



General Certificate in Education

Computing 6510

**CPT1 Computer Systems,
Programming and Networking
Concepts**

Report on the Examination

2008 examination – January series

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General

This was considered to be a paper which was accessible to the whole candidate ability range and there was again good evidence where candidates were using their own practical experiences with hardware and application software to support their answers. However, this can act as a double edged sword; for example in Q2(a) many candidates stated that they would put more RAM inside their computer with an explanation that the benefit would be to 'speed up the execution/processing of programs' because that, no doubt, was the argument stated (correctly) by the computer magazine or the salesperson at the local Computer Sales Outlet. It is not a sufficient answer for a computer science paper at this level.

There were two questions which asked for more depth than on previous papers; question 3 for the digitising of sound and question 5 on vector graphics.

Question 10 with the algorithm trace, asked that candidates trace a loop nested inside an outer loop and most candidates were clear this was the structure, probably supported and learned through some practical programming task.

There is still clear evidence that good examination technique and written communication skills are often the key to unlocking the mark(s). See specific comments which follow for questions 2(b), 3(b)(i), 4(d) and 10(d).

Question 1

Well answered; the majority of candidates scored the maximum three marks.

Question 2

- (a) Most popular answers were 'processor' and 'RAM' but few candidates were able to give a convincing answer for the second mark, often merely re-stating the words in the question stem that the processor would 'increase the speed of execution of the program'. A good explanation for RAM was rare; candidates clearly have the knowledge that more RAM should result in the faster execution of a program but not the reason behind it.
- (b) The most popular answer was some form of hard drive with this time candidates usually able to get the second mark for a simple statement that it will, 'increase the storage capacity,' but note 'bigger disk' was not considered sufficient (a good example where clear quality of expression gets the mark).

For (b) 2 marks were rarely scored. Candidates who had used a USB on their computer would have identified with this question straight away, but an answer stating that the devices can be then 'simultaneously' connected was often missing.

Worryingly, as the content would seem to be at the heart of the subject at this level, there were a noticeable number of scripts which did not attempt some or all of this question. The distribution of candidate marks indicated that this question proved to be a good discriminator of candidates' ability.

Question 3

This question framework was different to that seen on previous papers but candidates generally answered well and were able to relate the diagram given to their basic definitions.

- (a) The most popular answers were 'sound recording software' and 'the operating system'.
- (b)
 - (i) Many answers simply rearranged the word in the question stem e.g. 'rate and which samples are taken' and so failed to score.
 - (ii) This was poorly answered, often when the candidate had been unable to write a worthy answer for (i).
- (c) Well answered.
- (d)
 - (i) Generally candidates scored the one mark. Any answer which suggested that a more 'faithful' recording was obtained was given credit. However 'smoother' sound suggested more samples would be required and so did not score.
 - (ii) Again, generally well answered. Wrong answers included that it would slow down the processing time or (worst) take more time to sample.
- (f) There is a statement at the start of the mark scheme for this question which is indicative of what was expected. Some candidates carried forward answers from a previous similar question which, because of their different context, were deemed unacceptable and included 'part of a word processed file, etc'. The key discriminator was how the bytes(s) would be interpreted by the processor or application software – not by the user sat in front of the application. The computer scientist who wrote typically, 'binary integer, memory address, ASCII character code,' pocketed three very accessible marks, and quickly moved on.

Question 4

- (a) & (b) Candidates generally scored well on these parts which was encouraging. At this level is it likely that candidates will have had little or no practical experience of low level programming. Therefore it was sufficient that the candidate was able to recognise the various generations and appreciate likely applications for which each would be used to score the marks.
- (c) Well answered.
- (d) This question was a variation from those in previous papers where candidates had been asked to compare compiler and interpreter software. There were many different points which the candidates could have made to secure the two marks. Most common correct answers suggested 'the interpreter translates each statement' – although answers which went on to suggest 'into machine code' were considered to have talked themselves out of this mark - the concept that it does the translation 'line by line'. The mark scheme was considered generous but, despite this, very few candidates scored the maximum 2 marks.

Candidates must read the question. There were often statements such as 'each HHL statement translates to several LLL statements' which suggests knowledge but did not answer this question.

- (e) This question was asked for the first time, but something more than 'because they are not compatible' was looked for. The assembler software is specific to a particular processor (architecture) is what was wanted.

Question 5

Despite being asked on previous papers, the level of candidates' knowledge, possible lack of any skills based work with vector based software, or simple poor expression, all too often meant answers seen were poor.

- (a) (i) It is likely that any candidate who had used a vector package for 2 minutes, dragged a rectangle object onto the canvas and changed its line thickness, fill colour and fill pattern style could not fail to score two easy marks .
- (a) (ii) Most frequent answers gave only a hint of some understanding, mentioning 'mathematical equations' or similar. Many candidates often talked themselves out of the mark by suggesting that 'the formula is re-calculated or altered'.
- (a) (iii) Again a question where, if the experience had included some practical work, the answer would have been forthcoming.
- (b) Despite similar questions on previous examination papers, the standard of answers seen for all three parts was poor.

Question 6

- (a) The usual loss of marks for describing 'bits of data' rather than just 'bits' was seen.
- (b) The port lines all have labels which suggest their usage such as busy, ACK, etc and these were the preferred answers. Many candidates, however, appreciated that the bookwork they had learnt about handshaking was put into practice here and were given credit.
- (c) Very few worthy answers seen. If the candidates remembered their use of the keyboard as an example, then they would have been better placed for a basic definition.

Many candidates wrote that 'the data sent used stop and start bits' which again did not answer the question set.

Question 7

- (a) The algorithm given contained a single loop, one selection statement and a function. However, the majority of candidates were unable to correctly complete the given algorithm, which begs the question - how many candidates would be able to write a similar algorithm from scratch?

- (b) The candidates were given for the first time a specific list of data types from which to choose. This approach is likely to be used again. If other data types are to be used in future questions e.g. Date, then they would clearly be included in a given table.

Candidates did better for D and F, although securing a mark for the purpose of the Position identifier for E was more elusive.

Question 8

- (a) & (b) Despite the question using 16-bit numbers, candidates generally scored well and were not guilty of failings seen in previous papers.
- (c) This mark proved more elusive, and the candidates' powers of expression tested examiners to the limit! Describing/pointing/circling bits generally got the candidate the mark.

Question 9

Despite what was considered to be a straightforward question, the range of the quality of answers seen was huge. Many failed even to appreciate what was meant by a binary tree (as was apparent by the suggested diagram!). Some answers correctly drew the structure for the tree but then failed to attempt (b) or (c) – which is strange as both the 'list of comparisons' and the 'number of comparisons' had been asked for on previous papers. The most common error was not to include the final name in the list, and candidates who did not score for (b), then often incorrectly quoted 3 as their answer for (c).

Question 10

It has been commented on in previous papers how the standard of candidates' answers for this question has improved and this continued with this paper.

- (c) A nested loop (given for the first time) was the key control structure and the majority of candidates identified this. Some confused the nesting, although were still able to secure 5 of the available 6 marks. The most commonly lost mark was at the start of the algorithm for the failure to initialise the array.
- (d) Generally, this question was well answered. Where a mark was lost the suspicion was that it was through poor expression, not lack of understanding of the algorithm. Incorrect answers often stated the numbers for individual sales staff or started to include the concept of target setting, etc.

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