AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

General Certificate of Education

Applied Information and Communication Technology 8751, 8753, 8756 & 8759

IT05   Fundamentals of Programming

Report on the Examination

2007 examination - June series

Introduction

This was the first session with availability of all of the units for both the user and practitioner awards at A2 and the second session for AS. The general standard of work seen across the AS units showed a definite improvement over the last session. The general standard of work across the A2 units was very pleasing with much creative work seen and clear indications that candidates with a wide range of abilities are succeeding with this Specification. This of course is inevitably not true of all candidates. Many centres should be congratulated on their approach to these courses as they have embraced the meaning of Applied ICT. Some centres, however, do need to consider the approaches taken to some of the units so that they can help candidates to attain the best possible marks. Centres are encouraged to make full use of the advice, materials, such as the Teachers Guide, and training available to them and to attend the feedback meetings for the A2 units and standardisation meetings that will be held in Autumn 2007 for both AS and A2 units.

Unit 5: Fundamentals of Programming (IT05)

General comments

This was the second Moderation series for all Centre-assessed coursework units at AS for this new Specification. The quality of work submitted for all units again varied in quality and presentation, with some high quality work seen in all units and some work achieving maximum marks. It was also clear that many candidates had enjoyed the work that they were doing and this was shown in the imaginative portfolios that were produced. In general the standard of work submitted had improved and far fewer misinterpretations of the portfolio requirements were seen than previously.

The nature of an applied Specification presents some unique challenges to teaching staff. It was pleasing to see that many centres continued to embrace an approach which set the learning in a real-world context and engaged the candidates in producing real work for real clients. In addition, some centres that had difficulty in engaging real clients had developed realistic scenarios for their candidates which gave them no indication that the client was not real. Candidates from centres where unrealistic scenarios were used again performed less well than those who used the recommended approach.

Portfolio presentation

The perfect portfolio is one that presents the candidates work in a logical sequence, with each page numbered sequentially, secured with one or more treasury tags. If it is deemed necessary the portfolio can then be placed in a card folder or card envelope for protection. This makes the moderation, and marking, process very easy.

Most centres provided securely bound portfolios of work for this session, and most heeded advice on page numbering of portfolios. Unfortunately some presented work in inappropriate bindings such as plastic wallets and ring binders. These make it much more likely that pages will become detached from the rest during posting and moderation.

Documentation

Each portfolio should have a Candidate Record Form securely attached to it, completed by the candidate and by the teacher. The majority of portfolios did have, but a minority had these forms incorrectly completed. This is an important document needed to prove that the work is the candidate's own and centres are reminded to refer to the guidance on such issues provided by the JCQ as well as AQA. In some instances the Candidate Record Form was missing entirely. It should be noted that it if the Candidate Record Form is not provided and correctly completed a candidate may have a result of zero marks entered for that unit.

Each Unit must have a Centre Declaration Sheet, completed by all the assessors for that Unit and by the Head of Centre. This must be submitted with the sample of work sent to the Moderator. Again, most centres did include this but a substantial number needed to be reminded by the Moderator. Centres should be aware that failure to submit the Centre Declaration Sheet, duly completed, may result in all candidates for that Unit receiving zero marks.

Centre Mark Forms should be completed and pink and yellow copies submitted to the Moderator by 15 May. A small number of Centres did not submit these on time. In a few cases Moderators again noticed some substantial differences between the marks recorded on the Candidate Record Form and the Centre Mark Form.

Use of AQA Marking Grids to record assessment decisions

AQA has devised Marking Grids for each of the Centre-assessed units to allow assessors to systematically assess the work of candidates and to record their assessment decisions. A number of Centres used the 2006 versions, which are out of date as amendments had been made prior to the standardisation meetings in the Autumn term. Centres should ensure that they are using the latest version of the Marking Grids (the latest version is the one published on the AQA website).

Many more Centres than previously had adopted these Marking Grids and had included them with the submitted portfolios. Other Centres had devised their own Marking Grids or devices that were based on them. In some cases the centre-devised grids contained errors, such as incorrect interpretation of the assessment requirements, or transcription errors, that could lead to incorrect assessment decisions.

Whilst there is no requirement to use the AQA Marking Grids, it is recommended that Centres do so. The Marking Grids have a space for page numbers to be added by the assessor to note where criteria have been met. Each row of the grid also has a space for a total and each Assessment Objective has a space for a subtotal. These subtotals should be transferred to the summary and a mark for the unit recorded.

It is important to note that each row on the Marking Grid should be used from left to right. Only if the cell on the extreme left has been fully satisfied should the assessor move to the next cell in the row. If the assessment requirement for a cell has not been fully satisfied then no more marks may be awarded on that row.

It was observed during Moderation that where Centres had used Marking Grids and included page references, the assessment was much more likely to be accurate. Where Marking Grids had been used, but no page references were included, assessment tended to be much less accurate and was often very lenient. The use of page numbers also allowed the Moderators to find the relevant evidence much more quickly. Where page numbers were not included the process tended to be re-marking rather than Moderating.

Standard Ways of Working

Standard ways of working is assessed in each unit, with an emphasis that is appropriate to that unit. So, for example, in Unit IT02 it is assessed through the actions the candidate takes to ensure compliance with copyright. In Unit IT04 it is assessed through the actions that the candidate takes to ensure that they comply with safety procedures necessary when working with static-sensitive and electrical equipment.

Many candidates included virtually identical sections labelled 'Standard Ways of Working' that included, for example, VDU regulations, details of backups and file naming conventions in each of the units submitted. Although these gained some marks where they met the appropriate criteria for the individual units, much of the content gained no marks at all.

Use of real clients during the production of portfolio work

The Specification states that "The fundamental philosophy of this Specification is that, in order to understand the nature of Information and Communication Technology, candidates must actively experience the Information and Communication Technology environment. This can be achieved through a variety of approaches including work experience, links with local employers, case studies and research."

The use of a real client is, therefore, emphasised in the allocation of marks for assessment. In some units candidates have to produce notes from a meeting or briefing with a client, in all they have to describe the clients' organisation and the client needs and for the higher marks, where practical skills are involved, they have to justify or explain what they have done in terms of meeting the needs of the client. In order to do these things the candidates need to have a clear picture of the client and their needs.

There was a clear differentiation between candidates of similar ability who had used a real client and those who had not. Candidates who had the involvement of a real client had a clearer idea of what was required than those who did not. Candidates from Centres who allowed the candidate to act as their own client, or who asked them to make up a client, tended to make unrealistic assumptions about what was required and this was reflected in the portfolio of work that was produced. Consequently, this was also reflected in the mark that those candidates achieved. Where candidates had engaged with a real client the portfolio of work often had a narrower focus with the candidate having a clearer idea of how what they produced was meeting the needs stated. This tended to make it easier for those candidates to access the higher marks.

Some Centres, for some units, adopted a compromise approach where the teacher acted as client for a number of candidates who were all working on the same scenario. Again in these cases, candidates tended to make assumptions about what was required but this was not as obvious as when an entirely fictitious client was used. In the best of these cases the candidates thought that they were working with a client who was real, as all communication took place by email, the teacher, who the candidates perceived as the client, responding to each individual as appropriate.

Internal Standardisation

In the samples taken from some Centres there was clear indication that internal standardisation had taken place across groups of assessors for individual units. Where this had not taken place there was occasionally variation in the assessment decisions of different assessors. Centres should be aware that this can lead to adjustment for all candidates for a unit where marks are found to be out of tolerance. Centres are reminded to read the rules for centres on internal standardisation. Centres are also advised to ensure that they are familiar with the relevant JCQ guidelines on coursework.

Assessment Objectives

Each Unit is assessed through criteria set within four Assessment Objectives (AO). These are common to all Awarding Bodies Specifications for GCE Applied ICT and were set by QCA, as were the weightings for each AO.

AO1 (ICT capability) is generally concerned with assessing the candidate's practical skill in using appropriate software, specified within the unit content, to implement a product for a client.

It also assesses the candidate's ability to adhere to standard way of working – this has a different emphasis according to the individual unit.

AO2 (Knowledge and understanding) assesses, within the context of the unit, the candidate's knowledge and understanding of the material relevant to the particular unit, as outlined in the 'You need to know, understand and be able to demonstrate' section of the Specification for each unit outlines what is required

AO3 (Apply knowledge, skills and understanding to produce solutions to ICT problems) involves assessing the candidate's ability to be able to apply the knowledge and understanding that they have gained to a particular situation and to use it to design solutions to problems that can be solved using these practical skills. Candidates must be able to formulate criteria that will allow them to test and assess how well their solution meets the client needs. They will also have to design any tests that will be necessary to provide evidence of whether assessment criteria have been met and hence whether the solution meets the client needs.

AO4 (Evaluate ICT solutions and own performance) assesses the candidate's ability to show the results of testing their solutions and analyse these in order to assess how effective they are. They also need to assess their own performance in meeting the requirements of the unit. Also assessed is the quality of their written communication.

Comments on AO4 that apply to all the AS Centre-assessed units

Assessment Objective 4 (AO4) has the same weighting and contains the same criteria for all AS units. It assesses the candidate's ability to plan and manage their time; describe the tasks that they needed to carry out in order to complete the requirements of the unit; set criteria against which they can evaluate what they have produced and carry out testing that takes into account these criteria; evaluate what they have produced and their own performance in producing it.

Row 1 assesses the actions taken by the candidate in tackling the work necessary to create the portfolio. Candidates should describe what they did in creating the portfolio of work and why it was necessary to do so. Many candidates provided part descriptions in their portfolios but few provided coherent narrative descriptions.

For Row 2 of AO4 candidates need to produce some kind of time plan, showing how they intend to use their time in order to produce their portfolio of evidence. This may be combined with the evidence for Row 1, which describes the actions that they need to take to produce the portfolio of evidence (referred to as 'the problem'). To gain the higher marks on Row 2 the candidate should include not only an estimated time of completion for each action planned, but should update this at frequent intervals to show that they are monitoring their progress and making any necessary adjustments. They will gain maximum marks if they can explain why any deadlines have been missed and what action has been taken to get back on track for the final deadline. Perfect time planning is not expected of candidates at this stage of their learning and it is far better for candidates to be honest than to pretend that everything has gone to schedule.

The evaluation criteria for Row 3 should be set so that the candidate can test whether what they have produced meets client needs. What they have produced is referred to as 'the solution'. To gain one mark testing must also have taken place. To gain two or more marks the testing must take account of the evaluation criteria which should be appropriate to the client needs. The evaluation criteria are not necessarily the same as the client requirements. For example, in Unit IT07 the client may require a website that 'loads quickly'. The candidate should then turn this into an evaluation criterion such as 'each page will load within 3 seconds over a 2Mb connection'. Testing of the website should take this into account and the results of testing used to inform the evaluation carried out (assessed in Row 4).

Unit 5: Fundamentals of Programming (IT05)

This unit assesses the candidate's grasp of the fundamental practices and principles that are the foundation of good programming. As such and bearing in mind the likely absence of real clients, most Centres again set scenarios for their candidates to undertake. On the whole these scenarios did provide candidates with a reasonable amount of information with which to work out a Specification and produce a programmed solution and some were very effective in providing candidates with a challenging task that allowed them to access the full range of marks available. Centres are advised to consult their Portfolio Adviser if they need guidance on the suitability of a particular scenario.

Some imaginative programs were produced that gained high marks.

In order to achieve 2 or more marks on AO1, Row 1 candidates must use a range of appropriate data types in their program. This means there should be evidence of more than one data type in use. A substantial number of candidates were awarded these marks where it was not clear that more than one data type had been used.

Few candidates gained full marks on AO1, Row 4 where for 2 or more marks, candidates must use "complex selection and repetition structures". Examples of these are structures such as nested IF, CASE, or any other selection structure nested inside a repetition structure, or vice versa. For 3 marks "complex conditions" might use Boolean operators AND, OR or NOT, or combinations of relational operators.

One area of weakness in candidates' portfolios was to do with interface design, assessed in AO2, Row 5. Candidates need to show that they have a basic understanding of good design features, by annotating their user interface design (this may be on design sketches or on the implemented interface). They must show that they understand the design features that they have used and why they have used them. For 3 marks, candidates must provide a good explanation of the design features they have used, and how they relate to Health and Safety and ergonomic guidelines

For the award of 2 or more marks on AO3: Row 5, test results must be clearly cross-referenced to the test plan, for example by means of test numbers or figure numbers against screenshots of the results.

When providing a listing of program code, candidates should be encouraged to copy the code into a word-processing application, as most programming environments only allow the printing of plain text files which often means that indentation is not clear and the lack of margins on pages of code leads to the binding obscuring the code. For 2 or more marks on AO3, Row 6, candidates must properly indent and comment their code.

Mark Ranges and Award of Grades

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