

Oxford Cambridge and RSA Examinations



OCR GCSE IN INFORMATION AND COMMUNICATIONS TECHNOLOGY A **1994**

OCR GCSE (SHORT COURSE) IN INFORMATION AND COMMUNICATIONS TECHNOLOGY A **1094**

TEACHER SUPPORT: TEACHERS' GUIDE INCORPORATING COURSEWORK ADMINISTRATION PACK

THIRD EDITION

CONTENTS

1	INTRODUCTION AND SPECIFICATION CONTENT	4
1.1	Summary of Specification	4
1.2	Teaching Time	7
1.3	Coursework	9
1.4	Exemplar tasks for coursework	10
2	COURSEWORK UNIT 2 (2358) – PROJECTS 1A AND 1B	20
2.1	Project 1A	20
2.2	Project 1B	26
2.3	Written Communication	37
3	COURSEWORK UNIT 4 (2360) - PROJECT 2	38
3.1	Project 2	38
3.2	Analysis	39
3.3	Design	42
3.4	Implementation	44
3.5	Testing	47
3.6	User Documentation	48
3.7	Evaluation	50
3.8	Written Communication	52
4	EXAMINATION PAPERS UNITS 1 AND 3 (2357 AND 2359)	52
4.1	The Design of the Examination Papers	52
4.2	Examination Technique	52
4.3	The Most Important Words in a Question (The Key Words)	59
4.4	Graded Response Marking	64

5	OCR RESOURCES AND SUPPORT	66
6	COURSEWORK ADMINISTRATION PACK	67
	Coursework Enquiries	69
	Assessing the Coursework	70
	Coursework Forms	73
	Centre Authentication Form	CCS160 Form
	Candidate Authentication Form	GWC652 Form

1 INTRODUCTION AND SPECIFICATION CONTENT

This Teachers' Guide is designed to assist teachers in the delivery of the teaching and assessment of the OCR Short and Full GCSE Courses in ICT A. It includes:

- a brief summary of the specification and suggestions for organising teaching time;
- guidance on the assessment of practical skills;
- guidance on coursework assessment;
- guidance on examination techniques;
- learning resources.

1.1 SUMMARY OF SPECIFICATION

The course is based on assessment units. It is important to remember that the candidate must also make a certification entry in the session in which they wish to claim a grade.

1.1.1 Structure

The courses are split into four teaching modules:

Short Course

Unit 1 (2357) Computer Systems, Communications Technology and Information Management.

Unit 2 (2358) Practical skills and understanding relating to the use of ICT applications.

The specification for the Short Course GCSE requires candidates to do two pieces of coursework (2358) and sit one examination paper (2357). Candidates must submit a piece of coursework which will essentially be on presenting information (Project 1a) plus another which can be chosen from handling data, modelling, measuring or control (Project 1b), as well as a single examination Paper 1F (Foundation) or Paper 1H (Higher).

Full Course

Unit 3 (2359) ICT Applications, Systems, Networks and Computer Technology.

Unit 4 (2360) Problem solving using ICT.

The teaching modules are assessed using units of assessment as described below.

The specification for the Full Course GCSE requires candidates to do three pieces of coursework and sit two examination papers. The Full Course requires that candidates fulfill all the requirements of the Short Course (2357 and 2358) and complete another piece of

coursework on systems design (2360) plus another examination (Paper 2359F (Foundation) or Paper 2359H Higher)).

Because of the modular nature of the course, candidates do not need to be assessed on both the Short and Full Courses at the same session. They could, for example, do the assessment for the Short Course in January and the assessment for the Full Course in June.

1.1.2 Tiering

Careful consideration needs to be given to the tier of entry in written papers!

Tiering is described in Section 4.1 of the specification. It is important to recognise that, although the written papers are tiered in order to improve accessibility for candidates, candidates are free to enter different papers at different tiers. Coursework is untiered.

When candidates make their certification entry they do not enter for a specific tier. The marks for each unit are simply aggregated and compared with the pre-set thresholds. Thus a candidate who is entered for Foundation tier in both written papers and performs well, could still achieve a grade higher than a C if their coursework marks are high enough.

The detail of the aggregation process is given in Section 4.9 of the specification.

The following table shows the distribution of the examination papers and their associated grades.

Paper	Duration	Max Raw Marks	Grades
2357F	1 hour	60	C – G
2357H	1¼ hours	60	E – A*
2359F	1 hour	60	C – G
2359H	1¼ hours	60	E – A*

1.1.3 Coursework

The following table shows the distribution of coursework and its associated grades.

Title	Topic	Course	Course	Raw Mark	Grade
1a	A piece of work related to Communication and Key Skills	Short	Full	28	G – A*
1b	A piece of work related to Handling Data, Modelling, Measurement or Control	Short	Full	28	
2	A piece of work related to Systems Design	—	Full	56	G – A*

Candidates may undertake work from a number of sources.

- Candidates may undertake a task they have developed themselves.
- They may choose from the coursework exemplar tasks suggested by OCR.
- Teachers may prefer to compose tasks of their own from which candidates will choose.
- Candidates are not required to complete any OCR-set projects.

1.1.4 Timetable

All four units are available in both the January and June examination series.

1.2 TEACHING TIME

1.2.1 Delivering the Short Course

This could be taught in one of three ways.

- Across the curriculum.
- As specific lessons.
- Across the curriculum and specific lessons.

In teaching the subject across the curriculum there will have to be somebody responsible for the co-ordination of the whole subject to make sure that everything has been taught and that all the coursework has been compiled according to the requirements of the specification. When taught as a specific lesson, one-hour per week would be sufficient.

1.2.2 Delivering the Full Course

This should only be taught in a single way.

- As specific lessons.

The Full Course is one that should have an equal amount of time on the timetable as any other optional subject. Normally two lessons of an hour each would be sufficient.

In both cases the ratio of coursework to theory is 60:40. However, spending 60% of the time available simply doing coursework would be inappropriate. All the subject matter underlying the coursework assessment will need to be taught and so some time allowance for this must be included within the 60%.

1.2.3 Time Required for the Coursework Element of the New Specifications

The assessment of the GCSE ICT course is split in the ratio 60% coursework and 40% written examination. An approach to teaching the course would be to divide the course into manageable units so that the coursework/theory split is 60/40.

The following analysis is based on the assumption that schools will spend two lessons per week of curriculum time on the Full Course and one lesson per week on the Short Course. It is assumed that a lesson is one hour long. Allowance must be made for the effects of training days and other curriculum squeezing activities, such as work experience, preparation for trial/mock examinations, examination time and study leave. It is assumed that most year 10 pupils will spend a maximum of 35 weeks on the course and year 11 pupils will spend a maximum of 25 weeks on the course. This gives a grand total of 60 weeks whereby candidates can be expected to be totally focused. Other models, of course, are possible.

Thus, one possible model could be:

	Number of lessons per week	Theory 40%	Coursework 60%
Short Course	1	24 hrs	36 hrs
Full Course	2	48 hrs	72 hrs

Short Course Coursework – Unit 2 (2358)

This module requires two pieces of coursework to be submitted. These are called Project 1a and Project 1b.

Given a time allocation of 36 lessons for the coursework, a logical split would be to spend 18 lessons on Project 1a and 18 lessons on Project 1b. This should be adequate both in topping up the skills acquired at Key Stage 3 and for actual completion of the coursework.

Full Course Coursework – Unit 4 (2360)

The additional 36 hours have to be spent on producing one project called Project 2. The following time allocations are suggested based on the amount of time spent on the coursework divided up pro rata according to how many marks are available. All times are approximate and meant only as a guide.

	Hours
Analysis	7
Design	8
Implementation	9
Testing	4
User Documentation	5
Evaluation	3

1.3 COURSEWORK

1.3.1 Unit 2 (2358)

Unit 2 is the coursework element of the Short Course GCSE (1094). Two pieces of work need to be submitted for this Unit. One piece of work will be focused mainly on communicating information, although not totally, since small elements of modelling and data handling are also required. This piece of work will meet most of the Key Skills IT requirements and in the specification is referred to as Project 1a. For this reason the communicating strand is no longer an optional strand. The second project will be assessed against one of the remaining strands of data handling, modelling, measuring and control. This piece of work is referred to in the specification as Project 1b.

Each piece of work is marked according to a set of criteria which are given in Section 7.5 of the specification and are exemplified later in this Teachers' Guide. The criteria are formed from a clear hierarchy of statements with most mark ranges containing criteria that are either additional to, or extensions of, the criteria in the mark range below. Candidates should be encouraged to move up the mark ranges by developing their work to encompass the additional criteria.

Projects 1a and 1b are totally separate and cannot be assessed together. This means that the work submitted as Project 1a cannot be assessed against the criteria for Project 1b and, obviously, the work for Project 1b cannot be assessed against the criteria for Project 1a.

1.3.2 Unit 4 (2360)

Unit 4 is the coursework element of the Full Course GCSE (1994). In Unit 4 there is a set of statements to be met which, again, are either additional to, or extensions of, the statements required for the lower mark. As a general rule, candidates will be able to increase their marks by adding additional work and gaining credit for matching extra criteria. All the criteria at each level must be achieved before the candidate can be awarded marks for that level.

1.4 EXEMPLAR TASKS FOR COURSEWORK

1.4.1 EXEMPLAR COURSEWORK TASKS - PROJECT 1a

These are just ideas for coursework and should not be taken as everything the candidate has to do to earn full marks. The candidate's work should be marked using the criteria from the specification.

1 Produce a short, illustrated children's book.

To include:

- a suitable cover;
- an advert for the writer on the back cover;
- a simple story in a suitable easy to read font;
- illustrations which could be clip art.

2 Produce a programme for a school performance.

To include:

- photographs of scenes from the production;
- a list of performers;
- timings of performances;
- details of play/concert etc.
- admission prices to various parts of the theatre/hall.

3 Create a web site to advertise your school.

To include:

- text which tells visitors about the school;
- photographs of the school;
- music made by the school orchestra;
- links to other pages.

4 Produce the advertising material for a car showroom.

To include:

- a brochure describing the main features of the cars being sold - make, model, age, engine size etc.;
- this brochure should show pictures of the cars on sale;
- a list of prices of the cars.

5 Create a presentation using a computer on a topic of your choice.

To include:

- animated text;
- pictures where appropriate;
- suitable video;
- running headers and footers;
- a presentation to an audience;
- a guide to how the presentation was created.

1.4.2 EXEMPLAR COURSEWORK TASKS - PROJECT 1b

These are just ideas for coursework and should not be taken as everything the candidate has to do to earn full marks. The candidate's work should be marked using the criteria from the specification.

- 1 Conduct an analysis within the school so that you can determine the between-meals eating habits of pupils.

To include:

- design and production of a data capture sheet;
- collection and input of data;
- sorting and searching data;
- presentation of results in the form of graphs/charts;
- a written conclusion.

- 2 Compile a database of second-hand vehicles using current information from local garage advertisements, leaflets and newspapers. This database will act as a vehicle location service for someone wishing to obtain details on the availability of certain models.

To include:

- a data capture sheet;
- collection and input of data;
- sorting and searching of data;
- presentation of results;
- written conclusion;
- an instruction sheet to enable another person to use the system to search for information on a specific type of vehicle.

- 3 Design a spreadsheet, which will model the trajectory of a projectile.
- To include:
- research to determine the correct formulae;
 - a spreadsheet which displays the distance from the start and the height of the object;
 - single cells which contain the values of velocity and angle which can be changed to experiment with the model;
 - a graph which displays the path of the projectile.
- 4 Use suitable data logging equipment with a variety of sensors to conduct an investigation to determine the effect that age, gender and weight has on heart rate after mild exercise.
- To include:
- a detailed description of how the investigation was carried out;
 - a printout of the results;
 - a conclusion supported by graphs and charts;
 - an evaluation of the investigation.
- 5 Carry out a series of tests on insulating materials such as paper, metal and polystyrene that could be used for drink containers in order to keep a drink warm for the maximum amount of time.
- To include:
- a detailed description of how the investigation was carried out;
 - a printout of the results;
 - a conclusion supported by graphs and charts;
 - an evaluation of the investigation.
- 6 Design a control system for the local Leisure Centre which has a large enclosed water slide as a feature of the swimming pool and wish to install an automatic control system to ensure its safe use.
- To include:
- a red and green light at the top of the slide to show when the slide is clear and ready for use;
 - an audible warning to sound if a person attempts to use the slide before the last person is safely clear of the splash down area;
 - a counting device that will record the number of people who have used the slide in any one session.

- 7 Compile a database of videotapes/CDs/DVDs using current information from local video stores, leaflets and newspapers. This database will act as the basis for a store assistant finding a specified videotape/CD/DVD as well as keeping a record of whether it is in stock or not.

To include:

- a data capture sheet;
- collection and input of data;
- sorting and searching of data;
- presentation of results;
- an instruction sheet to enable another person to use the system to search for information on a specific videotape/CD/DVD.

- 8 Create a burglar alarm system, which can be used in a house.

To include:

- sensors to detect movement;
- sensors to detect if a window has been opened;
- sensors to detect if someone has walked on the floor;
- an alarm system;
- an emergency button to set off the alarm immediately;
- an off button to switch off the alarm;
- documentation for the system.

- 9 Create an interrogation system for a historian to enable them to find out various facts about monarchs.

To include:

- a data capture sheet;
- collection and input of data – e.g. who they were, when they were born, when they were crowned, how long they reigned, how they died, age they died, which family they were in etc;
- sorting and searching of data;
- presentation of statistics in the form of graphs/charts;
- an instruction sheet to enable another person to use the system to search for information on a specific monarch.

1.4.3 EXEMPLAR COURSEWORK TASKS - PROJECT 2

These are just ideas for coursework and should not be taken as everything the candidate has to do to earn full marks. The candidate's work should be marked using the criteria from the specification.

- 1 Devise a system which would help the owner of a car dealership to organise the business. There are several aspects to the business, which the owner needs help with.
 - A record of all the stock has to be kept so that if a customer comes in and make enquiries about a specific car, salesmen can immediately inform them whether the dealership has such a car.
 - A record of customers has to be kept for further mailings about special offers.
 - The servicing department has to keep a record of all the parts in the stores.
 - Itemised bills have to be prepared for customers when they have their cars serviced (certain customers are allowed a discount).

Choose one or more of these aspects of the business when devising your solution. In order to gain high marks, at least two aspects of the business will need to be considered.

Your solution should include the following.

- Identification of problems with the current system.
- Interviews with possible users/operators of such a system.
- Documents and forms in use in the current system.
- Identification of the inputs, outputs and processing currently employed.
- Designs of the structure of databases/spreadsheets/word processing documents required.
- Design of the input screens and the output documents/screens of the new computerised system.
- Documentation of how the databases/spreadsheets/word processing documents and how the associated input screens and output documents/screens were created.
- The combination of the outputs from one piece of software into another.
- Evidence of testing.
- A User Guide showing how to use the new system.
- An evaluation of the final system compared with their original design.

2 Devise a system that would help the organisers of a weight-watchers club to assist their members in the various aspects of their activities. There are several aspects of the club, which they need help with.

- Help their members to calculate their daily energy and protein levels based on their food intake.
- Help their members predict the effect of changes to their diet.
- Keep a record of every member's details for sending information about changes in meetings or special events.
- Keep a record of their member's weight to produce charts showing their progress.

Choose one or more of these aspects of the activities of the organisers when devising your solution. In order to gain high marks, at least two aspects of the club will need to be considered.

Your solution should include the following.

- Identification of problems with the current system.
- Interviews with possible users/operators of such a system.
- Documents and forms in use in the current system.
- Identification of the inputs, outputs and processing currently employed.
- Designs of the structure of databases/spreadsheets/word processing documents required.
- Design of the input screens and the output documents/screens of the new computerised system.
- Documentation of how the databases/spreadsheets/word processing documents and how the associated input screens and output documents/screens were created.
- The combination of the outputs from one piece of software into another.
- Evidence of testing.
- A User Guide showing how to use the new system with a trouble-shooting guide.
- An evaluation of the final system compared with their original design.

3 Devise a system that would help the managers of a leisure centre/fitness club to provide a more efficient service to their members. There are several aspects of the leisure centre/fitness club, which they need help with.

- Keep a record of every member's details.
- Measure the heart rate, blood pressure and other physiological measures of their members before and after various set exercises.
- Compare these measures with national norms and advise their members on their fitness levels.
- Keep a record of their members' fitness levels to produce charts showing their progress.
- Send details of centre/club activities

Choose one or more of these aspects of the activities of the organisers when devising your solution. In order to gain high marks, at least two aspects of the centre/club will need to be considered.

Your solution should include the following.

- Identification of problems with the current system.
- Interviews with possible users/operators of such a system.
- Documents/forms and methods of measuring blood pressure etc. in use in the current system.
- Identification of the inputs, outputs and processing currently employed.
- Designs of the structure of databases/spreadsheets/word processing documents/data-logging equipment required.
- Design of the input screens and the output documents/screens of the new computerised system.
- Documentation of how the databases/spreadsheets/word processing documents/data logging systems and how the associated input screens and output documents/screens were created.
- The combination of the outputs from one piece of software into another.
- Evidence of testing.
- A User Guide showing how to use the new system with a trouble-shooting guide.
- An evaluation of the final system compared with their original design.

- 4 Devise a system, which would help the owner of a video rental shop to organise his business. There are several aspects to the business, which he needs help with.
- A record of all the videos has to be kept so that if a customer comes in and make enquiries about a specific video, shop assistants can immediately inform them whether they have it in the shop at that time.
 - A record of customers has to be kept with the videos they have on hire so that overdue notices can be sent if required.
 - The various pricing strategies have to be calculated so that special offers such as ‘hire three get one free’ and others can be applied.
 - Letters can be sent to customers if a new film, which matches their particular preferences, comes into the shop.

Choose one or more of these aspects of the business when devising your solution. In order to gain high marks, at least two aspects of the business will need to be considered.

Your solution should include the following.

- Identification of problems with the current system.
- Interviews with possible users/operators of such a system.
- Documents and forms in use in the current system.
- Identification of the inputs, outputs and processing currently employed.
- Designs of the structure of databases/spreadsheets/word processing documents required.
- Design of the input screens and the output documents/screens of the new computerised system.
- Documentation of how the databases/spreadsheets/word processing documents and how the associated input screens and output documents/screens were created.
- The combination of the outputs from one piece of software into another.
- Evidence of testing.
- A User Guide showing how to use the new system with a trouble-shooting guide.
- An evaluation of the final system compared with their original design.

5 Devise a system, which would help the owners of a small hotel, organise their business. There are several aspects to the business, which they need help with.

- A record of all the hotel rooms, their type and their occupancy has to be kept. If somebody wishes to book a room they can be advised with regard to availability.
- A record of the details of the hotel guests has to be kept.
- Bills have to be calculated so that meals taken etc. can be included.
- Letters can be sent to former guests advertising special offers.
- A booking system for evening meals has to be organised in the hotel restaurant to avoid seating problems.

Choose one or more of these aspects of the business when devising your solution. In order to gain high marks, at least two aspects of the business will need to be considered.

Your solution should include the following.

- Identification of problems with the current system.
- Interviews with possible users/operators of such a system.
- Documents and forms in use in the current system.
- Identification of the inputs, outputs and processing currently employed.
- Designs of the structure of databases/spreadsheets/word processing documents required.
- Design of the input screens and the output documents/screens of the new computerised system.
- Documentation of how the databases/spreadsheets/word processing documents and how the associated input screens and output documents/screens were created.
- The combination of the outputs from one piece of software into another.
- Evidence of testing.
- A User Guide showing how to use the new system with a trouble-shooting guide.
- An evaluation of the final system compared with their original design.

2 MODULE 2 – PROJECTS 1A AND 1B

2.1 PROJECT 1A

Candidates are required to produce a single, coherent piece of work which satisfies the requirements of a task which has been set. They cannot undertake a selection of tasks which are set up purely to gain credit for each criterion.

The assessment approach is hierarchical and so it is a good idea for candidates to gain their marks by meeting the mark ranges one by one. The requirements for each mark range are explained below. It is important to note, as stated earlier, that it is necessary for the candidate to provide evidence that meets all the criteria at a particular level if they are to be awarded a mark at that level. If **just one** statement is missed out in any mark range candidates cannot be given a mark in that range. The best approach for candidates to take therefore is to match **all the criterion statements** in a lower mark range before moving on to a higher mark range.

The essential aspect to this work is that candidates provide evidence that they have matched these criteria. Statements from teachers saying that candidates have been observed performing the required tasks will not be acceptable as evidence.

It is essential that candidates introduce the task they are undertaking. This will make it easier for them when moving through the mark ranges to give reasons related to purpose for choices they make at various stages in their work. This will also help the teacher or moderator to understand what they are trying to achieve.

The descriptors provided below should be considered as building successively on proceeding requirements. For example, a candidate who achieves a mark in the 20-21 range would in addition have presented evidence matching the descriptors of the proceeding mark ranges.

To achieve marks of 11 or above candidates will need to produce a **significant** piece of work. It is therefore recommended for a booklet that the work should consist of at least 8 A5 or A4 pages and the equivalent for other tasks e.g. 8 slides in a presentation. All the criteria for marks in the ranges 0-10 must be met within this piece of work. For example, development of the work and purpose of the work must relate to this significant piece of work.

0-2 Find different types of information from an IT source and non-IT sources.

Candidates will need to include evidence of information they have found using an IT source such as clipart, scanned images, CD-ROMs or the Internet **and** information from non-IT sources such as newspapers and magazines.

Use a computer to create a piece of work.

This will be a document or presentation of at least two pages or slides containing images or text using information they have found. Information from the IT and at least one non-IT source must be included.

Use editing techniques to bring in some of the information.

Candidates need to indicate within their work where they have used any simple editing features such as copy and paste or cut and paste.

3-4 Include text, images and numbers in the work.

The work must contain evidence of all **three** features. More than one example of this type of data must be included.

Numbers are considered to be data that can be mathematically manipulated and appropriately formatted, e.g. £1.20

Use a computer to develop a piece of work.

Candidates must present evidence of evolution of their design including several printouts (more than two) showing the changes made.

5-7 State the purpose of the work.

Candidates must provide an appropriate reason why they are undertaking the work. The candidate's brief statement must identify the audience intended and the information to be communicated.

Experiment with layouts and choose an appropriate layout for the selected information.

This requires some consideration of which layouts of the information they are going to use. These could be hand drawn sketches or printouts of different page layouts with some indication of which one would be best.

8-10 Write down how the development matches the purpose of the work.

As with 3-4 marks, candidates must present evidence of evolution of their design including several printouts (more than two) showing the changes made. For 8-10 marks and above, annotation or documentation must be provided giving reasons for these changes.

Candidates need to include more than one printout showing how the work has been developed, e.g. before and after alterations.

There must be evidence of text, images and numbers included in this work. Suitable evidence may include

- a print out of initial text, followed by a printout of the text with a graphic incorporated into the work
- a printout showing text properly formatted and a graphic positioned appropriately
- a table of numbers included.

Candidates should write down why they have developed the work in the way they have and why it matches their purpose.

Show consistency throughout the work.

This mark is awarded for consistency of presentation, e.g. applying house style. This evidence must be identified with the solution to the task. For example, applying consistent font styles for headings, sub-headings and body text.

11-13 Use a computer to develop a significant piece of work.

The candidate must show how this **significant** piece of work was developed. Printouts will be needed to show various stages of development.

Use a spell checker or proof-reader to check the accuracy of the work.

Screen dumps of the piece of work showing the spell checker in use could be provided. It is expected that this checking will be carried out on the final presentation to ensure a high level of quality. An example of how to use a spell checker will not satisfy this criterion.

An alternative is for the candidate to have their work independently proof read by a suitable person. In this case the proof-reader will highlight all errors of fact or grammar and the proof-reader will sign to confirm that they proof-read the work. In addition, there must be evidence that corrections required have been made as a result of these checks. Before and after printouts are required.

Save information using appropriate folders and file names.

Evidence is required that the candidate has used appropriate folder and file names. This should take the form of screen dumps of directories or listings.

14-16 Use a computer to develop a significant piece of work using different types of information from a range of IT sources and non-IT sources.

Candidates must provide evidence that they have used **more than one type** of IT source and more than one non-IT source. The Internet counts as only one type of IT source regardless of how many search engines/web sites are used. Some examples of different types of IT sources would include, CD-ROM, scanners/digitisers, microphones, MP3s, digital cameras. Some examples of non-IT sources would include books, magazines and photographs.

Search for information using multiple criteria.

This should be the output from the use of a search using more than one criterion carried out on the Internet, CD-ROM encyclopaedia or a database. The evidence required is a screen dump or a printout showing the criteria used. Evidence that the search has been carried out must also be provided either in the form of screen dumps or a printout of the information found.

17-19 Use hyperlinks or refined searches to identify information which is suitable for the purpose of the work.

Candidates may explore different sites on the Internet. In doing this they must refine their searches or use hyperlinks to ensure that the results match their purpose. They should explain why they think the refined searches or the links they are following will produce information relevant to their purpose. They need to say why their chosen information is relevant to their purpose.

Use formatting techniques to bring in some of the information.

Candidates must demonstrate that they have carried out editing and formatting to develop imported or downloaded information. For example, cropping an image they have downloaded or reformatting an imported piece of text.

Editing is considered to be a change to the content of the information, whilst formatting is considered to be a change made to the appearance of the information.

20-21 Derive new information for inclusion in the work.

Candidates will need to show evidence that new information has been produced based on information obtained from one of their sources. This information must have been manipulated in some way using another software package. For example, complex text has been simplified and summarised or new data has been derived from the initial imported or downloaded information. The new information must then be imported/inserted into the candidate's work.

Additional Skills Marks

It is strongly recommended that Additional Skills Marks are best evidenced by making reference to their own work. Merely writing about these points in the abstract may lead to problems with over similarity of candidates' work and difficulty in establishing the candidates' understanding and knowledge.

All the criteria at the lower levels must be met before marks can be awarded at a level.

0-2 Is able to compare own use of IT with other methods.

This will be a written statement by the candidate, which includes a comparison of his or her own use of IT with other methods. They could explain how their work could have been produced manually.

Can work safely and take care of equipment and avoid losing information.

Candidates will write about how they worked safely and looked after equipment and made backups. They must provide evidence that they have used some form of backup system so that in the event of accidentally losing one file they still have copies available. This can be achieved by including screen dumps showing their backups.

Knows how to get help when dealing with errors.

They will write about how they used on-line help or when they had to get help from a teacher or technician.

3-4 Can write about the advantages and disadvantages of using IT.

Candidates will list more than one advantage and disadvantage of using IT which they experienced in the production of their work.

Knows when it is necessary to observe copyright or confidentiality.

Candidates will write a few lines about either issue. Again, it is advisable that this relates to their own work. For example, they may have acknowledged sources used within their work or avoided them because of copyright issues.

5-7 Can identify errors and their causes.

Candidates are again recommended to make reference to their own work when giving examples. Suitable evidence could include screen dumps of error messages with written statements as to what caused the errors.

Knows how to minimise risks from viruses.

Candidates should provide a description of how they avoided or could avoid getting viruses from floppy disks or Internet downloads, including how they made use of or could have used a virus checker.

Knows how to minimise health risks.

Candidates will write about at least **two** health risks of using computers and how they can combat these.

2.2 PROJECT 1B

There are four strands of ICT of which the pupils should choose one. The assessment approach is hierarchical and so it is a good idea for candidates to gain their marks by meeting the mark ranges one by one. The requirements for each mark range are explained below. It is important to note that, as for Project 1a, it is necessary for the candidate to provide evidence that meets all the criteria at a particular level if they are to be awarded a mark at that level. If **just one** statement is missed out in any mark range candidates cannot be given a mark in that range. The best approach for candidates to take therefore is to match **all the criterion statements** in a lower mark range before moving on to a higher mark range.

The essential aspect to this work is that candidates provide evidence that they have matched these criteria. Statements from teachers saying that candidates have been observed performing the required tasks will not be acceptable as evidence.

It is essential that candidates introduce the task they are undertaking. This will make it easier for them when moving through the mark ranges to give reasons for choices they make at various stages in their work as well as helping the teacher or Moderator to understand what they are trying to achieve.

2.2.1 Handling Data

There are two ways that a candidate can achieve a mark in the 0–10 ranges. One is to collect data and create a database and then use the database to match the criteria. The second is for the teacher to provide the database for the candidate.

Below is a list of the mark ranges and what candidates are required to do in order to match the criteria. The definition of a criterion is provided the first time it is included in a mark range. It is important when awarding marks to refer to the specification and ensure that every marking criterion has been met before awarding a mark in that range.

0–2 Look at the data stored in a database.

This is an elementary requirement requiring candidates to load the database and look at the data in it.

Find answers to questions using the data in the database.

Candidates will have a list of questions which need to be answered. They will write these out and then obtain the answer to the questions. The answers may be printed or hand written.

3–4 Sort the database into order.

Candidates are expected to print out the whole database. They will choose a field and sort the database into ascending/descending order. They will provide a printed copy of the unsorted and of the sorted database

5–7 **Change some of the data in the database when appropriate.**
Candidates will provide a printout of the database showing appropriate changes. By this it is expected that candidates might change the contents of certain fields from something reasonable to something equally reasonable. This could be the classification of a film being changed from U to PG. An inappropriate change might be from U to ZZ. This is simply a way of finding out if a candidate is capable of editing data in an existing database. Candidates must provide a copy of the original database to show they have made changes.

8–10 **Ask people questions to get more data to add to the database.**
Candidates will normally produce a data capture form based on the existing database, or, if they intend moving up above this mark range, produce a data capture form to enable them to create their own database. If they do the latter, they will have matched the first criterion of the 11–13 mark range. They will include copies of the blank data capture form and completed forms. They are only required to include two or three completed forms by way of examples.

Add this new data to the database.

Candidates will have to provide a printout of the existing database with the added information or their created database, including the collected information. This is in addition to a printout of the original database if they are using an existing database.

11–13 **Develop a method of collecting data.**
The essential difference between this and the previous mark range requirement is that the method must be the candidate's own. For the 8–10 mark range candidates could have used a blank printout of the original database structure. They might simply produce a hand-drawn table with column headings matching the information needed. They will then fill in their data capture forms using information from catalogues, brochures or other sources.

Create a database using this data.

Candidates create their database and enter their collected data. Candidates would describe how they created the database using the data from the data capture form and provide a printout of the database as evidence. The data in the database must obviously match the data on the data capture form or they will not be eligible for the award of a mark in this mark range.

Visually check the database for accuracy.

Candidates must provide a printout of their created database with errors in it. They highlight these errors with a highlighter pen or other method.

Search the database for answers to specific questions.

Candidates will need to make a list of questions that they are going to find the answers to. They do not necessarily have to be formalised questions but they must be in everyday English. They then convert these requests into searches, filters or queries. These need to be written down or printed out along with the results of the search. At least **two** different searches need to be carried out.

14–16 Collect a range of data.

There will need to be evidence that a range of sources of data has been used. This could be a selection of magazines or a selection of catalogues, a magazine and a catalogue or any reasonable alternatives. There must be a minimum of 2 and candidates needs to identify them. The best way of doing this is by cutting out examples and including them in their work. Candidates must provide a description of what they have done.

Create a database using selected data.

Candidates will need to describe how they have selected the data for inclusion in their database. They must ensure that either:

- i) they determine from the outset what data is to be collected **or**
- ii) they collect a lot of data and then reduce this sample for inclusion in the database.

The first method requires reasons for the choice of the fields of information they are collecting to be given from the outset and what sources they are going to use. The second method involves writing about the fact that the different sources had different items (fields) of information and consequently they could not include all these items. It could be that the details of the same video/car/computer game were present in two of the sources and so it was pointless entering the same record twice.

Edit the database in light of the mistakes found

Having identified errors for the 11–13 mark range, candidates now provide a printout of the database with all the errors removed.

Search the database, using the results of previous searches, for answers to specific questions.

This is required in order that candidates can demonstrate that they are able to refine a search using a sub set of the data. It can equally be achieved using a complex search using the Boolean operand AND.

17–19 Check the database for accuracy using validation routines.

Candidates should create their own validation routines. There are several ways this can be done. One way is to include validation routines when the database is constructed. The evidence required is a description of the validation check used together with a printout of a screen dump of the error message produced when invalid data is entered.

Another method of doing validation checks is to enter queries or searches which will print out records containing invalid data. Range checks particularly lend themselves to this approach as do invalid character checks i.e. typing in characters other than Y or N in a Y/N field and then searching for characters other than Y or N. Evidence for this is again a description of the check and the printouts of the results of the search.

Using more than one condition, search the database for answers to specific questions.

This is somewhat similar to the requirements of the 11–13 mark range. Candidates will write out questions which search using information in at least two fields. They use Boolean operands AND, OR and NOT. A minimum of two searches and two operands must be in evidence.

20–22 Give reasons for the choice of software.

Candidates need to write an explanation of why they chose the software they used. The reasons must be in relation to the task and must be in comparison with other data-handling software. Candidates who give their reasons as being because it is the only database the school has got or it is the one they are most familiar with cannot be awarded this mark. Equally, candidates who compare their chosen software with a word processor or desktop publishing package will not be able to gain the mark. Comparison with a spreadsheet is acceptable, providing it is possible to search the data on the spreadsheet and the comparisons are made with regard to the data-handling features of the package. The reasons given should not be trivial.

23–25 Give reasons for the choice of fields, field types and lengths.

This is a follow on from ‘Create a database using selected pieces of this data’. Candidates are expected to give reasons why they have chosen the fields included in their database. They will explain why they have chosen certain fields but left out others. They will also need to give reasons for their choice of field types. *To ensure easier validation and to save time in data entry* could be reasons for using logical fields, for example. They will also explain their choice of field lengths. Referring to the completed data capture forms, highlighting the longest piece of data in a particular field, for example, often does this.

26–28 Identify the required output for a given task.

This is best achieved by candidates creating a list of possible searches to be made on the database. These may well be in written question form. The required output would be specified as the results of these searches and the format of the output i.e. tables, lists, reports etc.

Construct a method of collecting data based on this output.

Having identified the required output candidates would identify the fields of a database required to provide the output. These fields would then be used on their data capture form. Candidates will explain how their data capture form contains the fields based on the required output.

Give reasons for the relevance of their choice of software to the required output.

This now requires candidates, in addition to what they wrote for 20–22 marks, to be specific about how their choice of software is able to produce the type and form of output specified above. For example, the format of the output required might be a report, where the fields can be in any order that candidates require. Certain database software is unable to do this but, hopefully, the chosen software can.

Give reasons for the relevance of their choice of fields, field types and lengths to the required output

Candidates will already have given their reasons for choice based on the data collected on their data capture forms. They are now required to explain their choice with regard to the required output. The need to produce output in a good, presentable format may now override the use of logical fields (originally chosen for ease of data entry, validation etc.). For example, a full description of a car’s features will be easier to read than a succession of Y’s and N’s.

Comment upon how easy it is to use the software to produce the required output.

This is an evaluation of candidates' use of the software. They will make comments upon how easy (or otherwise) it was to search, sort, produce reports etc.

Comment upon how easy it is to produce the required output in different forms of tables and graphs.

Candidates will need to have produced graphs and output in tabular form. They now need to say how easy, or difficult, it was to use the software to achieve this. These last two criteria might be best achieved by candidates producing a simple User Guide to their solution and including comments as to the ease or difficulty of using these features of the software.

2.2.2 Modelling

Remember that, in general, each statement below is in addition to the statements above it.

0–2 Write about the workings of a model, which they have used.

Candidates will print out a spreadsheet. They will then describe what it does in terms of what the cells contain and they will describe how the numbers in one cell depend on those in another cell.

3–4 Write about how they have used the different options available within the model.

Candidates need to describe how they have used a spreadsheet. They must describe how they changed the variables in the spreadsheet and what effect this had on other variables.

5–7 Write about how they have used a model to make decisions.

Up to now candidates will have just explored changing variables. For this mark range, they will need to say what they are going to change. If it is a simple profit and loss spreadsheet, for example, they could increase the profit margin on some items and decrease the profit margins on others. They will have to get printouts of the changes they have made in addition to a printout of the original spreadsheet.

Write about the consequences of these decisions.

Candidates need to write about the effects of their changes.

8–10 Use a model to discover the patterns within it.

Candidates need to be in a position to say what the spreadsheet does. They will change at least two variables and write about the effects, noting how an increase in one variable causes an increase in another variable, how decreasing a variable causes a decrease in another one. They will get a printout of the change they have made in addition to a printout of the original spreadsheet. They will write about their findings.

Understand how the model operates.

For this candidates will need to be more specific about how the model works. They will need to describe the actions of the formulae within the spreadsheet and be able to generalise about the actions of formulae i.e. column C is the result of multiplying column A by column B and adding 2 for example.

Make simple predictions.

Candidates will make some simple predictions but at this stage do not need to verify these i.e. they do not have to see if they work.

11–13 Explore the effects of changing the data within the model.

Candidates need to produce printouts of the spreadsheet. These should show how altering some variables changes the contents of other cells. They need to change variables more than once i.e. by increasing the variable and decreasing it or by increasing/decreasing it by two substantially different amounts.

Make simple predictions about some of the effects of these changes.

Candidates will have made some simple predictions for 8–10 marks. They now need to make these changes to the spreadsheet and get printouts. They must annotate the work saying whether their predictions proved to be true or not.

For all the mark ranges higher than 13, candidates must use a complex model. A complex model is one that contains at least **two** columns with formulae in them. The formulae must use at least **two** operators and at least **two** worksheet functions supplied with the software.

14–16 Use a complex model to discover the patterns within it.

Candidates do the same as they did for achieving 8–10 marks except that a complex model, as outlined above, must be used.

Explore the effects of changing the data within the model.

This is the same requirement as was required for 11–13 marks except that a complex model must be used.

Change the rules of the model.

Some of the formulae must be changed in the spreadsheet. In a payroll spreadsheet, for example, the formula for calculating tax might be taxable pay \times 22/100. If income tax were reduced to 21%, the formula would need to change to taxable pay \times 21/100. A printout of the spreadsheet showing the original formulae and a printout showing the changed formulae must be produced by candidates together with a description of the change.

Make simple predictions about some of the effects of these changes.

This will be the same as for the 11–13 mark range but this time the predictions will be about changing the formulae.

Write about how valid the model is.

Candidates will describe how well the model represents the real situation.

17–19 Develop the model by changing the rules to solve a given task.

You as the teacher can create a situation for the candidate to change the formulae in the spreadsheet. Keeping to the notion of a payroll scenario you may point out that above a certain wage, workers must pay tax at 40%. Candidates would need to insert a column for calculating that amount of the worker's wage on which they will have to pay 40%, a column for multiplying that by 40%, and an additional column for adding the two amounts of tax payable.

Write about how valid this model is in solving the task.

In addition to what is required for 14–16 candidates must comment on how well the new model deals with the new situation.

- 20–22 Design a complex computer model to provide the solution to a given task.**
Candidates will describe the task they are undertaking. They will then produce a design or designs of the spreadsheet structure. This will involve them drawing up a table of column headings, cell contents and formulae.
Give reasons, related to the task, for choosing a piece of software for the solution.
Candidates will refer to their task description and list what the software will be required to do. There must be a comparison with an alternative piece of software describing how their choice fulfils these requirements.
Use the software to construct the computer model.
Candidates must provide printouts of two or three stages in the construction of their spreadsheet, including printouts of the model with formulae printed.
Use the software to provide the answers required to solve the problem.
In their introduction to the task the candidates will have written about some uses of their spreadsheets. They must now include some predictions and some before and after printouts illustrating these predictions and their results.
Write about how valid this model is in solving the task.
Candidates must refer back to the task brief and comment on how realistic their solution is compared with the original task description. Does it solve the problem? What changes would need to be made to make it a valid model?
- 23–25 Write about how the model was created.**
Candidates will need to produce a detailed description of how they created their model including all the features of the software used.
- 26–28 Write about how suitable the software was for this purpose.**
Candidates will produce an evaluation of the software and how easy it was to create and use the model using the software.

2.2.3 Measuring

It is worth repeating at this point that, in general, each statement below is in addition to the statements above it.

- 0–2 Write about how everyday devices contain equipment which measure or monitor events.**
Candidates will list two devices and say how they use sensors to measure or monitor physical events e.g. speed cameras and weather stations.
- 3–4 Give examples of some everyday devices that contain equipment which measure or monitor events.**
Candidates will do the same as for 0–2 marks only for more devices – a minimum of 4 is required.

- 5–7 Write about how they have connected computers to external devices that contain equipment which measure or monitor events.**
This will just be a write up of an experiment that candidates have carried out using a computer and sensors to measure something.
- 8–10 Provide printouts and write about how they got the computer to display the results of the measurements.**
Following on from what they did to achieve 5–7 marks, candidates will print out the results of their measuring experiment. They will also produce a description of how they used software to collect the results and display them.
- 11–13 Explain the meaning of the displayed results.**
Candidates will need to annotate their graphs and tables, illustrating any trends they have noticed.
- 14–16 Describe how they have used computers to measure or monitor external events.**
In addition to the previous mark ranges, candidates will describe in detail how they set up an experiment, what the purpose of the experiment was and how the system measures analogue quantities, converts them to digital signals and then processes them producing various outputs.
- 17–19 Explain why they have used a computer for this purpose.**
Candidates must give a list of reasons (a minimum of 3) why it is better to use a computer for this purpose rather than manual methods.

In order for candidates to achieve any of the final three mark ranges they must define a task and construct an experiment of their own without assistance. Prior to these mark ranges they can have had some help in setting up their experiment. They must do everything that they would do for 17–19 marks, but in terms of their own experiment. The statements for 0–2 and 3–4, of course, do not refer to candidates' own experiments and must be included as before.

- 20–22 Design an experiment which uses measuring equipment to provide the solution to a given task.**
Candidates will describe the task and state the main problems that will need solving. They will describe the variables which need measuring, the sensors which will be needed and the form of output. They will include a diagram of the proposed set of components and designs of the forms of output.
- Construct the experiment and measure more than two physical variables.**
Candidates will describe how they connected the equipment together. They will have included at least three different types of sensor and diagram or a photograph of the constructed equipment.
- Use a file to store the displayed results.**
This will be a description of how candidates saved their data, including the format of the data file.

23–25 Describe the types of sensors used.

Candidates will list the names of each sensor and describe what they are measuring.

Store the displayed results using more than one file format.

Candidates will have saved their data in two different files. They must describe the format of each file.

26–28 Give reasons for their choice of hardware and software.

This is a very high level requirement and candidates will need to do well to achieve it. They will describe both the hardware and software they have used and say what they do. They will compare systems they have used with other possible computer-based alternatives and give reasons for why their chosen system is the best one.

2.2.4 Control

It bears repetition to point out that, in general, each statement below is in addition to the statements above it.

Below is a list of things candidates will need to do to gain the marks indicated.

0–2 Write about how some everyday devices respond to signals and commands.

Candidates must produce a list of at least 4 devices which use computer control. There must be some indication about what the device controls and what the input to the device is.

3–4 Specify an outcome.

Candidates will need to say what they are intending to do in terms of using a programming language such as Logo. A hand drawn shape with a sentence or two of description is all that is required.

Write down how they controlled a screen turtle or robot to achieve this outcome.

For this mark range a printout of the instructions are not required – only a few lines describing how candidates drew the shape is needed. A printout of the resulting shape will need to be included

5–7 Write down how they controlled a screen turtle or robot to achieve the specified outcome by a series of instructions;

In addition to what was required for 3–4 marks, candidates will need to mention the type of instructions used together with the effects of them. They will need to print out the pattern or shapes. On the printout an indication of some of the instructions is needed showing their effects. There is no need to do this for every instruction used or every shape used.

Write down the instructions used.

A list of the instructions used is required. This can be a computer printout or hand written.

8–10 Save the instructions as a program.

A description of the steps candidates went through to save their work is required.

Print out the program.

Candidates, at this point, must provide a computer printout of the instructions.

Annotate the program.

Candidates will annotate their programs showing what each group of instructions does in order to produce the final shape.

11–13 Write about how they used precision in forming instructions.

A description of the errors that could have happened if candidates had used the wrong instructions (e.g. forward instead of backward) or incorrect measurements should be present.

Write about how they used precision in sequencing instructions.

Candidates will describe how putting instructions in the wrong order would produce the wrong shape. A printout of some instructions incorrectly sequenced, together with the wrong pattern would be evidence of this. A printout of the correct version of the program and shape should be included.

In order for candidates to achieve either of the next two mark ranges they must produce complex patterns or shapes. They must do everything that they would do for 11–13 marks, but in terms of the new complex patterns.

14–16 Specify an outcome involving the production of complex manoeuvres or patterns.

Candidates will provide a description of a task which requires a combination of shapes to be drawn. This could be a combination of shapes already drawn (as long as there is some purpose for this) although it does not have to be.

Write about how they tested the program.

Candidates will produce printouts of stages of their program showing how there were mistakes resulting in the wrong shape(s) being produced. A number of program printouts and corresponding shapes printed out will be required. A statement to the effect that there were no errors in the original program will not be acceptable for this statement.

Write about how they refined the program.

This will be annotation of the program following on from the previous statement showing how the errors were corrected.

17–19 Write about how they used efficiency and economy in framing instructions.

For this candidates will have had to use both loops and procedures. They will need to annotate their programs showing where they have used them and explain the advantages of their use.

In order for candidates to achieve any of the final three mark ranges they must define a task and construct a system of their own without assistance. They must do everything that they would do for 17–19 marks, but in terms of their own system.

20–22 Design an experiment which uses control equipment to provide the solution to a given task.

Candidates outline the requirements of the task. They then describe how they are going to approach the task and include sketches of the proposed layout of their system including the sensors they will be using.

Construct the experiment and use at least two different sensors.

The sensors must measure **two different** variables e.g. light and pH.

Write about how they connected all the equipment to a computer.

This is a description, step by step, of how the equipment was all connected together.

Provide diagrams or photographs showing the constructed equipment.

Candidates include with their description, a photograph or sketched diagram of the complete system clearly labeled.

23–25 Describe the sensors and what they are sensing.

This is a description of the sensors being used and the variables being measured.

26–28 Annotate the program indicating exactly where feedback takes place.

Candidates' programs will need to be annotated to give a clear indication of which group of statements provide feedback.

Write about how they used feedback in their program.

An explanation of what exactly feedback is will need to be given together with an explanation of how they have incorporated it into their system.

2.3 WRITTEN COMMUNICATION

This section has a total of 4 marks allocated to it:

- 1 The assessment quality of written communication is required in the following modules of this specification.
- 2 The marks for each module will be awarded on the basis of the performance in spelling, punctuation and grammar on the module overall, in accordance with the performance criteria given work below.

0 Marks	Below threshold performance
1 Mark	This is the threshold performance. Candidates spell, punctuate and use the rules of grammar with some accuracy. They use a small range of specialist terms appropriately.
2 Marks	Candidates spell, punctuate and use the rules of grammar with some accuracy. They use a small range of specialist terms appropriately. They communicate some meaning in their work.
3 Marks	Candidates spell, punctuate and use the rules of grammar with considerable accuracy. They use a good range of specialist terms with facility. They communicate meaning in their work.
4 Marks	Candidates spell, punctuate and use the rules of grammar with almost faultless accuracy, deploying a range of grammatical constructions. They use a wide range of specialist terms adeptly and with precision. They very clearly communicate the meaning of the work.

3 COURSEWORK UNIT 4 (2360)

3.1 PROJECT 2

This has to be a realistic problem that requires a system solution. Candidates will benefit from choosing a problem of their own. They will not be able to gain marks if they are given a prescriptive task. An alternative to finding a problem of their own is that the teacher gives them a list of possible tasks from which they will choose one. They will have to include this list in their work.

In order to try and clarify the requirements of this piece of coursework, exemplar task 1 in the OCR specification will be referred to from time to time. The requirements of the task are outlined below.

- 1 Devise a system which would help the owner of a car dealership to organise her business. There are several aspects to the business which she needs help with.

These are:

A record of all the stock has to be kept so that if a customer comes in and makes enquiries about a specific car, salesmen can immediately inform them whether the dealership has such a car;

A record of customers has to be kept for further mailings about special offers;

The servicing department has to keep a record of all the parts in the stores;

Itemised bills have to be prepared for customers when they have their cars serviced (certain customers are allowed a discount).

Choose one or more of these aspects of the business when devising your solution. In order to gain high marks, at least two aspects of the business will need to be considered.

Your solution should include:

Identification of problems with the current system.

Interviews with possible users/operators of such a system.

Documents and forms in use in the current system.

Identification of the inputs, outputs and processing currently employed.

Designs of the structure of databases/spreadsheets/word processing templates required.

Design of the input screens and the output documents/screens of the new computerised system.

Documentation of how the databases/spreadsheets/word processing templates and how their associated input screens and output documents/screens were created.

For a system for others to use, this requires within ‘communicating work’, the production of finalized examples of documents, but templates into which the user can input their own data.

The combination of the outputs from more than one piece of software into another.

Evidence of testing.

A User Guide showing how to use the new system with a trouble-shooting guide.

An evaluation of the final system compared with their original design.

Candidates would be advised to cover all the above aspects of the task.

3.2 ANALYSIS

This section has a total of 12 marks allocated to it, which are spread out amongst its different aspects. The vast majority of the work in this section is based upon discovering how the present (old) system provides a solution to the problem. However, there will inevitably be some extra comments made about the added requirements or wishes of potential users for the new system.

3.2.1 Identify a Problem

This sub-section has a total of 4 marks. The marking points are hierarchical but this time instead of adding statements every mark, words like ‘list’ are replaced by words like ‘describe’.

1 mark Identify a problem.

The candidate must provide evidence that they have identified a problem. If they are not attempting to solve a problem that they have decided upon, they have to include in their work a list of problems and on it they will indicate their choice.

Outline the nature of the problem.

Candidates will make a list of the problems, which are being faced by the user of the current system. Throughout, the “user” of a system should be thought of as the person who operates the system e.g. a salesperson using a system to assist a customer and not the customers themselves. One such problem could be the user has difficulty in knowing whether she has cars of a certain colour in stock.

2 marks Outline the user’s requirements.

The candidate makes a list of features of a system which the user requires. The candidate might list features which the user needs to be able to find out easily e.g. if there are any arctic blue cars in stock. Another feature is the ability to find the phone numbers of customers who want a particular car when it comes into stock. Several of these points would need to be made by the candidate.

3 marks

Describe the nature of the existing problem.

More detail has to be given to each item on the list of problems being faced by the user of the current system.

One example, although there would have to be several, could be a description of how each part of the current system operates such as how the user currently looks for all the red cars.

Describe the user's requirements.

Some detail has to be given to the list of the owner's requirements. This will go further than just saying that the user needs to be able to find all the red cars. It means that in addition the candidate has to say what information about the red cars the user will have to give out once she finds them.

4 marks

Identify a complex problem.

The type of problem identified must require:

1. at least two different types of software to produce the solution
2. the transfer of data, NOT by "cut and paste" between the two or more packages.

It is clear that the definition of the problem above requires, as an absolute minimum, a database and a word processor. Also, this requirement must be part of the problem and not commented on as one of the parts to be developed within the solution. (i.e. the problem is complex, not the solution)

Describe the nature of the existing problems.

This is much the same as for 3 marks but all aspects of the problem must be considered.

Describe the user's requirements.

Again this is much the same as for 3 marks but for all aspects of the problem.

3.2.2 Use Methods of Collecting Information

This sub-section has a total of 4 marks. The marking points are hierarchical but this time instead of adding statements every mark, words like 'list' are replaced by words like 'describe'.

1 mark

Collect information from potential users.

Candidates have to provide evidence that they have used at least one method of collecting information from potential users of a system. This could take the form of interviews with owners of car showrooms or letters sent to them. They must include the information they have collected such as replies to letters, completed questionnaires and transcripts of interviews and documents they have gathered which are currently used by the showroom.

2 marks

Collect information from potential users and describe the method used.

Candidates now need to describe how they obtained their information. They will describe the interview, letter or questionnaire and how it was used to obtain information as well as describing what information they were seeking.

- 3 marks** **Collect information from potential users, describe the method used and suggest alternatives.**
Candidates must describe alternative methods of collecting information. This will include the methods which they did not use.
- 4 marks** **Collect information from potential users, and justify the method used, compared with alternatives.**
Candidates must explain the disadvantages and advantages of their own and alternative methods. This will give them the basis for explaining why their choice was the most suitable.

3.2.3 Identify the Inputs, Outputs and Processing Required

This sub-section also has a total of 4 marks. This time each marking point is an extension of the one above, but again it is essential for candidates to get each marking point before they move onto the next one.

Within the Analysis section, the candidate should document a number of specific tasks their system will be expected to perform.

- 1 mark** **List the inputs, outputs and processing required.**
The inputs will be the type of queries that customers might make to the salesman in the car showroom. For example, one might be ‘Have you any red Fords?’
A list of the outputs will then need to be made. These will be the details the salesman needs to retrieve from the system in order to answer the queries listed above.
A list of the processing requirements of the current system will need to be made. This will be a list of the methods used by the salesman to find the information from the current system in response to the customer query.
- 2 marks** **Describe the inputs, outputs and processing required.**
This is an extension of the 1-mark requirements in as much as some detail is required. Candidates need to do this for all the possible situations they can think of. Not just customer queries but the other aspects to the problem as outlined in the introduction above.
- 3 marks** **Suggest a system specification for the solution.**
This will be a list of the hardware and software which the candidate intends to use in order to solve the problem, accompanied by a commentary indicating why certain items are suitable for the system being developed. At this stage brand names do not need to be mentioned, just the types of software they intend using for the different aspects of the solution.

- 4 marks** **Justify a system specification for the solution compared with alternatives.**
Candidates must compare their proposed system with possible alternatives, i.e. different hardware specifications and a possible choice of integrated software or different named packages for each part of the solution.

3.3 DESIGN

This section has a total of 12 marks allocated to it, which are spread out amongst its different aspects. This and the consequent sections are based on the development of the new system. It is expected that the designing tasks take place away from the computer and that ideas are presented in the form of “pen/pencil drawings” which are annotated or describe in the supporting text.

It is not expected that printouts from the software package to be used in the developed system are included at this stage. Within a database solution, it should be expected that a candidate, when designing their data structure will at the very least consider each field carefully enough to know the data size from the start. Changes to data size therefore are not sufficient to produce appropriate alternatives. Similarly, if the system demands a spreadsheet, then aesthetic qualities such as background colour or font size are equally irrelevant differences.

3.3.1 Produce Designs for the Data Structure

This sub-section has a total of 3 marks allocated to it. Each marking point is in addition to the one above, so it is necessary for candidates to get each marking point before they move onto the next one.

- 1 mark** **Produce an appropriate design for the data structure.**
Candidates must cover most aspects of their proposed solution. They will produce a file structure for their database, a design of the spreadsheet including formulae, a template of a standard letter etc.
- 2 marks** **Describe alternative appropriate designs for the data structure.** Candidates must describe each design they have produced. The key word is appropriate. They must not be differences created just for the sake of it. There will be fields added or omitted for good reason. Field lengths and types will be changed. This must be done for alternative spreadsheets and word processing templates etc.
- 3 marks** **Justify their choice of design for the data structure.**
Candidates will produce a list of the advantages and disadvantages of each structure and give reasons why their choice is best.

3.3.2 Produce Designs for the User Interface

Again, this sub-section comprises 3 marks and requires candidates to add something to the work they have produced for the previous mark.

- 1 mark** **Produce an appropriate design for the user interface.**
Candidates have to produce a design of a data entry screen for the database or spreadsheet or a query screen for the database. This will usually be hand drawn and can be on just one aspect of the problem. The design must be relevant to the problem they are solving.
- 2 marks** **Describe alternative appropriate designs for the user interface.**
Candidates must produce at least one alternative design for each input screen they have specified. They should describe the format of each of their designs.
- 3 marks** **Justify their choice of design for the user interface.**
Candidates will give the advantages and disadvantages of each screen design. They must then give reasons why their choice of design is best.

3.3.3 Produce a Design for the Output Formats

This sub-section has 3 marks and again requires candidates to add something to the work they have produced for the previous mark.

- 1 mark** **Produce an appropriate design for the output formats.**
This will be output screens or printouts. They will consist of different output formats for one aspect of the problem i.e. the data handling, spreadsheet, word processing etc. The intention is not to produce alternatives. For example, if the data-handling aspect is being designed, alternative report formats for one particular query are not required. More than one format has to be designed i.e. the results of more than one search need to be considered. Also, for a complex problem, there should be evidence of designing the output from each package e.g. a report for a query in a database and the mail merge letter from the word processing package.
- 2 marks** **Describe alternative appropriate designs for the output formats.**
Now, alternatives have to be produced. Each design above must now have at least one **appropriate** alternative.
- 3 marks** **Describe alternative appropriate designs for the output formats and justify their choice of designs for the output formats.**
Candidates compare their alternative designs giving the advantages and disadvantages for each one. They will do this for different queries and say which is the best design for each. For example, the candidate might discuss the pros and cons of using a tabular format as opposed to an individual record printout for searches of specific types of car.

3.3.4 Produce Software and Hardware Requirements

This sub-section has 3 marks and requires candidates to add something to the work they have produced for the previous mark. Therefore, again, in order to match a particular marking point they will need to have matched the previous marking point.

- 1 mark** **List the software and hardware requirements of the solution.**
Candidates must now be precise about their requirements. They will list the hardware and software by name.
- 2 marks** **Describe appropriate alternative software and hardware requirements of the solution.**
Candidates must now go into more detail about the requirements. These may be alternative types of computer and software available to the potential user and again these must be sensible alternatives.
- 3 marks** **Describe appropriate alternative software and hardware requirements of the solution and justify their choice.**
This requires both the advantages and disadvantages of the respective systems to be given. Reasons for choice of both hardware and software must be given by commenting on the features relevant to the system being produced.

3.4 IMPLEMENTATION

This section has a total of 14 marks allocated to it which are spread out amongst its different aspects.

3.4.1 Implement their Data Structure

This sub-section has 4 marks and, as with other sections, requires that each marking point is addressed in turn. For example, to get 4 marks candidates will have to achieve each of the three previous sections.

The candidate uses the computer to create their system, implementing their chosen designs from the previous section, but taking the opportunity to make minor changes as they go along.

Screen dumps of the various steps taken, along with supporting commentary is the best way a candidate can produce this evidence.

- 1 mark** **List the features of the software used to produce their data structure.**
This will consist of brief statements about how the solution was created. This will include how the software was loaded, how they created a new file, created their file structure, saved it etc.

- 2 marks** **Describe the features of the software used to produce their data structure.**
This will be a much more detailed account such that a competent user could follow these instructions and reproduce it.
- 3 marks** **Describe the features of the software used to produce their data structure including changes made to the data structure.**
Modifications will need to have been made to the structure resulting in a different structure to the one described in the design section. These must be described in detail.
- 4 marks** **Describe the features of the software used to produce their data structure. Justify the changes made to the data structure.**
This will be amplification to the point above giving the reasons why the change(s) had to be made.

3.4.2 Implement their Input and Output Formats

This sub-section has 4 marks and as with other sections requires that each marking point is addressed in turn. Again, candidates must achieve each of the previous marking points in order to achieve the subsequent one.

- 1 mark** **List the features of the software used to produce their input and output formats.**
This will be a few lines about how the user interface and output formats were created, how fields were positioned on the screen etc.
- 2 marks** **Describe the features of the software used to produce their input and output formats.**
This will need to be in sufficient detail for a competent user to be able to produce the same formats.
- 3 marks** **Describe the features of the software used to produce their input and output formats including changes made to formats.**
Modifications will have been made in the light of unforeseen problems arising. These changes will need to be described in some detail.
- 4 marks** **Describe the features of the software used to produce their input and output formats. Justify the changes made to their formats.**
This will consist of reasons for the changes which were made.

3.4.3 Use Features of Software Appropriately

This part of the assessment will not be addressed in any one section of candidates' work. It can be identified at any point in the documentation where it occurs. The evidence is likely to be in the Implementation, User Guide or Testing sections. The only additional work on the part of the candidate will be in adding extra documentation to match the 4-mark statement.

- 1 mark** **Appropriately use at least one feature of a software package.**
This can simply be a search performed using the database software, or a 'whatif' in the spreadsheet etc.
- 2 marks** **Appropriately use a range of features of a software package.**
This will be the use of more than one feature such as the use of forms, searches, reports and producing graphs etc.
- 3 marks** **Appropriately use a range of features of more than one software package.**
Candidates will have used more than one feature of two software packages. In a spreadsheet this could be the use of replication, automatic recalculation, worksheet functions, graphs etc.
- 4 marks** **Justify their choice of the range of features and software packages.**
Candidates will give reasons for a minimum of **two** features used. Comparing alternative ways of doing this will do this. Replication (or copying down) would seem a fairly obvious feature to justify.

3.4.4 Combine Software Features

To gain 1 mark candidates have to do this once. For 2 marks they need to do it twice, for two significantly different reasons e.g. a mail merged letter to people with outstanding videos on loan and a video club membership card. Again, this will not require additional documentation. The evidence could be in the Implementation, User Guide or Testing Sections.

- 1 mark** **Within their solution, interchange data from one software package to another for an appropriate purpose.**
Candidates can be given this mark if they have moved data from one package and the purpose is appropriate for example from a database to a spreadsheet or vice versa.
- 2 marks** **Within their solution, interchange data from one software package to another for appropriate purposes.**
Candidates must do this for two separate purposes. Moving data from a database to a spreadsheet and then back again does not count as moving it twice. Another purpose could be for creating standard letters.

3.5 TESTING

This section has a total of 14 marks allocated to it, which are spread out amongst its different aspects.

Within the Analysis section, candidates should have listed a number of things the potential user wants the system to be able to do. This list should form the basis of the testing strategy that they now employ.

3.5.1 Describe their Testing

This sub-section has a total of 4 marks allocated to it. In order to gain any mark candidates must achieve the previous marking point.

- 1 mark** **Provide evidence that they have carried out at least one test of their solution.**
- Candidates will print out the results of a test. They will write down the test, which might, at this level, be a straightforward search which was outlined in the Analysis Section.
- 2 marks** **Provide evidence of, and describe at least two tests used to test their solution.**
- For example on a database, in addition to performing another search there has to be a description of the test and what the candidate is trying to achieve. The results of the tests will accompany the description.
- 3 marks** **Provide evidence of, and describe the tests used to thoroughly test their solution.**
- This is a lot more difficult as there has to be evidence as well as descriptions of tests used to ensure that all aspects, database, spreadsheet, word processing etc. are working well. This will include validation checks as well. To satisfy the requirement of “thoroughly testing”, it is expected that ALL user specified tasks listed in the Analysis section will be tested and commented upon.
- 4 marks** **Provide evidence of, and describe the tests used to thoroughly test their solution. Including testing from the point of view of the user.**
- This requires the user or somebody acting as the user to test the solution. The key thing is to get critical feedback from the user otherwise the mark cannot be awarded. The opinions of the user will have to be documented. Some form of response sheet would be in order.

3.5.2 Describe the Results

This sub-section has a total of 3 marks allocated to it, which are spread out amongst its different aspects. In order to gain any mark candidates must achieve all the previous marking point.

- 1 mark** **List the actual results of the tests. List the expected results of the tests.**
Candidates need to provide the expected results as well as the actual results. For every test they have carried out they will need to do this.
- 2 marks** **Compare the actual results with the expected results.**
This requires some form of description from the candidates about the outcome. On most occasions there will be very little comment on what happened as the two sets of results will be identical. Candidates, however, must make comment on the rare occasion when this is not the case. They must include examples of this to gain this mark. A possible example is the typing in of wrong formulae into a spreadsheet.
- 3 marks** **Compare the actual results with the expected results. Explain their choice of test data.**
Candidates have to list their test data and explain why they are using that particular data. With such tests as validation checks they will obviously have to choose some invalid data to prove that the check works.

3.6 USER DOCUMENTATION

This sub-section has a total of 7 marks allocated to it, which are spread out amongst its different aspects.

The documentation for this section should assume that the user is familiar with the various software packages used within the system and that instructions should deal with the various parts of the system that the candidate created.

3.6.1 Show a Potential User how to Enter, Amend and Save Data

This has a total of 2 marks allocated to it. Each marking point is in addition to the previous point. Candidates cannot achieve a particular marking point without meeting all the previous ones.

- 1 mark** **Produce a basic user guide showing how to enter and save data.**
This will be for any aspect of the solution. A competent user must be able to follow the instructions and be able to enter data and save the file.
- 2 marks** **Produce a detailed user guide showing how to enter, amend and save data.**
The candidate will produce a user guide, which enables a competent user to load your database, spreadsheet or standard letter. It will allow them to add new records. It will allow them to change data and then save the work. You will need to cover each piece of software you have used. You will use screen dumps to illustrate your work so that the user guide is easy to follow.

3.6.2 Show a Potential User how to Process and Output Data

This has a total of 3 marks allocated to it, which are spread out amongst its different aspects. Each marking point is an extension of the one above it. Each has to be achieved in succession.

1 mark Produce a basic user guide showing how to process and output data.

This can simply be showing somebody how to perform a search on your database and print out the results.

2 marks Produce a detailed user guide showing how to process and output data.

This will match the processing identified in the candidate's Analysis section, which was also used to form the testing strategy, under the heading 'Identify the inputs, outputs and processing required'. The candidate will produce descriptions of how to perform searches on their database, how to do calculations on their spreadsheet, and how to generate standard letters. Screen dumps will be included to illustrate the guide.

3 marks Produce a detailed user guide showing how to process and output data for all aspects of the solution.

Candidates must produce a user guide which covers every aspect of the solution, as specified in the Analysis section. A variety of searches on the database and a variety of calculations on the spreadsheet will have to be illustrated. They will show how to produce different types of standard letter and different forms of output in terms of graphs and different layouts. How to produce the output formats, which were created in the implementation section, should be demonstrated. Candidates should demonstrate how the output formats, which were created in the implementation section, were produced.

3.6.3 Show a Potential User How to Avoid Problems

To gain 2 marks candidates will just do everything for 1 mark and then describe how users can put errors right.

These errors are NOT error messages produced by the computer, such as the printer not working because it is out of paper, but errors produced by the candidate's system e.g. errors generated by validation routines.

1 mark List errors, which the user should avoid when using the system.

Two errors have to be listed that the user should avoid when using the system. This is not a trouble-shooting guide to the software or the hardware. A common error is mistyping search conditions. This can be avoided by writing down the search conditions before typing them in and then double-checking them prior to executing the search.

2 marks List errors, which the user should avoid when using the system. Describe methods of rectifying the errors.

Candidates must now describe ways the errors can be corrected. For example, the wrong search conditions would result in wrong output. Putting this right is simply a matter of retyping the search conditions.

3.7 EVALUATION

This sub-section has a total of 4 marks allocated to it, which are distributed amongst its different aspects.

3.7.1 Evaluate their Solution

This sub-section has a total of 4 marks allocated to it. Again, everything must be achieved in one marking point before moving on to the next.

1 mark Describe what the solution can do.

This should consist of just a few statements about what the solution can do. For example, one statement might be that the cars database contains data about cars and allows you to search for information about all the cars of a particular colour. A list of all the things the solution can do is required.

2 marks Compare the solution with the outline of the problem.

This is a comparison of what the solution can do with how the problem was outlined in the analysis section. The user's requirements must be included.

3 marks Compare the solution with their design. Describe the limitations of their solution. Suggest possible improvements.

Candidates must now go on to list the features of their design and compare each feature with the solution produced. There will be parts of the design which the candidate has failed to implement. These must be documented together with ways in which the solution could be improved so these problems could be overcome.

4 marks Compare the solution with their design. Describe the limitations of their solution. Evaluate their solution from the point of view of users. Suggest possible improvements.

Candidates will need to include comments from users of the system. They will need to describe how improvements might be made to the solution to allow for their comments.

3.8 WRITTEN COMMUNICATION

This section has a total of 4 marks allocated to it:

- 1 The assessment quality of written communication is required in the following modules of this specification.
- 2 The marks for each module will be awarded on the basis of the performance in spelling, punctuation and grammar on the module overall, in accordance with the performance criteria given work below.

0 Marks	Below threshold performance
1 Mark	This is the threshold performance. Candidates spell, punctuate and use the rules of grammar with some accuracy. They use a small range of specialist terms appropriately.
2 Marks	Candidates spell, punctuate and use the rules of grammar with some accuracy. They use a small range of specialist terms appropriately. They communicate some meaning in their work.
3 Marks	Candidates spell, punctuate and use the rules of grammar with considerable accuracy. They use a good range of specialist terms with facility. They communicate meaning in their work.
4 Marks	Candidates spell, punctuate and use the rules of grammar with almost faultless accuracy, deploying a range of grammatical constructions. They use a wide range of specialist terms adeptly and with precision. They very clearly communicate the meaning of the work.

4 EXAMINATION PAPERS AND LANGUAGE USED IN EXAMINATIONS

4.1 THE DESIGN OF THE EXAMINATION PAPERS

When creating an examination paper, Examiners aim to:

- design questions that can be marked accurately and consistently by the all the Examiners;
- cover a wide range of the specification;
- provide a balanced coverage of the specification;
- have a varied set of questions over a period of time;
- ensure readability for the target group of candidates;
- meet the needs of the assessment objectives.

The examples are often taken from the sample papers but in some cases have been changed to emphasise a specific point.

4.2 EXAMINATION TECHNIQUE

Understanding Mark Schemes

Some candidates leave out answers to questions when they do not know the answer. In some cases the candidate might as well attempt an answer since the answer might be correct. The candidate can only ever lose any marks from providing a wrong answer in the following types of question.

Example

Question 1	Ring two items used for storing data.		
plotter	scanner	TV remote control	
RAM	keyboard	CD-ROM	[2]

If the candidate rings three, or more, answers then it is impossible for the Examiner to know which of the three responses the candidate is offering as the answer. All three are marked, correct or not, and then a mark is deducted for every answer given above the number asked for. Obviously a minus score is never awarded.

Mark schemes contain a list of answers that are to be given full credit. The writers of the questions on the question papers have to follow the rules provided by the specification but candidates' answers do not. A candidate can give a correct answer to a question which is not mentioned in the specification and still gain marks, but the question writers cannot ask questions which are not specifically covered in the specification.

Example

Question 2 A mail order electronics company uses a computerised stock control system in its warehouse

(a) In order to find an item, a six-digit item code number has to be entered into the computer. Give **two** validation checks which could be used on this number.

Check 1 _____

Check 2 _____

_____ [2]

Answer 2 (a)

Two from:

- Range check.
- Existency check.
- Check digit.
- Check if all the characters are digits.
- Check if there are less or more than six characters entered.

[2]

The mark scheme has a list of acceptable answers. However, the candidate writes down 'Check if more than 6 digits are entered'. The answer given by the candidate is just as correct as those listed as acceptable answers and so the answer is correct and would be given the credit.

The candidate may put a number of answers on the first line in which case only the first two are taken as the candidate's answer.

The candidate may put a number of answers on all the lines in which case the first answer on each line is taken as the candidate's answer.

Sometimes the number of answers required is given to the candidate in the question. The candidate should only give the number of answers asked for. The number of answers required is highlighted in bold.

Example

Q3

Unauthorised access to data held on a computer can cause problems.

Give **two** ways in which these problems may be caused.

Way 1 _____

Way 2 _____

_____ [2]

Answer 3

Two from:

- Data can be changed.
- Sensitive data can be looked at – (criminal records / medical records etc.)
- Data can be deleted.
- Data can be copied.
- Data can be corrupted with a virus.

[2]

The mark scheme asks for any **two** of the answers.

If the candidate gives only a single way then the mark for the second way will not be available. If the candidate gives more than two ways then time has been wasted since the candidate cannot gain more than two marks for the question. Only the first two answers will be considered.

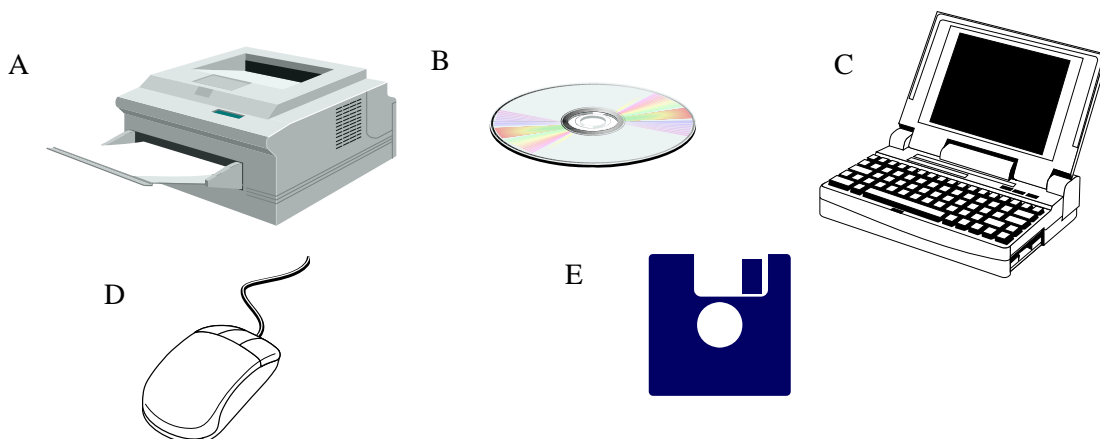
Sometimes questions ask a candidate to choose from a list of given answers.

The list is definitive and the candidate should not give an answer that is not on this list, even if it is a correct name.

Example

Question 4

Name the objects A, B, C, D and E using words from the list.



plotter	joystick	video
mainframe computer	mouse	floppy disc
laptop computer	keyboard	CD-ROM
printer	graphics tablet	CD-ROM drive

A _____

B _____

C _____

D _____

E _____

[5]

No credit would be given if the candidate makes up his or her own answer.

In some questions the candidate is asked for a longer answer. The candidate should look at the marks available for the answer to the question and to make at least that number of different points when answering to the question. The candidate will not, in these types of questions, be penalized for making more points than the number of marks to be awarded suggests.

Example

Question 5

An expert system is to be created to help doctors diagnose illnesses.

Describe the stages involved in creating this expert system. [6]

The marks given to the question indicates to the candidate to the number of different points that should be made in the answer to gain maximum marks. The candidate should attempt to describe at least this number of points in the answer.

Using Source Material

The candidate may have to use a scenario created by the question in order to provide an answer.

Questions such as 'With reference to' or 'Relating your answers to ABC plc' give specific instructions to the candidates. All the answers to questions containing these phrases should be related to the scenario.

Example

Question 5

An automatic weather station is situated on the roof of a school and is connected to a computer in the classroom. The station has an anemometer to measure the speed of the wind.

Give **two** reasons why it is sensible to collect wind data this way.

Reason 1 _____

Reason 2 _____

_____ [2]

There might be a number of questions related to this scenario. The scenario may reflect a real situation or it may not. Even if the candidate has never come across the given scenario it should be used since this is a statement of how things are done at the present. Each question should be answered within the context of the scenario. General answers should not be given. In the above

case all answers should be related to measuring the speed of the wind by an automatic weather station, situated on the roof of a school, connected to a computer in the classroom.

Expressing an Opinion

More difficult questions, where a large number of marks are available, expect the candidate to express (and maybe justify) an opinion.

These are more open-ended questions and candidates need to think carefully about how to structure their answers to obtain all the marks available.

The use of examples and fully reasoned responses considering all aspects of the question asked is often essential if candidates are to convince the Examiner that they understand the topic.

At no time will a question be asked such as ‘What do you think.....’. This is because the answer must always be correct since it is the candidate’s opinion!

OCR ICT - Advice to Candidates

What To Do and What Not To Do When Answering Examination Questions

There are a number of points which you should bear in mind when answering any examination question.

- Only give the number of answers asked for.
- Do not make the same point over and over again.
- Do not write a long list of answers and hope that one of them is correct. Often only the first member of a list is taken as your answer.
- Do not waffle.
- If asked for a disadvantage and advantage, never make a disadvantage the opposite of an advantage. Choose a different example.
- If asked to ring the correct answers then ring only the number asked for. Ringing too many will only lose you marks.
- If you do not know the answer to a question where you are asked to ring then ring something. You might be correct. Marks are not deducted for wrong answers except if you indicate more than you are asked for.
- Never leave out a question.
- Make sure you have answered all the questions. Go through the answer book to make sure every page has been answered.
- Do not give general answers that could apply to anything in a question relating to a specific topic.
- Do not write more than can be written on the lines provided. Use the number of lines as a guide to how much is expected.
- Do not repeat what was provided in the question.
- Do not rewrite the question as the answer.
- If the question excludes something from the answer do not write about it or give it as one of your answers.
- Do not use trade names in your answer. Talk about a 'word processor', 'spreadsheet', or a 'database' and not the specific product.
- Answer the question that is given. Do not give an answer that is not asked for just because you know it.

4.3 THE MOST IMPORTANT WORDS IN A QUESTION (THE KEY WORDS)

The beginning words of each question give the candidate clues to what he/she has to do.

Often certain Key Words are used to indicate to the candidate what has to be done. These key words are:

- state
- give
- describe
- explain
- discuss

Each of the words provides an indication of what is required of the candidate.

State

Each candidate has to write down a short statement answering the question. This is probably the only time a one-word answer would provide an acceptable answer.

Example

Question 6

State **two** input devices used in computer systems.

Device 1: _____

Device 2: _____ [2]

The answer would involve any **two** input devices, such as mouse, joystick, keyboard etc. Other correct answers would be possible and the candidate would gain marks from these.

Give

The candidate usually has to provide the marker with more information than a mere single word statement.

Example

Question 7

A company has branches all over the world and uses electronic conferencing to communicate with its employees.

Give **two** benefits to the company and its employees of using electronic conferencing.

Benefit 1 _____

Benefit 2 _____

_____ [2]

Answer 7

Two from:

- Companies do not have to transport their employees to a common meeting place.
- Instant communication with all employees.
- Each employee can contribute equally to the conference.
- Cost of travel eliminated.
- Time saved because of travelling.
- Can work from home.

[2]

Just writing a one-word answer, for example 'time', or 'travel' would not gain any marks since the candidate has not told us what benefit the answer is related to.

Describe

The candidate has to convince the marker of their ability to describe an answer that is appropriate to the question.

Example

Question 8

Describe how the misuse of computers might give rise to legal and moral problems.

The answer should relate everything to how computers might give rise to legal and moral problems. Short answers stating that it is easier to steal things using a computer do not tell the marker enough to award a mark. The answer needs to describe how the computer could be used to obtain illegal information.

Example

Question 9

Two of the features of good software are that it is free of any bugs and has a good user manual.

Describe what other features the user would expect to find in good software.

The candidate would be awarded marks for stating what the feature was e.g. on-line help and for describing what it was used for, e.g. looking up explanations of techniques without having to look in a manual.

Explain

The candidate usually has to write down **both** advantages and disadvantages to show both sides of an argument in the given situation. It must be clear what are considered to be the advantages and the disadvantages. In the following example, however, they are directed to only explain the good points.

Example

Question 10

A company is to employ a significant number of people with various disabilities to use its computers.

Describe special types of hardware and software that will be required. Explain why each might be useful.

[4]

The candidate's answers should include:

Answer 10

Any two, paired answers from:

- Tracker balls [1] to control the pointer on the screen for people with limited mobility. [1]
- Voice activated input [1] to control the computer if no access to keyboard. [1]
- Audio output [1] for blind users because they cannot see the screen. [1]
- Touch screens [1] to control input operated by head wand. [1]
- Software to predict words [1] in sentences – dyslexia – slow typists. [1]
- Foot activated controls [1] for people with no arm movement. [1]
- Braille printer [1] for the blind. [1]
- Speech recognition system [1] for people who cannot access the keyboard. [1]

[4]

Example

Question 11

Explain the advantages and disadvantages of digital and analogue watches.

The candidate might write:

Advantage: The digital watch does not need winding up.

Disadvantage: The analogue watch needs winding up.

In this instance the candidate would only score one mark, for either the advantage OR the disadvantage.

A candidate who wrote:

Advantage: The digital watch does not need winding up.

Disadvantage: You don't need batteries for an analogue watch.

OR

Disadvantage: It may be harder for young children to learn to tell the time using an analogue watch.

would score a mark for the advantage AND a mark for the disadvantage.

Discuss

A discussion should provide an explain-type answer but the candidate may also include a relevant conclusion at the end.

Example

Question 12

Discuss the relative advantages and disadvantages of electronic mail (e-mail) and fax to communicate information around the world.

The answers expected include a discussion of both the advantages and disadvantages. Themes for discussion may include:

Answer 12

Email

Advantages

- Fast communication to anywhere in the world.
- Can send large electronic documents very quickly.
- Is very cheap – local telephone call rates.

Disadvantages

- User must connect to the computer to get the messages.
- Not everyone has electronic mail.
- Some people worried about security.
- Cannot send original material – documents.
- Viruses attached to e-mails.

Fax

Advantages

- More secure way of sending credit card details.
- Data not saved on intermediate computers.

Disadvantages

- Paper may not be in the receiving machine.
- Not everyone has a fax machine.
- Cannot send original material.

A concluding statement should be included which gives the view of the candidate. This statement can be either in favour of the situation or against as long as it has a reasoned explanation. Trivial conclusions, on their own, for example 'So I think e-mail is better', are not given credit.

4.4 GRADED RESPONSE MARKING

Some questions lend themselves to a different way of marking the responses of candidates. Often referred to as “graded response” marking, the aim is to allow more candidates access to the marks while retaining the discrimination at the top end of the mark range. Such marking is usually applied to one or more questions on the Higher tier written papers, and often, but not always, on the Foundation tier written papers as it is more appropriate for use with questions that are designed to elicit longer answers. A question and its mark scheme are given here as exemplars.

Question 13

A company is transferring its customer support and administration centre to another country.

Discuss the implications to the company, its employees and customers.

[6]

The answers are expected to include a discussion of the implications to the three groups mentioned in the question. Themes for discussion may include the following where candidates would be expected to make a point and then elaborate on it:

Answer 13

Company:

- Cheap labour – reduced costs to the company.
- Training of new staff – increased costs to the company.
- Recruitment of new staff – advertising in a different country.
- Risk costs – insurance, liability costs.
- Initial costs can be high – reduced profitability in the short term.
- Cultural differences – misunderstandings/difficulties with problem resolution etc.
- Relative cost of housing staff - increased costs to the company.
- Installation of new remote system – associated issues e.g. connectivity, transfer of data.
- Changeover issues – loss of data and interruption in services.
- Loss of customers – reduced customer base leading to need for more advertising.

Employees:

- Staff might have to travel to the new location – travel costs/time issues.
- Costs to relocated staff of accommodation/education of children.
- Redundancy – need to find new employment.
- Do not understand the local language - Improved language skills.
- New location staff need to learn a new language – to communicate globally.

Customers:

- No personal access to company staff – no instant feedback.
- Have to use electronic communications – not all have Internet access.
- Can contact company at any time by email – no need to wait for answer/be put on hold via telephone/no long phone calls.
- If telephoning – delays through time differences/cultural/language differences.
- Quality of service.
- Loss of local jobs – as the company shuts down its original operation.

Marks are awarded for a point plus a suitable discussion of the point.

[6]

When marking the answers, candidates responses would be compared to the above marking points and marks awarded for the points made and the discussions of each. Using a traditional marking scheme, a candidate might score a mark only if a point and a discussion of the point were clearly made. Thus, candidates who merely listed points would fail to score marks despite demonstrating that they had some knowledge of the implications. A graded marking scheme goes some way towards addressing this issue.

A typical graded mark scheme is shown below. The candidate’s response is compared to the mark scheme and points and discussion identified from the marking scheme above. The number of points and discussions are then used to arrive at a score based on the grid.

A typical graded response grid of criteria such as this one would be suitable for this question:

	1 point only	2 points	3 or more points
No expansions	1	2	3
1 expansion	2	3	4
2 expansions	3	4	5
3 or more expansions	4	5	6

[6]

(Note that this grid is an exemplar and its inclusion here does not constitute a guarantee that the format of the grid will not change in future examination sessions.)

Often, there is also a mark available up to the maximum mark, in such questions for a reasoned conclusion.

While there is usually no indication on the actual question paper that such a mark scheme will be applied, in preparing for the written papers candidates should be advised to look for the key words, such as “explain”, “describe”, and “discuss” in the question, and to tailor their response accordingly remembering that such key words indicate that a lengthy answer is required.

Responses that address the key words and make points and then elaborate on the points will score more marks than those answers that merely constitute lists of points. Such good responses should score high marks irrespective of the type of mark scheme used. However, the use of graded response marking schemes allows credit to be given to brief answers with valid ICT content which would usually not score marks, and for this reason graded response marking schemes have become established as part of the marking repertoire for ICT A (1094/1994) examination papers.

For more specific information, teachers and candidates are advised to refer to the published mark schemes and Chief Examiner reports for each examination session.

5 USEFUL RESOURCES

Support for this specification can be found on OCR's web site: www.ocr.org.uk

OCR also hosts a discussion forum at:

<http://community.ocr.org.uk/>

where elists and resources can be found.

The ICT GCSE community pages can be found at:

<http://community.ocr.org.uk/community/ict-gcse/home>

This is a useful source of information about current developments, support materials such as books, publications and the views, ideas and opinions of teachers of this specification. Requests for help, information and advice can be posted here.

6 COURSEWORK ADMINISTRATION

This Coursework Administration Pack is designed to accompany the OCR GCSE ICT A specifications (Full and Short Course) for teaching from September 2004.

The forms in this pack are for use with the following specifications:

- **ICT A (1094/1994) Unit 2358 (Unit 2)**
- **ICT A (1994) Unit 2360 (Unit 4)**

Guidance on the assessment of coursework will be found in Section D of the specification.

Centres are permitted to copy materials from this booklet for their own internal use.

Contents:

Compulsory Recording Materials

Coursework Cover Sheets for Projects 1a and 1b (GCW6501 & GCW651)

Coursework Summary Form (GCW652)

Coursework Cover Sheet for Project 2 (GCW653)

All forms may be photocopied and used as required. Additional copies may be downloaded from the OCR website www.ocr.org.uk.

COURSEWORK ENQUIRIES

Coursework enquiries for ICT A should be sent to OCR at the following address:

Subject Officer ICT A

Technology Team

OCR

Mill Wharf

Mill Street

BIRMINGHAM

B6 4BU

Correspondence should be marked 'Coursework Enquiry 1994' or 'Coursework Enquiry 1094'.

ASSESSING THE COURSEWORK

These notes are provided to assist in the process of assessing each piece of coursework.

Project 1A

To assess the project.

- For the main mark range choose the box which best describes the candidate's achievement making sure that all the criteria in the box have been met.
- Identify the mark range allocated to that box.
- Choose a mark within the range according to how well the criteria have been achieved.
- Record the mark on the Coursework Assessment Form and the candidate's coversheet.
- For the add-on marks choose the box which best describes the candidate's achievement making sure that all the criteria in the box have been met.
- Identify the mark range allocated to that box.
- Choose a mark within the range according to how well the criteria have been achieved.
- Record the mark on the Coursework Assessment Form and the candidate's coversheet.
- Produce a total out of 28.

PROJECT 1b

To assess the project.

- Select the strand to be assessed.
- Choose the box which best describes the candidate's achievement making sure that all the criteria in the box have been met.
- Identify the mark range allocated to that box.
- Choose a mark within the range according to how well the criteria have been achieved.
- Produce a total out of 28.
- Record the total mark for Project 1b on the Coursework Assessment Form and the candidate's coversheet.

Quality of Written Communication

Assess the two pieces of work (Project 1a and 1b) together against the criteria for quality of written communication to produce a mark out of 4.

Total Mark

Produce a total mark out of 60 and record this on the Coursework Assessment Form.

PROJECT 2

To assess the project.

- For the section headed 'Identify a problem' choose the box which best describes the candidate's achievement making sure that all the criteria in the box have been met.
- Record the mark on the Coursework Assessment Form and the candidate's coversheet.
- Repeat the process for each subsequent section to be assessed.
- Produce a total out of 56.

Record the total mark for Project 2 on the Coursework Assessment Form and the candidate's coversheet.

Quality of Written Communication

Assess the work against the criteria for quality of written communication to produce a mark out of 4.

Total Mark

Produce a total mark out of 60 and record this on the candidates cover sheet.

Additional Notes for Guidance on Project 1a Assessment

In order to obtain a mark in any of the available mark ranges, candidates need to produce a piece of work which consists of at least one document or presentation. Marks can only be awarded where work is appropriately annotated by the candidate. This annotation can take the form of a written report.

- 0-2** The candidate creates a piece of work using information from a source such as clipart, scanned images, CD ROMs or the Internet and sources such as newspapers and magazines. They use simple editing techniques like copy and paste to include information from these sources into their work.
- 3-4** The candidate uses **all** three types of data i.e. text, numbers and images.
- 5-7** The candidate states the reason why they are doing the work. This can be done by identifying a specific target audience. They provide examples of different possible layouts.
- 8-10** The candidate shows development of the work and writes about how this development matches the purpose of the work. The use of fonts and layout should be consistent.
- 11-13** The task must involve the production of a booklet with several pages or a presentation with several slides. There must be evidence that their booklet/presentation has been spell checked or proof read. There must be evidence that errors have been corrected.
- 14-16** Up until now candidates have only been required to use one IT source. For this mark range and all subsequent mark ranges more than one IT source must be used. Using the Internet only counts as one source. Evidence that complex searches have been used must be evidenced by screen dumps.
- 17-19** Candidates must provide evidence that they have refined searches or visited a number of Internet sites or CD ROM pages using hyperlinks. They must give reasons related to purpose why they investigated certain sites and not others. Having found suitable information they should then change the format of the information for inclusion in their work.
- 20-21** Candidates must derive new information from the information found as a result of their search and include it in their piece of work.

Add-ons

- 0-2** Candidates must write a report comparing how they produced their piece of work using IT with other ways they could have produced their work. In their report they write about how they have worked safely, looked after the equipment and used some form of backup system. They write about how they got help when the computer reported errors in their work.
- 3-4** They include the advantages and disadvantages of using IT to produce their work and how they dealt with copyright or confidentiality in the production of their work.
- 5-7** In their report they write about what caused the errors the computer reported in their work. They write about the precautions they took to guard against the introduction of viruses into their work. They write about the (safety and) health precautions they took whilst producing their work.

UNIT 2 – PRACTICAL SKILLS AND UNDERSTANDING RELATING TO THE USE OF ICT APPLICATIONS – GCSE ICT (1094/1994)

GCSE UNIT 2358



Coursework Cover Sheet - Project 1a

Please read the instructions printed overleaf before completing this form. One of these cover sheets, suitably completed, should be attached to the assessed work of **each** candidate in the moderation sample.

Year	2	0	0	
------	---	---	---	--

Centre Name					
-------------	--	--	--	--	--

Centre Number					
---------------	--	--	--	--	--

Candidate Name				Candidate Number				
----------------	--	--	--	------------------	--	--	--	--

INSTRUCTIONS FOR COMPLETION OF THIS FORM

- One cover sheet should be used for each candidate in the sample sent to the Moderator.
- This form should only be used for recording coursework marks. A printout from a suitable software package is an acceptable alternative to this form if all the same information is given.
- Carry out internal standardisation to ensure that there is agreement on the standards.
- Retain a copy of every form that is sent to the Moderator.
- A copy of this form may be found on the OCR website. This may be downloaded and completed using a computer.
- Please ensure that the appropriate boxes at the top of the form are completed.
- Complete the mark boxes, overleaf, as detailed below.
- For the **Key Skills** mark range choose the box which best describes the candidate's achievement making sure that all the criteria in the box have been met.
- Choose a mark within the range according to how well the criteria have been achieved.
- In the comments box include the page numbers where the evidence for the mark given can be found
- Record the mark in the **Key Skills** box.
- For the **Additional Skills** mark range choose the box which best describes the candidate's achievement making sure that all the criteria in the box have been met.
- Choose a mark within the range according to how well the criteria have been achieved.
- In the comments box include the page numbers where the evidence for the mark given can be found
- Record the mark in the **Additional Skills** box.
- Produce a total out of 28.
- Record the mark in the **Total** box.

Key Skills : Specific comments on nature of evidence (reference to page numbers may assist)

--

Total Key Skills	(max 21)	
-------------------------	----------	--

Additional Skills : Specific comments on nature of evidence (reference to page numbers may assist)

--

Total Additional Skills	(max 7)	
--------------------------------	---------	--

Total Project 1a	(max 28)	
-------------------------	----------	--

INSTRUCTIONS FOR COMPLETION OF THIS FORM

1. One cover sheet should be used for each candidate in the sample sent to the Moderator.
2. Please ensure that the appropriate boxes at the top of the form are completed.
3. Complete one row only from Handling Data, Modelling, Measurement or Control.
4. Place the total in the Grand Total box. This mark should not be above 28.
5. In the rightmost box insert the page numbers where the evidence for the mark given can be found.
6. This form should only be used for recording coursework marks. A print out from a suitable software package is an acceptable alternative to this form if all the same information is given.
7. Carry out internal standardisation to ensure that there is agreement on the standards.
8. Retain a copy of every form that is sent to the Moderator.
9. A copy of this form may be found on the OCR website. This may be downloaded and completed using a computer.

INSTRUCTIONS FOR COMPLETION OF THIS FORM

Marking and Internal Standardisation

- 1 Teachers must be thoroughly familiar with the appropriate sections of the specification and with the general coursework regulations.
- 2 Please ensure that one Centre Declaration Sheet, CCS 160, is completed and sent to the Moderator.
- 3 This form should only be used for recording coursework marks for 2358. A print out from a suitable software package is an acceptable alternative to this form if the same information is given.
- 4 Complete the information at the head of the form.
- 5 The candidate number and the teaching group/set should be shown.
- 6 Carry out internal standardisation to ensure that the total marks awarded to the candidates reflect a single valid and reliable order of merit for the component.
- 7 Enter the marks for each of the Marking Criteria in the appropriate spaces, together with the total mark out of 60.
- 8 Ensure that all mark transcriptions and additions are independently checked.
- 9 A copy of this form and the moderator's copy of the MS1 must be sent to the moderator by the appropriate submission date for coursework marks.
- 10 You are advised to keep a copy of this form for reference.

UNIT 4 – PROBLEM SOLVING USING ICT (1994)

GCSE UNIT 2360



Coursework Cover Sheet – Project 2

Please read the instructions printed overleaf before completing this form. One of these cover sheets, suitably completed, should be attached to the assessed work of **each** candidate in the moderation sample.

Year	2	0	0
------	---	---	---

Centre Name										
Centre Number										
Candidate Name						Candidate Number				

Candidates should be able to:		Page numbers where evidence can be found	Maximum Mark	Mark
Analysis 12	identify a problem		4	
	use methods of collecting Information		4	
	identify the inputs, outputs and processing required		4	
Design 12	produce designs for the data structure		3	
	produce designs for the user Interface		3	
	produce a design for the output formats		3	
	produce software and hardware requirements		3	
Implementation 14	implement their data structure		4	
	implement their input and output formats		4	
	use features of software appropriately		4	
	combine software features		2	
Testing 7	describe their testing		4	
	describe the results		3	
User Documentation 7	show a potential user how to enter, amend and save data		2	
	show a potential user how to process and output data		3	
	show a potential user how to avoid problems		2	
Evaluation 4	evaluate their solution		4	

Subtotal (56)	
Communication (4)	
Total (60)	

INSTRUCTIONS FOR COMPLETION OF THIS FORM

1. One cover sheet should be used for each candidate in the sample sent to the Moderator.
2. Please ensure that one Centre Declaration Sheet, CCS 160, is completed and sent to the Moderator.
3. Please ensure that the appropriate boxes at the top of the form are completed.
4. Complete the Mark column for each of the six sections.
5. Place the total in the Total box. This mark should not be above 56.
6. In the rightmost box insert the page numbers where the evidence for the mark given for each section can be found.
7. This form should only be used for recording coursework marks. A printout from a suitable software package is an acceptable alternative to this form if all the same information is given.
8. Carry out internal standardisation to ensure that there is agreement on the standards.
9. Retain a copy of every form that is sent to the Moderator.
10. A copy of this form may be found on the OCR website. This may be downloaded and completed using a computer.

Centre Authentication Form for Coursework

One copy of this form, must be completed for **each** unit or coursework component and signed by the appropriate person(s). The completed form **must** accompany the coursework or portfolios submission to the moderator/examiner or be inspected by the visiting moderator for Entry Level, GCSE, GNVQ, VCE and GCE qualifications.

It is now a requirement of the Code of Practice that this authentication form is signed.

'Authentication of candidates' work – *The internal assessor must present a written declaration that the candidates' work was conducted under the required conditions as laid down by the specification.'*

Centre Name Centre No

Specification or Unit title

Qualification or Unit number/component code

Session Year

(Please tick box if yes)

In this case this form must accompany the sample posted to the moderator or inspected by the visiting moderator

OR

Examined unit
(Please tick box if yes)

In this case this form must accompany the packet of coursework which is posted to the examiner or assessed by the visiting examiner

Signature(s) of internal assessor(s) – i.e. person(s) responsible for carrying out internal assessment and/or supervision (in the case of examined coursework) of work:

I/We the undersigned confirm that that the candidates' work was conducted under the required conditions as laid down by the specification.

Signature:..... Print name:.....

Signature:..... Print name:.....

Signature:..... Print name:.....

In order to support internal assessors in authenticating their students' work an **example** of a standard Candidate Authentication Statement is provided on the OCR Website (www.ocr.org.uk). Alternatively centres may wish to continue to use their own internal arrangements for candidate authentication, but these must provide equivalence to the standard Candidate Authentication Statement provided.

Notes

- In the case of private candidates or distant tutored candidates, the centre must ensure that:*
- *the tutor/teacher has acquainted themselves thoroughly with the general standard of candidates' work before accepting coursework for Internal Assessment. Work submitted by candidates that is atypical or inconsistent with their general standard may raise concerns over authenticity.*
 - *sufficient on-going regular monitoring of the candidates' examination coursework has taken place.*
 - *Centres are reminded that they must comply with restrictions that may apply to entries e.g. the exclusion of Private candidates from a specification.*

Candidate Authentication Statement

The completed form should be retained within the Centre and should **not** be sent to the moderator or OCR unless specifically requested.

NOTICE TO CANDIDATE

The work you submit for assessment must be your own.

If you copy from someone else or allow another candidate to copy from you, or if you cheat in any other way, you may be disqualified from at least the subject concerned.

1. Any help or information you have received from people other than your subject teacher(s) must be clearly identified in the work itself.
2. Any books, information leaflets or other material (e.g. videos, software packages or Information from the Internet) which you have used to help you complete this work must be clearly acknowledged in the work itself. To present material copied from books or other sources without acknowledgement will be regarded as deliberate deception.

Declaration by candidate

Centre Name

Centre No

--	--	--	--	--

Session

Year

2	0	0	
---	---	---	--

Specification or Unit title

Candidate Name

Candidate Number

--	--	--	--

I have read and understood the **Notice to Candidate** (above). I have produced the work without any help from other people apart from that which I have declared in the work itself. I have acknowledged all source materials in the work itself.

Candidate's signature:.....

Date:.....

Notes

The Candidate Authentication statement once completed should be stored securely within the Centre. A copy of this authentication form must be available upon request for each coursework/portfolio submission