



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

**COMPUTER SCIENCE**

**4021/2**

**PAPER 2 Structured**

**NOVEMBER 2021 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 on 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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- 1 (a) The following table shows **four** applications which require specialist input devices.

application	input device	reason for choice of device
Virtual reality application		
a person with disability communicating with a computer system		
automatic stock control system at a supermarket		
information kiosk at an airport using a GUI (graphic user interface)		

For each application, suggest **one** input device and give a reason for your choice.

[8]

- (b) Write down any **one** difference between the terms **off-the-shelf** and **tailor made software**.

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[2]

- 2 Give any **two** uses of computers in each of the following areas:

- (a) hospital

1 

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2 

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[2]



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(b) education

1

2

[2]

3 (a) Discuss any **four** benefits of online banking.

1

2

3

4

[4]

(b) Which banking transaction can be done through traditional banking but **not** through online banking.

[1]

(c) State any **two** benefits of computer-aided design.

1

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2 \_\_\_\_\_

\_\_\_\_\_ [2]

4 (a) Define the term **subprogram**.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

(b) Give any **three** advantages of subprograms.

1 \_\_\_\_\_

\_\_\_\_\_

2 \_\_\_\_\_

\_\_\_\_\_

3 \_\_\_\_\_

\_\_\_\_\_ [3]

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5 Networks can be **ring, bus or star topology**.

(a) Name and draw any **two** topologies stated above.

[6]



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- (b) State any **one** benefit and any **one** drawback of using each of the following communication methods used in business:

- (i) mobile phone

benefit \_\_\_\_\_ [1]

drawback \_\_\_\_\_ [1]

- (ii) video conferencing

benefit \_\_\_\_\_ [1]

drawback \_\_\_\_\_ [1]

- (iii) email

benefit \_\_\_\_\_ [1]

drawback \_\_\_\_\_ [1]

- (b) Describe any other application of mobile phones besides access to the internet.

\_\_\_\_\_  
\_\_\_\_\_ [2]

- 6 Hackers may use their technical skills to gain unauthorised access into computers or networks.

- (a) State any **four** prevention measures against hacking.

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_  
4 \_\_\_\_\_ [4]

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- (b) List any **three** protection measures against accidental data loss.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_ [3]

- (c) State any **three** unethical practices which may be done by youths when they are in an internet environment.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_ [3]

- 7 A new computerised information system is designed to keep students' records.

- (a) Suggest any **four** fact-finding techniques that can be used by the systems analysts.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_ [4]

- (b) State any **four** activities carried out during the design stage of the systems development life-cycle.

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_ [4]

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- (c) Describe any **one** type of test data.

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[2]

- 8 A school office sells stationery items to learners. A database used to keep details of stock is shown below.

Code	Item	In Stock	Sold	On Order	Price (\$)
G302	Floppy disk	24	16	20	1.50
G101	Rubber	16	14	10	1.00
G102	Pencil	5	25	30	1.00
G103	Protractor	8	12	20	1.50
M101	Pen	18	22	20	2.00
M202	Compass	8	12	20	2.00

- (a) Write a query that extracts items with prices less than \$2.00.

[3]

- (b) Write down the items output if the search below is used.  
code contains "m" or [in-stock<15]

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[3]



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(c) Differentiate the terms below.

(i) string and numeric data

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[2]

(ii) a field and a record

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[2]

- 9 The economic environment of a business plays an important role in determining its success or failure.  
State any **five** economic factors that can affect computer-based businesses.

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]

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- 10 Daily temperatures were recorded ten times a day by learners over a period of a year.  
(*assume that a year contains 365 days*)

Write an algorithm, using pseudocode or flowchart which performs the actions below.

inputs all the temperatures (ten per day)  
outputs the highest temperature taken over the year  
outputs the lowest temperature taken over the year  
outputs the average temperature per day  
outputs the average temperature per year

[10]

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11 (a) Define the term **byte**, giving an example.

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[2]

(b) The acronym ASCII stands for

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[1]

(c) (i) Convert  $101011_2$  to base ten.

[1]

(ii) Calculate

$$\begin{array}{r} 11001_2 \\ - \quad 110_2 \\ \hline \end{array}$$

[1]



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- (d) (i) Draw a circuit diagram of the function

$$F = A + \overline{A}.B$$

[3]

- (ii) For the function in d(i), find the output of F when A = 0 and B = 1.

[2]

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12 (a) Define the terms below.

(i) html

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[1]

(ii) cookie

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[1]

(b) State any **three** features found on a good website.

1 

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2 

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3 

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[3]

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