



AS

Computer Science

7516/2 Paper 2

Report on the Examination

7516
June 2024

Version: 1.0

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Question 1.1

70% of students were able to describe the set of real numbers, many identifying it as all rational and irrational numbers or as all possible real-world quantities or numbers.

Question 1.2

More than 90% of students selected the correct two lozenges on this question.

Question 1.3

66% of students selected the correct lozenge for this question with a common error selection being $\mathbb{R}$, the symbol for real numbers.

Question 2.1 – 2.2

These conversion questions were well answered with more than 90% of students gaining the marks.

Question 2.3

A large majority of students gained two marks on this question with the most common error being not to show the carry bits as working.

Question 2.4

This question on binary subtraction was answered quite well with more than half of students able to achieve both marks. There were a number of responses where the students appeared to work out the decimal values and subtract those which was not mark worthy.

Question 2.5

This fixed-point binary question was well answered; a common mistake was to work out the integer part incorrectly while correctly calculating the fractional part.

Question 3.1

80% of students recognised the component as an Analogue to Digital Converter or ADC.

Question 3.2

60% of students managed to gain full marks on this question with the most common error being not to realise that 5 bits could represent 32 different colours.

Question 3.3

This definition question required the actual name of the additional information – "metadata" and 80% of students could recall this definition.

Question 3.4

This sound calculation question required students to work out the duration of the sound given the file size, sampling resolution and rate instead of calculating the file size given duration, sampling resolution and rate. Almost 70% of students achieved full marks with most of the rest managing to gain some marks for working.

Question 3.5

This understanding question was not well answered with many students referring to improved quality even though this was stated in the question. The best answers simply stated there would be "less quantisation error".

Question 3.6

There was variable understanding of MIDI with only a quarter of students gaining both marks. There were a number of answers which described MIDI as "sampled sound" or as using "more samples". The most common single marks awarded were for examples of the data in MIDI messages such as note or pitch. Fewer students stated that MIDI is made up of event messages.

Question 3.7

This was a more familiar question with the need to explain an advantage of using MIDI. Almost 70% of students gained the mark here with a common answer being that "it is easy to modify" – a better answer in an explain question would be to describe what is easier to modify, eg the notes are easy to edit / modify.

Question 4.1

Almost 70% of students correctly applied the Caesar cipher to reveal the plaintext for this question with the most common error being to apply the key in reverse, so de ciphering the ciphertext letter **W** as **A** rather than **S**.

Question 4.2

Most students scored at least one mark for their explanation of why Caesar ciphers are vulnerable to being cracked. A common answer that did not gain marks was to simply state "they can be brute forced" – of course many ciphers could be brute forced, but it is the limited number of keys that makes Caesar ciphers especially vulnerable.

Question 5.1

80% of students identified a "Programming language translator" as an example of system software.

Question 5.2

Half of students managed to identify two examples of hardware resources that are managed by the operating system. A significant number identified I/O devices even though that example was given in the question with others stating the management of a software resource such files.

Question 6.1

Over 90% of students correctly identified an XOR gate.

Question 6.2

This logic trace table was answered very well with only a few students missing out on marks. Some students failed to identify that output **Z** was the OR result of the columns **L** and **M** while some applied an XOR instead of OR.

Question 6.3

This question was very well answered with over 75% of students gaining full marks. A few students wrote operators in words rather than using the correct symbols and some missed the brackets needed to indicate precedence.

Question 6.4

This was a challenging question with only a few students achieving full marks. However, most students attempted the question and achieved at least one mark for recognising the identity $Y \cdot 1 = Y$.

Question 7.1

This labelling question was answered correctly by about half of students. Some failed to state the full names of the components although this was clearly stated in the question.

Question 7.2

The description of the stored program concept – essentially a definition – was answered fully correctly by around a third of students. Common incorrect answers referred to programs being saved for later use or to save memory.

Question 7.3

Half of students gained one mark for this question – a good answer would have identified a memory address or a register number, but many answers identified a data type such as an integer instead, even though this was already given in the question.

Question 7.4

In this question many students struggled to describe the advantage of having a large cache memory although some did state that this memory was faster to access than RAM. There were some misunderstandings about what is stored in cache with some students writing that programs were stored there. Greater word length was less well covered with many students just equating this to bus size. A good answer would be that more bits can be processed at the same time – being accurate with the idea of bits is preferable to descriptions that contain the word "information".

Question 8

Only about 20% of students achieved full marks but many more achieved two or three marks. Those that missed out on the top mark had often forgotten to make sure the larger value ended up in R1. Students often used the mnemonic LDR instead of MOV when loading an immediate value into a register, which is incorrect.

Question 9.1

More than half of students achieved some marks on this question, but some struggled to describe the process, often substituting the idea of data for radio waves, and simply stating that data is transferred from the tag to the reader without describing the process in any detail.

Question 9.2

Most students achieved one mark on this question but far fewer achieved both. A common error was to recognise that the range of passive and active tags was different but failing to relate this to the scenario in the question (the use of an RFID tag in a passport) by referencing security issues.

Question 10

Over half of all students achieved at least six marks on this long answer question. Common errors here were stating the same point in several different places in the answer, concentrating on just one aspect instead of considering a range of issues and writing about the possible legal actions against the company if they did not comply with legislation, which does not answer the question. Some students included no, or very brief, details about solid state drives and so often failed to compare these to the use of hard disks or other secondary storage devices.

Question 11.1

Most students achieved at least one mark on this question, and it seems that these definitions are quite well known. Bit rate was described better than baud rate, but students should be careful to include a time period (eg seconds) in their answer as some just stated it was the number of bits transmitted.

Question 11.2

Fewer than 20% of students achieved both marks on this question and this was often due to their forgetting the scenario and just making general comments about file sharing websites. The most common correct response was to do with the set up being cheaper due to not needing a server.

Question 11.3

This question was well answered in general although many students described it as being the "name" of a wireless network, an acceptable point this year. Some students confused the idea of SSID with MAC address filtering.

Question 11.4

Around 25% of students achieved both marks for this question. A common mistake was not to explicitly state that disabling the SSID broadcast hides the identifier from users searching for a wireless network. Some students just mentioned increased security (which is stated in the question) without describing why this might be the case.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.