



# Examiners' Report Principal Examiner Feedback

November 2021

Pearson Edexcel International GCSE  
In Computer Science (4CP0)  
Paper 01: Principles of Computer Science

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## **Introduction - historical context**

For those reading this report in future years, 2021 was the second, and hopefully last, year when examinations were disrupted by COVID19.

The June 2021 examinations were cancelled, and students were given teacher-assessed grades. This paper was offered in November for students who were unable to get a teacher-assessed grade or were dissatisfied with that grade.

Very few students opted to sit the November examination. As a result, the entry for this examination is very small. This means that statistical information is likely to be unreliable. Even comments such as 'most candidates got both marks for this question' could be misleading as the candidates who took the paper cannot represent the full range of abilities and experience of a 'normal' entry.

## **Report format**

In light of the very small entry, this report will not try to analyse the responses to each item. Most of the short items, where answers are listed in the mark scheme will be dealt with briefly. Instead, it will concentrate on the longer questions, where some examples and commentary might be useful to those preparing students for future examinations. This report should be read in conjunction with the mark scheme.

## **Report on individual items**

1a(i),(ii) and (iii) are about binary and hexadecimal notation, and conversions between them. The mark scheme lists the only acceptable answers.

1b(i) is about finding the size of an image when stored as bytes. The mark scheme lists acceptable answers.

The question states that an expression is needed and that the calculation should not be carried out.

One mark should be awarded for a calculated answer of 120,000 with no expression.

The expression may be rearranged to any form that would give the correct answer. The expression may be given in words such as width, height, depth, instead of numbers.

1b(ii) asks for a run-length encoding of an image. The mark scheme gives the correct answer. The letter-number pairs are spaced to aid readability. Candidates are not required to add spaces.

Letters and numbers may be reversed as long as it is done for each letter-number pair.

1b(iii) asks for a meaning for the term lossless in the context of compression. The mark scheme lists acceptable answers.

1c(i) asks for a description of the process of converting an analogue sound into a digital file.

Answers should form a linked description, covering any three of the five points given in the mark scheme.

1c(ii) asks why the sound quality of the compressed file may not be as good as the uncompressed version. The mark scheme lists acceptable answers.

Answers about loss of quality should not be awarded marks without further detail, as it is given in the question.

2a is a multiple choice question and the only correct answer is given in the mark scheme.

2b is about a phishing email and use the same image of an email for both parts.

2b(i) asks why the words 'Dear Customer' might be suspicious. The mark scheme lists acceptable answers.

2b(ii) asks the candidate to circle two other parts of the email that might indicate a phishing attempt.

The correct items are the use of 5 instead of S in 5afepayment.com, the word stoop instead of stop, and the login button or the words 'link to login'.

Circles around larger areas should be allowed for up to one word either side, e.g. 'will stoop working' would get a mark.

2c(i) asks for a description of the term 'shoulder surfing'. The mark scheme lists acceptable answers.

2c(ii) asks for a way of preventing shoulder surfing. The mark scheme lists acceptable answers.

Answers that effectively say don't go out in public, or don't use a laptop in public places, should not be awarded a mark.

2d(i) is a multiple choice question and the only correct answer is given in the mark scheme.

2d(ii) is about the risks in delaying the application of a software patch. The mark scheme lists acceptable answers.

3a asks candidates to complete a tick table about network types. The only correct answers are given in the mark scheme.

3b asks candidates to give two layers in the TCP/IP stack and to give one function for each of those layers.

The mark scheme lists acceptable answers.

Internet layer may be allowed as an alternative to Network layer.

Marks should not be awarded for functions if the layer is not given or is incorrect for that function.

3c is a multiple choice question and the only correct answer is given in the mark scheme.

3d(i) is about advantages of using higher frequency bands in mobile communications.

The mark scheme lists acceptable answers.

Answers about signals/communication being faster at higher frequencies should not be allowed without further explanation as all radio signals move at the same speed.

3d(ii) asks for a benefit of using 5G instead of 3G. The mark scheme lists acceptable answers.

In this context, 'faster communications' is acceptable for one mark, with a second mark being awarded for a suitable expansion such as more bandwidth or being able to download more data in a given time.

3e is about the environmental impact of a smartphone.

3e(i) asks how energy consumption may be reduced.  
The mark scheme lists acceptable answers.  
Other reasonable methods of reducing power should be awarded a mark.

3e(ii) asks for an explanation of how environmental impact could be reduced, apart from power consumption.  
The mark scheme lists acceptable answers.  
Other reasonable methods of reducing environmental impact should be allowed.

4a asks what is meant by the term 'algorithm'.  
The mark scheme lists acceptable answers.

4b(i) is a short practical question, about completing a trace table.

This is worth five marks.  
The mark scheme shows a completed trace table that would score five marks.  
Alternatives such as Y/N may be used in the Cont=2? Column.

Where candidates use more than two rows.

- If the rows are complete then the last two should be marked.
- If a new row is used for each value change an effort should be made to follow the logic. This will probably mean using the last two values in each column to form the answer.

4b(ii) asks for a benefit of using a trace table.  
The mark scheme lists acceptable answers.  
Answers about recording variable states, outputs and decisions, should not be allowed without expansion, as this information is given in the question.

4c is a short practical question, about completing an algorithm.

This is worth five marks.  
The mark scheme shows a completed algorithm that would score five marks.  
There are other possible answers and credit should be given to anything that meets the requirements given in the question.

5a asks the candidate to complete a table, matching CPU components to letters shown on a diagram of a CPU.  
The only correct answers are given in the mark scheme.

5b(i) asks for a description of how the 'program counter' register keeps track of instructions.

The mark scheme lists acceptable answers.

5b(ii) is a multiple choice question and the only correct answer is given in the mark scheme.

5b(iii) asks for the effect that increasing the clock speed would have on the fetch-decode-execute cycle.

The mark scheme lists acceptable answers.

5c(i) asks for features of an embedded system.

The mark scheme lists acceptable answers.

Answers about it being part of/controlling a larger system/device should not be credited as this is given in the question.

5c(ii) asks about choosing a CPU in the context of an embedded system in a TV remote control.

The mark scheme lists acceptable answers.

Answers about low clock speed should not be credited as this is given in the question.

Other reasonable answers should be credited as long as they are applicable to the context of a TV remote control.

6a(i) asks for a benefit of using a low-level programming language.

The mark scheme lists acceptable answers.

6a(ii) asks for a drawback of using a low-level programming language.

The mark scheme lists acceptable answers.

6b(i) asks for functions of an anti-virus program.

The mark scheme lists acceptable answers.

Answers about virus removal should not be credited as this is given in the question.

6b(ii) asks for a type of anti-malware other than anti-virus.

The mark scheme lists the only acceptable answers.

6c is a short practical question, about completing a boolean expression.  
This is worth four marks.

The mark scheme shows a completed expression that would score four marks.  
There are other possible arrangements of the expression and credit should be given to anything that meets the conditions given in the question. Extra brackets that would not affect the answer should be ignored.

6d is a short essay question about protecting software from illegal copying and distribution.  
This is worth six marks.

The indicative content in the mark scheme includes a range of possible measures/discussion topics. Good answers do not need to include all the ones shown or even one from each category shown.

The level three descriptor requires 'accurate and relevant knowledge, and a balanced and fully developed discussion'. Balance may be satisfied by discussing topics from two or more areas of the indicative content.  
Relevancy is likely to be implicit as long as the candidate is discussing ways of protecting software.





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