



GCSE EXAMINERS' REPORTS

COMPUTER SCIENCE GCSE

SUMMER 2023

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Unit	Page
Component 1: Understanding Computer Science	1
Component 2: Computer Programming	3

COMPUTER SCIENCE

GCSE

Summer 2023

COMPONENT 1: UNDERSTANDING COMPUTER SCIENCE

General Comments

The mean total for Component 1 this series was approximately 39 out of 100 marks. This represents a slight decrease when compared with the mean total of 42 out of 100 marks in 2019.

The effect of the pandemic remains evident in candidates' literacy skills and their use of technical terminology, but less so than in 2022.

Comments on individual questions/sections

- Q.1** The majority of candidates were able to state the name given to a collection of 4-bits. Only a minority were able to arrange the data storage requirements in order.
- Q.2** This was the best answered question of the paper. Many candidates were able to correctly identify the characteristic that matches the different components of a computer system. The majority of candidates were able to give one benefit of increasing the number of cores and cache size in a CPU. Around half of candidates were able to describe an embedded system in terms of it performing a specific task, with fewer picking up the second mark. Many candidates were able to circle the correct name given to software written specifically for an embedded system. Very few candidates incorrectly circled 'tupperware'.
- Q.3** This was the second worst answered question of the paper. A minority of candidates were able to explain how cloud storage works. A significant number of candidates listed advantages of cloud storage, such as files being available on multiple devices. Whilst this is true, it doesn't explain how the technology works.
- Q.4** This was the second best answered question of the paper. Around half of candidates were able to determine the missing column headings in the given truth table. These candidates were also able to identify the Boolean expression represented in truth tables given. Candidates tended to perform either very well in this question, gaining full marks, or very poorly, based on their understanding of the topic.
- Q.5** This was the worst answered question of the paper. A few candidates were able to describe the listed network hardware used in establishing wired and wireless connectivity. A lack of technical terminology and understanding were significant factors in this question.
- Q.6** This was the third best answered question of the paper. Many candidates were able to complete the given table by converting between binary, denary and hexadecimal number counting systems. A minority of candidates were able to show how 17 would be subtracted from 56 using two's complementation. The conversion of 17 to -17 posed challenges for candidates and the binary addition method itself. Around half of candidates were able to describe what would happen if the answer to the previous question was stored in a 5-bit register.

- Q.7** Many candidates were able to match the form of cyberattack with the correct description. Only a few candidates were able to describe network forensics and firewalls in enough depth to gain two marks for each.
- Q.8** Around half of candidates were able to correctly simplify the Boolean expressions given using Boolean algebra and identities. It is worth noting that almost a fifth of candidates left this question unattempted. Again, this year, we saw a number of candidates use truth tables to answer this question, which was not accepted (unless used to check answers).
- Q.9** Many candidates were able to give two advantages of a network. These candidates were also able to match the protocol with the correct description. Only a very few candidates were able to describe the application layer and physical layer in the TCP/IP 7-layer model.
- Q.10** Around half of candidates were able to complete the sentences about utility software. These candidates were able to describe disk compression and revision control and how it helps optimise or maintain a computer system.
- Q.11** Around half of candidates were able to write an algorithm that outputs the storage requirements for an image. A particular stumbling block for some candidates was the conversion into megabytes, with many writing a good algorithm aside from this. Around half of candidates were able to expand the algorithm to output the disk space saved. However, a significant number of candidates output the new file size rather than the disk space saved, as required by the question.
- Q.12** Around half of candidates were able to identify an example of each error in the program and suggest a possible correction. These candidates were also able to compare how an interpreter and a compiler would have identified these errors.
- Q.13** This was the third worst answered question of the paper. A minority of candidates were able to describe the characteristics of the bubble sort and binary search algorithms. A majority however lacked depth in understanding, with nearly a fifth of candidates leaving the question unattempted.
- Q.14** A minority of candidates were able to discuss the principles of the legislation listed. These candidates showed adequate understanding of the requirements of the question and a satisfactory knowledge of the indicative content. They addressed the question and used appropriate technical terminology referring to the indicative content.

Summary of key points

Candidates had a reasonably good understanding of storage requirements, truth tables and number representation. They performed best in these questions.

Candidates found the questions on network hardware, cloud storage and search / sort algorithms difficult. This was reflected in the low facility factor for these questions.

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GCSE
Summer 2023
COMPONENT 2: COMPUTER PROGRAMMING

General Comments

The specification maturing has led to better attempts across the paper, and it was pleasing to see good programming skills in evidence. Generally, as is standard with computer science the algorithm questions proved demanding for candidates resulting in lower facility factor.

Comments on individual questions/sections

Q.1 A majority of the available marks were awarded to candidates for this question on file handling, GUI use and understanding of authentication (login/passwords). This was the best answered question of the paper with 94% attempt and 92% facility factor. It was pleasing to see candidates able to enter the examination with a lower barrier to entry than previous.

Q.2 & Q.3 Candidates scored well identifying programming constructs from the provided python files. The quality of the annotation was at times limited and not always related to the question (generic annotation was attempted by candidates).

Q.4 & Q.5 These questions assessing algorithm design and composition were not as well answered as Q.1, Q.2 and Q.3. Algorithm design has historically been considered a more demanding topic whilst teaching computer science and this was demonstrated in the answers to this question.

Q.6 The new programming implementation question assessed programming using the Python programming language. It was pleasing to see that many candidates had been well prepared and could attempt this question. The quality of programming was markedly improved this series and it was pleasing to see good programming in evidence.

Q.7 This section assessed candidates' ability to enter and use test data to test the functionality of the programming completed in previous questions. Candidates should be advised to read the question carefully and use the test data provided.

Q.8 & Q.9 The programming refinement question assessed programming adaptations using the Python programming language. It was pleasing to see that many candidates had been well prepared and could attempt this question.

Q.10 Some candidates were unable to effectively evaluate the progress they made during the examination. Some candidates did not review the changes made during development.

A number of candidates did not attempt this question.

Summary of key points

Candidates had a reasonably good understanding of cybersecurity, practical programming, and testing. They performed best in these questions and markedly better programming was in evidence this series.

Candidates found the questions on evaluation and algorithm design challenging, and this was reflected in the low facility factor for these questions.



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