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ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Report on the Examination

Information and Communication Technology
Specification A

■ Full Course

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General Comments

This was the first year of the new specification in Information and Communication Technology. One of the major changes was that candidates sat one paper instead of two. Most of the paper was accessible to the majority of candidates and it was very rare to see large parts of the paper left unattempted. Considering the highest grade that can be awarded on the Foundation Tier is grade C, a number of candidates scored very high marks on this paper.

Questions 1 to 5 (Multiple Choice Questions)

Generally these were well or very well answered by most of the candidates. The vast majority of candidates scored more than half marks and full marks were not unusual. Common wrong answers were "virus check" (to stop unauthorised access) and "it can be read from and written to" (features of ROM). Some candidates wrote the answers as words rather than the corresponding letter but if the right words were chosen, the marks were awarded.

Question 6

The majority of candidates scored well on this question. The most common wrong answers were:
Part (a) Hard Disk and CD-ROM
Part (b) Graphics Digitiser and Hard Disk

Question 7

Part (a) of this question was well answered by the majority of candidates and high marks were common. This part of the question was looking for changes that had already been made, so candidates did not gain marks at this stage for suggested additional improvements. Candidates also failed to gain marks for vague one-word answers such as "bigger" or "fonts". Part (d) of the question was looking for additional changes that had not already been made to the flyer, so candidates did not gain marks for spotting additional changes that had already been made.

Question 8

This was quite well attempted by many of the candidates, as this is now a familiar type of question. However, full marks were surprisingly rare. Candidates who did not score well on this question usually did one or more of the following:

- They gave too few boxes (maybe they planned to code the data but they gave no indication of this)
- Did not give enough fields (the question asked for five suitable fields)
- Gave some fields that were irrelevant e.g. National Insurance Number. Whilst this did not lose marks it did not gain any, and only the first five fields were marked.

AQA

Question 9

This question was answered badly by the vast majority of candidates, even though they were given a list of answers to choose from. No part of this question was answered correctly by a large number of candidates, and the vast majority of candidates only scored 2 marks or fewer, which reflects a lack of understanding in this area of the specification.

Question 10

Despite the Data Protection Act becoming a common area for questions over recent years, and possible answers being given, this question was not well answered. In part (a) a common wrong answer was "D: Data is never to be given to anyone."   Candidates often scored no marks for parts (b) and (c).

Question 11

Parts (a) and (b) of this question were very well answered and most candidates gained full marks. Sadly the majority of candidates could not give the correct formulae needed for part (c), despite the fact that fairly simple formulae were required. Some candidates appeared to have seen the formulae before but could not come up with an acceptable syntax. Many candidates were able to gain one mark for part (d) by describing the reduction of the number of items bought or their price. However very few gained the second mark by describing the checking of the adjusted total cost for the bedroom to make sure that it was now within budget.

Question 12

Parts (a) and (b) were well answered and the vast majority of candidates correctly identified the number of records and fields. In part (c) many candidates were able to identify a field which had been coded but very few were able to give advantages of coding data. The answers to part (c) were mixed and often seemed to be centre dependent.   In (d) parts (i) and (ii), a very high proportion of candidates could use "visual validation" to identify the error and explain how they knew it was an error. However few were able to go on to explain how data validation could have been used to prevent this error.

Question 13

Part (a) was quite well answered and many of candidates were able to name or describe at least one related health problem. However, some candidates tried to blame the use of computers for "every disease known to man". In part (b) many candidates gained one mark for stating one step that could be taken to overcome a problem described in part (a).   However, few candidates expanded on the reason given or gave a second reason and as a result they did not gain the second mark.

Question 14

Most candidates scored highly on this question and full marks or near full marks were quite common. Part (e), automatically collecting temperatures at a weather station, was the part of the question that caused candidates most problems.

Question 15

Part (a) was not well answered by most candidates and few gained both marks. However, most candidates picked up some marks in part (b) as they were able to identify some of the important factors in designing a new user interface. Surprisingly, part (c) was on the whole very badly answered. In (i) many candidates simply tried to repeat the question and answers such as "A hyperlink is a link to somewhere else" were common. Very few correct answers were seen for (ii) and many candidates described it as the "most popular sites".

Question 16

Part (a) of this question was not well answered by the vast majority of candidates and very few gained any marks. In part (b) more candidates gave the correct answer but it was still disappointing that so many still could not identify an operating system as software. Many candidates were able to identify at least one feature of an operating system in part (c) but the majority were unable to name even one type of operating system.

AQA

Written Paper - Tier H

General Comments

As with Tier F, this was the first year of the new specification in Information and Communication Technology. Again the major change was that candidates sat one paper instead of two. Most of the paper was accessible to the majority of candidates and it was very rare to see parts of the paper left unattempted. The vast majority of the candidates were entered for the correct tier and low scores were quite rare.

Question 1

Part (a) of this question was also well answered by the majority of candidates and high marks were common. This part of the question was looking for changes that had already been made, so candidates did not gain marks at this stage for suggested additional improvements. Candidates also failed to gain marks for vague one word answers such as "bigger" or "fonts". Part (d) of the question was looking for additional changes that had not already been made to the flyer, so candidates did not gain marks for spotting additional changes that had already been made. Even at the higher tier few candidates scored both marks for this part of the question.

Question 2

Most candidates scored highly on this question and full marks or near full marks were quite common. As with the Tier F candidates, part (e), automatically collecting temperatures at a weather station, was the part of the question that caused candidates most problems.

Question 3

This was well attempted by many of the candidates, as this is now a familiar type of question. However full marks were not as common as might have been expected. Candidates who did not score well on this question usually did one or more of the following:
- They gave too few boxes (maybe they planned to code the data but they gave no indication of this)
- Did not give enough fields (the question asked for five suitable fields)
- Gave some fields that were irrelevant e.g. National Insurance Number. Whilst this did not lose marks it did not gain any, and only the first five fields were marked.

Question 4

Despite the Data Protection Act becoming a common area for questions over recent years, this was not well answered by most candidates. Many candidates incorrectly thought that the Data Protection Act meant that no data could be given to anyone at anytime and under any circumstances. Some candidates scored no marks for this question as they described the responsibilities of data users rather than rights of data subjects.

Question 5

Most candidates scored half marks or more on this question with parts (c) and (d) being well answered by many candidates. However, even very good candidates often failed to come up with the correct syntax to gain full marks for part (d) (ii). In part (a), many candidates struggled to give a clear explanation of the terms record and field. These candidates rarely followed the question's advice to give examples.
In part (c) candidates usually scored either two marks or no marks. Where a candidate selected the correct key field they usually gave a correct explanation why it was suitable to be used as a key field. A high proportion of candidates incorrectly gave Price as the key field and they then went on to say that this was the most **important** piece of information for potential buyers.

Question 6

Parts (a) (i) and (ii) were well answered but a significant number of candidates gave the wrong answer of "it is always correct" to the last part. Part (b) was generally answered poorly and many candidates gave vague answers or answers that just repeated the question, e.g. "Presence Check – checks that things are present".

Question 7

This question was not well answered by the vast majority of pupils and even giving a list of answers to choose from did not help most candidates. No part of this question was well answered and the vast majority of candidates only scored half marks or less, which reflects a lack of understanding in this area of the specification.

Question 8

As with the Foundation Tier part (a) was not well answered by most candidates and few gained both marks. However most candidates picked up some marks in part (b) as they were able to identify some of the important factors in designing a new user interface and full marks were common. Surprisingly, part (c) was on the whole not well answered. In (i) many candidates simply tried to repeat the question and answers such as "A hyperlink is a link to somewhere else" were common. Very few correct answers were seen for (ii) and many candidates described it as the "most popular sites".

Question 9

Part (a) of this question was not well answered by the vast majority of candidates and very few gained any marks. In part (b) more candidates gave the correct answer but it was still disappointing that so many still could not identify an operating system as software. Many candidates were able to identify at least on feature of an operating system in part (c) but the majority were unable to name even one type of operating system.

Question 10

Candidates answered part (a) of this question well and most were able to name two or three fields that would be contained in the library database. Answers to parts (b) and (c) were mixed and although there were some good answers, too many candidates gave vague answers that revolved around "cheaper, faster". In part (d), most candidates gained at least one mark for identifying the fact that specially written software would be more expensive to buy (as the development cost would be shared by fewer buyers).

Question 11

This question provided good discrimination between candidates. At one extreme, candidates wrote a very vague five or six lines describing some of the activities carried out in a supermarket, without ever mentioning advantages or disadvantages. At the other extreme, candidates wrote two or three sides of well-argued points, giving clear advantages and disadvantages to both the supermarkets and their customers.

Information and Communication Technology (Short Course)

Written Paper - Tier F

General Comments

This was the first year of the new Short Course specification in Information and Communication Technology. Most of the paper was accessible to the majority of candidates and it was very rare to see large parts of the paper left unattempted. Considering that the highest grade that can be awarded on the Foundation Tier is grade C, a number of candidates scored very high marks on this paper.

Questions 1 to 5 (Multiple Choice Questions)

Generally these were well or very well answered by most of the candidates. The vast majority of candidates scored more than half marks and full marks were not unusual. Common wrong answers were "virus check" (to stop unauthorised access) and "it can be read from and written to" (features of ROM). Some candidates wrote the answers as words rather than the corresponding letter but if the right words were chosen, the marks were awarded.

Question 6

This was generally answered well by most of the candidates and the majority of them scored well on this question. The most common wrong answers were:
Part (a) Hard Disk and CD-ROM
Part (b) Graphics Digitiser and Hard Disk

Question 7

Part (a) of this question was also well answered by the majority of candidates and high marks were common. This part of the question was looking for changes that had already been made, so candidates did not gain marks at this stage for suggested additional improvements. Candidates also failed to gain marks for vague one-word answers such as "bigger" or "fonts". Part (d) of the question was looking for additional changes that had not already been made to the flyer, so candidates did not gain marks for spotting additional changes that had already been made.

Question 8

Despite the Data Protection Act becoming a common area for questions over recent years, and possible answers given, this question was not well answered. In part (a) many a common wrong answer was "D: Data is never to be given to anyone". Candidates often scored no marks for parts (b) and (c).

Question 9

This was quite well attempted by many of the candidates, as this is now a familiar type of question. However full marks were surprisingly rare. Candidates who did not score well on this question usually did one or more of the following:

- They gave too few boxes (maybe they planned to code the data but they gave no indication of this)
- Did not give enough fields (the question asked for eight suitable fields)
- Gave some fields that were irrelevant e.g. National Insurance Number. Whilst this did not lose marks it did not gain any, and only the first five fields were marked.

Question 10

Part (a) was quite well answered and the most common correct answers given were:
- Cheaper than replacing or repairing damaged fire engines (not just cheaper).
- Safer than putting firemen's lives in danger in just a simulation.
- Conditions can be varied and rerun as many times as needed.

Part (b) was very well answered and full marks were quite common. In part (c) candidates often named a job, object or a place rather name actual simulations. Common one-word answers than did not gain marks were, "police", "army", "boat", "rides".

Question 11

Parts (a) and (b) of this question were very well answered and most candidates gained full marks. Sadly the majority of candidates could not give the correct formulae need for part (c), despite the fact that fairly simple formulae were required. Some candidates appeared to have seen the formulae before but could not come up with an acceptable syntax. Many candidates were able to gain one mark for part (d) by describing the reduction of the number of items bought or their price. However very few gained the second mark by describing the checking of the adjusted total cost for the bedroom to make sure that it was now within budget.

Question 12

Although the vast majority of candidates could not clearly explain the difference between data and information in part (a) many were able to pick up marks in part (b). Here almost all candidates gained at least one or two marks for identifying if an item was either Data or Information.

Question 13

This question was answered badly by the vast majority of pupils, and even giving a list of answers to choose from did not help most candidates. No part of this question was answered correctly by a large number of pupils and the vast majority of candidates only scored 0 or 1, which reflects a lack of understanding in this area of the specification.

Question 14

Part (a) was quite well answered and many of candidates were able to name or describe at least one related health problem. However some candidates tried to blame the use of computers for "every disease known to man". In part (b) many candidates gained one mark for stating one step that could be taken to overcome a problem described in part (a). However few candidates expanded on the reason given or gave a second reason and as a result they did not gain the second mark.

AQA

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Question 16

Part (a) was well answered by most candidates and almost all candidates were able to identify at least one feature of chart software. Surprisingly, part (b) was on the whole very badly answered. In (i) many candidates simply tried to repeat the question and answers such as "A hyperlink is a link to somewhere else" were common. Very few correct answers were seen for (ii) and many candidates described it as the "most popular sites". In part (c) candidates rarely gave additional features of web design software that were not just additional DTP features.

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General Comments

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Question 14

Parts (a) (i) and (ii) were well answered but a significant number of candidates gave the wrong answer of "it is always correct" to the last part. Part (b) was less well answered and few candidates were able to describe how **both** presence checks and range checks were used to detect errors.

Question 15

Candidates answered part (a) of this question well and most were able to name two or three fields that would be contained in the books' database. Answers to parts (b) and (c) were mixed and although there were some good answers, too many candidates gave vague answers that revolved around "cheaper, faster".

Question 16

This question provided good discrimination between candidates. At one extreme, candidates wrote a very vague five or six lines describing some of the activities carried out in a supermarket, without ever mentioning advantages or disadvantages. At the other extreme, candidates wrote two or three sides of well-argued points, giving clear advantages and disadvantages to both the supermarkets and their customers.

Coursework

AQA-set Assignment

The AQA-set Assignment was completed for the first time for this revised specification; whilst there were changes from the requirements of the old specification, the major aim was to provide continuity and additionally incorporate modifications and improvements recommended over the period of the old specification.   In general the work was of the required standard, though there was evidence that some centres were finding that completing the tasks set in the assignment took rather longer than anticipated.

Analysis

Candidates were required to analyse the material sent by the Board. This was an assignment based on a sports day for a school. The requirement was that the analysis was completed first and then presented for marking, before the candidate moved on to design and then implement solutions. Most centres did this, but some did not then present this analysis as a single, combined set of pages, but chose to place the analysis for each task with the task itself. This does make moderating a little more difficult and centres risk a reduction in marks where moderators are not able to see exactly how the candidate has analysed the problem. It is not acceptable for the centre to ignore the clear instruction to mark the analysis before proceeding with the rest of the work.

What is required is a list and no explanation of the items is expected. The list should identify the problem, state the form of the output, identify the information to be output and the data needed to produce the output. The candidate can identify the latter by making an explicit page and probably a line reference or by copying out or describing the data; no distinction in the marking grid is made between desired outcomes (subjective) and performance criteria (measurable). Identifying and listing them is enough.

Having completed the analysis, candidates could then, if required, be assisted in identifying the five tasks. This prevented those candidates who had not done so from being disadvantaged for the next stages. It also allowed centres to manage the work of their weaker candidates. Some tasks are inherently more difficult than others and not all candidates are expected to complete all tasks, though centres should note that each task is worth the same mark. While much of the differentiation is by outcome, weaker candidates would be better advised to spend more time on the more straightforward tasks. Teachers should annotate the candidates' work to indicate which tasks the candidates have managed to identify for themselves and if they have been helped at this stage. Centres can reveal the whole of the analysis to the candidates at this stage if they wish. They must bear in mind, however, that there is some evidence suggests that candidates who have completed their own analysis, however flawed, tend to be disadvantaged by receiving the "correct" answer and then having to adjust their thinking to that presented by the analysis in the Confidential Instructions. It may be advisable to consider carefully the feedback that is to be given, particularly to the weaker candidates, who may be better directed in to completing those tasks which are more appropriate to their needs. What centres must not do is photocopy the confidential material and present this directly to candidates.

The marking grid records the completeness of the listing with a slight bias towards needing to identify the data needed for the output**.** With regard to the marking criteria, it was emphasised that 'ALL' means 'all' with the work under the appropriate headings. 'MOST' was defined as 'more than half', and by using the appropriate headings provided in the Candidate Booklet, candidates would be using a suitable structure to give them every opportunity for success in this component.

Most centres did get their candidates to reorganise their analyses into the separate tasks. Most then ensured that the candidates then numbered and titled the tasks according to those given in the Confidential Instructions. This made the moderating process straightforward. While many centres used the marking grid appropriately, there were a number of cases where it was not completed correctly or fully for all of the candidates and a resulted in a few cases of moderators disagreeing with the way centres arrived at the final mark.

The Analysis section was in general, properly marked with candidates able to produce suitable listings to what could be a difficult start to their work. In some cases, candidates did identify some the requirements but were not clear in which category to include the work.

Design

The design section should include two main components:

* Evidence of how the problem is to be solved, explaining the choices made
* The software that will be used and the features of the solution that make the software suitable

Designs are about identifying how the work might proceed. Initial ideas as to how to solve the problem are required. These should be subsequently improved and amended as the problem, and the possible ways of solving it, become clearer. A developed design is one where an initial idea is improved, showing initial outlines and first thoughts and then progressing to an improved design, justifying any choices made.

Designs should include, where appropriate, sketches, descriptions, layout plans, suggestions for formulas and cell types and widths, field details, search criteria and identification of the way the output will look.

A planned design will contain enough detail to explain to a third party the requirements for the implementation, thus enabling anyone familiar with the package being used to carry out that implementation. A useful rule of thumb will is, "*Is there enough detail for someone else to carry out the Implementation?"*

At the lower end of the design mark, candidates will choose software and describe some features of the software. As we move up the mark range these descriptions will relate more closely to the needs of the solution. The descriptions will focus on how the software solves the problem and not simply on all the things the software can do.

The Design section was attempted reasonably well, though many centres gave very high marks to limited designs, and the reasoning for the selection of software was sometimes a little weak. Candidates have to explain the suitability of this software for the particular task they are planning to undertake. This explanation needs to be as closely related to the problem as possible and whilst generic justifications can score some marks, candidates should be encouraged to relate the software choice specifically to the requirements outlined in the Analysis section. The ability to do this is enhanced if the candidate does really understand the nature of the task. Good designs were produced by candidates who gave descriptions of what they were doing as well as paper based sketches, where appropriate. These, sometimes very simple, drawn designs can be credited highly, as they can show clearly the thought processes of the candidate. Candidates should be encouraged to show how they have arrived at their final design; some candidates did not use the Design section to explain their ideas. Candidates need to do more than state their design. They must also give reasons and explanations for the particular choices they are making. Some centres gave high marks to candidates who did little more than make comments similar to those given in the Confidential Instructions in the design sections. It is very important that candidates use the Design section to explore and explain how they could attempt to solve the problems presented by the tasks. More expansive designs are required. Candidates need to produce detailed statements of what they plan to do to solve the problem.

The point made at centre standardising meetings, "…*could the plans be followed by someone else?*", needs to be emphasised again. Sketches for DTP tasks were usually satisfactory but minimal designs for queries were included; similarly for spreadsheet models, there was rarely a plan showing where data and formulae were to be used and the types of data to be used in the cells. Many candidates did provide a printout of the formulae for the spreadsheet and screen dumps of the query requirements in the Implementation section, with some candidates including the same in their Design section. It should be remembered that design work should not encroach on the Implementation section, and whilst allowance can be made for the cyclic design process, designs should not be done either retrospectively or include work that actually is evidence of the implementation.

Some candidates produced designs that described every step in the process that would be followed to complete the implementation. This is unlikely to actually be design and is not what is required. A design describes ways of solving a problem and does not detail each fine step.

The design of testing plans was not a strong point of many candidates, though some good examples were seen at the higher mark range. The testing needs to be designed, and planned. The data, and sometimes some of the processes are given within the assignment booklet but candidates must be very clear about what they are doing and how their work is going to be tested. Candidates need to give expected results as well as the data they will use to test. They need to note what the input test data is and where it comes from.

Implementation

For each problem, the solution design should be implemented. Candidates should:

- provide evidence that the task has been implemented
- include earlier versions of the work to show the development of the solution and any improvements, corrections or changes from the design
- annotate printouts/provide written evidence to make it clear what has been done
- carry out changes if any tests show they are needed

To gain high marks candidates should choose, and clearly justify, the choice of appropriate tools and techniques to solve the problem. They should develop good, planned and creative designs. They should produce clear testing plans. A test of a good design is whether or not another candidate, with a minimum of interpretation, could successfully follow the design to its conclusion.

The Implementation section was, within the ability of the candidates, well done. The centres usually marked this appropriately though some over-marking was evident. The Design and Implementation sections are worth 70% of the total marks for the assignment. Where there were significant alterations to the centre's mark, it was usually because of over-marking in these areas. These reductions were usually because of the lack of detail in the candidate's report. Examples of earlier work, showing the development of the final solution, are very valuable and are a requirement of the specification and marking criteria. Candidates should annotate this work to explain its relevance. A few examples are sufficient and candidates need to realise that showing developments is not the same as revealing errors that they imagine may be penalised, but is a positive process and one that can only be beneficial to them.

Centres should note that candidates must fully annotate all their work, to explain how they achieved their objectives; this is also included as part of the marking criteria. Where this annotation was present, it was often possible to agree readily with a centre's mark. Without annotation from the candidate, this was more difficult and was often a reason for the adjustment of marks. Many candidates produced many pages of printout for their implementation, without any notes to indicate what the printouts were. The best candidates were able to show the development of their solutions by several annotated printouts. This annotation needs to show the candidate's thinking as well as the processes they followed. A few notes on each page is usually sufficient.

Candidates who printed out early versions of their work and then explained how they were going to improve were credited with more marks than those candidates who simply presented final versions. These early versions provided some of the evidence to indicate that a candidate understood the work and the techniques used. With such material clearly annotated it was possible to see how the resources the candidate chose to use were appropriate and that they had been used efficiently. This will not be evidenced by the final solution alone.

Marks in the upper range are available to candidates who use appropriate resources and techniques, with a good level of skill, understanding and efficiency. They should produce the evidence in a form that is clearly the solution to the problem and carry out any modifications indicated by the testing.

There was much work in evidence on the implementation that met the criteria for the middle mark bands upwards, although there are centres who consider a reasonably complete solution, which is not annotated and where there are no earlier stages, to be worth 37 – 45; additionally some are not annotating to show how their solution was arrived at to show their efficiency. For others, even though some candidates had annotated their work, the final solution was incomplete or incorrect, but judged by the centre to be complete and correct.

Testing

This could probably be called "*Checking*" for the assignment. The candidate must identify and state whether testing is required or not for each problem. A test plan would identify the data needed (all in the candidate booklet) and what the expected results will be (again given in the candidate booklet). They should also show how the data will be used to set up the tests. Some candidates at the lower end of the mark range might describe the above but then not be able to follow their plan. Alternatively, their plan might contain the correct information but be so disorganised and unsystematic that it is difficult to credit them highly. They must produce a record of the results of their tests and describe the changes they will then implement. They may describe these in their implementation section but they will need to be credited in the testing section.

Essentially testing is about entering known data and comparing the output with a pre-stated result. In a spreadsheet for example one test is by entering sample integer values, which allows a hand calculation and check to be done. One checks the rules (formulae) that are used.

In a database one predicts the outcome of a search before the search is made. This expected outcome is then compared with the output when the search is executed. The test is not of the ability of the database programme to search but tests the correctness of the data input.

Testing is an area that candidates find difficult, although the initial award of this specification showed an improvement on work produced for the old one. If candidates understand the problem and how the solution is to be used, they seem to be better able to decide how to test their solution. They can then identify the likely errors that could arise and are able to subject their solutions to suitable tests according to a test plan. Candidates often produced only very limited ranges of data that they were going to use to test their solutions.

There was evidence to show that some centres were teaching candidates how to test database solutions and spreadsheets, in preparation for these elements of the work. Testing plans should identify expected outcomes and compare those to the actual outputs. The data required for testing will be given in the assignment booklet and it is not necessary for candidates to do more than the testing required by the assignment. Many candidates limited the mark they could obtain by not providing designs for testing plans for tasks that required such plans. Some candidates described testing but provided little evidence that it had been carried out. It was not uncommon to read that the solution worked; therefore it was OK and had been tested.

Those candidates who went further than the test(s) required of them in the booklet, did so often in preparation for the more difficult testing requirements on the project; it should however be remembered that candidates do not gain any extra credit for this with full marks attainable by using the appropriate data from the Candidate Booklet. Additionally, some candidates carried out 'tests' but not the required ones.

For high marks, candidates have to do more than just enter their test data. They have to follow a comprehensive test plan and produce a record of the results. They then have to evaluate the results against their expected results. They should then identify any modifications required.

Evaluation

Evaluation is recognised as being difficult. The process of being self-critical using pre-stated criteria is not easy. In this work, the identification of clear performance criteria in the analysis is fundamental to the later production of a high quality evaluation.

At its simplest level, evaluation is a process of reviewing what was done and what is achieved. What went wrong, and how it was dealt with, is also a feature at this level.

The performance criteria and desired outcomes are vital to success in this section. It is useful to get the candidate to cut and paste them from their analysis or a teacher provided list if that is more appropriate. (If the latter is done then the centre must state this on the Assignment Cover Sheet).

If a candidate has produced poorly defined or even incorrect performance criteria then they could be operating at a level where they were describing what they had achieved and had made some comparison with the intended outcomes. These candidates will tend to do little more than record the performance criteria or restate them. At a slightly higher level, the candidate would be trying to show how the work meets the performance criteria more directly.

To meet the requirement to describe the effectiveness of the solution, one needs to refer to the solution as both an outcome; e.g. a total of a spreadsheet, and as a process, e.g. how correct data gets into the spreadsheet. There also needs to be a greater recognition of the overall problem being solved; a recognition that the tasks contribute to an overall solution and are not simply separate, stand alone pieces of work.

At the top end, the candidate is truly critical of the process followed and final output produced and is clearly able to evaluate the work, giving a discussion of the solution which shows some of the insights gained through developing a deeper understanding of the original problem.

On the whole the Evaluation sections were appropriately marked, with many candidates producing the desired outcomes and performance criteria as the initial part of the section and using these to produce the required reference to these outcomes, thus giving them an opportunity to address at minimum the middle area bands of the marking criteria.

The tasks as they appear in the Confidential Instructions did provide some degree of differentiation.

Task 1 (Sports Day Programme) was done well with many candidates producing effective implementations, often in colour. An important point to remember for this, or any other DTP type solution, is that it is not just the final output that is required but additionally the development work required plus the necessary annotation to show the level of skill being used. The lack of these components often reduced possible top box mark criteria work in to the lower end of the next box down at best.

Task 2 (Recording Sheets) was generally not well done; many candidates managed to produce some evidence of the output required, although not necessarily in the required format. Designs often once again produced these layouts but ignored the design of what was a quite difficult search criteria for many candidates.

Task 3 (Performance Charts) resulted in many candidates being able to produce a printout of the chart, although not always in the output format required in the Candidate Booklet. As well as the title and key for the chart, plus the labelling of the axes, the chart needed to show the total points awarded to each house and the points awarded to the boys and girls in each house. In many cases these were mixed up or missing.

Task 4 (Web Page) produced a range of solutions, many using DTP or word processing and some using HTML. Ephemeral evidence would not normally be accepted as part of the coursework requirements, although this was allowed on the testing component where it was felt that certain methods of solution may be difficult to produce the necessary documented evidence of testing being carried out; it is important that some form of evidence is provided by the teacher to indicate a working solution was produced. Often this was given by the member of staff signing the stages of the testing carried out or including a note at the foot of the testing to indicate evidence of the requirements being produced.

For those candidates using HTML, it should be remembered that not only should the code be listed, but additionally annotation is required to indicate the level of skill being shown.

Task 5 (Drinks Model) suffered particularly from the solution just "appearing" with many candidates supplying only the final "answer" with no evidence of how they had arrived at it. Some candidates are not producing the evidence of formulae used, which is one of the major requirements of the annotation to support the level of skill.

Administration matters

Many centres are to be congratulated on the way that they provided the material requested in a timely manner. However, more than a few centres were late with their work. Work was generally well presented though some attention needs to be given to appropriate labelling of the sections of the work, so that the tasks are clearly and easily identifiable.

The tasks do need to be numbered and identified to match those in the confidential instructions.

The analysis must be marked before the candidates go on to complete the rest of the work. This analysis mark then stands for the rest of the course. The marking grid should be used as indicated in the instructions with a cross to indicate the mark range appropriate for each task. The marks then need to be compared to the mark ranges given in the instructions and a mark given, for each part of the assignment, that matches the candidates' work in each section. If a candidate fails to present any evidence in a section for any given task, then the effect of this zero mark should be taken into account when deciding the final mark. A very small minority of centres still does not appear to have recognised this.

Centres must record any discussions, that they have had with the candidate, in the section on the back page of the Candidate Internal Assessment Form. It is difficult to believe that some centres have not had any discussions about work with their candidates. The content of these notes can be very useful to the moderator, who can then make some judgements about the degree of help given to a candidate and hence the degree of skill shown by that candidate.

Teacher annotation of candidates' work was lacking from some centres, though this is required by the specification. Some candidates may well have failed to gain marks for sections where there was no teacher annotation as, without this annotation from the teacher, it can be difficult to see why a candidate has been awarded marks. It is evident that centres that did annotate candidates' work were more likely to have their marking accepted and not have marks moderated downwards, which was more likely with centres that did not annotate the work appropriately. The amount of annotation required is not onerous. For a centre to indicate where in the candidates' work particular criteria have been met is sufficient.

Centres MUST standardise their marking across different teachers. Where this is not done a candidate, whose work may well be marked correctly by the centre, could risk losing marks if a more highly placed candidate's work is found to be over-marked by the centre. The adjustment applied will preserve the rank order and may move down candidates whose work had been properly marked.

Unfortunately, there is evidence of centres not spotting candidates cheating. There were some examples of candidates presenting identical solutions to tasks, either copied from another candidate or direct from a text book. It is vital that centres are very aware of this issue and do all they can to dissuade candidates from what is a very damaging process. Candidates marks may be reduced or they may not be awarded a GCSE at all if there is evidence of collusion in the work.

Project

For the project component candidates are required to submit a report on an investigation into a problem and the implementation of its solution; ideally the solution should comprise a re-usable system. By outlining a scenario at the beginning, candidate(s) will have every opportunity to reach the higher bands, particularly in the analysis, outlining the actual problem rather than any task driven assignment such as the AQA-set Assignment. It should be remembered that unlike the AQA-set Assignment in which candidates have only to list the required tasks, in the project the sub problems should arise from the initial exploration of what the actual problem is. Hence the scenario at the beginning must, especially for the higher mark bands on the Analysis, give sufficient detail to generate the problem and its sub problems. If this detail is not included then the 'problem' effectively becomes just listing tasks, thus restricting the mark award.

The range of topics selected by candidates was in most cases appropriate but centres must take note that the AQA-set Assignment is not the model to follow blindly to produce a good project; some centres are not realising that this is the main reason they are finding their marks are adjusted downwards.

The assignment is designed to lead candidates into analysis and design work. Since these processes may be relatively new to many candidates, the AQA-set Assignment contains much of the analysis and many of the design ideas. The AQA-set Assignment is deliberately task-oriented with the aim of ensuring that candidates are tested over a range of skills and given the opportunity to show how well they can do over a range of tasks. Though the tasks all fit into the same general theme, they are not as integrated as would be expected from a project. There is a greater wholeness to be found in good project solutions and this cannot be achieved using the format of the AQA-set Assignment. The stages may look similar, as they are, but they are not the same.

To improve, centres should consider the amount of detail that the candidate booklet gives about the scenario. It is clearly unrealistic to expect this volume of work to be produced by a candidate, and indeed would be quite unnecessary, but the problem does need to be given a comprehensive overview. Centres should dissuade candidates from entering into task identification too soon. Tasks should not simply appear but should come from this comprehensive description of the problem. The scenario itself will lead to the tasks and, very importantly, the performance criteria.

Initial discussions between the teacher and candidate will play an important role in the choice of project to be undertaken and the eventual method of solution to be used.

Whilst the project is looking for a holistic system approach, it may well be that candidates of a certain ability may be better 'guided' into a limited mark task driven approach; evidence in the work presented suggests that whatever method is used, candidates of all abilities tend to produce a better quality project when they have a genuine interest in the topic to be undertaken, and where genuine research can be carried out.

At the higher levels, it is important that candidates tackle a problem that is enough to provide them with necessary breadth and depth to achieve the higher marks but do not take on the solution to a problem that will be unachievable in the time available. A feature of some projects, which were subsequently moderated downwards, was that of simplistic (though often well executed) problems and solutions that lacked breadth. Projects whose solutions were limited to database work or programming only, were usually not able to achieve high marks. It is unlikely that candidates can produce programming solutions that are truly better than generic software is able to produce. Some limited macro programming is acceptable where the macro adds functionally that would be difficult to achieve from within the software being used. Projects that truly tried to solve problems and used the appropriate software were more successful. Some excellent work was seen from some centres.

Candidates at the higher levels in particular may decide eventually to use a single, powerful package (e.g. Access) to produce their solution or use linked packages; whatever method is used the re-usability MUST be identified together with detailed identification of the desired outcomes and performance criteria. On the work submitted, more candidates were tending to use a single package approach than had previously been seen on the old specification, resulting in more compact documentation and providing a link to higher levels of ICT study, although the majority of centres still are using a range of packages and allowing for the links using integrated software. As indicated in the specification, either of these methods is appropriate if suitably documented.

Links between the sub-problems should be in evidence and with this in mind candidates may be well advised to use a holistic approach to all sections to ensure these links are explained throughout the coursework.

Two significant features in this specification relating to projects are reusability (now included in various parts of the marking criteria) and testing plans. Both these need attention from centres that are hoping to gain high marks for their candidates. There is significant guidance on these features in the specification under the heading "Project Guidelines". The main evidence for the reusability features of a project solution will be found in the Analysis and Design sections, with supporting evidence in the user guide. Candidates should consider the use of the solution they outline at a later date. What happens next week? Next year? How is new data added to the system? Not all aspects of the project need to exhibit this reusability, but there must be evidence of this where appropriate. Projects must be selected that do allow such reusability.

Analysis

Analysis was sometimes disappointing and candidates did not always take enough time to consider significant aspects of the problem. Many, although showing clear signs of ability, tended to adopt a task-oriented approach rather than the essential problem solving work that is required by this specification. The problems need to come out of the analysis and some centres were able to encourage candidates to do exactly this. Each problem needs to be broken down into sub-problems. The better work shows that the candidate has an appreciation of the audience and the uses of the solution they are developing and these candidates do explore the problem and only eventually come to a conclusion as to the precise nature of the issues involved. Less good work reaches conclusions about the problems much sooner. It was not uncommon to find the whole analysis taking no more than a couple of sides of A4 paper. This volume of work is not sufficient for a full analysis and consequently would not be highly marked. It would be very valuable for the centre to state this in their own annotation of the candidates' work.

Design

Design sections were often weak where candidates did not offer much in the way of design. They chose the way they would solve the sub-problems, with little regard to the information requirements. Candidates need to fully explore the possible systems that could provide solutions, and justify the choices they made. They need to identify the techniques that they feel are most appropriate and use the software tools appropriately. Candidates need to keep in mind their analysis and constantly refer to the problem being solved. If they have identified effective performance criteria they are more likely to produce evidence that can be seen as a good solution to the problem. They will attempt to link the various parts of the problem where this is appropriate and address which parts can be re-used and how.

Implementation

Implementation continues to be reasonably well done by many centres. There are some issues affecting candidates who do not annotate and explain their work well. These candidates risk having their mark adjusted because there is not enough evidence for the award of the skill level. It must be noted that moderators may not be familiar with the particular software being used, so they need the candidate to annotate the work in order to be able to make a judgement. Modifications as a result of testing were still rare. This was probably because of the very limited testing that many candidates undertook. Candidates who scored high marks generally recognised the links between various parts of their solution. They moved data around where appropriate, and where possible, identified advantages to the user in not duplicating material. They produced not only good solutions but also efficient solutions where the power of the software and of the particular systems used was most effective.

Testing

The Testing section is where many candidates are weak. Candidates need to be taught how to test and how to set up testing plans. The testing plan would identify how the developed solution would be used and would identify typical data. This test data would be entered into the system to check the functionality and correctness. Candidates would document this fully, giving screen shots where appropriate, to show that the testing had been carried out and the to show typical outputs. Modifications would also be documented. Erroneous data would be

entered and the outputs compared against stated expected results. Extreme data would also form part of the testing. The candidates would comment on the output from this testing and say how they would alter their system to deal with such input. For many candidates testing seems to be no more than a statement such as "I tried it and it worked". Statements such as "I will check the spreadsheet with a calculator" do not form a testing plan. It is very important that candidates understand validation of data on entry, for successful treatment of erroneous data. If the software being used does not allow validation rules, then the candidate can simply explain how they would incorporate validation and what would happen to data entered.

Evaluation

Evaluations were very good where candidates had identified performance criteria in the analysis section. If these are used to identify how well the solution solves the problem, then it is relatively easy to gain high marks. However many candidates are not using these performance criteria. Evaluations must relate the solution directly to the problem initially identified. If the problem is in fact a set of tasks, then candidates will find this process difficult, if not impossible. All they can report is that they succeeded in completing the task. Unfortunately they do not in these circumstances, evaluate the solution, so gain little credit.

User Guide

User guides are often full and detailed and they offer the main vehicle for describing the reusability of the solution. The user guide needs to be divided into sections and candidates must avoid the temptation to produce a software manual. This is not what is required. The assumption can be made that the end-user can use the software but what they need is a guide to the particular solution provided by the candidate. How is the software used in this particular application?

Administration matters

There is a need for centres to:

- internally standardise. If this is not done then students risk having downward adjustments applied because of the inaccurate marking of one teacher on one set of students' work;
- remove work from bulky folders before posting to the moderator;
- ensure that, if plastic wallets are used, all the work is visible without the moderator having to remove it from the wallets;
- ensure the correct marking criteria is used. A few centres used the old specification grids allocating a separate mark for SPG which is now, for this specification, incorporated in to the Analysis, Design and User Guide components.
- ensure that paperwork has been completed as per the specification, as delays are inevitable if the correct documentation is not provided;
- ensure that work reaches the moderator by the deadline (several centres were very late in despatching the work to the moderator);
- annotate the work as required by the specification. Teachers must show why they have awarded the marks. They potentially disadvantage their candidates by not doing this.

Mark Ranges and Award of Grades

Full Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3521/F	85	140	74.8	15.7
3521/7/C	100	105	29.0	16.4
3521/P	100	105	26.9	16.4
Foundation tier overall 3521/F	--	350	130.7	38.4

		Max. mark	C	D	E	F	G
3521/F boundary mark	raw	85	42	38	35	32	29
	scaled	140	69	63	58	53	48
3521/7/C boundary mark	raw	100	41	31	22	13	4
	scaled	105	43	33	23	14	4
3521/P boundary mark	raw	100	45	35	25	16	7
	scaled	105	47	37	26	17	7
Foundation tier scaled boundary mark		350	143	123	103	83	63

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3521/H	85	140	78.1	17.9
3521/7/C	100	105	55.5	21.2
3521/P	100	105	53.6	22.1
Higher tier overall 3521/H	--	350	187.2	51.5

		Max. mark	A*	A	B	C	D	allowed E
3521/H boundary mark	raw	85	67	57	47	37	25	19
	scaled	140	110	94	77	61	41	31
3521/7/C boundary mark	raw	100	82	68	54	41	31	26
	scaled	105	86	71	57	43	33	27
3521/P boundary mark	raw	100	78	67	56	45	35	30
	scaled	105	82	70	59	47	37	32
Higher tier scaled boundary mark		350	264	226	188	151	110	89

Provisional statistics for the award

Foundation tier (10145 candidates)

	C	D	E	F	G
Cumulative %	33.4	50.3	67.8	83.0	92.5

Higher tier (12360 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	7.1	22.8	48.6	73.9	92.2	96.6

Overall (22505 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	3.9	12.5	26.7	55.6	73.3	83.6	90.5	94.7

Short Course

Foundation tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3527/F	80	80	43.9	10.0
3521/7/C	100	120	26.1	17.7
Foundation tier overall 3527/F	--	200	70.0	23.3

		Max. mark	C	D	E	F	G
3527/F boundary mark	raw	80	40	35	30	26	22
	scaled	80	40	35	30	26	22
3521/7/C boundary mark	raw	100	41	31	22	13	4
	scaled	120	49	37	26	16	5
Foundation tier scaled boundary mark		200	78	66	54	42	30

Higher tier

Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
3527/H	80	80	50.3	10.0
3521/7/C	100	120	63.1	25.4
Higher tier overall 3527/H	--	200	113.5	31.9

		Max. mark	A*	A	B	C	D	allowed E
3527/H boundary mark	raw	80	65	56	47	39	28	22
	scaled	80	65	56	47	39	28	22
3521/7/C boundary mark	raw	100	82	68	54	41	31	26
	scaled	120	98	82	65	49	37	31
Higher tier scaled boundary mark		200	157	134	111	88	65	53

Provisional statistics for the award

Foundation tier (8999 candidates)

	C	D	E	F	G
Cumulative %	31.9	49.0	68.5	84.4	92.7

Higher tier (7873 candidates)

	A*	A	B	C	D	allowed E
Cumulative %	8.1	28.4	54.2	78.1	91.2	95.4

Overall (16872 candidates)

	A*	A	B	C	D	E	F	G
Cumulative %	3.8	13.2	25.3	53.5	68.7	81.0	89.5	93.9

Definitions

Boundary Mark: the minimum (scaled) mark required by a candidate to qualify for a given grade. Although component grade boundaries are provided, these are advisory. Candidates' final grades depend only on their total marks for the subject.

Mean Mark: is the sum of all candidates' marks divided by the number of candidates. In order to compare mean marks for different components, the mean mark (scaled) should be expressed as a percentage of the maximum mark (scaled).

Standard Deviation: a measure of the spread of candidates' marks. In most components, approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation from the mean, and approximately 95% of all candidates lie in a range of plus or minus two standard deviations from the mean. In order to compare the standard deviations for different components, the standard deviation (scaled) should be expressed as a percentage of the maximum mark (scaled).