



GCSE EXAMINERS' REPORTS

**GCSE (NEW)
COMPUTER SCIENCE**

SUMMER 2022

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UNIT 1

General Comments

The mean total for Unit 1 this series was approximately 41 out of 100 marks. This represents an increase since this unit was last examined in 2019.

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

Comments on individual questions/sections

Q.1 Most of the available marks were awarded to candidates for this question on input, output and storage devices. This was the best answered question of the paper.

Q.2 Many of the available marks were awarded to candidates for this question on data storage units.

For this question, marks tended to be polarised, with candidates either getting all four marks or zero.

Q.3 Around half of the available marks were awarded to candidates for this question on cybersecurity.

Most candidates were able to match the description given with the correct cyberattack. Many candidates had difficulty describing footprinting and confused this method of identifying vulnerabilities with penetration testing.

Q.4 A minority of the available marks were awarded to candidates for this question on the central processing unit (CPU) and hardware components.

Many candidates confidently described the difference between RISC and CISC processors. These candidates were also able to describe the role of the motherboard well.

Fewer candidates were able to describe the fetch-decode-execute cycle in terms of the components given. A very few were able to describe the role of graphics cards in enough technical detail.

Q.5 Around half of the available marks were awarded to candidates for this question on truth tables.

Many candidates were able to identify the logical operator used in part (a) and correctly tick the Boolean expressions represented in the truth tables.

Fewer candidates were able to complete the truth table for the given Boolean expression. This was partly due to having the incorrect input for A, B and C.

Q.6 Around half of the available marks were awarded to candidates for this question on networks.

A few candidates were able to correctly complete the sentences about the TCP/IP 5-layer model, but generally, this was poorly answered.

Stronger responses were seen for the questions on the star network topology. A common misconception however is that a server is located in the middle of the star and not a switch / hub.

Around half of candidates were able to describe the typical content of an acceptable use policy.

Q.7 Around half of the available marks were awarded to candidates for this question on number representation.

Many candidates confidently converted between the different number counting systems. However, only a very few were able to give a reason why hexadecimal notation is used.

Around half were able to use binary addition and understand the function of arithmetic shifts.

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

A common incorrect answer for the number of colours that can be represented was 255.

When calculating the storage requirements for the image in kilobytes, a common incorrect answer was to divide 600 x 500 by 8.

A few candidates did not attempt this question.

Q.9 Around half of the available marks were awarded to candidates for this question on Boolean algebra.

Many candidates were able to apply the complement rule, but a few then went on to incorrectly apply the identity rule in part (a).

In part (b), most candidates were confident in expanding the brackets and applying the complement rule, but made further incorrect simplifications from this point.

A few candidates did not attempt this question.

Q.10 A minority of the available marks were awarded to candidates for this question on data structures, file design, and data validation and verification.

Many candidates were able to describe the dangers arising from Betty's B&B using computer systems to store personal data.

A few candidates were able to state why an array is not suitable for the given data set.

Many pupils were unable to apply their knowledge of arrays to the Betty's B&B scenario. This was also true for the different validation checks. Where a suitable type of check was given, the rule itself was often too generic rather than being specific to the data stored in the field. For example, a format check on the Booking ID field would be qualified with a rule such as 'ensuring the data is in a specific format' rather than 'LL00000'.

A few candidates were able to give the generic purpose of backing up data, but did not specifically understand the need to maintain generations of files. The need to archive files was often confused with backups.

- Q.11 A majority of the available marks were awarded to candidates for this question on program errors.
- Q.12 Around half of the available marks were awarded to candidates for this question on the environmental impact of digital technology.
- Q.13 A few of the available marks were awarded to candidates for this question on compilation. This was the worst answered question of the paper.

Responses to this question often showed a lack of understanding of the topic. Welsh medium candidates often wrote about compression rather than compilation.

A substantial minority of candidates did not attempt this question.

Summary of key points

Candidates had a reasonably good understanding of input, output and storage devices, data storage units and program errors. They performed best in these questions.

Candidates found the questions on compilation, data structures, file design, and data validation and verification, digital storage of graphics, and hardware components challenging, and this was reflected in the low facility factor for these questions.

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UNIT 2

General Comments

Most of the candidates demonstrated a good understanding of the specification. Many candidates were well prepared, and many excellent answers were evident. There was evidence also that most candidates had been well prepared for some of the practical programming elements. It was pleasing to see the Java programming questions answered so well. With programmed screen savers and interactive games in evidence.

Comments on individual questions/sections

HTML (markup language):

This was answered well by most candidates. However, a significant number of candidates found the link (using `<a href=. . .`) difficult. Candidates also found the `` tag difficult. Some candidates also forgot to close the HTML tags resulting in incorrect formatting. Candidates should not use generated code or CSS as the specification states the HTML tags that should be used. Some candidates confused the Head, Title and Body tags.

Assembly language:

This is considered to be a more difficult area of the specification and was found to be a more difficult question.

Algorithms:

Some good answers were seen to this question, however, only a few candidates achieved full marks. Within the question marks were awarded for sections – such as inputting data, loops, conditions (if statements) and output. Of these sections most candidates had input and some outputs. Some candidates had a correct if statement. Very few candidates had a working loop.

Java programming within the Greenfoot environment:

Populating the world proved problematic for a very small number of candidates, most candidates could get an object to move around the screen. A significant number could get an object to respond to key input. Random movement was programmed well, and many candidates also had object collision detection in evidence. Question 5 (The screen saver) had the highest facility factor and was well attempted by the majority of candidates.

Summary of key points

A good demonstration of understanding of the specification with some areas still proving problematic for candidates.



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