

# **OCR ADVANCED SUBSIDIARY GCE IN INFORMATION AND COMMUNICATIONS TECHNOLOGY (3838)**

# **OCR ADVANCED GCE IN INFORMATION AND COMMUNICATIONS TECHNOLOGY (7838)**

## **Specimen Question Papers and Mark Schemes**

These specimen assessment materials are designed to accompany the OCR Advanced Subsidiary GCE and Advanced GCE specifications in Information and Communications Technology for teaching from September 2000.

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

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

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**Oxford Cambridge and RSA Examinations**

**Advanced Subsidiary GCE**

**INFORMATION, AND COMMUNICATIONS  
TECHNOLOGY**

**INFORMATION SYSTEMS AND COMMUNICATIONS**

**2512**

**Specimen Paper**

Candidates answer on the separate answer paper provided.

Additional materials:

One 8-page answer booklet.

**TIME** 1 hour 30 minutes

### **INSTRUCTIONS TO CANDIDATES**

Write your name, Centre number and candidate number in the spaces provided on the answer booklet.  
Answer all questions.

### **INFORMATION FOR CANDIDATES**

You will be assessed on your clarity of expression, the structure and presentation of your ideas and your grammar, punctuation and spelling in your answers to questions.

Answer **all** questions.

A newsagent's shop has at least two electronic tills, including a processor and file storage, linked to a local file server in the shop. The newsagent's system *uses a graphical user interface (GUI)*.

Whenever prices change or offers occur, updates are made on the local server, which then sends data to the tills. Only the manager of the shop is allowed to update the prices, not the sales assistants. Every few minutes the tills send data to the local server giving details of the sales.

- 1 (a) Explain the advantages and disadvantages of each electronic till having its own processor and backing store. [4]  
(b) Describe suitable input and output devices for use at each till, explaining why the devices are required. [6]
- 2 (a) Describe the features required in a *graphical user interface (GUI)* suitable for use in the newsagents. [2]  
(b) Describe **one** advantage and **one** disadvantage of the use of a *GUI* compared to a text-only interface on the newsagent's till. [4]
- 3 Describe how the network system allows only the manager to update the prices. [2]
- 4 The newsagent's shop is one in a chain of 500 shops. Each shop typically offers for sale supplies of twelve daily newspapers, six Sunday papers with supplements, and eighty monthly magazines. Details of each newspaper are held on the computer in a flat file with fixed length records. The *primary key* in each record is a two-character code representing the title of the newspaper or magazine.  
(a) State why a *primary key* is needed for each newspaper and magazine. [2]  
(b) Explain why a two-character code is used as the *primary key* and not the newspaper title itself. [2]  
(c) Describe a problem associated with a two-character code and how it could be overcome. [2]
- 5 A shop has between 100 and 500 customers who have accounts. These customers have papers delivered and magazines ordered regularly. Their accounts are payable weekly.  
(a) By giving examples from the customers' accounts, explain the difference between data and information. [2]  
(b) Describe **two** factors that may make the customers' accounts data inaccurate and explain how this affects the quality of the information obtainable. [4]

- 6** The newsagents update their filing system to use a relational database.
- (a) Compare a flat file system with a relational database. [3]
  - (b) Name and describe **two** entities in the newsagent's database and the relationships between them. [6]
  - (c) Describe the obligations the Data Protection Act (1984), and subsequent legislation, placed on the manager of the newsagent. [6]
- 7** The manager of each shop uses a mail-merge process to produce reminders for each customer that owes money on account. Generic application software is used for this task.
- (a) Name the **two** types of generic application software that are used in a mail-merge process. [2]
  - (b) Identify **two** advantages and **two** disadvantages of using generic application software rather than a tailor-made software package in the running of a newsagent's shop. [4]
  - (c) Name **three** items of system software that could be installed on the newsagent's system and explain their purpose. [6]

The newsagent is part of a national company that runs 500 shops. Its local server is connected to a computer network at the company's head office. At the end of each day, sales data is transferred electronically to the head office computer. The network also provides an electronic mail (e-mail) system between head office and the shops.

- 8**
- (a) Explain the need for protocols in establishing the link between the shop and head office. [2]
  - (b) When the data has arrived from all of the shops, the head office computer runs a routine to update its master files. Name the type of processing used for the update, and identify **three** of its major characteristics. [4]
  - (c) Describe **two** facilities available on an electronic mail (e-mail) system. [4]

- 9** The data processing manager at the head office belongs to a professional organisation.

Name one organisation that serves the needs of computing and ICT professionals and describe the benefits that membership of such an organisation brings. [3]

- 10** Many of the newsagent's customers are gaining access to the Internet. This allows them to read a wide range of online newspapers and magazines.

Discuss the increasing availability of online newspapers and magazines. You should describe the capabilities and limitations of using ICT for this purpose and the impact it has on the individual, the newsagent's business and the way in which news is reported to society. [8]

- 11** The data processing manager at head office is worried about the increasing possibility of crime since they have also decided to provide on-line services on the Internet.
- (a) Give **two** examples of ICT crime. **[2]**
  - (b) Describe **one** method of combating ICT crime. **[2]**
  - (c) The web pages are designed for ease of navigation. Describe two navigation aids that would be used in the design of the web pages. **[4]**

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**Advanced Subsidiary GCE**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY**

**INFORMATION, SYSTEMS AND COMMUNICATIONS**

**2512**

**Mark Scheme**

## General

- 1 The paper is to be assessed and marked to AS Standard.
- 2 Marking should be positive; marks should not be subtracted for errors or inaccuracies. Where appropriate, the benefit of any doubt should be given to the candidate.
- 3 Candidates should be regarded as achieving the highest level of response which accurately describes their answer.
- 4 The mark scheme includes an indication of the possible content that candidates might use in their answers. It should though be stressed that where content is provided in this way, it is indicative of the likely answers to be forthcoming and is therefore neither exhaustive nor complete.
- 5 In assessing quantitative answers the 'own figure rule' should apply i.e. a candidate must be given credit for logical calculations which, though numerically wrong, are consistent with an earlier error.
- 6 The Quality of Written Communication is to be explicitly assessed on answers to questions identified in the paper rubric. In this context, it refers to:
  - (a) the selection and use of form and style of writing appropriate to purpose and complex subject matter;
  - (b) the organisation of relevant information clearly and coherently, using specialist vocabulary when appropriate;
  - (c) legibility of text, accuracy of spelling, punctuation and grammar so that meaning is clear.

Marks will be allocated according to the following criteria:

- 3–4 Very good form and style of language, appropriately used with complex subject matter. Writing is legible with spelling, punctuation and grammar accurate and meaning clear. Ideas well organised and expression clear and coherent using specialist language.
- 1–2 In general, the layout expresses a comprehensible picture although it is not difficult to see ways in which the language could be improved. The spelling, punctuation and grammar are accurate, and the language is not difficult to understand.
- 0 Is to be awarded if the candidate fails to achieve 1.

The Quality of Written Communication mark must be added once the primary marking has been completed. The Quality of Written Communication mark should be clearly shown on the candidate's script, together with the primary mark and overall script total.



## Question 1

- (a) Advantages:  
faster access to data (1)  
individual record at each till in event of failure (1)
- Disadvantages:  
more expensive hardware (1)  
server does not always have totally up-to-date data (1)

[Max 4]

- (b) Input: must have full description  
keyboard (1)  
OR concept keyboard/description (2)
- mouse (1)  
bar code reader/wand/scanner (1)

Output: must have full description  
monitor (1)  
LCD display (1) (NB needs to be more than just 'display')  
receipt/thermal/dot matrix printer (1) (NB not just 'printer')

[Max 6]

## Question 2

- (a) Display consisting of **icons (1)**, which can be **selected by pointing (1)**, using a **mouse (1)**, to **perform associated tasks (1)**. [Max 2]
- (b) Advantages:  
No need to know complex commands (1)  
Icons describe tasks (1)  
Use of pulldown/pop up menus gives uncluttered but helpful interface (1)
- Disadvantages:  
More powerful hardware (1) e.g. memory/disk space/faster processor (1).

[Max 4]

## Question 3

By use of **passwords (1)**, **access rights/levels (1)**

[Max 2]

## Question 4

- (a) A **unique (1) identifier for each record (1)**
- (b) Data entry errors with the full title (1)  
Less space needed to save key/speeds up processing (1)  
Fixed length field/speeds up processing (1)

[Max 2]

[Max 2]

Problems occur with e.g. Daily Mirror/Daily Mail (1) meaning that code is not obvious (1), it is overcome by choosing other codes eg MI/MA and having a lookup table (1).

[Max 2]

### Question 5

- (a) Data – characters/digits **representing some data value (1)**: e.g. 16.76  
Information – interpretation of **meaning (1)**: e.g. balance owing = £16.76

[Max 2]

- (b) Factors: Inaccuracy in transcribing (1)  
Illegibility of data handed in by customer (1)

Effects: Wrong price on database for papers (1)  
Information gained from data will be wrong leading to wrong action (1)

[Max 4]

### Question 6

- (a) Flat file: single (1) OR unrelated (1) tables  
Relational database: multiple tables (1) linked by (foreign) keys (1)

[Max 3]

- (b) Entities (any **two** of):  
CUSTOMER (1) – Primary key Cust ID/three attributes given (1)  
NEWSPAPER (1) – Primary key Newspapercode/three attributes given (1)  
ROUND (1) – Primary key RoundID/three attributes given (1)

Relationship named correctly (1) and given correct scope (1)

e.g. CUSTOMER orders NEWSPAPER (many to many)

[Max 6]

- (c) For all personal data (1) stored on computer (1)  
must register use (1)  
subjects (i.e. customers) have right to see data (1)  
data must be relevant (1), correct (1), up-to-date (1), kept secure (1)  
data must only be used for stated purpose (1)  
data must be kept only as long as needed (1)

[Max 6]

### Question 7

- (a) Database management system (1), wordprocessor (1)

[Max 2]

- (b) Advantages (any **two** of):  
readily available (1)  
tried and tested (1)  
large user-base (1)

Disadvantages (any two of):

Non-specific to newsagent – may not fit task (1)  
Harder to customise (1)  
May have too many unnecessary extras – cost (1)

[Max 4]

(c) Any **three** of (one for name, one for purpose)

Operating system (1): controls hardware/software (1), provides user interface (1), allows for multi-tasking (1) etc.

Any named utilities (1) + purpose (1) eg virus checker, backup utilities, disc scanners

Any one device driver (1) + purpose (1)

Translator (1): to translate source code into binary/object code (1)

[Max 6]

## Question 8

(a) To ensure that the sending and receiving computers interpret the data in the same way e.g. binary transfer (1)  
use common data transfer settings e.g. no. of stop bits (1)

N.B. Examples not needed to gain marks.

[Max 2]

(b) Batch processing (1)

Any **three** of:

Large volume similar transactions (1)

Processing commences once all data ready (1)

Processing continues without human interaction (1)

[Max 4]

(c) Any **two**:

Forward messages (1) to another recipient (1)

Multiple recipients (1) mailed to simultaneously (1)

Hold delivery (1) until predetermined time (1)

Auto-acknowledgement (1) from recipient (1)

Blind copying (1) to suppress recipients (1)

[Max 4]

## Question 9

Any **one**:

British Computing Society (1)

Institute of Data Processing (1)

Association of Computer Managers? (1)

Company of Information Technologists? (1)

[Max 1]

Any **two** points:

Ability to share expertise (1) amongst fellow professionals (1)

Access to up-to-date information (1) through periodicals (1)

Providing for standardised (1) qualification framework (1)

Legal protection (1) in case of data loss/misconduct allegations (1)

[Max 2]

## Question 10

- Up-to-date news (1)
- Global news (1) not just national (1)
- Less chance of bias e.g. state control of media (1)
- Undermining of censorship laws (1)
- Levelling out of style to fit browser displays (1)
- Less capital needed to publish (1) more variety (1) greater access to marketplace (1)
- Copyright of images/texts harder to police (1)
- Multi-media (1)
- Hyperlinks to follow threads (1)
- Not easily portable (1)
- Feel of real paper lost (1)
- Links with TV and other media (1)
- Less need for traditional newsagent (1)
- Automated cuttings services (1)
- Customised newspapers (1)

[Max 8]

## Question 11

- (a) Fraudulent use of data (1)
  - Hacking into restricted files (1)
  - Intercepting credit card details (1)
- (b) Encryption of data transmitted via ISDN/other commercial media (1) to ensure any intercepted data is nonsense (1).

[Max 2]

[Max 2]

**or** Careful selection of personnel with restricted (1) access to data to ensure that (1) risk of fraud is reduced.

**or** Use of firewalls, passwords and Ids (1) plus frequent changes of passwords (1) to prevent unauthorised access (1).

**or** Tough penalties for offenders under the terms (1) of the Computer Misuse Act (1)

- (c) Graphical icons (1) for visual identification of topic (1)
  - Pull down lists/menus (1) for easy straightforward selection (1)
  - Hot words/hot links (1) to jump to a new topic directly (1)

[Max 4]

## UNIT 2512 - ASSESSMENT GRID

	1	2	3	4	5	6	7	8	9	10	11	Total
<b>1.1</b>				2	6							<b>8</b>
<b>1.2</b>	10						6					<b>16</b>
<b>1.3</b>		6					6				4	<b>16</b>
<b>1.4</b>				4		9						<b>13</b>
<b>1.5</b>			2					10				<b>12</b>
<b>1.6</b>						6			3	8	4	<b>21</b>
<b>Total</b>	10	6	2	6	6	15	12	10	3	8		<b>86</b>
<b>AO1</b>	6	6	2	6	4	11	12	10	3	5	4	<b>69</b>
<b>AO2</b>	4				2	4				3	4	<b>17</b>
<b>QoWC</b>												<b>4</b>
<b>Total</b>	10	6	2	6	6	15	12	10	3	12		<b>90</b>



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**Advanced Subsidiary GCE**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY**

**STRUCTURED PRACTICAL ICT TASKS**

**2513**

**Pre-released Tasks**

**Max Mark 120**

**INSTRUCTIONS TO CANDIDATES**

You should attempt all tasks, working independently from other candidates.

There is no time limit on any of the tasks other than the requirement that all work on tasks must be completed by the agreed date.

There are no restrictions on computing facilities, hardware or software, that may be used.

You are strongly advised to keep all your working notes as these may be required by the Moderator.

Reasons for answers to tasks are expected to form part of the work submitted.

## Task 1

A company employs 5 people who are paid on an hourly basis. These people may work on any day of the week. If they work for 35 hours or less on Monday to Friday, they are paid the normal hourly rate. For 36 to 40 hours they are paid time-and-a-half and for over 40 hours they are paid double time. Any work done on a Saturday is paid at time-and-a-half and all work on a Sunday is paid at double time.

A calculator is required which accepts a valid hourly rate and number of hours worked on each day of the week by each employee. Employees do not necessarily work on every day of the week and some employees may be on holiday during a week. In this case they are paid for 35 hours. The calculator should show the amount earned at standard rate, the amount earned from overtime and the amounts earned on a Saturday and Sunday. It should also show the amount earned by each employee and the total wage bill.

(a) Produce and implement a design for this calculator. [15]

(b) Choose test data, giving reasons for your choice, to test your implementation. [7]

(c) Produce simple, concise user instructions for your solution. [5]

(d) Employees who earn more than £66 per week pay National Insurance at the rate of 10% on all earnings above £66. They also pay tax, on all earnings above £83.45 per week, at the following rates.

£83.46 to £112.31 at 10%  
£112.32 to £621.92 at 22%  
above £621.92 at 40%

Modify your solution so that it shows the total wage before deductions, the National Insurance contributions, tax deductions and net wage for each employee.

[6]

**[Total: 33]**



## Task 2

A squash club has three types of member. These are Social Members, Junior Playing Members (playing members under 18 years of age) and Senior Playing Members. The squash club has a number of leagues, each consisting of 5 players, and a playing member may be in one of the leagues. The number of leagues vary according to the number of members who wish to take part in them. Some playing members are not members of a league and only play friendly games.

When someone joins the Club, they pay a joining fee and one year's subscription. All subscriptions last 12 months and the start date is the date on which a member joins the Club. The joining fee is £100 and the subscriptions are

Social Member £10

Junior Playing Member £100

Senior Playing Member £200

The Club Secretary is responsible for producing, each month, lists of the members in each league. The Treasurer is responsible for notifying (in writing) Club Members when their subscriptions are due and the amount owing.

- (a) Design and implement a database to hold the details of all members. The database is to be used by the Secretary to produce the league lists, and the Treasurer to collect the subscriptions. The database should contain details of at least 15 members, there should be examples of all types of membership and there should be at least two leagues. You must produce hardcopy to show your implementation. **[12]**
- (b) Design and implement a reporting system which will list the members of each league. You must produce hardcopy to show your implementation. **[4]**
- (c) Each month the Treasurer notifies members, whose subscriptions become due in the following month, of the amount owing. Design and implement a system that the Treasurer can use to do this. You must produce hardcopy to show your implementation. **[6]**

**[Total: 22]**

### Task 3

The Law Courts in a busy urban area have five courts presided over by local magistrates. These courts are in operation from Monday to Friday each week; each day being divided into two half day sessions. The courts run throughout the year, but are closed on Public Holidays.

Teams of three magistrates are allocated to each court for each session. One of these magistrates will be more senior than the others and will act as chairperson. Each magistrate is part time, working **either** one half day per week, or one day per fortnight, or two consecutive days per four week period. Each magistrate opts for one of these working styles when appointed and nominates the days of the week when available for duty. It takes a while for new magistrates to become assigned to a regular session, for example, every Tuesday afternoon, as preference is given to those who are already established.

Two courts deal with cases that are estimated to take one or two days. These cases are scheduled a minimum of four weeks in advance. The other three courts handle cases that can be dealt with in half a day or less. Magistrates are timetabled to courts on the basis that they will hear the whole case.

One person is in charge of timetabling the magistrates for all of the courts. The timetable is prepared four weeks in advance and a rolling timetable for the next four weeks is sent out, each week, to all registered magistrates who are actively available for duty.

Magistrates should keep the person in charge of timetabling informed of any periods when they will not be available for normal duty. This is not always possible and amendments may need to be made to the timetable right up until the start of any session. A record of the finally implemented timetable for each week is filed. At the end of the year, the file is archived. A running total of the number of half day sessions undertaken in the current year to date is kept in each magistrate's record with a note of how many of these sessions the magistrate was appointed chairperson.

A microcomputer system is to be used to maintain magistrates' details, to prepare initial timetables and to keep a record of the finally implemented timetable each week.

- (a) Draw up record layouts for the magistrates' file and the timetable file. You should justify your decisions and indicate any assumptions you have made; [10]
- (b) Draw up a print layout for the four weekly rolling timetable to be sent to magistrates each week. [9]
- (c) Implement a system to print the timetable for the four weeks ahead. [10]

[Total: 29]

## Task 4

A music collector has established a small business supplying record covers to collectors of second hand records. Most sales take place at record fairs but some business is done through the post.

The music collector owns a microcomputer with database, spreadsheet and word processing packages. He is using the database package to maintain a file of his product range. Each record contains a product reference code, product description, pack size and price per pack. This is kept up to date as prices change and as products or pack sizes are added to or deleted from the range.

This database is used to produce advertising lists and order forms for mail order. For every mail order, an invoice is required, showing for each item ordered the product reference code, description, pack size, pack price, the number of packs ordered and the invoiced amount. In addition, VAT at the current rate must be included and shown separately for each item. Finally, 10% of the total invoice value is added to cover packing and postage. The music collector is using the spreadsheet package in combination with the database package to prepare the invoice details, but needs to develop this a little more to include the customer name and address, invoice date and reference number.

- (a) Replicate the system that the collector has developed. You should set up a database of at least twelve entries, justify your choice of data and produce an invoice containing at least six of these entries. [20]
- (b) Develop this system to include the extra requirements and reproduce your invoice with the additional items. [6]
- (c) Prepare a set of instructions for the collector to implement these extra requirements. You should make these instructions accessible as an icon based on-line help system. You should make provision for different entry points to the instructions. [10]

**[Total: 36]**





**Oxford Cambridge and RSA Examinations**

**Advanced Subsidiary GCE**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY**

**STRUCTURED PRACTICAL ICT TASKS**

**2513**

**Mark Scheme**

## Task 1

(a) In the design the user should have the opportunity to enter the following data.

The hourly rate [1]

The number of hours worked on each of 7 days [1]

by each of 5 employees [1]

The design should validate

the hourly rate [1]

each of the number of hours worked [1]

It should calculate the amount

earned for weekday working for each employee at standard rate [1]

earned for weekday working for each employee at overtime rate [1]

earned on a Saturday by each employee [1]

earned on a Sunday by each employee [1]

It should also calculate

the total earned by each employee [1]

including someone on holiday [1]

and the total wage bill. [1]

The implementation should

accept a valid hourly rate and reject an invalid rate [1]

accept valid hours worked and reject invalid hours for every situation [1]

calculate the weekday wage correctly [1]

calculate the Saturday wage correctly [1]

calculate the Sunday wage correctly [1]

calculate correctly the wage of someone on holiday [1]

calculate the total for each employee correctly [1]

calculate the total wage bill correctly [1]

Give marks as shown to a maximum of 15. [Max 15]

<b>(b)</b> Test hourly rate with a value	
below a minimum such as £3.60	[1]
and above a maximum such as £60	[1]
Test hours work with values	
below zero	[1]
and above say 16	[1]
all values blank or zero for one employee (on holiday)	[1]
values which give time-and-a-half for weekday working	[1]
values which also give double time for weekday working	[1]
value which is for Saturday working	[1]
and one for Sunday working	[1]
Give marks as shown to a maximum of 7.	<b>[Max 7]</b>
<b>(c)</b> Explanation stating	
how to enter hourly rate	[1]
how to enter hours worked	[1]
how to check for errors in data entry	[1]
how to read results	[1]
Quality of instructions is clear and jargon free	[1]
Give marks as shown to a maximum of 5.	<b>[5]</b>
	<b>[Max 5]</b>
<b>(d)</b> The solution correctly calculates	
the N.I. for earnings below £66	[1]
£66	[1]
over £66	[1]
the tax for earnings	
below £*****	[1]
£***** to £*****	[1]
over £*****	[1]
exactly £*****	[1]
exactly £*****	[1]
exactly £*****	[1]
Give marks as shown to a maximum of 6.	<b>[Max 6]</b>
	<b>[Total: 33]</b>

## Task 2

(a) The database should contain at least the following information.

Field	Type	Length
Unique Identifier	String/numeric	3 to 6 characters
Surname	String	15 to 30 characters
Forename/Initials	String	15 to 30/1 to 5 characters
Address 1	String	15 to 30 characters
Address 2	String	15 to 30 characters
Address 3	String	15 to 30 characters
Post Code	String	8 to 12 characters
Type of Membership	Character	1 character
Joining date/Date sub due	Date	6 to 15 characters
Date of Birth	Date	1/2/4 bytes
League	Numeric/Integer	1/2/4 bytes

### 1 mark per line, maximum 8 marks

- Implementation showing  
at least 15 members [1]
- all three types of membership [1]
- at least two leagues [1]
- at least 6 fields [1]

[Max 12]

- (b) Proof that the production of the list of league members is automatic from the database (not simply word processed) [1]  
Good layout, members grouped by league [1]  
showing at least two leagues [1]  
with five members in each [1]

[Max 4]

- (c) Proof that the production of letters is automatic from the database (not simply word processed) [1]  
Good layout for the letter [1]  
showing address of member [1]  
how member has been chosen [1]  
correct subscription [1]  
good English [1]

[Max 6]

[Total: 22]



### Task 3

(a) For both files -

Variations on the record organisations given below are acceptable providing they achieve the same objectives.

Any reasonable field descriptions that are justified are acceptable.

Fixed length records expected, but variable length accepted provided that end of field record markers are applied accurately [1]

Any consistent and reasonable storage allocations for characters, integers and real numbers that are justified are acceptable. [1]

Magistrates file

Reference number - key field [1]

basic details - name, address, telephone number, etc. [1]

'duty' details - working style [1]

- nominated days for working [1]

- chairperson indicator [1]

session count [1]

chairperson of session count [1]

non availability dates [1]

**Give marks as shown to a maximum of 5.**

Timetable file

week reference/number [1]

court reference/number [1]

draft/confirmed timetable indicator [1]

for each half day session

public holiday indicator [1]

pre-booking indicator for 1/2 day case [1]

magistrate reference number for chairperson [1]

magistrate reference number [1]

a further magistrate reference number [1]

**Give marks as shown to a maximum of 5.**

**Total for (a) [10]**

- (b) Design should take account of
- landscape/portrait [1]
  - page length/page width [1]
  - all fields displayed must be accessible from Magistrates file or timetable file or otherwise be justified [1]
  - field lengths must match those in the record layouts or otherwise be justified [1]
  - week identifier on each page [1]
  - the ten day sessions each week labelled Monday to Friday and a.m. or p.m. [1]
  - for each session per court
  - list of 3 magistrates, where [1]
  - each magistrate is identified by name [1]
  - chairperson is indicated [1]

**Total for (b) [9]**

- (c) Identify the four weeks to be printed [1]
- For each week [1]
    - Using records from timetable file [1]
    - Set up print layouts [1]
    - Insert week identifier
  - For each court within week [1]
    - Insert court reference/number [1]
  - For each session within court within week [1]
    - Insert 'closed' statement for public holiday or any other reason [1]
    - Insert magistrates' names by cross reference [1]
    - Magistrates' file for details [1]
    - Identify chairperson [1]

Give marks as shown to a maximum of 10. **Total for (c) [10]**

**[Total: 29]**

## Task 4

- (a) Database set up with required fields acceptably defined using a database package [4]  
12 sets of data entered [1]  
Justified reasons for selecting the particular combinations of data, testing/demonstrating different parts of the implementation [5]  
Spreadsheet created with the required invoice headings using a spreadsheet package [4]  
with required formulae to calculate price and VAT [1]  
and with the required formulae to calculate total, packing and postage [1]  
and final total [1]
- Required invoice items exported from the database and imported to the spreadsheet [1]  
Correct invoice printed [1]

Give marks as shown to a maximum of 20.

**Total for (a) [20]**

- (b) Reasonably sized *template* for the extended invoice created using a word processing package or alternative equivalent arrangements appropriate to the word processing package used acceptable. [2]  
Spreadsheet imported and data input to the additional fields [1]  
Correct invoice printed [1]  
Any other viable solution based on the use of any combination of these three packages is acceptable [1]

**Total for (b) [6]**

- (c) Instructions to use a word processing package to include
- create template [1]
  - save template [1]
  - define the required fields [1 mark for each, max 4]
  - enter customer and invoice reference details [1]
  - import spreadsheet [1]
  - print invoice [1]

Give marks as shown to a maximum of 6.

Instruction to reflect solution in question 3, part b

- Clarity of instructions [1]
- Access to help system by icon selection [1]
- More than one entry point to instructions [1]
- User friendly screen presentation of instructions [1]

**Total for (c) [10]**

**[Total: 36]**



**Oxford Cambridge and RSA Examinations**

**Advanced Subsidiary GCE**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY**

**PRACTICAL APPLICATIONS OF ICT**

**2514**

**Specimen Paper**

Candidates answer on the separate answer paper provided.

Additional materials:

One 8-page answer booklet.

**TIME** 1 hour 30 minutes

**INSTRUCTIONS TO CANDIDATES**

Write your name, Centre number and candidate number in the spaces provided on the answer booklet.

Answer all questions.

**INFORMATION FOR CANDIDATES**

You will be assessed on your clarity of expression, the structure and presentation of your ideas and your grammar, punctuation and spelling in your answers to questions.

Answer **all** questions.

- 1** A word-processing package is used by both a technical author and an office secretary. The author uses it to produce scientific books, the secretary for letters to customers.
- (a) Describe **two** features of the word-processing package that would be important to the author but not necessarily to the secretary, explaining what they would be used for. **[4]**
  - (b) Describe **two** features of the word-processing package that would be important to the secretary but not necessarily to the author, explaining what they would be used for. **[4]**
- 2** An advertising agency produces advertisements for national publications. The advertisements consist of photographic or hand-drawn images and text. The images are enhanced by using software.
- (a) Explain why a desktop publishing (DTP) package is a suitable application package for producing the advertisements. **[2]**
  - (b) Describe **three** ways in which a photographic image may be enhanced for inclusion in advertisements. **[3]**
  - (c) Hand-drawn images are scanned into the computer system. Describe **two** ways of increasing the quality of the image captured by the scanner software. **[2]**
- 3** Describe **two** advantages and **two** disadvantages of using page-creation wizards in a desktop publishing (DTP) package. **[4]**
- 4** A spreadsheet package can be used to manipulate data held in tables. For example, data can be sorted.
- Give **three** data manipulation functions, other than 'sort', commonly available on a spreadsheet. **[3]**

- 5 A travel company uses a spreadsheet to calculate costs of its holidays. An extract of a worksheet is shown.

	A	B	C	D	E
1		Cost in £	Cost in £	Exchange rate (£)	1.62
2	Air fare London - NY	-----	367.00		
3	Hotel (per night)	100.00	=B3*@E1		
4	City Tour	80.00			
5	Meals	100.00			
6	Cabaret	50.00			
7	Transfers	60.00			
8	TOTAL	-----			

- (a) The formula in cell C3 calculates the cost of the hotel in sterling. What value is shown in cell C3 as a result of this calculation? [1]
- The symbol before the entry E1 in the formula indicates that this is an absolute reference. The calculation made is =B3\*E1. The B3 is a relative reference.
- (b) Explain the difference between an absolute and a relative cell reference in this context. [2]
- (c) State the two cells' contents which will be multiplied together for the value displayed in cell C4. [2]
- (d) Explain how the formula in cell C3 is replicated into cells C4 through C7. [2]
- (e) The total of the cells through C3 to C7 has to be displayed in cell C8. Write both a function and a formula that could perform this calculation. [2]
- (f) Explain how a chart is created to show the individual costs shown in cells C3 to C7. [3]
- (g) State the type of chart that should be used to best show the costs in oe. Justify your choice. [2]
- 6 A shoe shop keeps details of its stock and its suppliers on a relational database. The shop has the option of buying an off-the-shelf package or having one specially written.
- Explain **two** benefits of each option when purchasing software. [4]

7 An extract from a table for the entity SHOE in the shops relational database is shown below.

Ref	Description	Size	Quantity	Price	Supplier
012839	Oxford, Brown, Men	5	4	29.99	OSL
012839	Oxford, Brown, Men	6	3		
012839	Oxford, Brown, Men	7	2		
112937	Cambridge, Black, Women	4	3	35.99	CSL
112938	Cambridge, Blue/Cream, Women	5	1		

The table shows entries for five shoes. The style in each case is either Oxford or Cambridge, each of which is supplied in different colours and sizes. The price of a shoe depends only on the style. The reference consists of 6 digits for the sex, style and colour.

The shoes are supplied by two suppliers - OSL and CSL. OSL supply all Oxford styles and CSL supply all Cambridge styles.

- (a) The data in the table is not normalised. Explain the features of the data that show that the table is not normalised. [3]
- (b) Translate the table into its first normal form. [3]
- (c) Translate the table into third normal form. [4]
- (d) Draw a table, in third normal form, for the entity SUPPLIER. [2]
- (e) Draw an entity relationship diagram (ERD) to show the relationship between SUPPLIER and SHOE. [3]
- 8 A map-making company uses *vector-graphics* for producing its maps. These show the road, railway and river networks in an area.
- (a) Explain what is meant by *vector-graphics* and explain why they are used for this application. [3]
- (b) Give a use for *bitmap-graphics* in this application, stating why it is suitable. [2]



9. A trainer uses a software package to design and produce a presentation for use in a training workshop. The presentation consists of slides that are projected on to a screen during the workshop. The software provides the use of

*Master slide, Transition, Buttons, Hotspot, Slideshow*

Evaluate how these features may be used to present an effective presentation. You should refer to both good and bad design techniques in producing a presentation [10]

- 10 A tourist office contracts a company to design and produce a website advertising the local attractions. An HTML editing package is used for this.

Evaluate **six** features that are found in an HTML editor and explain how they would be used in the creation of the website for the tourist office. [12]

- 11 (a) Explain why JPEG images are better than bitmaps (BMP's) for inclusion on a web page. [2]

- (b) Explain how an animated GIF on a web page is created. [2]





**Oxford Cambridge and RSA Examinations**

**Advanced Subsidiary GCE**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY**

**PRACTICAL APPLICATIONS OF ICT**

**2514**

**Mark Scheme**

## General

- 1 The paper is to be assessed and marked to AS Standard.
- 2 Marking should be positive; marks should not be subtracted for errors or inaccuracies. Where appropriate, the benefit of any doubt should be given to the candidate.
- 3 Candidates should be regarded as achieving the highest level of response which accurately describes their answer.
- 4 The mark scheme includes an indication of the possible content that candidates might use in their answers. It should though be stressed that where content is provided in this way, it is indicative of the likely answers to be forthcoming and is therefore neither exhaustive nor complete.
- 5 In assessing quantitative answers the 'own figure rule' should apply i.e. a candidate must be given credit for logical calculations which, though numerically wrong, are consistent with an earlier error.
- 6 The Quality of Written Communication is to be explicitly assessed on answers to questions identified in the paper rubric. In this context, it refers to:
  - (a) the selection and use of form and style of writing appropriate to purpose and complex subject matter;
  - (b) the organisation of relevant information clearly and coherently, using specialist vocabulary when appropriate;
  - (c) legibility of text, accuracy of spelling, punctuation and grammar so that meaning is clear.

Marks will be allocated according to the following criteria:

- 3–4 Very good form and style of language, appropriately used with complex subject matter. Writing is legible with spelling, punctuation and grammar accurate and meaning clear. Ideas well organised and expression clear and coherent using specialist language.
- 1–2 In general, the layout expresses a comprehensible picture although it is not difficult to see ways in which the language could be improved. The spelling, punctuation and grammar are accurate, and the language is not difficult to understand.
- 0 Is to be awarded if the candidate fails to achieve 1.

The Quality of Written Communication mark must be added once the primary marking has been completed. The Quality of Written Communication mark should be clearly shown on the candidate's script, together with the primary mark and overall script total.

### Question 1

(a) Any TWO of:

Thesaurus, special symbols, technical dictionary, page numbering, autoformat for subheadings.

1 for name, 1 for explanation

**(Max 4)**

(b) Any TWO of:

Mail-merge, standard letter templates, images (author would not put images in - publisher would).

1 for name, 1 for explanation.

**(Max 4)**

### Question 2

(a) Any ONE of:

Flexibility of layout, text manipulation features.

1 for name, 1 for explanation.

**(Max 2)**

(b) Any THREE of:

Sharpen/soften, despeckle, contrast, brightness, hue/saturation, size (needs to have some explanation i.e. not just one word answers).

**(Max 3)**

(c) Any TWO of:

Scale, brightness, contrast, gamma (needs to have some explanation, i.e. not just one word answers).

**(Max 2)**

### Question 3

Any TWO advantages from:

Speed of creation, standard formats, user-friendly.

Any TWO disadvantages from:

All documents look similar (lack of originality), may not match needs exactly.

**(Max 4)**

#### Question 4

Any THREE of:

sort, filter, search, index, look-up.

(Max 3)

#### Question 5

(a) 162 (Max 1)

(b) Absolute = reference does not change during replication.  
Relative = reference changes during replication. (Max 2)

(c) B4 and E1 (Max 2)

(d) Highlight range C3 down to C7 and either select menu option OR use key combination  
(e.g. CTRL - D) (Max 2)

(e) = SUM (C3:C7)  
= C3 + C4 + C5 + C6 + C7 (Max 2)

(f) Highlight C3 to C7, choose charting tool, select format required (e.g. type of chart, legends etc.)  
(Max 3)

(g) Bar chart + explanation (Max 2)

#### Question 6

Off-the-shelf: Any TWO of:

Readily available, tried and tested, peer support.

Bespoke: Any TWO of:

Meets purpose precisely, no redundant features, expert support. (Max 4)

#### Question 7

(a) The description is not atomic  
There are two groups of repeated data  
Namely price and supplier (Max 3)

(b) A table showing Description split into 3 columns  
Style, Colour and Sex  
No empty cells in Price and Supplier. (Max 3)

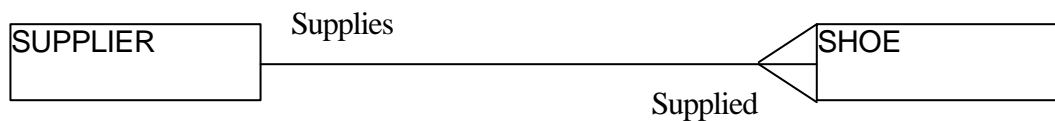
- (c) (Ref, Style, Colour, Sex) (1 mark)  
 (Style, Price, Supplier) (1 mark)  
 (Ref, Size, Quantity) (2 marks) (Max 4)

(d) SUPPLIER (SupplierID, Name, Address, Phone, Contact)

Give 1 mark for at least 3 sensible fields and 1 for a suitable key. (Max 2)

- (e) Give 1 mark for an indication of the relationship (Supplies/Supplied by)  
 1 mark for the 1 end of the relationship

1 mark for the many end of the relationship (Max 3)



### Question 8

(a) Each point/object described geometrically/by equations - ability to scale objects/calculate distances

(b) For icons/symbols - always same size/superimposed on geometric object.

(Max 2)

### Question 9

Master slide - contains format that is common to all slides (1) giving consistency of display to help with house style/readability (1)

Transition - effect used to move from one slide to the next (1) need to be consistent (1) in its use/having too many different transitions can distract from content (1)

Button - area on screen which can be clicked to call an effect (1) only have a few on any slide for ease of use (1)

Hotspot - area on screen, when mouse moves over effect is called (1) use sparingly (large areas) as (small areas) can be difficult to use for presenter (1)

Slideshow - set of slides that run through automatically (1) useful for standalone presentations but not if there is a person presenting (1)

(Max 10)

## Question 10

Any SIX features described within tourist office context. One mark is given for the description of the feature and one mark for the evaluation of how it contributes to good web design in the tourist office context.

Graphics

Tags

Sound

Video

Buttons

Pulldown menus

Fonts

Style sheets

Background image

**(Max 12)**

(1 mark for each correct feature and 1 mark for its correct explanation)

## Question 11

(a) Small size due to compression

**(Max 2)**

(b) Combination of individual images with time delay in between

**(Max 2)**



## Unit 2514 - Assessment Grid

Obj	1	2	3	4	5	6	7	8	9	10	11	
5.3.1			4			4						8
5.3.2	8	7						5	10	12	4	46
5.3.3				3	14							17
5.3.4							15					15
	8	7	4	3	14	4	15	5	10	12	4	86
AO1	8	7	4	3	4	4	7	5	10	12	4	68
AO2					10		8					18
QoWC												4
												90



## Oxford Cambridge and RSA Examinations

### Advanced GCE

# INFORMATION AND COMMUNICATIONS TECHNOLOGY COMMUNICATIONS TECHNOLOGY AND ITS APPLICATIONS

**2515**

### Specimen Paper

Candidates answer on the separate answer paper provided.

Additional materials:

One 8-page answer booklet.

**TIME** 1 hour 30 minutes

### INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces provided on the answer booklet.  
Answer all questions.

### INFORMATION FOR CANDIDATES

You will be assessed on your clarity of expression, the structure and presentation of your ideas and your grammar, punctuation and spelling in your answers to questions.

Answer **all** questions.

- 1** (a) Distinguish between the following two applications:  
- speech-input to a wordprocessor to generate a text file  
- speech-activated menus on a telephone enquiry system. [2]
- (b) (i) A computer system uses speech input to generate a text file. Give **THREE** problems associated with capturing speech input accurately. [3]
- (ii) Describe how the speech-input software can be designed to improve the accuracy. [2]
- 2** A railway company has two methods of broadcasting messages at its stations.
- recorded messages are broadcast by an operator keying the number of the message into a computer:
  - messages may be broadcast live by the operator by speaking into a microphone.
- Discuss the relative advantages and disadvantages of each method. [6]
- 3** (a) Draw a diagram to show a star topology of a network, clearly labelling a file server and workstations. [3]
- (b) In the context of computer networks, explain the purpose of each of these components:
- (i) Modem [2]
- (ii) Switches [2]
- (iii) Hub [2]
- (iv) Bridge [2]
- (v) Router [2]

4 A telephone company makes the following claim:

*“Improve the speed of your Internet connection by installing one of our fast ISDN lines”*

- (a) (i) Explain how the installation of an ISDN line should increase the speed of connection to the Internet. [2]
- (ii) Explain why a user may not notice any significant increase in speed when browsing some websites. [2]
- (iii) Explain the financial costs and benefits of installing an ISDN line as compared to using a dial-up connection. [3]
- (b) Explain what is meant by “handshaking” in the context of electronic communication and state why it is necessary. [3]
- (c) Give **three** advantages in using a packet switching, rather than circuit switching, system to send messages between offices that are in different parts of the country. [3]
- (d) (i) Give an example of a protocol that may be configured when setting up a modem and typical values for the protocol. [2]
- (ii) State why it is necessary to set the values of protocols when communicating data between two devices. [2]
- (e) Explain a method of detecting and correcting the errors that result from corruption during the electronic transmission of data. [2]

5 (a) (i) State what is meant by *layering* in a communications system. [2]

(ii) State why *layering* is necessary. [1]

(b) A company has offices in six cities across the UK. Each office has a local area network.

Explain **three** potential benefits that would accrue from connecting these six LANs together. [3]

6 (a) The company installs an intranet throughout its business.

(i) Define the term ‘intranet’. [1]

(ii) Managers are able to access the intranet from home. Discuss the effects this has on the working patterns of a manager in this company. [3]

- (b) The company provides video-conferencing facilities through its intranet. Discuss the effects this has on the effectiveness of meetings within the company. [3]
- (c) The company provides a connection to the Internet from its intranet. The security of e-mails on the intranet is maintained by using firewalls and encryption.
- (i) Define the term 'firewall'. [2]
- (ii) Define the term 'encryption'. [2]
- (d) Give **three** facilities that are available on an e-mail service that are not available on traditional postal services and explain the benefits each brings. [6]
- (e) The company maintains a database of information on orders and customers. The database has to be accessible from each one of its six offices across the UK. It has to choose between:
- Duplicating the entire database onto a local computer in each site at the end of every day.
- Holding the database centrally but providing access to it from every site.
- Discuss the relative advantages of each method. [4]
- 7 An electricity company has an automated customer billing service. This allows a customer to telephone a freephone number and, by responding to recorded messages by pressing numbers on a telephone keypad, enter the up-to-date electricity meter reading.
- What are the advantages and disadvantages of allowing the customers to directly input their meter readings rather than asking them to send them in on a prepaid postcard? [4]
- 8 Television companies are beginning to offer new services as a result of digital TV. Two of these are *interactive participative broadcasts* and *interactive teletext*.
- Discuss these developments with reference to the benefits they bring the viewer, the impact they have on viewing habits and the type of information that may be available on teletext to support a programme as it is being viewed. [10]



**Oxford Cambridge and RSA Examinations**

**Advanced GCE**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY  
COMMUNICATIONS TECHNOLOGY AND ITS  
APPLICATIONS**

**2515**

**Mark Scheme**

## General

- 1 The paper is to be assessed and marked to Advanced GCE Standard.
- 2 Marking should be positive; marks should not be subtracted for errors or inaccuracies. Where appropriate, the benefit of any doubt should be given to the candidate.
- 3 Candidates should be regarded as achieving the highest level of response which accurately describes their answer.
- 4 The mark scheme includes an indication of the possible content that candidates might use in their answers. It should though be stressed that where content is provided in this way, it is indicative of the likely answers to be forthcoming and is therefore neither exhaustive nor complete.
- 5 In assessing quantitative answers the 'own figure rule' should apply i.e. a candidate must be given credit for logical calculations which, though numerically wrong, are consistent with an earlier error.
- 6 The Quality of Written Communication is to be explicitly assessed on answers to questions identified in the paper rubric. In this context, it refers to:
  - (a) the selection and use of form and style of writing appropriate to purpose and complex subject matter;
  - (b) the organisation of relevant information clearly and coherently, using specialist vocabulary when appropriate;
  - (c) legibility of text, accuracy of spelling, punctuation and grammar so that meaning is clear.

Marks will be allocated according to the following criteria:

- 3–4 Very good form and style of language, appropriately used with complex subject matter. Writing is legible with spelling, punctuation and grammar accurate and meaning clear. Ideas well organised and expression clear and coherent using specialist language.
- 1–2 In general, the layout expresses a comprehensible picture although it is not difficult to see ways in which the language could be improved. The spelling, punctuation and grammar are accurate, and the language is not difficult to understand.
- 0 Is to be awarded if the candidate fails to achieve 1.

The Quality of Written Communication mark must be added once the primary marking has been completed. The Quality of Written Communication mark should be clearly shown on the candidate's script, together with the primary mark and overall script total.



- 1 (a) Wordprocessor takes input and translates into sequence of characters, menus take input and carry out action dependent on key sounds. [2]
- (b) (i) Any THREE of  
accent, homonyms, variation in any one user's speed, quality of microphone [3]
- (ii) Train software by speaking standard phrases, 'learn' from experience. [2]
- 2 Any THREE advantages (brief explanation 1, full explanation 2)
- recorded messages - can re-record until clear and accurate  
 recorded messages - can use at several stations  
 recorded messages - staff saving  
 recorded messages – consistency  
 live broadcasts – flexibility  
 live broadcast - less likely to broadcast wrong message (easy to press wrong key)
- max 3 x 2 =** [6]
- 3 (a) Diagram showing a file server and workstations with FS at hub [3]
- (b) (i) Modem – device to connect digital computer to analogue telephone system [2]
- (ii) Switches - automatic device for routing signals to appropriate hub. [2]
- (iii) Hub – point at which single cable from server is split so that signals can be sent to many workstations. [2]
- (iv) Bridge – device to connect two LANs. [2]
- (v) Router – device to connect LAN to WAN/ISDN. [2]
- 4 (a) (i) By providing digital service - less errors - improved throughput. [2]
- (ii) Speed of download from web site determined by traffic to/from that web site and quality of connection from web site host to server network. [2]
- (iii) ISDN – installation and rental high, speed should mean call charges less. [3]
- (b) Sequence of control characters exchanged between transmitter and receiver to ensure both are ready for data transfer. [3]
- (c) Packet switching - cheap, always available, not so susceptible to network failure. [3]
- (d) (i) Any ONE of  
Baud rate - eg 33.6K  
Flow control - XON/XOFF  
Parity – even (or odd)  
Data bits - 7 [2]
- (e) Parity plus description [2]

- 5 (a) (i) Layering - separating the physical and logical components of a communication system that interface with the user (platform dependent) from those that are internal to the system. [2]
- (ii) Layering - is necessary so that the system is usable by users whatever platform they use. [1]
- (b) Sharing data  
Work on any site  
Up to date data on every site [3]
- 6 (a) (i) Intranet = LAN with web-like features. [1]
- (ii) Home working - flexibility of hours, no travelling, social disadvantages, difficulty of separating home/work. [3]
- (b) Meetings held at short notice, can involve more staff, no time lost through travel. [3]
- (c) (i) Firewall - server that filters incoming messages to protect internal network from viruses, hacking. [2]
- (ii) Encryption - encoding transmitted data messages and decoding at receiver. [2]
- (d) Any THREE (1 for name, 1 for explanation)  
Multiple recipients (ease, same cost/time)  
Auto address books  
Forward  
Attachments  
  
3 x 2 = [6]
- (e) Duplication – speed of access + explanation  
Central - up-to-date + explanation  
  
max [4]
- 7 Advantages - no need for staff to input data, speed of update  
Disadvantages - accuracy, customer ‘training’.  
  
max [4]
- 8 Freedom of choice, access to personalised information, loss of national viewership for common programmes, different views on sports events, video-on-demand .  
  
5 point (max 2 for each on depth of explanation) max [10]

## UNIT 2515 - ASSESSMENT GRID

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>TOTAL</b>
<b>5.4.1</b>						6		2	<b>8</b>
<b>5.4.2</b>			13	19	3				<b>35</b>
<b>5.4.3</b>	7				3	5	4		<b>19</b>
<b>5.4.4</b>		6				10		8	<b>24</b>
	<b>7</b>	<b>6</b>	<b>13</b>	<b>19</b>	<b>6</b>	<b>21</b>	<b>4</b>	<b>10</b>	<b>86</b>
<b>AO1</b>	4		13	15	4	5			<b>41</b>
<b>AO2</b>	3	6		4	2	16	4	10	<b>45</b>
<b>QoWC</b>								4	<b>4</b>
								<b>TOTAL</b>	<b>90</b>



## Oxford Cambridge and RSA Examinations

### Advanced GCE

### INFORMATION AND COMMUNICATIONS TECHNOLOGY

### ICT SYSTEMS AND SYSTEMS MANAGEMENT

**2517**

### Specimen Paper

Candidates answer on the separate answer paper provided.

Additional materials:

One 8-page answer booklet.

**TIME** 1 hour 30 minutes

### INSTRUCTIONS TO CANDIDATES

Write your name, Centre number and candidate number in the spaces provided on the answer booklet.  
Answer all questions.

### INFORMATION FOR CANDIDATES

You will be assessed on your clarity of expression, the structure and presentation of your ideas and your grammar, punctuation and spelling in your answers to questions.

Answer **all** questions.

WhyZ Computers sell computer systems from a single location within the United Kingdom. The company purchases hardware and software components from a number of suppliers and assembles these into a range of standard systems.

- 1** The management of WhyZ is organised hierarchically. A LAN supporting an integrated office software package has recently been installed in the company's premises.
- (a) Describe the features of a hierarchical organisation. **[5]**
  - (b) Explain **six** different ways in which the LAN can be used to provide the differing information requirements throughout a typical hierarchy. **[6]**
  - (c) Describe **two** reasons why the company prefers to use an integrated package rather than separate packages. **[4]**
  - (d) WhyZ use spreadsheets to monitor productivity in the assembly line. Using examples, describe **two** different features of spreadsheets which make them suitable for this purpose. **[4]**
- 2** The company uses a computerised stock control system in its warehouse. When a computer system is being assembled, the list of the required hardware and software components is produced manually. The production manager has requested a computerised information system for the assembly line. A systems analyst has been appointed to produce the systems specification.
- (a) The current stock control system runs on a real-time operating system while the previous system used batch processing. Briefly distinguish between these two types of operating system and comment on their suitability for a stock control system. **[6]**
  - (b) The stock control system was purchased 'off the shelf'. State **three** advantages and **three** disadvantages of such a stock control system compared to a purpose-built stock control system. **[6]**
- 3**
- (a) Describe the main steps in producing the specification for a new computer system. **[8]**
  - (b) Describe in outline **two** important factors which might influence the design of the user interface. **[6]**
  - (c) Identify, and describe, **two** different methods of installing a new computer system. **[8]**
  - (d) WhyZ Computers sign a maintenance contract with the developer of the new information system which stipulates regular reviews of the new system.
    - (i) Outline **two** reasons why maintenance of this new system might be required. **[4]**
    - (ii) Describe how the reviews of the new system should be carried out. **[3]**

- 4 The company has been very successful and is about to embark on an ambitious expansion to additional sites both within the United Kingdom and in other countries. The current location will become the company's headquarters.
- (a) Outline the main information requirements of the expanded company. [6]
  - (b) Outline the telecommunications requirements of the expanded company. [6]
  - (c) Senior management of WhyZ require a report describing a suitable corporate ITC training strategy for the expanded company which focuses on training needs and how training could be implemented.
    - (i) Explain how such a report would be produced
    - (ii) Describe the areas that would need to be covered in the report. [8]
  - (d) It is envisaged that the extended company will utilise distributed databases where possible.
    - (i) Outline two advantages of a distributed database over a centralised database [2]
    - (ii) Describe **two** methods of ensuring data security in a distributed database and comment on the effectiveness of each. [4]







**Oxford Cambridge and RSA Examinations**

**Advanced GCE**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY**

**ICT SYSTEMS AND SYSTEMS MANAGEMENT**

**2517**

**Mark Scheme**

## General

- 1 The paper is to be assessed and marked to Advance GCE Standard.
- 2 Marking should be positive; marks should not be subtracted for errors or inaccuracies. Where appropriate, the benefit of any doubt should be given to the candidate.
- 3 Candidates should be regarded as achieving the highest level of response which accurately describes their answer.
- 4 The mark scheme includes an indication of the possible content that candidates might use in their answers. It should though be stressed that where content is provided in this way, it is indicative of the likely answers to be forthcoming and is therefore neither exhaustive nor complete.
- 5 In assessing quantitative answers the 'own figure rule' should apply i.e. a candidate must be given credit for logical calculations which, though numerically wrong, are consistent with an earlier error.
- 6 The Quality of Written Communication is to be explicitly assessed on answers to questions identified in the paper rubric. In this context, it refers to:
  - (a) the selection and use of form and style of writing appropriate to purpose and complex subject matter;
  - (b) the organisation of relevant information clearly and coherently, using specialist vocabulary when appropriate;
  - (c) legibility of text, accuracy of spelling, punctuation and grammar so that meaning is clear.

Marks will be allocated according to the following criteria:

- 3–4 Very good form and style of language, appropriately used with complex subject matter. Writing is legible with spelling, punctuation and grammar accurate and meaning clear. Ideas well organised and expression clear and coherent using specialist language.
- 1–2 In general, the layout expresses a comprehensible picture although it is not difficult to see ways in which the language could be improved. The spelling, punctuation and grammar are accurate, and the language is not difficult to understand.
- 0 Is to be awarded if the candidate fails to achieve 1.

The Quality of Written Communication mark must be added once the primary marking has been completed. The Quality of Written Communication mark should be clearly shown on the candidate's script, together with the primary mark and overall script total.

## Question 1

(a) From section 5.6.1

It is arranged in a pyramid ...  
... with the more powerful/influential people at the top  
... The three major layers ...  
... are represented by management workers at the top ...  
... information workers below them ...  
... and production workers at the lowest level

[1] for each of five points

[5]

- (b) 5.3.2 Benefits of different topologies, 5.4.1 to 5.4.3 Features of networks and comms systems,  
A LAN with a server enables information to be shared  
in a managed and strictly controlled way – e.g. single version of up-to-date data available to  
everyone  
Information can be stored centrally ...  
5.1.4 & 5 access levels and passwords  
... and accessed from a number of terminals/workstations  
Passwords and access rights can prevent unauthorised access  
Each user can be permitted appropriate access to exactly the information the user requires or is  
responsible for creating/maintaining  
Sensible maintenance and changes to passwords  
5.6.1 Information and the organisation  
At the lowest level, only information essential for production-related tasks is made available  
Information workers can create and process general information  
Management workers can have immediate access to relevant reports/summaries

[1] for each of six relevant points

[6]

(c) Sections 5.3.1 and 5.3.3

Data can be shared easily between components of the package  
Thus, data from a database can be copied to a document

All the components will use a standard interface ...  
... making training easier  
... making adapting to new components easier

A single software developer will be involved ...  
... a single licence agreement is required  
... a single help-line/contact point is available

[1] for each of four relevant points, two for each reason

[4]

- (d) Sections 5.3.1, 5.3.3 and 5.6.1 – use of information in decision making.  
 Mathematical calculations can be performed automatically ...  
 ... such as total time taken  
 Statistical calculations/analyses can be performed automatically ...  
 ... such as average time/SD  
 Graphs can be drawn automatically ...  
 ... such as time taken against team/day/hour

[2] for each of two features

[1] for the feature + [1] for example

[4]

## Question 2

- (a) Sections 5.1.3 and 5.6.2 for definitions of operating systems  
 and 5.6.1 role of data and information in the organisation

Real-time

Additions to, and removal from, stock is processed immediately  
 so that transactions take immediate effect

Stock levels are always up-to-date

[1] for each of two points.

[2]

Batch

Stock transactions are placed in a queue ...

... and processed when convenient ...

Stock levels are only accurate immediately after a batch run

[1] for each of two points.

[2]

Either approach has implications for both company and customer

e.g. the need to be able to respond quickly to a customer query about a product

Up to 2 marks for a good discussion of discussion

[2]

[6]

- (b) Sections 5.3.1 and 5.6.3  
 Advantages

Cheaper as costs shared amongst many users

Available immediately

Tested and tried

References/other users' views available

[1] for each of three advantages

Disadvantages

May not do exactly what is required

May require significant changes from current practices  
May be difficult/impossible to alter  
May not integrate with existing systems

[1] for each of three disadvantages

[6]

### Question 3

(a) Sections 5.4.1 and 5.5.1

Carry out a feasibility study ...  
... to establish scope and objectives  
... to determine if it is worth proceeding  
... technically/economically/operationally

Produce feasibility report

Carry out a requirements analysis  
... by interviewing relevant staff  
... by questionnaire  
... by examining current procedures/documentation  
... by observation of current operations

Model the current system/proposed system

Specify exactly what the proposed system will do ...  
... alternative solutions  
... costs and benefits

[1] for each of eight relevant points.

[8]

(b) Any two relevant factors accepted

5.1.3 different styles of user interface 5.3.1 tailoring the user interface 5.4.3 types of user interface  
The experience of the user  
An inexperienced user will require a GUI/on-line help facilities  
An experienced user may prefer a command-driven interface

[1] for each of three points

5.4.3 types of user interface

The environment in which the system will be used  
A GUI would be suitable for general information processing/office activities  
A special keypad/touch sensitive screen would be suitable in a production line  
natural language – particularly if the operator is using their hands for another job – like testing  
computer system components

[1] for each of three points

5.6.2 effective design of user interface

physical capabilities of the user  
choice of size, colour and layout etc to suit the user  
e.g. limited vision requires careful choice of background and foreground colours and size of

widgets.

[1] for each of three points

[6]

(c) section 5.6.3

Any two appropriate methods acceptable

Parallel conversion section 5.6.3

The new system is introduced alongside the existing system

The existing system can be used while errors in the new system are being corrected

Duplication of effort is required during the conversation phrase

[1] for each of four points

Direct changeover

The existing system ceases to be used and immediately the new system is introduced

A minimum of duplication is required

An error in the new system can be very disruptive

[1] for each of four points

[8]

(d) (i) section 5.4.1 and 5.5.5 and 5.6.3

There may be a fault in the new system.

It may not be producing accurate lists, for example.

The needs of the production manager may change.

He/she may require more detailed lists or lists in a different form, for example.

[2] for each of two reasons

[1] for reason + [1] for detail relating to scenario

[4]

(ii) section 5.6.3

A user representative should be nominated to record users' comments/suggestions and to log all faults

The developer should nominate a representative to review the system formally with the user representative.

Reviews should normally be held on a regular basis but extraordinary reviews must be possible when required

Each review should result in an action plan agreed by both sides

[3]

[1] for each of three relevant points

## Question 4

(a) section 5.6.1

Information similar to that currently processed will be required at each location ...

... to support day to day operations

Staff at each location may require access to their counterparts at other locations ...  
... to ensure common procedures/quality standards

Management at HQ will require access to information from each location ...  
... to facilitate decision-making/strategic planning

Management at HQ will need to be able to direct operations at each location

[1] for each of six points

[6]

**(b)** section 5.1.5

Each new location will require internal communications ...  
... possibly via a LAN  
... similar to the one already in use

section 5.4.2

Global communication will now be essential .  
..connecting the company intranets  
... for passing operation data/information between locations  
... and HQ will require it to monitor and control what is being done at each location

section 5.1.5 and 5.4.2

A WAN might be installed ...  
... or extensive use made of the Internet

[1] for each of six points

[6]

**(c)** section 5.3.1

Use of the integrated package to ensure a house style  
benefits of the use of templates and/or macros  
section 5.3.2  
benefits of WP or DTP tools e.g. auto-page/ section numbering etc

[1] for each of two points

(ii) section 5.4.1

Corporate training strategy means that :-  
All staff require training in the effective use of ICT relevant to the roles they perform  
Extensive training in the effective use of ICT will be required immediately for all key staff  
This will be followed by training for all staff

Senior managers also need training in the effective use of ICT ...  
... to enable better decision making.

Middle managers are responsible for ensuring that ICT is used effectively within the company...  
and so require training in identifying and providing the information required by all users

End users require training appropriate to their use of ICT systems  
This could range from data entry skills to, for example, using ICT to prepare reports

[1] for each of four points

Alternative implementation methods

- Computer-based training
  - Interactive video training
  - On-line tutorials
  - Internal and external courses
  - Courses leading to recognised qualifications with incentives
- [1] for each of two points

[8]

(d) section 5.3.4, 5.4.4 and 5.4.5

- (i) There is no need for a single heavily resourced central location.  
It can provide a speedier response to enquiries which are processed locally.

[1] for each of two advantages

[2]

(ii) Examples

- Data encryption  
Data is encoded using a special transformation key before being transmitted  
It is very effective because only someone knowing the key can decode it

- Use of passwords  
Access to sensitive data is restricted to users keying in an appropriate password  
Users tend to be careless selecting passwords/keeping them secret

[1] for identifying method + [1] for comment on effectiveness. (2X2)

[4]



## Unit 2517 - Assessment Grid

	Q1 a	Q1 b	Q1 c	Q1 d	Q2 a	Q2 b	Q3 a	Q3 b	Q3 c	Q3 d	Q4 a	Q4 b	Q4 c	Q4 d	
6.1	5	6													
6.2					6		8	6							
6.3			4	4		6			8	7					
6.4											6	6	8	6	
AO1	5	6	4	4	6	6		2	2				4	3	
AO2							8	4	6	7	6	6	4	3	
														86	
														4	QoWC
														90	
Synopti c with Unit	1	1	3	3	1	3	2&5	4	5	5	1	4	4	4	