Candidate Name	Centre Number	Candidate Number

ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

General Certificate of Education Ordinary Level

COMPUTER SCIENCE 4021/2

PAPER 2 Structured

NOVEMBER 2022 SESSION 2 hours 30 minutes

Candidates answer on the question paper

No additional materials are required.
Calculators must not be used in the examination.

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.
Write your centre and candidate number in the box at the top right corner of every page of this paper.

Check that all the pages are in the booklet and ask the invigilator for a replacement if there are duplicate or missing pages.

Answer **all** questions.
Write your answers in the spaces provided on the question paper using **black** or **blue** pens.

INFORMATION FOR CANDIDATES
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 100.

This question paper consists of 13 printed pages 3 blank pages.

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Answer all questions.

1 **(a)** Name any **three** file management tasks that are done by a computer operating system.

1. [1]

2. [1]

3. [1]

(b) Give any **two** advantages of buying a software package rather than writing a program.

1. [1]

2. [1]

(c) Complete the table below by writing down the appropriate data collection device for the given application.

Application	**Data Collection Device**
Reading information from a credit/debit card.	
Choosing an option from a customer information screen at an airport.	
Reading the results from a questionnaire where pencil lines were used to chose options.	

[3]

(d) State any **two** differences between **digital camera** and **traditional camera**.

1 [1]

2 [1]

2 (a) Eve Garage uses an expert system to find faults in car engines.

(i) Describe how an expert system can be used to find engine faults.

[3]

(ii) Give any **two** applications other than engine diagnosis that use an expert system.

1. [1]

2. [1]

(b) (i) Name any **one** household gadget used in a home other than a computer, that contains a microprocessor.

[1]

(ii) State any **two** tasks that the microprocessor performs for the gadget stated in **b(i)**.

1. [1]

2. [1]

(iii) Give any **two** advantages of using microprocessors to control devices.

1.

[1]

2.

[1]

3 (a) (i) Convert the characters below in ASC11.

B [1]

8 [1]

(ii) Convert 101101111 to hexadecimal.

[1]

(b) Which **two** gates are combined to make a NOR gate?

1. [1]

2. [1]

(c) State the number of bits in a nibble.

[1]

4 (a) Draw an AND gate.

[1]

(b) Fill in the truth table for the NAND gate.

Input A	Input B	Output C
0	0	
0	1	
1	0	
1	1	

[2]

5 **(a)** Explain the term **data transmission.** Give **one** example.

[2]

(b) Explain, using a diagram, the **half duplex** data transmission mode.

[3]

(c) Mobile devices are connected to each other using internet or WPAN.

(i) Expand the acronym WPAN and give **one** example.

WPAN

[1]

Example [1]

(ii) Internet connection allows users to send and receive emails.
Outline any **two** advantages of using emails over writing letters.

1.

[1]

2.

[1]

(iii) Data on the mobile device can be stored online using cloud services.
Define the term **cloud computing**.

[1]

(d) Explain, using an example, what is meant by **network protocol**.

[3]

(e) Draw a well labelled mesh topology.

[3]

6 (a) (i) Define the term **software piracy**.

[1]

(ii) Explain any **two** risks, to the user, of using pirated software.

1.

[1]

2.

[1]

(iii) List any **two** measures to reduce software piracy.

1.

[1]

2.

[1]

(b) Name and explain any **two** online computer crimes.

1 [1]

Explanation

[1]

2 [1]

Explanation

[1]

(c) State any **one** benefit of backing up data.

[1]

7 **(a)** Give the differences between the two fact finding methods in the table below.

Interviews	**Questionnaire**
1.	
2.	

[2]

(b) Outline any **two** reasons why some employees might resist a new system.

1.

[1]

2.

[1]

(c) State any **two** ways in which management can encourage employees to accept the new system.

1.

[1]

2.

[1]

(d) Explain any **two** types of data which can be used to test a system. Give examples.

1.

[2]

2.

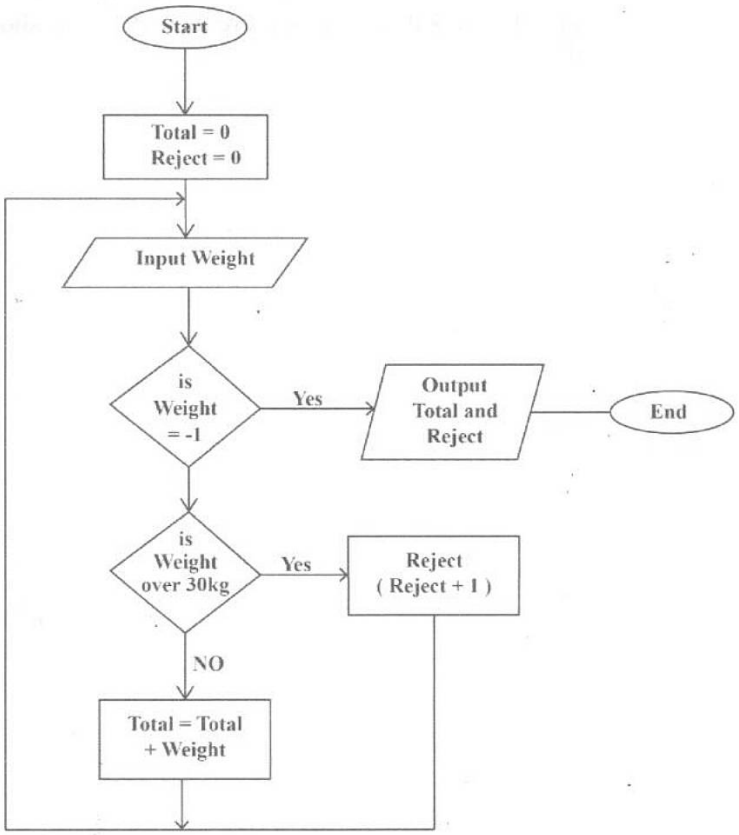
[2]

8 (a) Draw a flow chart for a program that accepts students' marks and displays "PASS" or "FAIL".

Marks from 50 to 100 is a "PASS" whilst from 0 to 49 is a "FAIL".
If a mark is less than zero or more than 100, user should re-enter the mark.

[5]

(b) The flow chart below is used at Shumba-Liner. It inputs weight of bags for passengers on the bus.
Parcels over 30 (thirty) kilograms are rejected and a value of -1 stops further input into the system.



Complete the trace table for the program using the data below.

26 12 2,5 39 -1

Weight	Reject	Total	Output	
			Total	Reject

[5]

9 **(a)** Define the term **debug**.

[1]

(b) State and explain any **two** types of errors.

1.

[2]

2.

[2]

10 Below is a table showing students' information at a college.

Student Number	Student Name	Gender	Student Course	Resident	Student Address
N572	Phil Sithole	M	Motor Mechanics	No	23 Rujeko Street
N5261	Conn Mapfumo	F	Hotel and Catering	Yes	RM 6 Hostel 3
N5292	Ben Moyo	M	Computer Science	No	238 Area 15 Dangamvura
N5381	Joe Dube	M	Business Management	No	8 J. Moyo Chikanga
N5423	Ray Gava	M	Computer Science	Yes	Rm 13 Hostel 7

(a) State the data type for the fields below.

Student Number [1]

Resident [1]

(b)

Student Number	Student Name	Gender	Student Course	Student Address
Students	Students	Students	Students	Students
☑	☑	☑	☑	☑
		=M		

Write down the names of students who would appear in the query above.

[3]

(c) Explain why organisations choose to use a database for record keeping rather than manually writing records in a book.

[3]

(d) State any **two** ways of securing database in an organisation.

1.

[1]

2.

[1]

11 **(a)** State the meaning of the following tags as used in html.

</h> [1]

 [1]

(b) Explain any **three** advantages of a website for an organisation.

1. [1]

2. [1]

3. [1]

12 **(a)** State any **two** business strategies.

1. [1]

2. [1]

(b) Explain the term **intellectual property rights.** Give an example.

[3]

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