



General Certificate of Education

Computing 6510

**CPT2 Principles of Hardware, Software
and Applications**

Report on the Examination

2007 examination - January series

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General

Candidates who read the whole question before starting to answer it often give themselves a distinct advantage. In this paper, question 5 was a good example of this; candidates could maximise their marks by giving answers to (a) (i) which they could answer fully in (b) (ii). Also in question 2, candidates who had read the whole of the question would have been less likely to give control characters as an answer to part (a).

Candidates should also remember that one-word answers are rarely sufficient for a mark. For example, in question 3(b), one candidate wrote 'Colour, quality, speed' which, sadly, was not credited with any marks. This candidate was not alone in throwing away marks by such brevity. 'Easier' was a word that crept in this time, as in question 4c, the use of indices makes it 'easier to search'; it is rarely a sufficient answer to a question.

This is a subject where the understanding and use of accurate technical terms is expected in appropriate places. In this paper, the main confusion was between files and records in question 8 (a) (i) and between bits and bytes in question 7(d)(i)

Question 1

Most candidates successfully answered this question, showing a good understanding of the roles of different types of operating system.

Question 2

Most candidates gave two out of the three expected answers for part (a) of lower case characters, digits and symbols or punctuation characters. Those who gave valid examples of these were also credited. Incorrect answers included control characters, despite part 2b, and formatting terms such as bold or italics. Fewer candidates were able to suggest two examples of control characters which might appear in a text file.

Question 3

In part (a), candidates were asked to choose, from a given list, the most suitable storage medium for different common tasks, and justify their choice. Most candidates made sensible suggestions for the media, but many were unable to give a good justification for their choice of medium.

Part (b) asked candidates to consider the requirements of a printer that would be used to print photographs as well as routine documents. One good answer was as follows. '1. Can choose between print resolutions so can change between settings for documents and photographs. 2. Has a high quality ink cartridge. 3. Is able to use normal A4 plain paper and all types of photo paper.' Other appropriate answers were the ability to print directly from a camera or memory card, the ability to print borderless images and having fast drying inks to prevent smudging.

Question 4

Many candidates successfully answered question 4a by suggesting the use of primary and foreign keys or of shared or common attributes. Candidates who answered by giving an example from the tables shown were also credited. Those who just stated 'foreign keys' were not.

The entity Loan required a composite primary key. It was pleasing to see that many candidates realised that this was the case, although few gained both available marks by choosing BookID and DateOut . Some suggested a new field LoanID, which was not credited.

Indexing on other attributes in a table is used to speed up searches on that attribute and the validation on the attribute BookID was an example of the use of a check digit.

Question 5

In this question, candidates were asked to give examples of two different types of failure of security and two different reasons for failure in integrity, in order to distinguish between the two. Candidates who read the question carefully and registered the two words, 'examples' and 'reasons' made a good attempt at this part. The most common answers for the former were unauthorised access and unauthorised loss or destruction of data, followed closely by loss of data through natural hazards and theft or damage to hardware. Candidates did have to specify the failure; answers such as 'hackers', 'data not password protected' or 'natural hazards' were not credited. Some candidates lost marks by giving two different examples of the same type of failure such as two different ways in which unauthorised access might occur.

In the main, part (a) (ii) was answered well, although some candidates confused integrity with security, giving reasons for a failure in security instead of for a failure of integrity.

Personal data, as defined for the Data Protection Act, is information about living, identifiable individuals or information that can identify living individuals. Unfortunately, few candidates gave sufficient thought to their answer to this part of the question.

For the last part of question 5, candidates had to return to part (a) (i) and suggest measures which a school might take to ensure the security of students' personal data against the failures of security that they had identified. Most candidates made some attempt at this, although few gave sufficient detail to score full marks. In some cases, candidates described two or even three practices briefly for a particular type of failure, instead of describing only one, and that in a little more detail.

Question 6

The purpose of an electronic point of sale system is to provide an itemised bill for customers, to maintain accurate stock control, to improve both the speed and the accuracy of the checkout procedure, to provide means of paying for goods electronically and to provide management information. These systems have side-effects, also, such as reducing overall costs by cutting down on staff, and calculating the correct change for a cash-paying customer. However, this question asked for three significant purposes. Some candidates appeared to mistake a 'basic system' for a hand-held device that the customer would take round the store with them as they were shopping.

Inputs to such a system would include the scanned barcode and quantity of the item being bought, or the weight of any loose goods. Payment details such as the PIN and login details for the checkout operator were also accepted. Expected outputs were the itemised bill, the details displayed on the VDU and a receipt from the electronic payment. A good answer for this part was 'Item name, cost and total cost to be displayed on screen' and 'A printout of all items purchased and total cost'. A few candidates gave input and output devices, suggesting they had not read the question properly.

Significant processing tasks included looking up the scanned barcode to retrieve the item details, totalling the bill, deducting stock bought from stock levels and processing the payment. A good, simple response from a candidate was 'Identifying the item and price from the bar code' and 'Removing the sold stock from the system'. Some candidates lost marks because their answers were not processing tasks.

For part (d), as to why stores felt it was worth the cost of offering loyalty cards, one candidate gained full marks by answering 'By using these, they can create customer portfolios for targeted marketing, and get extra sales', and, 'they could also sell customer details to other companies and make money from that'. Other accepted answers were along the lines of encouraging customers to return to the store, with the consequent increase in sales.

Question 7

In part (a), candidates were being asked to use appropriate file management technical terms to complete some sentences. They had to be accurate in their answers as they were copying from a given list. So, for example, hard disk was not accepted for part (a) (i).

An edited file can be saved without writing over the original copy by either re-naming the file or saving it in a different directory. A printer would be used to produce a hard copy. Sadly, many candidates gave other responses.

The commonest error in the calculation of file size was candidates confusing bits and bytes. Some candidates appeared to convert all lengths into bits, do their calculations and then convert back again into bytes, with a consequential increase in the opportunity for errors.

The most likely reason why a stored file of fixed length records would be larger than the size calculated is that an exact number of records might not fit into a block, thus wasting bytes in each block. Information such as Author and Date Last Modified is not stored as part of the file.

Question 8

Many candidates simply re-worded 'the master file should be updated in one pass', or in some other way, demonstrated that they did not understand the phrase. Some gave the answer to part (b) here, by explaining how it would be achieved, but did not answer the question which was 'what does it mean?' That is, that the master file is read from start to finish, once, and all updates are made.

The advantage of doing this is a saving in complexity of processing and so of processing time. It also means that inexpensive and compact serial media can be used for both files. Many candidates who probably knew the answer did not gain credit for this part of the question because they wrote 'quicker', 'faster', or even 'takes less time' rather than answering in full.

For part (b) candidates were invited to consider the file organisations of these two files to explain how a one-pass update would be achieved. As the master file was a sequential file and the transaction file was originally organised in a serial manner, the transaction file would have to be sorted sequentially into part number order to be in the same order as the master file. Some candidates did not appear to read the question sufficiently carefully as their responses had nothing to do with file organisation. Some stated that the transaction file was initially ordered sequentially, despite the stem stating clearly that records were added to that file as jobs were completed. However, many candidates made a good attempt, clearly showing their understanding of the process.

Question 9

Candidates had to explain different social, economic and ethical consequences of spam. A certain degree of freedom was accepted in distinguishing between social, economic and ethical consequences as it was appreciated that there is frequently an overlap between these three categories. However, some candidates did give the same answer for two categories, and were not credited for both.

For the first time, this paper was e-marked, and it is intended for this to continue. The scripts are scanned into a computer system and examiners see the scanned clips on a computer monitor and mark these. It would therefore be helpful if candidates for CPT2 papers write their answer in blue or black ink because this scans well.

Mark Ranges and Award of Grades

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