

Candidate Name

Centre Number

Candidate Number



**ZIMBABWE SCHOOL EXAMINATIONS COUNCIL**  
**General Certificate of Education Ordinary Level**

**COMPUTER SCIENCE**  
**PAPER 2 Structured**

**4021/2**

**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.

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**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.

(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.

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\_\_\_\_\_ [5]

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

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[5]

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

**Component 1** \_\_\_\_\_

**Purpose** \_\_\_\_\_

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**Component 2** \_\_\_\_\_

**Purpose** \_\_\_\_\_

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**Component 3** \_\_\_\_\_

**Purpose** \_\_\_\_\_

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**Component 4** \_\_\_\_\_

**Purpose** \_\_\_\_\_

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[8]

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

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[2]

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

1. 

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2. 

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3. 

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4. 

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5. 

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[5]

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

1. 

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2. 

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3. 

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4. 

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5. 

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[5]

- 5 (a) Convert  $101101111_2$  to hexadecimal.

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[2]

- (b) Convert  $BOA_{16}$  to binary.

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[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 value 1 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.

**(a)** Explain **software testing**.

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[3]

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

1. 

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2. 

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3. 

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4. 

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[4]

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

1. 

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2. 

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3. 

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[3]

7 (a) Explain the differences between

(i) file server and client server

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[4]

(ii) Routers and Bridges

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[4]

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

1. 

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2. 

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3. 

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4. 

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5. 

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[5]

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

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[4]

8 (a) Explain the following constructs.

(i) iteration\_\_\_\_\_

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[2]

(ii) selection \_\_\_\_\_

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[2]

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

[6]



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

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[2]

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

1. 

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2. 

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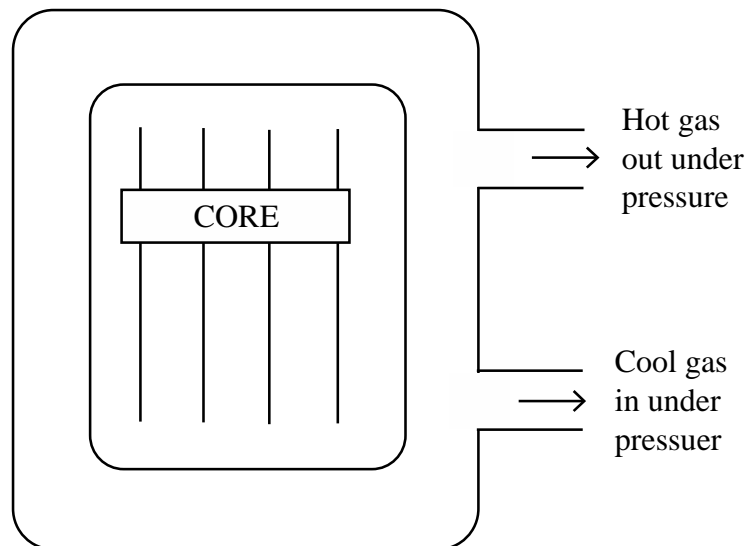
3. 

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[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. 

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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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