Examiner Report
Principal Examiner Feedback

November 2020

Pearson Edexcel International GCSE
In Computer Science (4CP0)
Paper 1: Principles of Computer Science

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Introduction - historical context

For those reading this report in future years, 2020 was the year when examinations were disrupted by COVID19.

The November 2020 paper was written for the June 2020 examinations. That examination series was cancelled, and students were given calculated grades. The paper was offered in November for students who were dissatisfied with their calculated grade.

Due to decisions by the UK government, calculated grades were replaced by teacher assessed grades and 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 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 is about reasons for connecting computers to a network. The mark scheme lists acceptable answers. No others were seen but any sensible reason for connecting computers to a network would be allowed.

1b(i) and (ii) are about wired vs wireless connectivity. The mark scheme lists acceptable answers. No others were seen but any sensible advantages and disadvantages would be allowed.

1c asks for the difference between the internet and the world wide web. Most answers seen were about internet = networks and WWW = web pages.

1d asks why IPv6 was introduced.
The mark scheme lists acceptable answers. No others were seen. One mark answers tended to be about the growth in address needs but not the expanded address range of IPv6.

1e(i), (ii) and (iii) are about the star network topology. The mark scheme lists acceptable answers.

1f(i) asks for email protocols. The mark scheme lists the only correct answers.

1f(ii) is a two mark question about tasks carried out by the Transport Layer. It is effectively 2 X 1 mark. The mark scheme lists acceptable answers.

2a(i) and (ii) are binary - denary conversions. No calculations or workings were required. The mark scheme lists the correct answers.

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

2c(i) asks about the number of characters in standard ASCII. The only correct answer is given in the mark scheme.

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

2c(iii) asks why Unicode was developed. Most answers were about the requirement to represent other languages. The mark scheme lists other acceptable answers.

3a is a short practical question about communication with a CPU.

This is worth six marks.

The mark scheme lists six items that must be shown in the diagram and gives a completed diagram. There are no allowable alternatives. Marking points are independent, so e.g. a mislabelled bus would not affect an arrow direction for data flow.

3b asks how increasing cache size improves CPU performance. The mark scheme lists acceptable answers. No others were seen.

3c is a short practical question about parallel processing.

This is worth four marks.

The mark scheme shows a completed table. Note the addition guidance about the positioning of the expressions within the table. The candidates do not have to produce the exact layout shown.

3d is a four mark description of how an operating system manages the storage of a file on random access secondary storage.

The mark scheme is written in terms of a hard drive and FAT or NTFS file systems.

File storage can be quite complex, note the simplified additional guidance:

- Finds space
- Puts file into space
- Break up file if needed
- Update FAT/MFT

Other file systems such as Apple File System exist and should be given credit. They should fit into the simplified guidance.

In future years it is likely that SSDs will predominate on computer systems. These have additional/different steps in storage allocation and will need additions to the MS.
4a is a multi-part (seven answers) question about sound sampling.
The mark scheme lists the only correct answers.

4b is a calculation question about file sizes. The question only requires a mathematical expression. Calculation of the answer is not needed.

This is worth four marks.

The mark scheme has examples of how the expression might be laid out. Any mathematically equivalent expression would be allowable.

4c asks for a drawback of a lossy algorithm in the context of storing music files.
The mark scheme lists acceptable answers. No others were seen.

5a is a short practical question about a truth table.

This is worth three marks.

The mark scheme shows a correctly completed table.

Note that the table rows may be in any order, and as long as all eight combinations are shown, extra/duplicate rows are ignored.

Follow through is allowed for the third marking point, so if the 'Q or R; column is incorrect credit can still be given for the 'P AND (Q OR R)' column.

5b asks for a boolean expression. The mark scheme lists the only correct answers.

5c is a two mark question about code review. It is effectively 2 X 1 mark. The mark scheme lists acceptable answers.

5d is about methods of protecting intellectual property. The mark scheme lists the only correct answers.

6a is a short practical that requires the candidate to draw a flowchart.

This is worth six marks.

There are no set marking points for this question.

The flowchart is assessed for functionality and notation.

The mark scheme gives four criteria for each.

Functionality looks to see if the solution would work, notation looks at labels, symbols and arrows. The two are assessed independently. A totally non-functional flowchart that uses consistent labels, arrows and symbols would still get three out of the six marks.

6b is a short practical that requires the candidate to interpret and correct an algorithm in pseudocode.

This is worth four marks.

The mark scheme lists the only correct answers.

6c is a short essay question about the difference between a compiler and an interpreter.

This is worth six marks.

The indicative content in the mark scheme includes a range of differences and similarities. Good answers do not need to include all of them but would include advantages and disadvantages of both the compiler and interpreter. A conclusion is not required.

The level three descriptor requires 'a well-developed, sustained line of reasoning which is clear, coherent, and logically structured'. and 'comprehensive knowledge and understanding, relevant knowledge and understanding of key concepts/principles of computer science'.
It does not require that the answer be complete or error free.

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