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General Certificate of Secondary Education

GCSE Applied Information and Communication Technology 3851 (Double Award)

3850/2 ICT in Organisations

Report on the Examination

2008 examination - June series

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Applied Information and Communication Technology (Double Award)

3850/2 Unit 2: ICT in Organisations

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Unit 2 – ICT in Organisations

Introduction

A series of full-day Teacher Standardisation meetings was held in the Autumn term, although unfortunately these were not as well attended as AQA had hoped. The split in candidate performance last year between those centres who understood what was expected and those who showed a lack of understanding as to what was required, has been narrowed this year. Most of the centres that attended meetings, had Portfolio Advisor visits or have regularly used the email portfolio advice system have developed well this year.

Sections 3 and 4 of the marking grid were rationalised this year to provide a more logical order for teaching purposes. Moderators were pleased to note that many centres used the updated marking grid in addition to annotating the candidates' work. Centres are to be commended in adopting this practice and it is to be encouraged. Using the grids and annotating the work enabled moderators to see exactly where marks were being awarded which resulted in more detailed feedback being given to centres.

A number of centres did not meet the published deadlines for submission of marks for the portfolio work. This seriously hindered the moderation process. Centres are reminded that if deadlines are not met there is a serious risk that candidate results for that centre will not be published at the expected time. Centres are reminded that the three units which make up the specification are moderated and examined by different people, and so sending all candidates' work to one moderator will delay the moderation process.

In order to ensure the smooth running of the moderation process, centres are reminded to check that the portfolios are tied together loosely with a treasury tag through the top left-hand corner, and that each portfolio has the correct Candidate Record Form attached that has been signed by the candidate and the teacher. The Candidate Record Form is imperative as failure to do this will result in a candidate being awarded zero. The completed Centre Declaration Sheet must also be enclosed.

This is the fifth year that the unit has been moderated. The unit consists of four sections; description of ICT systems, hardware, design of an ICT system and evaluation of the ICT system. Candidates are expected to provide evidence for all four sections. If candidates use screen prints in any of the sections, it is expected that they be of a size that can be read easily.

Description of ICT Systems

Candidates are expected to write a description of three ICT features from each of the two named, contrasting organisations that they have chosen. Moderators are pleased to note that most candidates did attempt descriptions of two organisations.

The majority of candidates named the organisations being described, however, there are still some candidates who are providing a general overview of how ICT is used within, for example, 'banking' or 'supermarkets'. This section is expected to be a case study and therefore candidates must name the organisations studied. Failure to do so results in the loss of marks.

Candidate produces a basic description of two features of the use of ICT by two contrasting organisations (5 marks)

Most candidates were able to identify two organisations and include detail of at least one application of ICT within the organisations. Some candidates, however, did not name specific organisations and referred instead to generic institutions such as schools or hospitals. In some cases, the description of ICT was very generic, for example, 'ICT is used in finance', with no further detail as to the type of application used. Many centres appeared to award marks for descriptions of the organisations' structures or backgrounds, rather than their uses of ICT. Many candidates appeared to provide a minimalist approach to this section. Although a basic description is acceptable, it is expected that a description of the ICT and how it is used is included rather than just a simplistic statement. For example 'The school uses SIMS..' does not describe it, nor does it identify any ICT. A database would have to be mentioned. Failure to mention the ICT within the description resulted in many candidates being unable to achieve marks.

Most of the organisations chosen by candidates were appropriate and contrasting. However, in some cases, candidates had discussed the same ICT uses for each organisation. This resulted in some candidates repeating the same information and therefore limiting the marks that they could achieve. Different uses of ICT allow candidates to achieve greater discussion.

Candidate produces a more detailed description of three features of the use of ICT by two contrasting organisations and describes briefly two advantages and two disadvantages of these systems (4 marks)

Many candidates failed to describe three distinct uses of ICT for both of the organisations they had identified. There were candidates who described three uses of a single ICT application rather than three distinct applications of ICT; this is not what is required. Some candidates included more than three descriptions of ICT. Where this happens candidates are only awarded marks for the three best descriptions. Candidates should be encouraged to include no more than three features for each organisation. This will greatly assist the moderation process.

Moderators were pleased to note that most centres now appear to understand that in order to be awarded these marks, advantages and disadvantages must be addressed within both organisations. Some candidates were able to describe the advantages of the system for the organisation, however many candidates either listed advantages and failed to give a description, or provided the advantages to the customer or the staff. This can be discussed as part of the 'bigger picture', however, unless the advantage to the organisation is described marks cannot be achieved.

Disadvantages were less well identified. Candidates often described generic problems such as 'it might break down', 'it might get a virus' or 'it might crash' and did not consider the measures taken by the organisation to avoid this. Few candidates appeared to consider both the organisation and the ICT when trying to identify a disadvantage.

Candidate produces a very detailed description of the main features of the use of ICT including two advantages and two disadvantages, and the impact of ICT systems within organisations, referring to working practices, cost and also information and processing characteristics, using three different sources (8 marks)

Many candidates included simple descriptions of the ways ICT impacted on the organisation. Centres sometimes awarded this mark where the candidate had not described the impact of ICT on both organisations.

Describing the impact on working practice was carried out less well, as few candidates appeared to consider the ways in which people's approach to working has changed since the introduction of ICT. Many candidates provided generic information regarding job losses, or the need for training, without discussing the impact on the working practices for that particular organisation. Few candidates included sufficient detail to be awarded both marks.

Many candidates attempted to include details of cost, but these were often either generic responses that did not relate directly to the organisation or were details of prices and did not consider the full working and long-term costs to the organisation. It was common to see statements such as 'it is expensive' or 'it costs a lot to put in place', with no further explanation. This approach is not sufficient. Few candidates included details of cost benefits and a description of the ways in which the ICT had made the organisation more cost efficient.

Candidates generally included details of the information that was contained in at least one of the ICT systems they had described. Centres are reminded that to achieve an information mark this must be carried out within both organisations. Processing was less well done, with candidates often omitting the ICT system process but discussing, for example, in terms of a customer entering a shop and buying goods. The way the ICT system processes information is what is required and must be included within both organisations to achieve a mark.

Moderators were pleased to note that many candidates were now referencing sources correctly. Although candidates often outlined three sources, many were of the same type and could not therefore be awarded the marks. The requirement is for candidates to correctly reference three different **types** of sources used for their research.

Candidate produces a very detailed and well-structured description of the main features of ICT use, including advantages and disadvantages, impact, details of information and processing characteristics of the chosen systems, referring to verifying data, security and robustness, using three sources, showing evidence of validation (6 marks)

Moderators were pleased to note that most candidates' reports showed evidence of different structure techniques. The majority of candidates used headings and paragraphs and bullets/numbering, but few used an introduction and a conclusion to the report. On some occasions candidates provided an introduction, but failed to provide a conclusion. Where this occurs, candidates are unable to achieve the mark.

Some candidates demonstrated a good understanding of the verification of information by one of the organisations discussed. Examples such as the use of the check digit on a bar code, the double entry of a password for the process on an internet registration process and double checking information manually were common.

Moderators were pleased to see that candidates showed an understanding of the security measures taken in order to protect the information on the systems. The most common details were of the use of passwords and user names, firewalls, secure websites and anti virus software. Sometimes this element was confused with the robustness of data. Backing up a system is not evidence of robustness of data, but security of information. There was very little evidence that candidates understood the term robustness in terms of data in the systems they had described. Few candidates described the way in which the systems they had described try to restrict data entry to reduce the risk of the system crashing, or to protect the system from the user. Some candidates included details of validation techniques, though sometimes these were generic rather than specific to the system described. Some candidates had tried to apply their theoretical knowledge of validation to the systems described but came up with unrealistic scenarios. Some good examples were the way websites use postcode validation and lookup tables to help customers add their addresses to forms, and the way concept keyboards or touch screens are used to restrict data entry in systems such as EPOS.

Moderators were disappointed to note that although the validation of information used for their research is a common feature for all three units, there was little evidence within this unit of candidates attempting this criterion. It is vital that candidates outline what specific information has been checked and how it was checked between two different sources for accuracy.

Hardware

Candidates are required to produce a description of three hardware features, which includes technical details. In addition to this they need to identify the cost and effect these features have on the efficiency of the whole system. Candidates are expected to describe three types of connectors including technical information.

This section showed that some of the centres had thoroughly taught hardware and candidates showed a sound understanding of the technical information regarding different devices. However, many candidates still showed a lack of understanding. Much of the information had been taken directly from well-known sources and many candidates did not attempt to make this information their own. Some candidates simply listed different brand specifications for different hardware devices.

Candidates should be encouraged to provide an in-depth study of three hardware features rather than a brief description of lots of hardware features. If more than three hardware features are identified, the strongest three are chosen for awarding purposes and the remainder are ignored.

Candidate produces a basic description of two hardware features of ICT systems (6 marks)

Most candidates were able to identify two hardware features on which to base their report. A significant number of candidates, however, identified specific makes and models rather than generic hardware types.

Simple descriptions of the purpose of the hardware were often sufficient to be awarded marks. However, some candidates had included descriptions which appeared to be the specifications of specific makes and models which did not include the simple description of, for example, ‘A printer is…’

Many candidates had included the technical description of how hardware works. However, it was not always certain that the work was the candidates' own, as in many cases it appeared to be very similar to commonly used sources.

Candidate produces a more detailed description of three main hardware features of ICT systems including the ways in which components are connected (6 marks)

Very few candidates included technical details, beyond a basic technical description, that demonstrated sufficient understanding to be awarded this mark. Many candidates included a large amount of technical detail but it was often not well explained. Some candidates had included details of more than three hardware devices and only the best three could be awarded marks.

Moderators were pleased to note that centres had taken on board previous advice given and many candidates had included good descriptions of the different connections used by the various hardware including details such as the data transfer rates or the difference between analogue and digital connections and how these things affected the user. Some centres still awarded these marks where candidates had not included this level of detail. Mentioning the connector, or a photograph of the back of a computer with the different connection labelled, on its own is not sufficient.

Candidate produces a detailed and well-structured description of hardware features that determine overall efficiency and cost of ICT systems (6 marks)

Many candidates had included sufficient structure detail in their descriptions to be awarded both marks. Some centres chose to present this section as a presentation or a brochure. This is acceptable, however candidates must ensure that they use the structure features outlined.

Many candidates had included some detail of what features of the hardware related to its efficiency and how this affected the user. However, some centres had awarded these marks for very simple descriptions, or where there was no evidence. Many candidates mentioned features that could relate to efficiency but the link was not always made, for example some candidates discussed print speed and quality for different types of printer but did not relate this to efficiency.

It was evident that whilst carrying out research, candidates had come across websites that were from other countries and discussed cost in terms of dollars. This is not appropriate for this section and centres should discuss with candidates how to refine their searches. Simple price lists are not accepted.

Design of ICT System

Candidates are required to design and model their own ICT system. Some candidates tackled this task with clear direction and thought, understanding why they were creating the system and the benefit that it would have for the organisation they were developing it for. These candidates were successful in being able to explain why and discuss ways to develop their system. Candidates who lacked the understanding of the purpose of the system appeared to be designing something in order to 'tick boxes'. This resulted in a lack of reasoning and explanation as to 'why' they were introducing certain elements to the system. Although creating the system is important, what is fundamental to this section is the explanations and

understanding as to why candidates are carrying out certain aspects of the system development. Candidates must be able to express this.

Candidate produces a basic description of the design for the ICT system, including purpose, benefits and information requirements (4 marks)

Moderators were pleased to note that many centres had taken on board the advice given last year and candidates were able to outline explicitly the purpose of the system that they were going to create. There was still evidence of candidates describing the existing system in terms of being paper-based and, because of this, disorganised with a tendency to lose important records pertaining to the organisation. Many paper based systems are actually quite well organised, and it is naïve of candidates to state that this is the primary reason for the introduction of an ICT system. It is disappointing that candidates are still outlining this as the purpose of a system. Candidates who had a clear idea of the purpose of the system and the job that it would do tended to do well. Integral to this discussion will be the benefits of the system for the organisation. Many candidates presented a bullet pointed list without actually discussing why something was a benefit. Although many candidates gave details of the benefits of their system, some of these were vague (better than the old system, quicker to find information). If candidates had included more information about why this would have been the case then they could have gained a mark.

Most candidates did not give reasons as to why they were choosing a particular software type for their system, even at a basic level. Some identified what a spreadsheet or database could do but did not link this to their system.

It was encouraging to note that candidates where identifying the information requirements for the system. At a basic level this was generally carried out well.

Candidate describes in more detail the design for an ICT system, and represents the system in an appropriate graphic manner (5 marks)

Although some candidates had included more detail for an element of the previous section, centres did not always appear to understand that one mark may be awarded for a detailed purpose, one mark for detailed benefits and one mark for detailed information requirements. Generally the purpose and the benefits were described in no more detail and did not demonstrate any further understanding than that of a basic description and thus, could not be awarded these marks. Moderators were pleased to note that many candidates were able to describe the information required for the system in some detail.

The DFDs produced were generally good. Many candidates clearly demonstrated the inputs, processes and outputs of the system. In addition to this most candidates included either a decision, or identified what was a manual and what was a computer operation. Centres need to be careful that they do not provide the outline of the DFD where the candidate then fills in the gaps.

Candidate produces a very detailed description of the design for the ICT system, represents system graphically and models system using ICT (7 marks)

Very few candidates were able to provide a detailed description of the system design.

Most candidates scored well for demonstrating the modelling of the system using ICT. However, it must be stressed that candidates are required to include a description to accompany any screen shots. In addition, candidates should be careful that the screen shots are not so small, nor that colour combinations which are then printed in black and white mean that they cannot be read by the moderator.

Some centres misunderstood the requirement and confused 'Models system' and 'Evidence of operation'. Candidate who designed databases were often able to provide more evidence than those who designed spreadsheets. Candidates sometimes included written or drawn design details which could not be awarded marks.

Candidate describes in detail, represents graphically and models ICT system, including evidence of operation of system and commentary on the system development (8 marks)

Moderators were pleased to note that candidates were more successful than in previous years in demonstrating the operation of the system. Centres are reminded that screen prints should be of a comfortable reading size and that evidence for this should not be taken from the user guide.

Few candidates had included details of changes or development ideas, they had made during the implementation of the system which would be needed for marks to be awarded for the commentary on the development of the system. Many centres had awarded these marks incorrectly, where candidates had simply described the implementation of the original design. The marks were sometimes awarded, incorrectly, for aesthetic refinements.

Candidate describes in detail and models ICT system supported by evidence of development and describes critical success factors for system (4 marks)

Few candidates were successful in identifying meaningful success factors. Most were at a trivial level, for example, that a search should be done in 10 seconds or that it should be easy to add a new record.

A suitable example might be that the system correctly produces a set of mail-merged letters identifying those members who have failed to pay their subscriptions.

Candidate describes in detail data types and sources, processing requirements and outputs, illustrating solution with a large data set (7 marks)

Many candidates failed to understand that each criterion in this section requires a detailed description. Thus, for M1, most candidates appeared to assume that their screen shot showing field names and data types at the design stage of setting up a system in a database would be sufficient. This does not constitute 'describes in detail'.

Candidates must provide an explanation of the different data types used, e.g. logical where the response is 'Yes' or 'No'. This choice could be elaborated upon by explaining that data entry, when such a data type is used, is facilitated by ticking a box rather than typing in the data. The choice of Date and Time as opposed to giving dates as Text could be explained in terms of 'greater than' searches being the equivalent of 'later than' if this data type is used. Candidates are expected to explain why they have used particular data types in order to be awarded these marks..

Those candidates whose solutions were spreadsheet-based did not always address the issue of 'data types'. This does not mean that candidates have not formatted the cells appropriately but they have neither described it nor provided suitable evidence.

It was pleasing to note that some centres had taken on board previous advice given with regards to completed data capture forms which were accompanied with an explanation as to how they would be used to collect information for the system. Unfortunately, some candidates are still submitting a data capture form with no explanation, or simply saying 'I would get the data from the old system'. This is not sufficient. Once converting an old paper based system to an electronic format, new data will eventually be added. Where will this come from and in what form? This information was often omitted.

Very few provided any information for the details of processing requirements. Candidates were generally able to provide details of output requirements, but very few provided sufficient detail for the two marks.

A large data set, comprising 25 to 30 records, is not the only requirement of the data set. The data set should be suitable for testing the system showing a variety of data types and would include examples, suitably highlighted, of extreme and erroneous data. This information was occasionally seen within the testing section. Many centres, however, are still awarding this mark without the necessary 'suitable to test the system' evidence.

Evaluation and Testing of ICT System

Candidate provides evidence of refinements to system, including results of testing with a range of data, and describes efficiency and robustness of solution (6 marks)

Refinements in N1 refer to aesthetic improvements and some candidates met that, perhaps by adding a logo. Centres are reminded that a before and after screen print is required with some explanation as to why this aesthetic change was made.

Moderators were pleased to note that the test plans provided by the majority of candidates were an improvement on previous years. Candidates clearly outlined expected and actual results. Some candidates, however, still provide general descriptions for the results such as 'accepted' or 'rejected'. This is not sufficient; candidates need to show the actual result through the use of a screen print.

Although M1, details of data types, was very rarely addressed, moderators were please to note that there was an improvement for the N3, use of a range of data, evidence this year. Candidates often showed the formatting of different data types within their systems.

Very few candidates addressed the question of efficiency, N4, even though most of them produced a relational database or at least a database with more than one table, even if it was not actually set up as relational. Many candidates included macros which improved the efficiency but, again, failed to describe their use. To gain a mark, it would be sufficient to describe how the macro was implemented and to explain how it enables several functions to be automated by issuing a single command, for example, by selecting the appropriate button with the mouse. There was often a minimalist approach to this criterion where candidates stated that they use a macro because it made things faster. There must be some further explanation to be awarded the mark.

The misconception over robustness, N5, was repeated but the more able candidates realised that devices such as validation and the use of input masks contributed towards robustness even though they did not use the correct term. A number of candidates referred to the need to guard against incorrect data entry but didn't relate this to the concept of robustness.

Candidate produces documentation for system written in a style appropriate to the intended user (4 marks)

Most candidates produced reasonable user guides but, because the purpose of the system was often not identified at the start, many of them described how to set up a complete database from the outset rather than concentrating on its use by an end user.

Two marks are available for the production of a basic user guide. A general guide, recognisable as a user guide, would be sufficient for one mark even though it might be incomplete. In order to be awarded the second mark, the guide must be complete in terms of the topics covered.

To be awarded a third mark, criterion O2, it is only necessary to include appropriate screen shots.

The final mark is awarded for a user guide that is appropriate to the user. This will depend upon how the candidate approaches it but it is likely that an 'appropriate' guide would be one which concentrates on the use of the finished system by the end user. Concentrating on, for example,

setting up a database and including details of data types and other design features would be inappropriate for this mark. A user guide is required, not a technical guide.

Candidate tests system against all practical initial conditions, and produces systematic documentation of results (4 marks)

Candidates did test various aspects of their systems but this was not always well documented.

A sizeable number tested functions which are already built-in, for example, data entry which did not match the data type, rather than additional safeguards which they, themselves, had designed and implemented.

A number of candidates tested that a database would accept a new record. Such a test is not relevant in this context as it would be expected that the software would function correctly from this point of view.

Marks were awarded for testing that the candidate's own validation techniques functioned correctly, for example, a range check with the corresponding error message, and for testing the operation of a macro.

In the case of a spreadsheet solution, marks were awarded for testing conditional formatting. Marks were also awarded for the use of extreme and erroneous data but, in all cases, the work must be clearly documented. Two marks were available for the testing and a further two for the documentation.

Candidate provides evaluation of the system, including evidence from third party (5 marks)

This was generally poorly done and responses tended to be descriptive rather than evaluative. It was often a more detailed repeat of Section H.

In order to score marks, candidates must identify a strength of their system for 1 mark, and then go on to identify a weakness for a second mark. In order to gain the final mark available for criterion Q1, the evaluation of the system, candidates must suggest how they might overcome the weakness.

The vast majority failed to address the third party evaluation adequately, Q2. Some candidates produced a questionnaire which had been given to a third party, or had interviewed a third party. Many candidates responded to the third party feedback by simply saying 'I agree with the feedback'. This is not sufficient for the mark. Which parts of the feedback do they agree with, and why?

Candidates should elicit reactions from the end user to which they can respond. Suggestions such as, 'It would have been better if you could have included …….' could lead the candidate to give a considered response, either by agreeing with the suggestion or ruling it out. Centres are reminded that information and examples provided at standardisation meetings by the presenter

are often an abbreviated version of acceptable information. Therefore simply saying, 'I agree' is not sufficient; there must be some explanation.

Candidate provides detailed evaluation of the system and also of user documentation including third party feedback (5 marks)

Q1 was rarely answered well with very few, if any, candidates scoring marks in this section.

Most candidates did not seem to realise that an evaluation of the documentation was required, R2. Where there was an evaluation, it tended to be trivial, e.g. the addition of more screen shots, or a more detailed description, rather than a more substantial suggestion such as the addition of an index.

The third party feedback to the user documentation was similar to that of the system and therefore most candidates did not achieve well here.

Conclusion

The feedback forms to centres this year continue to be very detailed in order to assist the centres for future development of this unit. Centres are reminded that ongoing support is available throughout the year. Centres requiring help in the interpretation of the specification or guidance on schemes of work or delivery should contact aqagcseappictpa@aqa.org.uk