ASSESSMENT and QUALIFICATIONS ALLIANCE

# Applied Information and Communication Technology (Single and Double Award)

## Specimen Assessment Materials and Mark Schemes

AQA ADVANCED SUBSIDIARY GCE (SINGLE AWARD) (8751)
AQA ADVANCED SUBSIDIARY GCE (DOUBLE AWARD) (8753)
AQA ADVANCED (SINGLE AWARD) (8756)
AQA ADVANCED (DOUBLE AWARD) (8759)

Further copies of this specification booklet are available from:

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Tel: 0161 953 1170 Fax 0161 953 1177
or
download from the AQA Website: www.aqa.org.uk



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# Contents

## Advanced Subsidiary



## A2



The GCE Awarding Bodies have prepared new specifications to incorporate the range of features required by the new GCE and subject criteria. The specimen materials accompanying the new specifications are provided to give centres a reasonable idea of the general shape and character of the planned assessment material in advance of the first operational examination.

General Certificate of Education
Specimen Paper

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**
**Unit 1 ICT and Society**

AQA-set Assignment - Candidate Booklet

**Assignment to be completed**

- **1 November – 21 January for the January series**
- **1 April – 21 June for the June series.**

Time allowed

- investigation time
- 15 hours under controlled conditions.

This booklet includes

- the assignment
- advice.

# The Assignment – ICT and Society

## Introduction

You should read this booklet together with the unit specification for Unit 1*: ICT and Society*. To complete this assignment you must undertake research and produce a newsletter.

## In this unit

You need to produce a portfolio of work which will include:

- a time plan to show how you will complete all the tasks within the time available
- a record of how you spend your time to show that you have followed your time plan
- evidence of an investigation into the use of ICT in relation to personal communications and leisure and entertainment, and an understanding of the effects that this use of ICT has on society and on individuals
- identification of ICT-related legislation and evidence of understanding why it was introduced/amended, and how it influences the use of ICT for individuals and society
- designing a newsletter that is suited to its purpose and audience and includes a range of features
- evaluation criteria for the newsletter
- a final newsletter that you have produced which is suited to its purpose and audience and includes a range of features
- evidence of testing the newsletter
- an evaluation of the finished newsletter
- an evaluation of your own performance in producing the newsletter
- evidence of use of standard ways of working
- evidence of appropriate written communication throughout the portfolio.

You will produce some of this under controlled conditions, and some of it before you start the controlled sessions in your investigation time. Further details about the newsletter, its audience and purpose are given in this booklet, which you should read carefully before starting the tasks.

## Marking

There are 70 marks available for this assignment. This is the only form of assessment for this unit. It will be marked externally using a mark scheme based on the 'How you will achieve marks' section of this booklet.

## 1. The investigation time

The investigation time begins when you are handed this booklet. During the investigation time you should carry out all the research and planning needed for the assignment.

### What you must do

- You must produce a time plan to show how you will complete all the tasks in the time available.
- You must keep a record of how you have spent your time to show that you have followed your time plan.
- You should research:
    - the ways in which ICT is used in relation to personal communications and leisure and entertainment, and the effects that this use of ICT has had on society and on individuals
    - ICT-related legislation, looking at why it was introduced and how it influences the use of ICT for individuals and society.

This research will involve:

- using a range of books
- visiting a range of Internet websites
- looking at a range of CD-ROMs
- interviewing users of ICT.

You may take your research findings into the controlled conditions. These findings can consist of:

- notes made during the investigation time
- diagrams
- clip art.

The material may be handwritten, or in the form of text or graphics files stored either on a floppy disk or CD-R or in a secure area on a computer.

## 2. The controlled conditions

During the 15 hours controlled conditions, you will need to complete the assignment detailed below in this booklet. Your teacher/tutor will tell you when the 15 hours have been timetabled.

During the controlled conditions, you may **not** communicate in any way with anyone, except the invigilator in the case of equipment failure.

You are **not** allowed to take in to controlled conditions textbooks or photocopies of parts of textbooks.

You are **not** allowed to copy type during controlled conditions and the material you bring in may not be in finished form, or in a file in word processor or DTP format.

You will **not** be allowed access to the Internet or any intranet during the controlled sessions.

The assignment must be completed by the end of the 15 hours of controlled conditions and printed out, as the examiner will be unable to look at work on floppy disks, CD-ROMs or other electronic media.

**What you must do**

- Using appropriate software you must produce an eight-page newsletter which is appropriate for a group of students of your own age. The newsletter must provide information about:
    - the effects that new technologies have had on **society** in relation to personal communications and leisure and entertainment
    - the way in which the personal communications and leisure and entertainment of **individuals** have changed due to ICT
    - the legislation which affects the use of ICT.

- When you are producing your newsletter you should consider people with particular needs and ensure that there is some content appropriate to them.
- You will need to use your research to ensure that the content of your newsletter is accurate and up-to-date.
- You must first of all design the layout and content of each page of your newsletter, to make it appropriate for the identified audience and at the same time contain all the necessary information. You must draw out on paper the layout, format and content of each page before you use the software. It is important that the newsletter produced using the software either matches the hand-drawn designs or you annotate the designs to show the changes you have made to them.
- You should also draw up evaluation criteria for the newsletter.
- You must then use appropriate software to produce the newsletter, making appropriate use of different font styles, graphics and colours, and also the editing and formatting features of the software. You must use standard ways of working to produce the newsletter.
- After you have produced the final newsletter, you must evaluate it in detail, thinking about your initial brief and using the evaluation criteria to identify the strengths and weaknesses of your newsletter and suggesting areas for improvement. You must also test the newsletter.
- You should also evaluate your own performance in producing the newsletter.

## 3. What you should hand in

When you have completed the assignment you should hand in:

(a) the time plan to show how you planned to complete the tasks within the time available
(b) a record of how you spent your time showing monitoring of, and amendments to, your time plan
(c) drafts and a final design for the newsletter that is suited to its purpose and audience and includes a range of features
(d) a final newsletter that you have produced which is suited to its purpose and audience and includes a range of features. The content of the newsletter should show that you have investigated and have an understanding of the effects that the use of ICT in relation to personal communications and leisure and entertainment, and ICT- related legislation has on society and individuals
(e) evidence of testing the newsletter
(f) evaluation criteria for the newsletter
(g) an evaluation of the final newsletter
(h) an evaluation of your own performance in producing the newsletter
(i) evidence that you used standard ways of working.

## 4. How you will achieve marks

You will be awarded marks for doing the following:

**Planning the newsletter**

- Planning how you are going to complete the tasks within the timescale, and monitoring and changing your plan as necessary to ensure that you keep to the schedule. (up to 4 marks)

- Researching and identifying types of content for the newsletter, and selecting content which is most appropriate for the audience of the newsletter. (up to 8 marks)

- Providing drafts and a final design for the newsletter and ensuring that the layout and format of the newsletter is appropriate for the audience of the newsletter. (up to 6 marks)

**The content of the newsletter**

- Including relevant and up to date information about ICT-related legislation in relation to personal communications and leisure and entertainment, and discussing the influence of the legislation within society. (up to 10 marks)

- Including relevant and up to date information about the effects of ICT on society with respect to personal communications and entertainment and leisure. (up to 4 marks)

- Including relevant and up to date information about the way in which the personal communications and leisure and entertainment of individuals have changed due to ICT. (up to 4 marks)

- Identifying the advantages and disadvantages of the use of ICT in these areas. (up to 6 marks)

**Producing the newsletter**

- Using appropriate software to produce the newsletter using a wide range of software features. (up to 8 marks)

- Showing that you have followed standard ways of working. (up to 5 marks)

**Evaluating your newsletter and your performance**

- Using the evaluation criteria to evaluate your newsletter, identifying its strengths and weaknesses, and suggesting improvements. (up to 5 marks)

- Showing how you have tested the newsletter. (up to 5 marks)

- Evaluating your own performance in producing the newsletter. (up to 5 marks)

**END OF ASSIGNMENT**

General Certificate of Education
Specimen Paper

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**
**Unit 1 ICT and Society**

AQA Assessed Assignment – Teachers' Booklet

**Assignment to be completed**

- **1 November – 21 January for the January series**
- **1 April – 21 June for the June series.**

Time allowed

- investigation time
- 15 hours under controlled conditions.

This booklet contains

- instructions and guidance for teachers supervising externally assessed assignments.

# The Assignment – ICT and Society

## Guidance for teachers

It is expected that the assessment material will be presented to candidates only after they have been adequately prepared. Candidates must have an understanding of the content of the unit and the necessary skills to complete tasks.

This unit is assessed by external examiners. The unit is assessed through an AQA-set assignment which is completed by candidates partly in investigation time and partly in 15 hours controlled conditions. This is the only form of assessment for this unit. Only paper-based evidence will be accepted, the external examiners will only be able to award marks based on this paper evidence. This should be borne in mind when advising candidates. The maximum number of marks available for each part of the assignment is indicated in the *Candidate Booklet.*

The centre should advise candidates that the majority of the available marks are awarded for planning, content and evaluation of the newsletter, with only a small proportion of marks available for demonstrating practical ICT skills.

## Providing guidance for candidates

It is expected that the teacher/tutor will discuss in detail the requirements of the assignment with candidates prior to the starting the assignment. In particular, each candidate must provide hard copy evidence to prove to the examiner that, through the assignment, which will include:

- a time plan to show how the tasks were completed within the time available
- a record of how time was spent to show that the time plan was followed
- evidence of an investigation into the use of ICT in relation to personal communications and leisure and entertainment, and an understanding of the effects that this use of ICT has on society and on individuals
- identification of ICT-related legislation and evidence of understanding why it was introduced/amended, and how it influences the use of ICT for individuals and society
- designing a newsletter that is suited to its purpose and audience and includes a range of features
- evaluation criteria for the newsletter
- a final newsletter which is suited to its purpose and audience and includes a range of features
- evidence of testing the newsletter
- an evaluation of their work
- an evaluation of their own performance in producing the newsletter
- evidence of use of standard ways of working
- evidence of appropriate written communication throughout the portfolio.

## 1. The investigation time

The investigation time begins when candidates are handed the *Candidate Booklet.* This should occur at the first convenient time after the date printed on the front cover of the booklet.

During the investigation time, candidates will be expected to carry out all the research and planning that they need for the assignment. This may include receiving advice from the teacher/tutor. Candidates may spend as much time as they wish on research and planning. The material produced should be placed in a preparatory folder.

## 2. The controlled conditions

During the 15 hours of controlled conditions, candidates must complete the assignment detailed in the *Candidate Booklet*. The work will normally be word processed. Diagrams may be hand-drawn. Candidates have unlimited access to the material in their preparatory folder.

Teachers/tutors will need to tell candidates when these 15 hours of controlled conditions have been timetabled. Particularly important is the time and date when the controlled conditions will end. This is the deadline that all candidates must meet for handing in their completed work for assessment.

'Controlled conditions' is essentially the same as 'examination conditions'. Candidates are expected to work independently and in silence. It is not acceptable for research and planning, or class or individual teaching, to take place during a controlled session.

Candidates may take their planning and research notes, produced during the investigation time, into the controlled sessions. It is the responsibility of the supervising teacher/tutor to inspect each candidate's notes to ensure that they are actually notes produced by the candidate, rather than pre-prepared materials. Candidates may not take any textbooks, or photocopies of parts of textbooks, into a controlled session. Neither may they take worksheets, copies of sample materials, or printouts of web pages into a controlled session. Candidates are permitted to carry out additional research and planning between individual controlled sessions.

Copy typing of any material is not permitted.

Candidates must not be able to access the Internet or any intranet during controlled sessions, and the centre must make provision for access to these to be prevented.

All work must be produced using a computer. Any candidate who does not use a computer to produce the assignment could lose some or all of their marks. Special consideration should be requested from AQA for candidates whose work, including the ability to use a computer in its production, has been affected by illness or other exceptional circumstances. Further information about the circumstances when special consideration may be requested is given in section XXXXX, 'Problems with Individual Candidates', of the specification. Information about the procedure is issued separately in the document *Regulations and guidance relating to candidates with who are eligible for adjustments in examinations* which can be obtained from AQA.

Teachers/tutors should ensure that any candidate that is absent from a controlled session is given the opportunity to make up any session missed.

## 3. What candidates should hand in

(a) the time plan to show how they planned to complete the tasks within the time available
(b) a record of how time was spent showing monitoring of, and amendments to their time plan
(c) drafts and a final design for the newsletter that is suited to its purpose and audience and includes a range of features
(d) a finished newsletter that is suited to its purpose and audience and includes a range of features. The content of the newsletter should show that the candidate has investigated and has an understanding of the effects that the use of ICT in relation to personal communications and leisure and entertainment, and ICT-related legislation has on society and individuals
(e) evidence of testing the newsletter
(f) an evaluation criteria for the newsletter
(g) an evaluation of the finished newsletter
(h) an evaluation of their own performance in producing the newsletter
(i) evidence of use of standard ways of working.

## 4. Steps which must be taken by the centre to secure the computer network

Teachers/tutors must ensure that suitable equipment is available to candidates to enable them to complete the work effectively.

Centres must create a separate computer User Area (on computers or servers used by candidates) in which candidates will produce their Assignments. Centres must ensure that this User Area cannot be accessed by candidates outside controlled lesson times. This Area must be directed and controlled by the teacher/tutor. This is most easily done by the changing of passwords (which would be unknown to candidates until the start of the next controlled session), or by use of an electronic time-lock, although other electronic means are acceptable.

The centre must use the *Record of Lessons Under Controlled Conditions* form on page XXXXX of this *Teachers' Booklet* to record the dates and times of sessions when candidates are producing their Assignments. This record must be signed by both the supervising teacher(s) and the Head of Centre to confirm the dates on which the controlled lessons took place. The form must be detached from the booklet and sent to the AQA examiner with the candidates' work.

From time to time, some centres may be required by AQA to supply details of the timetabling of the controlled sessions for the assignment. This information may be used by visiting members of the JCQ Examinations Inspectorate to check that controlled sessions are being conducted in accordance with the rules set by AQA. Heads of Centres will be obliged to make arrangements that will facilitate the work of the JCQ Examinations Inspectorate.

## 5. Authenticating candidates work

Teachers/tutors must sign the Centre Declaration Sheet to authenticate candidates work and to confirm that the rules for controlled conditions have been followed. Only material specified in the *Candidate Booklet* may be taken in to the controlled conditions.

The candidates must complete the Candidate Record Form to confirm that the work is their own.

## 6. How candidates will achieve marks

### Planning the newsletter

Candidates should have planned in advance in the preparation time how they will complete the assignment within the controlled conditions. This planning should be brought into the controlled session by the candidate. The plan for the work should be laid out in such a way that candidates' monitoring of the plan can be recorded, and any necessary changes incorporated into a revised plan.

In planning the content of their newsletter, candidates must ensure that it is appropriate for the audience for whom the newsletter is intended.

Candidates should produce drafts of the newsletter identifying layout, format and content. Candidates may need to produce more than one draft as their planning develops, but should not produce more than three drafts.

### Content of the newsletter

Candidates should study closely that section of 'What you should hand in', and the teacher/tutor should reinforce this with candidates. Candidates **must** focus their research and the content of the newsletter on the prescribed focus areas in order to obtain the maximum number of marks. Candidates who produce generic responses which are not focused on the prescribed area, or are not focused on an area at all, will be unable to achieve more that minimal numbers of marks.

### Producing the newsletter

Candidates must produce an 8-page newsletter, the first page of which is the front cover. Candidates may decide whether each page is A4 or A5 size.

Candidates should use appropriate software for the newsletter, and should use features of that software that are necessary and appropriate for producing a newsletter which suits its target audience.

Early drafts of the newsletter may be annotated by hand or electronically. Once complete, the newsletter pages should be printed out and arranged in booklet form. It is not essential for the printouts to be in colour, but it may be beneficial to candidates if they are, as this will enable reference to colours in the evaluation.

### Evaluating the newsletter and own performance

Candidates should evaluate the newsletter they have produced, with reference to the initial brief that they were given and the evaluation criteria they devised, identifying strengths and weaknesses. They should be encouraged to identify specific issues, and illustrate these by reference to their newsletter. They must show that they have tested the newsletter. They must also evaluate their own performance.

**END OF TEACHERS' BOOKLET**

**General Certificate of Education**

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**

Unit 1 ICT and Society

**Externally-assessed Unit: Record of lessons under controlled conditions**

**Centre Name** …… **Centre Number** | | | | | |

| **Date** | **Time** | **Number of hours (round minutes up or down to the nearest hour)** | **Signature of supervising teacher/tutor** |
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| | | | |
| Total number of hours | | | |

**Declaration**

I confirm that, on the occasions listed above, candidates' AQA-Assessed Assignments were produced under controlled conditions as specified these *Instructions and Guidance and* in the terms and conditions of the GCE in Applied ICT specification, and that every reasonable step has been taken to ensure that the work presented is that of the candidates named. Any assistance given to candidates beyond that given to the class as a whole and beyond that described in the specification has been recorded on the *Externally-assessed Assignment Candidate Record Form*.

**Signed ……. Head of Centre Date ……**

(Use an additional sheet, if necessary. This form may be photocopied.)

General Certificate of Education
Specimen Paper

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**
**Unit 9 Software Development**

AQA-set Assignment - Candidate Booklet

**Assignment to be completed**

- **1 November – 21 January for the January series**
- **1 April – 21 June for the June series.**

Time allowed

- investigation time
- 20 hours under controlled conditions.

This booklet includes

- the assignment
- advice.

# The Assignment – Software Development

## Introduction

You should read this booklet together with the unit specification for Unit 9: *Software Development.* To complete this assignment you must produce a working software solution to meet the needs of a client. The solution must be documented to meet the requirements of this unit.

## In this unit

During the investigation time you need to produce work which will include:

(a) a description and justification of the ICT system for which the solution is to be developed for a client
(b) evaluation criteria
(c) a design for a modular solution demonstrating the use of standard design methods.

Once you have completed this, you will have 20 hours under controlled conditions to complete work which will include:

(d) evidence of implementation of an effective solution using one or more of the following methods:
   - object oriented programming
   - a database using SQL or other programming language

(e) evidence of testing and using the results of testing to evaluate the solution against the evaluation criteria
(f) an evaluation of your work
(g) an evaluation of your own performance
(h) evidence of use of standard ways of working
(i) evidence of appropriate written communication throughout the portfolio.

After the controlled conditions you will hand in the work completed in the controlled conditions along with your design notes.

This unit applies some of the knowledge and skills gained from Unit 3: *Data Handling* and links with Unit 5: *Fundamentals of Programming*.

## Marking

There are 70 marks available for this assignment. This is the only form of assessment for this unit. It will be marked externally using a mark scheme based on the 'How you will achieve marks' section of this booklet. Although this unit links closely with Unit 13: *Systems Analysis*, it is assessed separately.

## 1. The investigation time

The investigation time begins when you are handed this booklet. During the investigation time you should carry out all the research and planning needed for the assignment.

**What you must do**

- You must describe and justify the ICT system for which the solution is to be developed for a client
- You must produce evaluation criteria.
- You must produce a design for a modular solution demonstrating standard design methods.
-

This will involve:

- using the specification to design a suitable software solution to meet the needs of the client
- producing notes and draft diagrams for use in controlled conditions
- reviewing your initial designs to ensure that they meet the specification requirements.

The material may be handwritten, or in the form of text or graphics files stored either on a floppy disk or CD-R or in a secure area on a computer.

## 2. The controlled conditions

During the 20 hours controlled conditions, you will need to complete the assignment detailed below in this booklet. Your teacher/tutor will tell you when the 20 hours have been timetabled.

During the controlled conditions, you may **not** communicate in any way with anyone except for the invigilator in the case of equipment failure.

You are **not** allowed to take in to controlled conditions textbooks or photocopies of parts of textbooks.

You are **not** allowed to copy type during controlled conditions and the material you bring in may not be in finished form, or in a file in word processor or DTP format.

You will **not** be allowed access to the Internet or any intranet during the controlled sessions.

This assignment must be completed by the end of the 20 hours of controlled conditions and printed out, as the examiner will be unable to look at work on floppy disks, CD-ROMS or other electronic media.

**What you must do**

- You must implement the solution you have designed to meet the client needs. This solution may be implemented using an object oriented programming language or a database package using SQL or other programming language.
- You should show that you have used standard ways of working.
- You will also need to test your solution and evaluate it against the evaluation criteria to ensure that it meets the client needs. You should identify the strengths and weaknesses of the solution, suggesting areas for improvement.

- You should also evaluate your own performance.

If you are unable to find a suitable client yourself, your teacher/tutor might be able to help. Alternatively, your teacher/tutor (or another competent person) may act as your client and so provide you with a working brief. You must not ask another student to be your client and you must not act as your own client.

You should ensure that:

- the design and implementation of the solution is carried out independently
- the documentation you produce is all your own work
- any documentation provided by your teacher/tutor or a client, is clearly identified as such.

You must base your design on the needs of a client so that you will be able to test that your finished solution meets the client needs. If the design brief has been provided for you by your teacher/tutor, he/she will act as your client.

However, as the solution will be implemented under controlled conditions, you are not required to carry out live client/end-user testing. You are, though, expected to be able to critically assess to what extent your finished solution would meet the client needs.

It is expected that, apart from your design notes, your evidence will largely be in the form of computer printouts, including the use of a word processor where appropriate. It should include fully annotated screen shots. It should be noted that work submitted on floppy disks, CD-ROMs or other electronic media cannot be accepted as evidence.

**Points to consider**

- This unit is assessed by an external examiner who will not have seen your solution and must rely upon your documentation to award marks. It is, therefore, essential that your documentation is complete, accurate and logically organised.

- Planning and monitoring should not be neglected. It is an important aspect of any project work. It is very unlikely that anyone could produce a piece of work of this complexity without having to modify plans several times. These changes should be fully documented. If a test fails, for instance, you will need to correct the problem and this should be reflected in your diary or schedule of activities.

- Make sure that you include printouts that are annotated, so that it is clear to the examiner what you are trying to show. Do not be afraid to handwrite on printouts; you will not be penalised for hand written annotation. In fact, where particularly relevant, this may help the examiner to award marks.

- Break your work down into clearly labelled sections. Use the 'How you will be assessed' section to make sure that you have included everything you have been asked to produce. Identify clearly where the evidence for each of the tasks can be found.

- In order to gain high marks, your testing should be systematic, comprehensive and clearly documented. Your evidence should demonstrate that your testing covers every aspect of the system and includes test data to check operation under extreme, boundary and erroneous conditions. However, it is not necessary, for example, to test every validation you have implemented as long as you clearly indicate that the other instances are similar in nature. Each test should be accompanied by an annotated screen dump which clearly

proves the outcome of the test. This should be cross-referenced to your test plan. Where a test has failed, you should clearly explain what changes, if any, you made to correct the problem. You do not need to include user testing ad this will not be possible under controlled conditions.

**You should**

- ensure that the programming language or database package you use to develop your solution is appropriate
- make sure that you have included all the necessary evidence

**You should avoid**

- making your designs too complex. If your data model is too complex, it will make it more difficult to solve the problem and to meet the assessment objectives of this unit
- putting in work that you have not been asked for. No marks will be awarded for work that does not appear in the assessment evidence grid.

**You must not**

- use a spreadsheet package to create your solution.

## 3. What you should hand in

When you have completed the assignment you should hand in:

(a) a report that describes and justifies the need for the ICT system you have been asked to develop to meet the client needs
(b) detailed designs for a modular solution that demonstrate the use of standard design methods
(c) documentation to show the implementation of an effective working solution using one or more of the following methods:
    - object oriented programming
    - a database using SQL or other programming language
(d) evidence of standard ways of working
(e) evaluation criteria
(f) evidence of testing the solution
(g) an evaluation of your solution
(h) an evaluation of your own performance.

## 4. How you will achieve marks

You will be awarded marks for doing the following:

**Planning your work**

Producing a realistic implementation schedule and using appropriate design methods to break down the task into a number of manageable sub-tasks. (up to 6 marks)

Showing that you have followed your implementation schedule fully. (up to 2 marks)

**Describing, justifying and designing your proposed solution**

Describing the background of, and the intended client for your proposed system. (up to 2 marks)

Providing a detailed description of the system for which you will be developing your solution. (up to 3 marks)

Showing that you fully understand the needs of your client. (up to 2 marks)

Explaining and justifying the hardware and software you will use to produce the solution. (up to 3 marks)

Stating the input, processing and output needs of the proposed system, and providing designs for the format and method of data input, processing and output of your proposed solution. These should be sufficiently detailed so that a third party can implement the solution. (up to 5 marks)

Describing the skills of the user, considering these skills in the design of your solution and justifying your design in terms of the user's skills. (up to 4 marks)

**Producing the solution**

Showing that you have used a range of data types and structures, data processing, control structures and validation/verification techniques, explaining and justifying this use. (up to 3 marks)

Implementing a solution that makes efficient use of modules to produce output as a result of processing, showing that you understand the need for a modular approach to implementation. (up to 3 marks)

Showing, explaining and justifying the methods used to process and output data to meet the needs of your client. (up to 3 marks)

Producing well-organised documentation which includes annotated screen shots and clearly describes the implementation of your solution. (up to 3 marks)

Showing that you have adhered to standard ways of working at all times. (up to 3 marks)

**Testing and evaluating your solution**

Identifying qualitative and quantitative evaluation criteria for your solution, which are appropriate to the needs of your client. (up to 4 marks)

Designing a comprehensive, fully documented test plan which includes testing against the evaluation criteria, and carrying out the tests. (up to 5 marks)

Drawing meaningful conclusions from the results of your tests, and making appropriate changes to your solution as a result of the testing, explaining why the changes have been made. (up to 3 marks)

Critically evaluating your solution, identifying strengths, weaknesses and areas for improvement, relating them to the needs of your client. (up to 5 marks)

**Evaluating your performance**

Describing in detail and critically reviewing the actions you took to produce your solution, identifying strengths, weaknesses and areas for improvement. (up to 5 marks)

Showing how you have planned and managed your time effectively, monitoring your progress. (up to 3 marks)

Showing that you have met most or all of your deadlines, giving acceptable explanations for any deadlines you have missed. (up to 3 marks)

**END OF ASSIGNMENT**

General Certificate of Education
Specimen Paper

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**
**Unit 9 Software Development**

AQA-set Assignment - Teachers' Booklet

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# The Assignment - Software Development

## Guidance for teachers

It is expected that the assessment material will be presented to candidates only after they have been adequately prepared. Candidates must have an understanding of the content of the unit and the necessary skills to complete tasks.

This unit is assessed by external examiners. The unit is assessed through an AQA-set assignment which is completed by candidates partly in investigation time and partly in 20 hours controlled conditions. This is the only form of assessment for this unit. Only paper-based evidence will be accepted, the external examiners will only be able to award marks based on this paper evidence. This should be borne in mind when advising candidates. The maximum number of marks available for each part of the assignment is indicated in the *Candidate Booklet*.

Although this unit links closely with Unit 13: *Systems Analysis*, it is assessed separately.

## Providing guidance for candidates

It is expected that the teacher/tutor will discuss in detail the requirements of the assignment with candidates prior to their starting the assignment. Each candidate must design, implement, test and evaluate a software solution to meet a client's needs. This may involve creating a program using an object oriented programming language or a database that utilises a recognised language such as SQL. It is expected that evidence will be produced using appropriate computer software. However, diagrams and initial designs may be hand-drawn, and annotations may also be made by hand.

It is expected that candidates will be provided with a specification for the software solution by their teacher/tutor that will allow them to meet all the assessment objectives in the assessment criteria grid. It is essential that teacher/tutors check that the specification provided for candidates is sufficiently challenging to allow them to meet all assessment objectives. A copy of the specification provided for candidates should be clearly labelled and submitted to the external examiner with the candidate's script.

It is particularly important that teacher/tutors do **not** include:

- test data
- data normalisation
- attribute parameters (e.g. data types)
- entity relationship diagrams.

The specification provided for candidates must require them to:

During the investigation time candidates need to produce work which will include:

(a) a description and justification of the ICT system for which the solution is to be developed for a client

(b) evaluation criteria

(c) a design for a modular solution demonstrating the use of standard design methods.

Once this is completed, candidates will have 20 hours under controlled conditions to complete work which will include:

(d) evidence of implementation of an effective solution using one or more of the following methods:
    - object oriented programming
    - a database using SQL or other programming language

(e) evidence of testing and using the results of testing to evaluate the solution against the evaluation criteria

(f) an evaluation of their work

(g) an evaluation of their own performance in producing the solution

(h) evidence of use of standard ways of working

(i) evidence of appropriate written communication throughout the portfolio.

After the controlled conditions candidates will hand in the work completed in the controlled conditions along with their design notes.

Teachers/tutors will need to provide guidance to candidates so that they are fully aware of the evidence they must produce. In particular, each candidate must provide hard copy evidence to prove to the examiner that they have:

- described the organisation and background of the proposed system
- described the system for which the solution is to be developed
- demonstrated an understanding of the client needs
- described the hardware and software used to produce the solution
- broken the task into a number of sub-tasks
- provided designs for inputs, processing and outputs of the system
- considered end user skills and provided an implementation schedule
- implemented their solution using appropriate validation and verification procedures, data types and structures, data processing, control structures, modules and outputs
- documented all aspects of the implementation using items such as annotated careen shots, data dictionary and data types
- tested their solution and used the results of testing to evaluate their solution. Results of test procedures and annotated printed copy of test results should be cross-referenced to the test procedures. These must include test data to check operation under normal, extreme and erroneous conditions
- used the results of testing to make changes to their design
- evaluated their own performance.

Much of this evidence can be provided in the form of annotated screen dumps. Candidates are not required to produce a user guide.

The examiner can only award marks where the candidate has produced evidence that meets the requirements. Therefore teachers/tutors should advise candidates to annotate their work so that it makes it clear where and how the requirements have been met.

## 1. The investigation time

The investigation time begins when candidates are handed the *Candidate Booklet*. This should occur at the first convenient time after the date printed on the front cover of the booklet. They may, however, have already begun to search for a suitable client before this date.

During the investigation time, candidates will be expected to carry out all the necessary research and planning that they need for the assignment. This may include receiving advice from their teacher/tutor. Candidates may spend as much time as they wish on research and planning. The material produced should be placed in a preparatory folder. Candidates may produce their designs for the software solution during this period. These may be placed in the preparatory folder together with rough notes and draft diagrams for use in the controlled conditions. During this time they may also produce their descriptions of the organisation/background for the proposed system, user requirements and the system for which the solution is to be implemented.

## 2. The controlled conditions

During the 20 hours of controlled conditions, candidates must complete the assignment detailed in the *Candidate Booklet*. Work will normally be word processed. Diagrams may be hand-drawn. Candidates have unlimited access to the material in their preparatory folder.

Teachers/tutors will need to tell candidates when these 20 hours of controlled conditions have been timetabled. Particularly important is the time and date when the controlled conditions will end. This is the deadline that all candidates must meet for handing in their completed work for assessment.

'Controlled conditions' is essentially the same as 'examination conditions'. Candidates are expected to work independently and in silence. It is not acceptable for research and planning, or class or individual teaching, to take place during a controlled session.

Candidates may take their planning and research notes, produced during the investigation time, into the controlled sessions. It is the responsibility of the supervising teacher/tutor to inspect each candidate's notes to ensure that they are actually notes produced by the candidate, rather than pre-prepared materials. Candidates may not take any textbooks, or photocopies of parts of textbooks, into a controlled session. Neither may they take worksheets, copies of sample materials, or printouts of web pages into a controlled session. Candidates are permitted to carry out additional research and planning between individual controlled sessions.

Copy typing of any material is not permitted.

Candidates must not be able to access the Internet or any intranet during controlled sessions, and the centre must make provision for access to these to be prevented.

All work must be produced using a computer. Any candidate who does not use a computer to produce the assignment could lose some or all of their marks. Special consideration should be requested from AQA for candidates whose work, including the ability to use a computer in its production, has been affected by illness or other exceptional circumstances. Further information about the circumstances when special consideration may be requested is given in section XXXXX, 'Problems with Individual Candidates', of the specification. Information about the procedure is issued separately in the document *Regulations and guidance relating to candidates who are eligible for adjustments in examinations* which can be obtained from AQA.

Teachers/tutors should ensure that any candidate that is absent from a controlled session is given the opportunity to make up any session missed.

## 3. What candidates should hand in

When candidates have completed the assignment they should hand in:

(a) a report that describes and justifies the need for the ICT system they have been asked to develop to meet the client needs
(b) detailed designs for a modular solution that demonstrate the use of standard design methods
(c) documentation to show the implementation of an effective working solution using one or more of the following methods:
    - object oriented programming
    - a database using SQL or other programming language
(d) evidence of standard ways of working
(e) evaluation criteria
(f) evidence of testing the solution
(g) an evaluation of the solution
(h) an evaluation of their own performance.

## 4. Steps which must be taken by the centre to secure the computer network

Teachers/tutors must ensure that suitable equipment is available to candidates to enable them to complete the work effectively.

Centres must create a separate computer User Area (on computers or servers used by candidates) in which candidates will produce their Assignments. Centres must ensure that this User Area cannot be accessed by candidates outside controlled lesson times. This Area must be directed and controlled by the teacher/tutor. This is most easily done by the changing of passwords (which would be unknown to candidates until the start of the next controlled session), or by use of an electronic time-lock, although other electronic means are acceptable.

The centre must use the *Record of Lessons Under Controlled Conditions* form on page XXXXX of this *Teachers' Booklet* to record the dates and times of sessions when candidates are producing their Assignments. This record must be signed by both the supervising teacher(s) and the Head of Centre to confirm the dates on which the controlled lessons took place. The form must be detached from the booklet and sent to the AQA examiner with the candidates' work.

From time to time, some centres may be required by AQA to supply details of the timetabling of the controlled sessions for the assignment. This information may be used by visiting members of the JCQ Examinations Inspectorate to check that controlled sessions are being conducted in accordance with the rules set by AQA. Heads of Centres will be obliged to make arrangements that will facilitate the work of the JCQ Examinations Inspectorate.

## 5. Authenticating candidates work

Teachers/tutors must sign the Centre Declaration Sheet to authenticate candidates work and to confirm that the rules for controlled conditions have been followed. Only material specified in the *Candidate Booklet* may be taken in to the controlled conditions.

The candidates must complete the Candidate Record Form to confirm that the work is their own.

## 6. How candidates will achieve marks

Candidates will be awarded marks for doing the following:

### Planning work

Producing a realistic implementation schedule and using appropriate design methods to break down the task into a number of manageable sub-tasks. (up to 6 marks)

Showing that they have followed their implementation schedule fully. (up to 2 marks)

### Describing, justifying and designing the proposed solution

Describing the background of, and the intended client for the proposed system. (up to 2 marks)

Providing a detailed description of the system for which they will be developing the solution. (up to 3 marks)

Showing that they have fully understood the needs of their client. (up to 2 marks)

Explaining and justifying the hardware and software to be used to produce the solution. (up to 3 marks)

Stating the input, processing and output needs of the proposed system, and providing designs for the format and method of data input, processing and output of the proposed solution. These should be sufficiently detailed so that a third party can implement the solution. (up to 5 marks)

Describing the skills of the user, considering these skills in the design of the solution and justifying the design in terms of the user's skills. (up to 4 marks)

### Producing the solution

Showing that they have used a range of data types and structures, data processing, control structures and validation/verification techniques, explaining and justifying this use. (up to 3 marks)

Implementing a solution that makes efficient use of modules to produce output as a result of processing, showing that they understand the need for a modular approach to implementation. (up to 3 marks)

Showing, explaining and justifying the methods used to process and output data to meet the needs of the client. (up to 3 marks)

Producing well-organised documentation which includes annotated screen shots and clearly describes the implementation of the solution. (up to 3 marks)

Showing that they have adhered to standard ways of working at all times. (up to 3 marks)

**Testing and evaluating the solution**

Identifying qualitative and quantitative evaluation criteria for the solution, which are appropriate to the needs of the client. (up to 4 marks)

Designing a comprehensive, fully documented test plan which includes testing against the evaluation criteria, and carrying out the tests. (up to 5 marks)

Drawing meaningful conclusions from the results of their tests, and making appropriate changes to the solution as a result of the testing, explaining why the changes have been made. (up to 3 marks)

Critically evaluating the solution, identifying strengths, weaknesses and areas for improvement, relating them to the needs of your client. (up to 5 marks)

**Evaluating their performance**

Describing in detail and critically reviewing the actions taken to produce the solution, identifying strengths, weaknesses and areas for improvement. (up to 5 marks)

Showing how they have planned and managed their time effectively, monitoring progress. (up to 3 marks)

Showing that they have met most or all of their deadlines, giving acceptable explanations for any deadlines they have missed. (up to 3 marks)

**END OF TEACHERS' BOOKLET**

**General Certificate of Education**

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**

Unit 9 Software Development

**Externally-assessed Unit: Record of lessons under controlled conditions**

**Centre Name** …… **Centre Number** | | | | | |

| Date | Time | Number of hours (round minutes up or down to the nearest hour) | Signature of supervising teacher/tutor |
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| | | | |
| Total number of hours | | | |

**Declaration**

I confirm that, on the occasions listed above, candidates' AQA-Assessed Assignments were produced under controlled conditions as specified these *Instructions and Guidance and* in the terms and conditions of the GCE in Applied ICT specification, and that every reasonable step has been taken to ensure that the work presented is that of the candidates named. Any assistance given to candidates beyond that given to the class as a whole and beyond that described in the specification has been recorded on the *Externally-assessed Assignment Candidate Record Form*.

**Signed ……. Head of Centre Date……**

(Use an additional sheet, if necessary. This form may be photocopied.)

General Certificate of Education
Specimen Paper

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**
**Unit 10 Advanced Spreadsheet Design**

AQA-set Assignment - Candidate Booklet

**Assignment to be completed**

- **1 November – 21 January for the January series**
- **1 April – 21 June for the June series.**

Time allowed

- investigation time
- 20 hours under controlled conditions.

This booklet includes

- the assignment
- advice.

# The Assignment – Advanced Spreadsheet Design

## Introduction

You should read this booklet together with the unit specification for Unit 10: *Advanced Spreadsheet Design*. To complete this assignment you must produce a working spreadsheet to meet the needs of a specified client and produce documentation of the work you have done to meet the requirements of this unit.

## In this unit

During the investigation time you need to produce work which will include:

(a) a description and justification of the need for the spreadsheet for a client

(b) evaluation criteria and a test plan

(c) a design for a spreadsheet system that meets the needs of the client and incorporates at least six complex facilities.

Once you have completed this, you will have 20 hours under controlled conditions to complete work which will include:

(d) evidence of implementation of an effective spreadsheet solution

(e) evidence of testing and using the results of testing to evaluate the solution against the evaluation criteria

(f) a user guide and technical documentation

(g) an evaluation of your work

(h) an evaluation of your own performance

(i) evidence of use of standard ways of working

(j) evidence of appropriate written communication throughout the portfolio.

After the controlled conditions you will hand in the work completed in the controlled conditions along with your design notes.

## Marking

There are 70 marks available for this assignment. This is the only form of assessment for this unit. It will be marked externally using a mark scheme based on the 'How you will achieve marks' section of this booklet.

## 1. The investigation time

The investigation time begins when you are handed this booklet. During the investigation time you should carry out all the research and planning needed for the assignment.

**What you must do**

- You will need to meet and interview a client to discuss an ICT problem that is best solved by the use of a complex spreadsheet
- You must find out about any system already in use by the client
- You must analyse any documentation used by the client
- You must analyse the client needs and produce a formal specification for the spreadsheet
- You must review your initial designs with the client to ensure that they meet his/her needs.
- You must produce evaluation criteria and a test plan.

The material may be handwritten, or in the form of text or graphics files stored either on a floppy disk or CD-R or in a secure area on a computer.

## 2. The controlled conditions

During the 20 hours controlled conditions, you will need to complete the assignment detailed below in this booklet. Your teacher/tutor will tell you when the 20 hours have been timetabled.

During the controlled conditions you may **not** communicate in any way with anyone except the invigilator in the event of equipment failure.

You are **not** allowed to take in to controlled conditions textbooks or photocopies of parts of textbooks.

You are **not** allowed to copy type during controlled conditions and the material you bring in may not be in finished form, or in a file in word processor or DTP format.

You will **not** be allowed access to the Internet or any intranet during the controlled sessions.

This assignment must be completed by the end of the 20 hours of controlled conditions and printed out, as the examiner will be unable to look at work on floppy disks, CD-ROMS or other electronic media.

**What you must do**

- You must implement the spreadsheet solution you have designed to meet the client needs.
- You should show that you have used standard ways of working.
- You should test your solution and evaluate it against the evaluation criteria to ensure that it meets client needs. You should identify the strengths and weaknesses of the solution, suggesting areas for improvement.
- You must produce a user guide and technical documentation.
- You should also evaluate your own performance.

If you are unable to find a suitable client yourself, your teacher/tutor might be able to help. Alternatively, your teacher/tutor (or another competent person) may act as your client and so provide you with a working brief. You must not ask another student to be your client and you must not act as you own client.

You should ensure that:

- the design and implementation of the spreadsheet system is carried out independently
- the documentation you produce is all your own work
- any documentation provided by your teacher/tutor or a client, is clearly identified as such.

You must base your design specification on the needs of a client so that you will be able to test that your finished spreadsheet meets the client needs. If the design brief has been provided for you by your teacher/tutor, he/she will act as your client.

However, as the spreadsheet will be created under controlled conditions, you are not required to carry out live client/end-user testing. You are, though, expected to be able to critically assess to what extent your finished spreadsheet would meet the client needs.

It is expected that, apart from your design notes, your evidence will largely be in the form of computer printouts, including the use of a word processor where appropriate. It should include fully annotated screen shots; relevant printouts of the spreadsheet including its formulae, and its outputs. It should be noted that work submitted on floppy disks, CD-ROMs or other electronic media cannot be accepted as evidence.

**Points to consider**

- This unit is assessed by an external examiner who will not have seen your spreadsheet working and who must rely on your documentation to award marks. It is, therefore, essential that your documentation is complete, accurate and logically organised.

- Planning and monitoring should not be neglected. It is an important aspect of any project work. It is very unlikely that anyone could produce a piece of work of this complexity without having to modify plans several times. These changes should be fully documented. If a test fails, for instance, you will need to correct the problem and this should be reflected in your diary or schedule of activities.

- Make sure that you include printouts that are annotated, so that it is clear to the examiner what you are trying to show. Do not be afraid to handwrite on printouts; you will not be penalised for hand written annotation. In fact, where particularly relevant, this may help the examiner to award marks.

- Your user guide should be user-friendly and be written for someone who is fairly computer competent but a novice spreadsheet user. It should include screen dumps to show the user **how to use your spreadsheet system**. You do not need to produce a guide to show how to use the application package. Make sure that your guide shows how to make inputs, initiate queries, obtain output and navigate any menu system you have produced. The client should not need to know anything about the complexities of your spreadsheet or even how the spreadsheet produces or calculates its outputs. The client should be able to obtain the outputs he/she requires without needing to carry out any coding, but instead make use of the facilities that you have provided according to their needs. Your guide should clearly identify at least basic problems likely to be encountered by an end-user and give clear concise solutions.

- In order to gain high marks, your testing should be systematic, comprehensive and clearly documented. Your evidence should demonstrate that your testing covers every aspect of the system and includes the test data to check the operation of the different parts of the spreadsheet under extreme, boundary and erroneous conditions. There should be annotated screen dumps of a representative sample of the tests, cross-referenced to your test plan. When a test failed, you should clearly explain what changes, if any, you made to correct the problem.

- Make sure that you provide sufficient evidence that your spreadsheet meets the client's needs. As you will not be able to include client/end-user testing during the controlled conditions, you will need to cross-reference the appropriate tests against the client's criteria, which you established during the initial interviews. **At least two** annotated reports or printouts are likely to be needed to show that your spreadsheet solution is appropriate and that it meets your client's needs.

- Break your work down into clearly labelled sections. Use the 'How you will be assessed' section to help you check that you have included everything you have been asked to produce. Identify clearly where the evidence for each of the tasks can be found.

**You should**

- check that your spreadsheet solution will meet the client needs *and* the evidence requirements for this unit
- ensure that the software package you use to develop your spreadsheet is appropriate
- include in your documentation printouts of all formulae and relevant parts of your spreadsheet system
- make sure that you include all the evidence that the assessment criteria grid requires.

**You should avoid**

- problems that are too complex. If the problem is very complex, it will be difficult to design, and even harder to implement a working solution.
- producing a printout of the entire spreadsheet showing its formulae, but failing to include row and column identifiers.

## 3. What you should hand in

When you have completed the assignment you should hand in:

(a) detailed design notes that demonstrate the use of standard design methods
(b) your test plans, test data and test report
(c) the finished spreadsheet
(d) user guide and any technical documentation not included above
(e) a written evaluation of the solution that uses the results of testing to check operation against the evaluation criteria you have devised
(f) an evaluation of your own performance in producing the solution
(g) evidence that you have used standard ways of working.

## 4. How you will achieve marks

You will be awarded marks for doing the following:

**Planning your work**

Producing a realistic implementation schedule, breaking the task down into a number of manageable sub-tasks. *(up to 3 marks)*

Showing that you have followed your implementation schedule fully. *(up to 2 marks)*

**Describing, justifying and designing your proposed solution**

Describing the background of, and the intended client for, your proposed spreadsheet. *(up to 2 marks)*

Providing a detailed description of the needs of the client for whom you will be developing your solution. *(up to 3 marks)*

Showing that you fully understand the needs of your client. *(up to 2 marks)*

Explaining and justifying the hardware and software that will be used for the solution. *(up to 3 marks)*

Stating the input, processing and output needs of the proposed spreadsheet, and providing designs for the format and method of data input, calculations (including proposed formulae) and output of your proposed solution. These should be sufficiently detailed so that a third party could implement the solution. *(up to 5 marks)*

Describing the skills of the spreadsheet's user, considering these skills in the design of your solution and justifying your design in terms of the user's skills. *(up to 4 marks)*

**Producing the solution**

Implementing a solution that makes efficient use of the spreadsheet's functions and facilities to produce output as a result of processing. *(up to 3 marks)*

Showing that you have used at least six complex spreadsheet facilities and appropriate validation/verification techniques, and explained and justified their use. *(up to 3 marks)*

Showing, explaining and justifying the methods used to process data (including formulae actually used) and produce output to meet the needs of your client. *(up to 3 marks)*

Producing well-organised documentation which includes annotated screen shots that clearly describes the implementation of your solution. *(up to 3 marks)*

Creating an explanatory user guide to your spreadsheet solution that includes annotated screen shots. *(up to 3 marks)*

Showing that you have adhered to standard ways of working at all times. *(up to 3 marks)*

**Testing and evaluating your solution**

Identifying qualitative and quantitative evaluation criteria for your solution, which are appropriate to the needs of your client. *(up to 4 marks)*

Designing a comprehensive, fully documented test plan which includes testing against the evaluation criteria, and carrying out the tests. *(up to 5 marks)*

Drawing meaningful conclusions from the results of your tests, and making appropriate changes to your solution as a result of the testing, explaining why the changes have been made. *(up to 3 marks)*

Critically evaluating your solution, identifying strengths, weaknesses and areas for improvement, relating them to the needs of your client. *(up to 5 marks)*

**Evaluating your work for this unit**

Describing in detail and critically reviewing the actions you took to produce your solution, identifying strengths, weaknesses and areas for improvement. *(up to 5 marks)*

Showing how you have planned and managed your time effectively, monitoring your progress. *(up to 3 marks)*

Showing that you have met most or all of your deadlines, giving acceptable explanations for any deadlines you have missed. *(up to 3 marks)*

**END OF ASSIGNMENT**

General Certificate of Education
Specimen Paper

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**
**Unit 10 Advanced Spreadsheet Design**

AQA-set Assignment - Teachers' Booklet

**Assignment to be completed**

- **1 November – 21 January for the January series**
- **1 April – 21 June for the June series.**

Time allowed

- investigation time
- 20 hours under controlled conditions.

This booklet contains

- instructions and guidance for teachers supervising externally assessed assignments.

# The Assignment – Advanced Spreadsheet Design

## Guidance for teachers

It is expected that the assessment material will be presented to candidates only after they have been adequately prepared. Candidates must have an understanding of the content of the unit and the necessary skills to complete tasks.

This unit is assessed by external examiners. The unit is assessed through an AQA-set assignment which is completed by candidates partly in investigation time and partly in 20 hours controlled conditions. This is the only form of assessment for this unit. Only paper-based evidence will be accepted, the external examiners will only be able to award marks based on this paper evidence. This should be borne in mind when advising candidates. The number of marks available for each part of the assignment is indicated in the *Candidate Booklet*.

## Providing guidance for candidates

It is expected that the teacher/tutor will discuss in detail the requirements of the assignment with candidates prior to their starting the assignment. Each candidate must design, implement, test and evaluate a spreadsheet system for a client. It is expected that evidence will be produced using appropriate computer software. However, diagrams and initial designs may be hand-drawn, and annotations may also be made by hand. Each candidate must provide hard copy evidence to prove to the examiner that they have produced evidence.

During the investigation time candidates need to produce work which will include:

(a) a description and justification of the need for the spreadsheet for a client

(b) evaluation criteria and a test plan

(c) a design for a spreadsheet system that meets the needs of the client and incorporates at least six complex facilities.

Once this is completed candidates will have 20 hours under controlled conditions to complete work which will include:

(d) evidence of implementation of an effective spreadsheet solution

(e) evidence of testing and using the results of testing to evaluate the solution against the evaluation criteria

(f) a user guide and technical documentation

(g) an evaluation of their work

(h) an evaluation of their own performance in producing the solution

(i) evidence of use of standard ways of working

(j) evidence of appropriate written communication throughout the portfolio.

After the controlled conditions you will hand in the work completed in the controlled conditions along with your design notes.

**Providing a design brief**

It is strongly recommended that each candidate investigates his/her own individual system. However, where a candidate is unable to find a suitable client, the centre may provide a suitable design brief. In which case, the teacher/tutor will need to act as the client. Candidates must not act as their own or each other's clients. If the teacher/tutor supplies a brief for a candidate, a copy of this brief should be clearly labelled and submitted to the external examiner with the script.

It is advised that teachers/tutors try to avoid providing scenarios as by doing so they might accidentally restrict the marks that the candidate can achieve. In particular, design briefs set by teachers/tutors must **not** include:

- entity-relationships
- formulae
- test data.

However, design briefs will need to include:

- a description of the client's organisational needs
- a description of any current manual system
- what the client wants the new system to be able to do
- details of any constraints.

Teachers/tutors will then need to brief the candidate, at the candidate's request, and possibly several times, while playing the role of the client. A copy of any material given to the candidate must be identified as such and included in the candidate's portfolio.

Whether or not the client is real or simulated in this way, it is important that the examiner has no doubt that the material being presented by a candidate is his/her own work. Candidates cannot be awarded marks for information or material that they have not produced.

As far as possible, teachers/tutors should ensure that:

- the design and implementation of the spreadsheet system is carried out independently by each candidate
- the documentation they produce is all their own work
- any documentation provided by you or a client, is clearly identified as such.

Candidates must base their design specifications on the needs of their clients so that they will be able to test that their finished spreadsheet meets their client's requirements.

However, as the spreadsheet will be created under controlled conditions, they are not required to carry out live client/end-user testing. Candidates are, though, expected to be able to critically assess to what extent their completed spreadsheet meets the client's needs.

The examiner can only award marks where the candidate has produced evidence that meets the requirements. Therefore teachers/tutors should advise candidates to annotate their work so that it makes it clear how and where the requirements have been met.

## 1. The investigation time

The investigation time begins when candidates are handed the *Candidate Booklet*. This should occur at the first convenient time after the date printed on the front cover of the booklet. They may, however, have already begun to search for a suitable client before this date.

During the investigation time, candidates will be expected to carryout all of the necessary research and planning needed for the assignment. This may include receiving advice from their teacher/tutor. Candidates may spend as much time as they wish on research and planning. The material produced should be placed in a preparatory folder.

The investigations candidates carry out will probably involve:

- meeting and interviewing a client to discuss an ICT problem that is best solved by the use of a complex spreadsheet
- observation of any system already in use by the client
- analysis of any documentation used
- analysing the client needs and drawing up a formal specification for the spreadsheet
- reviewing their initial designs with the client to ensure that they meet his/her needs.

Rough notes, drafts of diagrams, test plan(s) and the test data that will be used, together with outline plans for their user guide and evaluations may be placed in the preparatory folder for use in the controlled conditions.

## 2. The controlled conditions

During the 20 hours controlled conditions, candidates must complete the assignment detailed in the *Candidate Booklet.* The work will normally be word processed. Diagrams may be hand-drawn. Candidates may have unlimited access to the material in their preparatory folder.

Teachers/tutors will need to tell candidates when these 20 hours of controlled conditions have been timetabled. Particularly important is the time and date when the controlled conditions will end. This is the deadline that all your candidates must meet for handing in their completed work for assessment.

'Controlled conditions' is essentially the same as 'examination conditions'. Candidates are expected to work independently and in silence. It is not acceptable for research and planning, or class or individual teaching, to take place during a controlled session.

Candidates may take their planning and research notes, produced during the investigation time, into the controlled sessions. It is the responsibility of the supervising teacher to inspect each candidate's notes to ensure that they are actually notes produced by the candidate, rather than pre-prepared materials. Candidates may not take any textbooks, or photocopies of parts of textbooks, into a controlled session. Neither may they take worksheets, copies of sample materials, or printouts of web pages into a controlled session. Candidates are permitted to carry out additional research and planning between individual controlled sessions.

Copy typing of any material is not permitted.

Candidates must not be able to access the Internet or any intranet during controlled sessions, and the centre must make provision for access to these to be prevented.

All work must be produced using a computer. Any candidate who does not use a computer to produce the assignment could lose some or all of their marks. Special consideration should be requested from AQA for candidates whose work, including the ability to use a computer in its production, has been affected by illness or other exceptional circumstances. Further information about the circumstances when special consideration may be requested is given in section XXXXX, 'Problems with Individual Candidates', of the specification. Information about the procedure is issued separately in the document *Regulations and guidance relating to candidates who are eligible for adjustments in examinations* which can be obtained from AQA.

Teachers/tutors should ensure that any candidate that is absent from a controlled session is given the opportunity to make up any session missed.

**3. What candidates should hand in**

When they have completed the assignment they should hand in:

(a) detailed design notes that demonstrate the use of standard design methods
(b) your test plans, test data and test report
(c) the finished spreadsheet
(d) user guide and any technical documentation not included above
(e) a written evaluation of the solution that uses the results of testing to check operation against the evaluation criteria they have devised
(f) an evaluation of their own performance in producing the solution
(g) evidence that they have used standard ways of working.

**4. Steps which must be taken by the centre to secure the computer network**

Teachers must ensure that suitable equipment is available to candidates to enable them to complete the work effectively.

Centres must create a separate computer User Area (on computers or servers used by candidates) in which candidates will produce their Assignments. Centres must ensure that this User Area cannot be accessed by candidates outside controlled lesson times. This Area must be directed and controlled by the teacher/tutor. This is most easily done by the changing of passwords (which would be unknown to candidates until the start of the next controlled session), or by use of an electronic time-lock, although other electronic means are acceptable.

The centre must use the *Record of Lessons Under Controlled Conditions* form on page XXXXX of this *Teachers' Booklet* to record the dates and times of sessions when candidates are producing their Assignments. This record must be signed by both the supervising teacher(s) and the Head of Centre to confirm the dates on which the controlled lessons took place. The form must be detached from the booklet and sent to the AQA examiner with the candidates' work.

From time to time, some centres may be required by AQA to supply details of the timetabling of the controlled sessions for the assignment. This information may be used by visiting members of the JCQ Examinations Inspectorate to check that controlled sessions are being conducted in accordance with the rules set by AQA. Heads of Centres will be obliged to make arrangements that will facilitate the work of the JCQ Examinations Inspectorate.

## 5. Authenticating candidates work

Teachers/tutors must sign the Centre Declaration Sheet to authenticate candidates work and to confirm the rules for controlled conditions have been followed. Only material specified in the *Candidate Booklet* may be taken in to the controlled conditions.

The candidates must complete the Candidate Record Form to confirm that the work is their own.

## 6. How candidates will achieve marks

Candidates will be awarded marks for doing the following:

**Planning work**

Producing a realistic implementation schedule, breaking the task down into a number of manageable sub-tasks. *(up to 3 marks)*

Showing that they have followed their implementation schedule fully. *(up to 2 marks)*

**Describing, justifying and designing the proposed solution**

Describing the background of, and the intended client for the proposed spreadsheet. *(up to 2 marks)*

Providing a detailed description of the needs of the client for whom they will be developing the solution. *(up to 3 marks)*

Showing that they fully understand the needs of your client. *(up to 2 marks)*

Explaining and justifying the hardware and software that will be used for the solution. *(up to 3 marks)*

Stating the input, processing and output needs of the proposed spreadsheet, and providing designs for the format and method of data input, calculations (including proposed formulae) and output of the solution. These should be sufficiently detailed so that a third party could implement the solution. *(up to 5 marks)*

Describing the skills of the spreadsheet's user, considering these skills in the design of the solution and justifying their design in terms of the user's skills. *(up to 4 marks)*

**Producing the solution**

Implementing a solution that makes efficient use of the spreadsheet's functions and facilities to produce output as a result of processing. *(up to 3 marks)*

Showing that they have used at least six complex spreadsheet facilities and appropriate validation/verification techniques, and explained and justified their use. *(up to 3 marks)*

Showing, explaining and justifying the methods used to process data (including formulae actually used) and produce output to meet the needs of the client. *(up to 3 marks)*

Producing well-organised documentation which includes annotated screen shots that clearly describe the implementation of the solution. *(up to 3 marks)*

Creating an explanatory user guide to their spreadsheet solution that includes annotated screen shots. *(up to 3 marks)*

Showing that they have adhered to standard ways of working at all times. *(up to 3 marks)*

**Testing and evaluating their solution**

Identifying qualitative and quantitative evaluation criteria for the solution, which are appropriate to the needs of the client. *(up to 4 marks)*

Designing a comprehensive, fully documented test plan which includes testing against the evaluation criteria, and carrying out the tests. *(up to 5 marks)*

Drawing meaningful conclusions from the results of their tests, and making appropriate changes to the solution as a result of the testing, explaining why the changes have been made. *(up to 3 marks)*

Critically evaluating the solution, identifying strengths, weaknesses and areas for improvement, relating them to the needs of the client. *(up to 5 marks)*

**Evaluating their work for this unit**

Describing in detail and critically reviewing the actions taken to produce the solution, identifying strengths, weaknesses and areas for improvement. *(up to 5 marks)*

Showing how they have planned and managed your time effectively, monitoring your progress. *(up to 3 marks)*

Showing that they have met most or all of their deadlines, giving acceptable explanations for any deadlines they have missed. *(up to 3 marks)*

**END OF TEACHERS' BOOKLET**

**General Certificate of Education**

**APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY**

Unit 10 Advanced Spreadsheet Design

**Externally-assessed Unit: Record of lessons under controlled conditions**

**Centre Name** …… **Centre Number** | | | | | |

| Date | Time | Number of hours (round minutes up or down to the nearest hour) | Signature of supervising teacher/tutor |
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| Total number of hours | | | |

**Declaration**

I confirm that, on the occasions listed above, candidates' AQA-Assessed Assignments were produced under controlled conditions as specified these *Instructions and Guidance and* in the terms and conditions of the GCE in Applied ICT specification, and that every reasonable step has been taken to ensure that the work presented is that of the candidates named. Any assistance given to candidates beyond that given to the class as a whole and beyond that described in the specification has been recorded on the *Externally-assessed Assignment Candidate Record Form*.

**Signed ……..……. Head of Centre Date……**

(Use an additional sheet, if necessary. This form may be photocopied.)