



GCSE EXAMINERS' REPORTS

COMPUTER SCIENCE GCSE

SUMMER 2022

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Annual Statistical Report

The annual Statistical Report (issued in the second half of the Autumn Term) gives overall outcomes of all examinations administered by WJEC.

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COMPUTER SCIENCE

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Summer 2022

COMPONENT 1

General Comments

The mean total for Component 1 this series was approximately 43 out of 100 marks.

The effect of the pandemic was particular evident in pupils' literacy skills and their use of technical terminology.

Comments on individual questions/sections

- Q.1 A majority of the available marks were awarded to candidates for this question on cybersecurity. This was the best answered question of the paper.

Most candidates were able to correctly identify the type of threat to computer systems based on the characteristics given. Fewer were able to describe an SQL injection.

- Q.2 A minority of the available marks were awarded to candidates for this question on central processing units (CPU) and other hardware components.

Most candidates were able to name the missing components of a CPU and state the purpose of at least one of them. A very few were able to state four events that take place during the fetch-decode-execute cycle.

A very few candidates were able to describe the function of virtual memory in a computer system.

- Q.3 A minority of the available marks were awarded to candidates for this question on networks.

Many candidates were able to state the purpose of the FTP protocol, but were not as confident for the HTTPS protocol. These candidates were also able to identify two items contained in a data packet. Only a few candidates were able to describe the purpose of a protocol.

- Q.4 A majority of the available marks were awarded to candidates for this question on truth tables.

Many candidates were able to complete truth table. Around minority of candidates were able to state the simplest Boolean expression from the truth table.

- Q.5 Around half of the available marks were awarded to candidates for this question on number representation.

A majority of candidates were able to complete the sentences about overflow and underflow. Many were able to confidently convert between the three number counting systems.

Fewer candidates were able to show how two numbers were subtracted. Many candidates failed to correctly convert 9_{10} into -9_{10} using two's complementation. A significant number also failed to use binary addition, as required by the question.

- Q.6 A few of the available marks were awarded to candidates for this question on Boolean algebra. This was the worst answered question of the paper.

Around half of pupil were able to simplify the first expression. A very few were able to simplify the second.

A few candidates did not attempt this question.

- Q.7 A minority of the available marks were awarded to candidates for this question on writing algorithms.

Around half of candidates wrote an algorithm that could input more than one mark. Most candidates were unable to correctly determine of number of prizes to be awarded. This would most likely be achieved by creating a second loop after all marks have been entered.

A few candidates did not attempt this question.

- Q.8 A minority of the available marks were awarded to candidates for this question on the digital storage of sound.

A minority of candidates were able to describe the process of sound sampling and how samples are stored. A few were able to calculate storage requirements correctly.

Most candidates were able to give examples of metadata stored with sound files.

- Q.9 A minority of the available marks were awarded to candidates for this question on operating systems. This was the second worst answered question of the paper.

Many candidates were able to describe the purpose of different types of utility software. The most popular utility included anti-virus and disk defragmenters.

Most candidates were unable to describe how the operating system manages multitasking and the backing store.

- Q.10 A minority of the available marks were awarded to candidates for this question on merge sort algorithms.

Most candidates were unable to describe further characteristics beyond pairs of elements being compared and placed into order and combined.

A few candidates did not attempt this question.

- Q.11 A minority of the available marks were awarded to candidates for this question on integrated development environment (IDE) tools.

A very few candidates were able to label more than three tools for the given IDE.

- Q.12 Around half of the available marks were awarded to candidates for this question on translation.

Marks for the question on the different stages of compilation tended to be polarised with some candidates gaining full marks and others gaining zero dependant on their knowledge of the topic.

Many candidates were able to describe the function of an interpreter. Fewer were able to describe the function of an assembler.

Summary of key points

Candidates had a reasonably good understanding of cybersecurity, truth tables and representation of numbers. They performed best in these questions.

Candidates found the questions on Boolean algebra, operating systems, algorithms and IDE tools challenging, and this was reflected in the low facility factor for these questions.

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COMPONENT 2

General Comments

The effect of the pandemic was particular evident in pupils' literacy skills and their use of technical terminology during the review question (10) at the end of the paper.

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.
- Q.2 & Q.3 Candidates scored well identifying programming constructs from the provided python files. The quality of the annotation was at times limited
- Q.4 & Q.5 These questions assessing algorithm design and composition were not as well answered as Q1,2,3. 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 addition of a presence check on Member ID was seen to be more difficult for some candidates.
- 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.

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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