COMPUTER STUDIES

| Paper 0420/01 |
| Paper 1 |

General comments

The general standard of work from candidates was very similar this year to previous years. It was pleasing to note that there was less evidence of rote learning in the questions which required definitions and descriptions of standard processes.

There were one or two new topics in the syllabus for 2008; unfortunately, these appeared to cause some of the candidates a few problems.

Questions which involve interpreting or writing algorithms continue to cause many candidates problems. The last question on the paper, which requires candidates to write their own algorithm, can be answered either in the form of pseudocode or flowchart. Weaker candidates should consider using flowcharts if their algorithmic skills are rather limited.

It is also worth pointing out here that candidates should be aware that scripts are now scanned in and marked by Examiners on computer systems. Candidates must write only in the area allocated for answers or indicate **very clearly** that they have continued their answer elsewhere.

Comments on specific questions

Question 1

There were no problems with **parts (a)** to **(c)**. Most candidates had clearly learned their definitions. However, **parts (d)** and **(e)** were new questions and caused a few problems with many candidates. In **part (d)** it was common to see "laptops use wireless (wifi) connections" – whilst this is true it is not peculiar to laptops since desk top PCs also use wifi interfaces. The question was looking for answers such as: *portability, use of internal battery, integrated keyboard/ screen/pointing device, etc.* In **part (e)** many candidates still refer to trackerballs as "upside down mouse". The target answers were: *input device, pointing device, used to select options from menus on screen, etc.*

Question 2

This question caused very few problems with the majority of candidates aware of the tasks carried out by typical operating systems.

Question 3

This was a new question and caused a number of problems. The majority of candidates tried to refer to video conferencing issues throughout the whole question. **Parts (a)** and **(b)** were essentially looking for the advantages and disadvantages of having call centres in different countries i.e. *lower labour and office rental costs in some countries* and *potential language problems, time differences and customer animosity towards external call centres.* **Parts (c)** and **(d)** were rather better since these covered the well trodden ground of having video conferencing facilities.

Question 4

This question was well answered. The most common devices chosen were: *bar code readers, OCR/OMR, MICR and various sensors.* It was pleasing to see that the devices chosen and the named applications matched up in the majority of cases.

Question 5

Again, this was a well answered question with a large number of candidates aware of the problems with computer viruses and how to guard against them. It was pleasing to see that many candidates were fully aware of the reasons why backing up data did not guard against viruses.

Question 6

In **part (a)** a surprising number of candidates confused FILE ACCESS with MICROSOFT ACCESS and consequently lost all the available marks. It was also disappointing to see a significant number of candidates referring to CDs and DVDs as magnetic media.

The remainder of the question caused few problems with no real common errors to report.

Question 7

Most candidates had a good attempt at this question with many gaining full marks. The main place where marks were lost was in the last part of the diagram where attempts at REPEAT… ENDREPEAT were confused; but overall a good attempt by the majority.

Question 8

In **part (a)** many candidates just regurgitated the question and gave answers such as "South American countries that exported coffee in the year 2007". Acceptable answers had to be a refinement on the original statement given in the question to gain the mark e.g. "SOUTH AMERICAN COUNTRIES COFFEE EXPORTS 2007".

Parts (b) to **(d)** caused no problems and were generally well answered.

Question 9

Part (a) was well answered; the only real relatively common error was to give "f" as the output for the first and third set of data processed. It was very pleasing to note the number of candidates that produced their own trace tables in an attempt to determine the outputs.

It was surprisingly common in **part (b)** for candidates to give answers which referred to borrowing books from a library! The question referred to *a library of routines* which is entirely different.

Question 10

The answers to **part (a)** were generally very good with some valid differences between DVD/hard disk and RAM being given.

In **part (b)** it was common to see USB as the answer; this is not a device and is not an acceptable answer – candidates needed to give the correct term such as USB flash drive.

Question 11

This question was again well answered with many candidates having learnt the more common features of a typical Data Protection Act. Most of the marks lost were by candidates giving four examples of security aspects only (e.g. anti-virus, passwords, back ups and physical security) – all of these methods could only be rewarded with one mark in total.

Question 12

Part (a) was very badly answered with very few candidates showing an understanding of basic pseudocode. This was a fairly straightforward question requiring only the basics of **repeat … until** and **for … to** loops. For example,

```
count = 0
repeat
        input x
        count = count + 1
until count = 20
```
and,
```
for count = 1 to 20 do
        input x
next count
```

In **part (b)** it was surprising to see IF … THEN … ELSE being given as a loop structure.

Question 13

Part (a) was surprisingly badly answered considering the fact that most candidates will probably have used Internet shops to buy CDs, DVDs, clothes, and so on. The points which Examiners were looking for include: *hyperlinks, shopping baskets, search for (artists/title) facility, order tracking/status, customer accounts (e.g.. history of orders), customers who bought "X" also bought "Y" facility, etc.*

Part (b) was much better with many candidates knowing the main reasons for choosing Internet shopping.

Question 14

No real problem with either part of this question. The advantages of simulations and examples of virtual reality devices seemed to be well known.

Question 15

The first part of this question was well answered with the reasons for choosing the four common changeover methods (i.e. parallel, direct, pilot and phased) being well known.

In **part (b)**, there was some confusion between abnormal and extreme testing with several candidates giving, for example, $abc as extreme data and, for example, $1000 as abnormal data ("since this would not be an usual wage" often given as the reason).

Question 16

Part (a) was quite well answered with most candidates aware of the need for sensors to monitor the wash room. The occasional suggestion, by some candidates, that cameras were used was a little bizarre in this application!

There were not many good answers in **part (b)** with many just giving an essay or simple VERY general answers such as: "if sensor detects movement switch on light; if no movement switch off light" – such answers were far too general to gain any marks.

The third part i.e. referring to potential energy savings, was well understood by the majority of candidates.

Question 17

Candidates are improving with their descriptions of how to set up/create Expert Systems. There is still much evidence of lack of understanding with candidates describing how these systems work rather than how they are created; but there is a marked improvement overall this year.

Question 18

There are no real problems to report with this question. Even the weaker candidates did reasonably well giving good answers, in particular, for **parts (a)** and **(b)**.

Question 19

Many candidates gained four or five marks for this question. Many candidates used pseudocode and there was less evidence this year of simple descriptions in the style of an essay. It was interesting to see an increase in the number of candidates supplying a flowchart as the algorithm which is perfectly valid for questions of this type.

COMPUTER STUDIES

> **Paper 0420/02**
>
> **Project**

The quality of work was of a broadly similar standard to previous years. The minor revision in the assessment criteria should have allowed candidates the ability to score higher marks by offering some alternative ways of scoring marks in some sections. This was not always appreciated by candidates or Centres and there were more adjustments of marks than in previous years. Centres will need to obtain the moderation report for specific details of candidates' performance and the Centre's assessment of the projects.

Overall, the standard of assessment by Centres is reasonably accurate, but not as accurate in previous years. However, there are some occasions where credit appears to have been awarded when there is no relevant work in the documentation. There are also occasions where a higher mark has been awarded than that warranted by the work. The largest area of discrepancy is concerned with the objectives and the links with later sections. It would be useful if these were numbered in some way, so that it becomes easier to refer back to these in the later sections.

It is important to realise that the project should enable the candidate to use a computer to solve a significant problem, be fully documented and contain substantial sample output from their proposed system. Some candidates are attempting inappropriate projects of an impossible magnitude, e.g. a new database for a multi-national bank, a new website for a university. Some projects do not demonstrate that they have actually been run on a computer. Software advances and the use of 'cut and paste' can give the impression that the results have simply been word-processed. It is recommended that candidates make use of appropriate screen dumps and include these in their documentation to show the use of a computer. Candidates often referred to the system life cycle in parts of their documentation; this is not what is required in these sections. Rather, the candidates should use the criteria published in the syllabus as their guide for determining the necessary evidence.

However, the standard of presentation and the structure of the documentation continue to improve. Many candidates structure their documentation around the broad headings of the assessment scheme and this is to be commended. It would appear that many Centres provide their candidates with a framework for documentation. This can be considered part of the normal teaching process, but the candidates need to complete each of the sections in their own words. Each project must be the original work of the candidate. Marks were deducted where there was an overuse of such templates.

Centres should note that the project work should contain an individual mark sheet for every candidate and one or more summary mark sheets, depending on the size of entry. It is recommended that the Centre retain a copy of the summary marksheet(s) in case this is required by the Moderator. It was pleasing to note that the vast majority of the coursework was received by the due date. It causes some considerable problems in the moderation process where Centres fail to meet this deadline. Although the syllabus states that disks should not be sent with the projects, it is advisable for Centres to make back up copies of the documentation and retain such copies until after the results query deadlines. If CIE's Moderators think it necessary, further samples of candidates' work will be requested. Centres should note that on occasions coursework may be retained for archival purposes.

Areas of relative weakness in candidates' documentation continue to include setting objectives, hardware, algorithms and testing.

The mark a candidate can achieve is often linked to the problem definition. Candidates need to describe in detail the problem; where this is done correctly, it enables the candidate to score highly on many other sections. More candidates than in previous years did set themselves aims and objectives. For some candidates these were restricted to business aims and it will be a natural progression to include computer-related objectives. If the objectives are clearly stated in computer terms, then a testing strategy and the subsequent evaluation should follow on naturally, e.g. print a membership list, perform certain calculations, etc.

Description and/or evaluation of the existing system was misinterpreted by some candidates and they described/evaluated a system which was not the existing system. Credit can only be given in these sections (3 and 4) for the current existing system. The method of solution must be explained in order to gain credit in *section 11*. In order to gain credit for test results (*section 14*), candidates must include their test strategy including expected results. It is not sufficient to produce some output and expect to score marks.

There was evidence that some candidates appeared to be using a textbook, or the teacher's notes, to describe certain aspects of the documentation, especially the hardware section. Some candidates did not attempt to write this section of the documentation with specific reference to their own problem. It is important to note that candidates write their own documentation to reflect the individuality of their problem and that group projects are not allowed. Where the work of many candidates from the same Centre is identical in one or more sections, then the marks for these sections will be reduced to zero by the Moderators. Centres are reminded of the fact that they should supervise the candidate's work and that the candidate verifies that the project is their own work.