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

COMPUTER SCIENCE 4021/2

PAPER 2 Structured

SPECIMEN PAPER 2 hours 30 minutes

Candidates answer on the question paper.

No additional materials are required.

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.

Answer **all** questions.

Write your answers in the spaces provided on the question paper.

INFORMATION FOR CANDIDATES

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

This specimen paper consists of 11 printed pages and 1 blank page.

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1 A school stores a large amount of data. This include student attendance, qualification and contact details. The school's software uses a file-based approach to store this data. The school is considering changing to a DBMS.

For Examiner's Use

(a) State what DBMS stands for.

_____ ____ [1]

(b) Describe **two** ways in which the Database Administrator (DBA) could use the DBMS software to ensure the security of the student data.

1. _____

_____

_____

2. _____

_____

_____ ____ [2]

(c) Describe how the school secretary could use a **query processor**.

_____

_____

_____

_____ [2]

(d) The DBMS has replaced software that used a file-based approach with a relational database.
Describe how using a relational database has overcome the previous problems associated with a file-based approach.

_____

_____

_____ [5]

2 Identify **two** differences between library functions and user-defined functions.

For Examiner's Use

_____

_____

_____

_____

_____

_____ ___ [5]

3 **(a)** Identify **four** components of the C.P.U and explain the purpose of each.

Component 1 _____

Purpose _____

_____

Component 2 _____

Purpose _____

_____

Component 3 _____

Purpose _____

_____

Component 4 _____

Purpose _____

_____ [8]

(b) Identify any **two** features of GUI operating system.

For Examiner's Use

_____

_____

_____

_____ [2]

4 **(a)** Give **five** possible threats to a computer system.

1. _____

2. _____

3. _____

4. _____

5. _____ [5]

(b) Give solutions to threats identified in **(a)**.

1. _____

2. _____

3. _____

4. _____

5. _____ [5]

For Examiner's Use

5 **(a)** Convert 101101111_2 to hexadecimal.

_____

_____ [2]

(b) Convert BOA_{16} to binary.

_____

_____

_____ [2]

(c) Three digital sensors A, B and C are used to monitor a process. The outputs from the sensors are used as the inputs to a logic circuit. Signal X is output from the logic circuit.

Output X has a value of 1 if either of the following condition occurs:

- Sensor A outputs the value 1 OR Sensor B outputs the value 0.
- Sensor B outputs the value1 AND Sensor C outputs value 0.

Draw a logic gate to represent these conditions.

[6]

6 A system developer designs software for a school. The software needs to be tested before it is delivered to the school.

For Examiner's Use

(a) Explain **software testing**.

_____

_____

_____

_____ [3]

(b) State **four** levels of testing.

1. _____

2. _____

3. _____

4. _____ [4]

(c) Give **three** reasons why software maintenance is important.

1. _____

_____

2. _____

_____

3. _____

_____ [3]

7 **(a)** Explain the differences between

For Examiner's Use

(i) file server and client server

_____

_____

_____

_____ [4]

(ii) Routers and Bridges

_____

_____

_____

_____ [4]

(b) Give **five** advantages of a client server.

1. _____

_____

2. _____

_____

3. _____

_____

4. _____

_____

5. _____

_____ [5]

(c) Give **one** function of a switch.

For Examiner's Use

_____

_____ [4]

8 **(a)** Explain the following constructs.

(i) iteration_____

_____

_____ [2]

(ii) selection _____

_____

_____ [2]

(b) Write an algorithm to sort an element using **insertion sort**.

[6]

For Examiner's Use

9 **(a)** Define **a web browser**.

_____

_____

_____ ___ [2]

(b) State **three** facilities offered by a web browser.

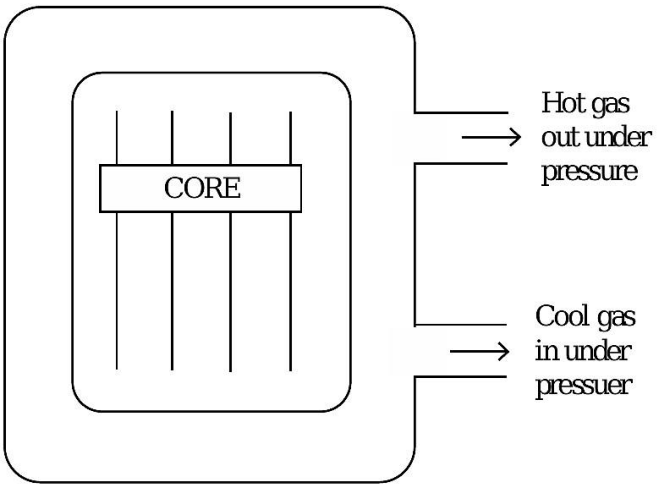
1. _____

2. _____

3. _____ [3]

10 **(a)** A nuclear reactor is cooled by pumping gas around the core. The diagram below shows a reactor monitored and controlled by a computer.

Nuclear power station



Write down any **three** reasons why a reactor is controlled by a computer.

1. _____

_____

For Examiner's Use

2. _____

_____

3 ._____

_____

[3]

(b) **(i)** Define the term **sensor**.

_____

_____

_____ [2]

(ii) State any **three** sensors suitable for monitoring and controlling the nuclear

1._____

2._____

3._____ [3]

11 Identify **five** sources to start a business.

1._____

2._____

3._____

4._____

5._____ [5]

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