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General Certificate of Education

Applied Information and Communication Technology 8751/8753/8756/8759

IT10 Advanced Spreadsheet Design

Report on the Examination

2007 examination - January series

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General Comments on A2 units

This was the first series for the examination of IT09 (Double Award) and IT10 (Single Award). Centres should note that the difference in weighting of the Assessment Objectives between AS and A2 units also applies to these externally assessed units. In particular, AO4 has 28 marks allocated on the A2 units compared with 14 at AS level. This places particular emphasis on planning, testing and evaluation of the product and the candidate's own performance. Candidates who took account of this weighting generally gained higher marks than those who focused mainly on the implementation of their solution.

In order to gain higher marks in both of these units it is important that a detailed understanding of the client's needs is elicited. This later allows the candidate to formulate relevant evaluation criteria and carry out relevant testing. In producing the evaluation candidates should then use the results of testing as proof of having successfully satisfied their evaluation criteria.

Candidates who failed to understand their client needs sufficiently generally did not refer back to the client needs in their evaluations, nor cross reference the results of testing to the client needs.

Many candidates also did not annotate their work to show how the needs of the client had been met.

Unit 10: Advanced Spreadsheet Design (IT10)

This was the first series for the examination of this unit. The format of the examination is an AQA-set assignment, for which candidates are allowed time for research and design work (the Investigation Time), then a period of Controlled Conditions during which candidates are expected to produce their spreadsheet system and an evaluation of the product and their own performance.

General

The majority of work seen was presented appropriately, and submitted in the order that the tasks were listed in the Candidate Booklet. Centres should remind candidates however, that all pages produced should be numbered consecutively. This includes work produced during both the Investigation Time and Controlled Conditions, and may be done by hand if necessary.

Nearly all candidates provided evidence of setting up a spreadsheet system for a client. Generally, the spreadsheet systems were un-ambitious and the level of complexity of the final systems was disappointing for A2 candidates.

Although it is appreciated that the time for implementing the solutions is limited, this should not prevent candidates from attempting more ambitious work, as if the design work is done thoroughly during the Investigation Time, the implementation should be very straightforward and enable a lot to be achieved in the time allowed.

Although most candidates used many complex spreadsheet features, these tended to be added on to a system rather than being an integral part of it. Candidates should be reminded that they need to justify the features used in terms of how they best help to provide an effective and efficient solution for their client that is useable by the stated users.

Organisation
Some work was not securely fastened as instructed in the Candidate Booklet. A treasury tag in the top left hand corner or a pair of treasury tags, is sufficient to ensure that work reaches the examiner complete and in the correct order.

Choice of clients
Most centres attempted to get a different client and a different problem for each candidate, which is to be applauded as this is truly within the spirit of an applied specification. Candidates who produced a spreadsheet for a genuine client were generally in a better position to explain how their work met the client's needs, and so achieve higher marks.

Systems do not need to be large, but attention should be paid to implementing effective and efficient solutions that are the best possible for the user and that meet the client's requirements.

In some centres, candidates created very similar systems, merely changing the name of the client. This is not recommended, as it is difficult to guarantee that the work done in the Investigation Time is the individual work of the candidate.

Producing a spreadsheet to be used in the home is not in the spirit of the specification. This is an applied course and as such the system produced for this unit should be linked to the use of ICT by organisations. It should be noted that these do not have to be large or commercial organisations.

In some cases where it was not possible to find a genuine client, teachers acted as the client and were imaginative in their scenarios. In such cases they should make it clear what is and what is not the work of the candidate. Only work done by the candidates themselves may be credited.

Investigation Time items

Items (a) to (f) of the task should have been produced during the Investigation Time, whilst items (g) to (k) should have been produced during the Controlled Conditions.

Item (a) - Time plan
Some candidates simply copied the requirements from the Candidate Booklet and placed a date or time against each one. For the plan to be valuable, the candidate should break the listed tasks into smaller, more easily manageable sub-tasks and monitor their progress in completing these on a regular basis.

The plan created should be for both the Investigation Time and the Controlled Conditions, with candidates estimating in advance how much time is required for each task that they have to perform. The plan should be word-processed during Investigation Time and then taken into the Controlled Conditions as a hard copy. It should then be amended or annotated by hand as necessary.

Simply stating the start and finish dates or times has been accepted as sufficient for this series, but in future candidates will be expected to estimate the time required for each task. They should be able to use their experience from completing AS units to help them with this.

Item (b) – Background information

Though most candidates provided detailed background information about their client, few addressed the question 'Why does the client need a spreadsheet system?' in sufficient detail as part of their description. It is important that candidates relate their solution to business needs.

In unit 2 they will have learnt what organisations use ICT for and what benefits can be obtained from its use. In the A2 units it is important that candidates build on this knowledge and understanding and show that they do understand what the spreadsheet system they will implement is intended to provide, in business terms.

Candidates should clearly specify what the spreadsheet would be used for.

Similarly, the users of the spreadsheet system were not always clearly identified and very few candidates referred to the user's skill level within their design work. For example, users with little ICT experience may need a help page or validation of input data in order to reduce the likelihood of data being entered in the wrong format.

Item (c) – Client's needs

This section was often completed in a poor manner.

Few candidates recognised that as nine marks were available for this section, detail needed to be provided about inputs, processing and outputs. For example, some candidates said that an output would be a graph without stating what this graph would show.

To get good marks on this section, the candidate needs to specify in some detail what the client wants. For example, the client might want the spreadsheet solution to print an invoice. The description of the invoice to be output should specify such items as the client's name, address, telephone and fax number, the date, an invoice number, the customer's name and address, details of products purchased, totals without and with VAT. The description of the invoice should also include the detail that it needs to fit on one side of A4 paper. The candidate should also specify that details of the invoice might need to be stored in an archive worksheet if that is what the client wants.

The candidate should then describe what data needs to be entered into the spreadsheet system in order to be able to produce the invoice and what processing needs to take place (for example to calculate the totals) and exactly what steps are required.

In this section the candidate should also state what date format is required, the format of the invoice number and define the format of the customer's name and address. For example are there to be separate cells for forename and surname?

Some candidates stated that the client's needs included six complex features of the software and that the system should include macros. It is unlikely that these would have been specified by the client, and it would be much more useful, for example, to explain that they had asked for an easy way to clear the data from the worksheet so that the next invoice could be generated.

A good understanding of client needs is essential if the candidate is to design, implement and evaluate a spreadsheet system that is an efficient and effective solution to those needs.

Item (d) - Evaluation criteria

Most candidates produced quantitative and qualitative evaluation criteria. Few went on to say why these criteria were appropriate to assess whether the client's needs had been met. Evaluation criteria rarely included references to checking that the calculations were correct.

Good evaluation criteria arise from a good understanding of the client needs and where candidates had not completed item (c) well they often also produced poor evaluation criteria.

Item (e) - Designs

There were many examples of clear, neat designs with good attention to detail, from which it would easily be possible for a third party to implement the spreadsheet solution. However some candidates submitted simplistic designs often produced without even the use of a ruler.

Often candidates neglected to design the processes that were to take place in the system although they had produced good designs for the actual spreadsheets.

Few candidates explained how their designs met the needs of the user, for example by annotating a macro button to say that this button will activate a macro that would move data into a different worksheet to be stored, as required by the client.

Better candidates involved the client throughout the Investigation Time and got feedback from them on the design work. Designs need to be shown to the client, so that improvements or corrections may be undertaken if necessary, before the system is developed. The designs should be annotated with comments from the client and any changes made as a result should be noted. Evidence of showing designs to the client was rarely provided and the evidence that was submitted was often weak.

Some comments on designs from clients were clearly comments made by the candidates themselves because there appeared to be no real client. In this case, the person acting as the client may make comments and a signed statement from that person would be helpful. This statement might explain that the designs had been discussed and, for example, it was felt that the screen was too cluttered and the information needed to be spaced out more.

Some candidates completed their designs in the spreadsheet software itself, in effect implementing the system during Investigation Time, and presenting parts of this as design work. This is not in the spirit of the examination; nor is the submission of retrospective designs produced after the implementation.

Similarly, macro or VBA code should not be included in the designs, as again this is effectively implementation prior to Controlled Conditions. Candidates can list the steps that they will need to perform in recording the macro, or include any form of process description to describe the code, but may not directly copy any code.

Candidates who did produce good design work often created a more effective and efficient system during the controlled conditions.

Item (f) – Test strategy and plan

The majority of candidates did not have a testing strategy. To gain credit candidates need to outline the strategy behind the test plan. A strategy might include answers to such questions as:

- what modules within the spreadsheet need to be tested?
- in what order should testing take place?
- how will testing be done?
- when will the various tests necessary take place?
- how will the whole system be tested?

The vast majority of candidates produced a list of tests that were appropriate for the testing of individual parts of the system. Whole system testing was, however, very rarely evident. For example, candidates showed that validation occurred when entering data into a data entry section of the system and that intermediate calculations or processing took place but did not show how the final output was affected as a result.

Few candidates provided data sets or stated the expected outputs as a result of testing. These data sets should include 'extreme and erroneous data,' that is data that should try to provoke failure. Most candidates carried out testing only with normal data.

An invoicing system should show a set of data from an order going through the system and the final printed invoice that is generated as a result.

Controlled Conditions items

Centres are reminded that Controlled Conditions means examination conditions and that clear guidance is provided in the Teachers' Notes about what is and what is not allowed. Any queries should be addressed to ICT Subject Support at AQA (ict-subjects@aqa.org.uk).

Several centres seemed to be unclear about what is allowed to be taken into Controlled Conditions sessions. No electronic files may be taken in to these sessions, as stated in both the Candidates Booklet and the Teachers' Notes. Only material in the preparatory folder (items (a) to (f) in hard copy format) should be made available to the candidates.

There was evidence that some candidates had access to their normal user areas during the Controlled Conditions sessions. It is the Centre's responsibility to ensure that candidates only have access to the facilities allowed, as stated in the Teachers' Notes. Access to all other facilities should be prevented.

Item (g) – Testing

Most candidates provided evidence of a series of tests for parts of their system. Many candidates did not test the whole system. In order to do this it would be expected that candidates would provide evidence of data input and to follow this through the system so that the final output can be checked. For example, when an item of data is input into a data entry form for an invoice system

- what are the intermediate calculations (if any)
- what is the final total of the invoice?
- does the final total match the expected answer?

Some candidates provided no screenshots at all as evidence that testing had been carried out; though in many cases this is the easiest form of evidence to produce. Some candidates did not

provide printouts of the output that the system generated. These candidates achieved few marks on this item.

Better candidates provided evidence that they had tested all formulae and functions using normal, extreme and erroneous data. They also tested the whole system, not only comparing their results with the expected results, but also explaining how the results proved that the system met the needs of the user.

Item (h) – Implementing the spreadsheet

This section comes after the evidence of testing, as it should be a description of the spreadsheet and how it works, for possible future maintenance or updating. It should not be an account of how the spreadsheet system was constructed or how to use the spreadsheet software.

Candidates should provide annotated printouts of all the outputs from the system, as well as annotated printouts or screenshots that describe the features used; the formulae and functions used and annotated code for any macros created. Annotations should also show the use of sheet names, filenames, named areas and macros that show how the work has been managed effectively. Few candidates provided comprehensive evidence of implementation.

Screenshots should be used to show how the interface will appear to a user of the stem that has been created and these should be annotated to explain why features have been used to make the interface appropriate to user needs.

Many candidates provided a step-by-step report on how they had set up the spreadsheet. This is not necessary. For example if a candidate records a macro, it is sufficient evidence to include the macro coding with annotation that explains what it does. It is not necessary to provide screenshots of each of the stages in recording the macro.

Several candidates included screenshots that were impossible to read, either because they were too small or because of a poor colour choice when the output was printed in black on white. In some cases it was difficult to award marks for the use of appropriate filenames and sheet names as screenshots had been cropped, effectively removing this evidence.

The standard of evidence for the use of formulae was weak, with many screenshots or printouts showing them truncated, so making them difficult to read. Inclusion of row and column headings in screenshots, or full printouts of the formula view would provide good evidence.

Few candidates made sufficient reference to the client's needs that were originally listed. This unit is not just about producing a spreadsheet but about producing a spreadsheet system to meet the needs of a client. In order to gain the highest marks available, evidence of implementation should be annotated to show how the client needs have been met.

Although the Candidate Booklet and Specification clearly state that a reusable spreadsheet system is required there were many cases where the 'reusable' aspects were not implemented.

Candidates should be encouraged to make use of the template creation facility within the software application used, or a macro that clears existing data from the spreadsheet.

The Candidate Booklet states that listings of macro code should be included where appropriate. This was often missing from the evidence of implementation so that credit could not be given.

Most candidates had used a variety of appropriate complex spreadsheet features in their systems, but very often these were not annotated to show neither how they were appropriate nor how they met the needs of the client. Candidates who did not explain these features were not able to gain all of the marks available.

Many candidates had only implemented systems that partially met the needs of the client and so could only gain a proportion of the marks available.

Item (i) – Evaluation of the system

The vast majority of candidates produced an evaluation.

For good marks in this section, candidates are expected to refer back to the client needs, user skills, and evaluation criteria that they defined during the Investigation Time. The results of testing may usefully be used to determine whether the evaluation criteria have been met by their systems and can use this to show how client needs have, or have not, been met. Better candidates used this evaluation to identify areas of their systems that could be improved in the future. Very few candidates had included all these components.

Item (j) – Adhering to the implementation schedule

This section was not tackled well, with many candidates simply writing 'achieved,' against every line of the original time plan. Some candidates, though, did attempt to explain necessary changes, delays and amendments to their plans. This clearly showed that they had monitored their progress effectively and these candidates achieved all the marks available for this item.

Item (k) – Evaluation of the candidate's own performance

Very often the evidence provided for this was no more than an anecdotal account of what had been done. Candidates should review what they have done, and how they have worked, in producing the spreadsheet system and then identify areas that they consider to be personal strengths and weaknesses, as well as areas for improvement. Better candidates considered such things as skills that they had acquired or improved, both in the use of software and in soft skills such as eliciting client requirements. They were also realistic and honest about their shortcomings.

Quality of written communication

Many candidates wrote well about their spreadsheet system, the decisions that they had made and the actions that they had taken. Some candidates failed to gain higher marks because they had not proofread their work or had not used the facilities available within their word-processing application to check their work.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the **Results statistics** page of the AQA website.