OCR
RECOGNISING ACHIEVEMENT

GCE

Information & Communication Technology

Combined Mark Schemes
And Report on the Units

January 2006

Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annersley
NOTTINGHAM
NG15 0DL

Telephone: 0870 870 6622
Facsimile: 0870 870 6621
E-mail: publications@ocr.org.uk

CONTENTS

Advanced GCE Information and Communication Technology (7838)

Advanced Subsidiary GCE Information and Communication Technology (3838)

MARK SCHEME ON THE UNITS

REPORTS ON THE UNITS

Mark Scheme 2512
January 2006

THE AWARDING OF MARKS FOR WRITTEN COMMUNICATION

Marks are awarded for the use of accurate spelling, punctuation and grammar according to the following criteria.

Marks

Below Threshold Performance		**0**
Threshold performance	Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately.	**1**
Intermediate performance	Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms with facility.	**2–3**
High performance	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.	**4**

The marks will be awarded on an impression basis and will reflect the candidate's performance in the paper as a whole.

RULE OF THUMB

0   Award only in rare circumstances e.g. no written work or minimal, which is **not** in sentences and is spelt incorrectly, without use of appropriate technical terms.

1   Questions answered using statements or single words only.

2   Candidates use some sentences and some technical words. Some errors in grammar and spelling.

3   Candidates use sentences correctly, with few errors in grammar. Some technical words used appropriately and with limited spelling errors.

4   Almost perfect use of grammar, technical vocabulary and spelling.

The 'norm' will probably be 3 marks. However, do not be afraid to award 4 marks if appropriate.

1	(a)	(i)	Describe what is meant by information.	

			Any 2 from:
			     Context (1)
			     Structure (1)
			     Meaning (1)
			     Processed data (1)
				[2]

		(ii)	Using an example related to recycling show how data can be changed into information.	

			Example must be relevant to recycling
			 3 from:
			     Example of Data (1) e.g. 010506
			     Example Structure (1) e.g. 01/05/06
			     Example Context (1) e.g. UK date
			     How it adds Meaning (1) e.g. next date of collection
				[3]

	(b)		Describe **two** effects of the quality of the data source that can affect the quality of the information produced.	

			1 for identify, 2nd for description/example:
			 Any two from:
			     Age (1) too old to be of use (1)
			     Relevance (1) may not be about recycling (1)
			     Accuracy (1) figures may be incorrect (1)
			     Completeness (1) may be too vague (1)
			     Level of Detail (1)/Quantity (1) too much or too little (1)
			     Presentation (1) e.g. figures instead of graphs (1)
				[4]

	(c)		Describe **three** different costs associated with producing the leaflet.	

			1 for identify, 2nd for description/example:
			 Must be different.
			 Any three from:
			     Hardware (1) printer (1)
			     Software (1) publishing software (1)
			     Manpower (1) training costs (1)/employ designer (1)
			     Consumables (1) ink/paper (1)
				[6]

	(d)		Identify **two** advantages and **two** disadvantages of using symbols to convey information.	

			Two advantages from:
			     Language independent (1)
			     Easily recognizable (1)
			     Picture paints a thousand words (1)
			     Do not have to be literate (1)
			 Two disadvantages from:
			     Symbols can only give limited information (1)
			     May mean different things to different people (1)
			     May not look for illustration (1)
			     Size/quality of printed symbol may be difficult to read (1)
			     Don't know what it means (1)
				[4]

2	(a)			Using examples, describe the difference between hardware and software.	

				Not proprietary software names.
				 Two for examples, two for description.
				       Hardware:
				            Can be touched (1)
				            Example: Printer (1)
				       Software
				            Programs/Code (1)
				            Example: Word Processing (1)
					[4]

	(b)			Explain how the speed of the machine cycle affects the overall performance of the computer.	
				One instruction run per cycle (1) Cycle measured in MHz (1) Faster cycle – more instructions (1)	**[3]**
	(c)			Identify and give the purpose of **two** items of supplementary user documentation that would be received with a new computer system.	

				One for identify, 2nd for purpose
				 NOT user documentation
				 Examples:
				       Warranty (1) if anything goes wrong can get money back (1)
				       Health and Safety (1) how to sit and use it without hurting yourself (1)
				       Start Up (1) how to begin to use the computer (1)
				       Glossary (1) know what the technical terms mean (1)
					[4]

3				Identify **three** other types of operating system.	

				Any three from:
				 NOT single user
				       Multi-user (1)
				       Multi-tasking (1)
				       Interactive (1)
				       Real time (1)
				       Batch Processing (1)
				       Distributed Processing (1)
				       Network (1)
					[3]

4			For each of the applications below, identify the most suitable method to use to access the data and give a reason for your choice.	
		(i)	Accessing a bank customer file from an ATM	

			1 for method, 1 for reason:
			Examples given for reason:
			    Random (1)
			    Lots of records/need to access any one (1)
				[2]

		(ii)	Accessing a transaction log from an ATM	

			1 for method, 1 for reason:
			Examples given for reason:
			    Serial (1)
			    In order of transaction (1)
				[2]

		(iii)	Accessing the customer file to provide monthly statements for all customers	

			1 for method, 1 for reason:
			Examples given for reason:
			    Sequential (1)
			    To go through one at a time (1)
				[2]

5			For each field name given below, give an appropriate data type.	

			1 from:
			    Telephone Number: Text/String/Alphanumeric(1)
			    Address Line 1: Text/String/Alphanumeric(1)
			    Passed Theory Test?: Boolean/Choice /YesNo(1)
				[3]

6			For each of the following types of user interface identify an appropriate use and give an input device that could be used.	
		(i)	Natural Language	

			1 for use, 1 for input device
			Examples of use given below.
			    e.g. dictating letters (1)
			    Microphone (1) / Keyboard (1)
				[2]

		(ii)	Forms	

			1 for use, 1 for input device
			Examples of use given below.
			    e.g. Entering information (1)
			    Mouse (1) / Keyboard (1)
				[2]

		(iii)	Command Line	

			1 for use, 1 for input device
			Examples of use given below.
			    e.g. System maintenance (1)
			    Keyboard (1)
				[2]

7	(a)		Why is it necessary for all the computers to use a protocol?	

			One from:
			    To communicate (1)
			    To follow rules (1)
				[1]

	(b)		Identify **three** characteristics of a WAN.	

			Three from:
			    Geographically remote (1)
			    External telecommunications (1) / external hardware (1)
			    Connected by third party cables (1)
				[3]

	(c)		Describe **three** advantages to the **management** of the health club of connecting the computers together	

			1 for identify, 2nd for description.
			Must be for management, not users
			Examples:
			    Monitoring (1) see what work staff are doing (1)
			    Centralised backup (1) single place to maintain data (1)
			    Network Management (1) can roll out software and profiles (1)
			    Higher quality equipment (1) e.g. as only one printer can be higher quality (1)
			    Communications (1) email staff (1)
				[6]

	(d)		Identify **three** rules that the user should follow when choosing a password.	

			Three from, examples:
			    Should be a minimum length (1)
			    Should include a capital letter (1)
			    Should include a number (1)
			    Should be a non dictionary word (1)
			    Should be not personal (1)
				[3]

	(e)		Describe **three** facilities of email that would be useful to the management of the health club when communicating with their staff.	

			1 for identify, 2nd for describe.
			Examples:
			    CC (1) send to multiple people (1)
			    Copy of email (1) know what you have sent (1)
			    Address book (1) list of people at different branches (1)
			    Attachments (1) send minutes/notices/spreadsheet (1)
			    Receipt (1) know who has received it (1)
				[6]

8				Describe **three** services that would be provided by the BCS for the network manager.	

				1 for identify, 2nd for describe.
				Examples:
				    Newsletter (1) round up of news (1)
				    Conferences (1) meet like minded individuals (1) latest topics (1)
				    Books (1) specialized (1)
				    Local contacts (1) help and assistance (1)
				    Legal advice (1) specialized to ICT (1)
					[6]

9				Identify **three** health issues related to working with ICT. For each health issue give a different solution.	

				Must be **health** NOT safety
				Solution MUST match issue
				Solution MUST be different each time
				Examples:
				    RSI (1) ergonomic keyboard (1)
				    DVT (1) walk around every 30 mins (1)
				    CTS (1) Wrist pad (1)
				    ULD (1) Chair of adjustable height (1)
				    Eye strain (1) non reflective desk (1)
					[6]

10			Discuss the impact that ICT has had on supermarkets.	**[7]**

Seven marks for discussion, 1 mark for conclusion:

0-2	**Identification Only** Identification of 1 point only (1) Identification of 2 points or more (2)
3-4	**Advantages Only OR Disadvantages Only** 1 advantage (3) 2 or more advantages (4) 1 disadvantage (3) 2 or more disadvantages (4)
5-7	**Advantages AND Disadvantages** Advantages of 1 and disadvantages of 1 (5) Advantages of 2 and disadvantages of 2 (6) Advantages of 3 and disadvantages of 2 (7) Advantages of 2 and disadvantages of 3 (7)

Identification:
A relevant point that relates to the question and involves ICT. It is not expanded upon or implications given.

Advantage/Disadvantage:
The point is applied to the situation and the advantages or disadvantages are expanded upon.

Codes to use are:
- **I – identification,**
- **P – advantage (positive)**
- **N – disadvantage (negative,)**
- **C – conclusion (1)**

Points to cover may include:
EPOS tills linked to stock system, Security systems – CCTV, scanners at exits, Need power to function, training of staff

Advantages (expanded) to include:
Up to date stock record for management, know what to order so they do not run out and customers complain. ICT systems to reduce theft of goods, reduces overheads of products allowing money and staff to be spend elsewhere.

Disadvantages (expanded) to include:
If power cut then cannot use the tills, security systems do not work meaning theft of goods and loss of profit, cannot serve the customers, may shop elsewhere – loss of customer loyalty and profit.

[7]

Code	Marks
I	1
II	2
P	3
N	3
PP	4
NN	4
PN	5
PPNN	6
PPPNN	7
PPNNN	7

C for additional 1 anywhere to Max 7

QWC [4]

Mark Scheme 2514
January 2006

THE AWARDING OF MARKS FOR WRITTEN COMMUNICATION

Marks are awarded for the use of accurate spelling, punctuation and grammar according to the following criteria.

Marks

Below Threshold Performance		**0**
Threshold performance	Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately.	**1**
Intermediate performance	Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms with facility.	**2–3**
High performance	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.	**4**

The marks will be awarded on an impression basis and will reflect the candidate's performance in the paper as a whole.

RULE OF THUMB

0   Award only in rare circumstances e.g. no written work or minimal, which is **not** in sentences and is spelt incorrectly, without use of appropriate technical terms.

1   Questions answered using statements or single words only.

2   Candidates use some sentences and some technical words. Some errors in grammar and spelling.

3   Candidates use sentences correctly, with few errors in grammar. Some technical words used appropriately and with limited spelling errors.

4   Almost perfect use of grammar, technical vocabulary and spelling.

The 'norm' will probably be 3 marks. However, do not be afraid to award 4 marks if appropriate.

Question			Mark
1	**a**	The company is developing a new logo. This logo will be on all company documents. The logo can be either a bitmap or vector graphic. **Describe bitmap graphics.** **Any 4 from:** - Made up of pixels (1) - Each pixel is an addressable unit (1) so subtle changes can be made to image (1) - May take a long time to load (1) - Can be displayed very quickly (1) as the calculations are minimal (1) - Pixelate on enlargement (1) - File size is larger than vector (1) - High number of pixels leading to good resolution (1) - Each pixel can be a different colour (1) - Example of use (1)	**4**
	b	**The logo will be saved as a different file type to the documents on which it will be used. Explain why different file types are needed.** **2x2 or 4x1 from:** - The user knows the file type (1) so can open the correct software (1) - An application program recognises the file type (1) and can interpret the data (1) - Reduces non-usable file types (1) Is impossible for one file type to be used for all types of data (1) - Can search by file type (1) - Import / export of file to ensure compatibility with logo creation (1)	**4**
	c	**Explain why it is important to have the logo on all company documents** **1 for identify, 1 for further explanation** - Corporate Image (1) all documentation is identifiable with the company (1) - Customers become familiar with layout (1) less chance of errors (1)	**2**

d **Templates and wizards can be used to produce the documents.**

i **Explain two advantages of using templates**
1 for **identify**, 1 for further explanation
- Can be set up once (1) will not be changed (1)
- Determines the basic structure for a document (1) users only have to complete specific information/will not forget anything (1)
- Skill level of user not relevant (1) Inexperienced users can use document templates (1)
- All documents of the same type will be identical (1) enables corporate identity to be maintained (1)

4

ii **Explain two disadvantages of using wizards.**
1 for identify, 1 for further explanation
- May offer options (1) not appropriate to task (1)
- Documents produced may be identical to other companies (1) no corporate identity (1)
- Layout / format of wizard documents (1) may not be appropriate to requirements (1)
- Only see the result at the end (1) if wrong will have to start again (1)

4

2 **a** **The company is considering opening an office in Birmingham. Describe three characteristics of modelling software that could be used when determining the financial implications of opening this office.**

1 for identify, 1 for further explanation
- Can predict expenditure (1) can use 'what if' questions (1)
- Use of graphs (1) graphs can change automatically as data is changed (1) can show trends (1)
- Automatic recalculation (1) as data input changes so does result (1)
- No special software needed (1) spreadsheets are standard business software (1)
- Calculations are easier to perform (1) than manually (1)

6

b   **The sales data for the company is kept in a spreadsheet. Explain why a spreadsheet is used rather than a database.**

1 for identify, 1 for further explanation
- Can provide graphical representation (1) of data in charts / graphs (1)
- Can perform calculations/what if (1) accurately, quickly and easily (1)
- Cells/workbooks/worksheets (1) can be linked (1)
- Data can be updated (1) across the linked components of spreadsheets (1)
- Code optimisation (1) spreadsheets developed to handle numbers (1)
- Wizards in spreadsheets are geared towards calculations (1) in databases are towards searching & sorting (1)

- ALLOW COMPARISONS (if correct) of spreadsheets and databases.

                                                                   6

c   **State the most suitable type of chart that can be used.**

    i   **The company wants to compare the sales figures of each region of the UK over a one-year period.**

- Line / bar (1)

    ii   **The company has collected the sales figures for the 10 best selling stationery items**

- Bar/ pie chart (1)

2

3   **a**   **Explain the advantages of using a website rather than a CD-ROM to show the goods supplied by Useful Things.**

1 for identify, 1 for further explanation
For example
- Website can be updated quickly (1) CDs have to be repressed/reburned (1)
- Can hold larger amount of data (1) than a CD (1)
- Can put links on the website (1) to other sites/part of site (1)
- Can reach a larger audience (1) increase in customer base through browsing WWW (1)

6

  b   **Useful Things intends introducing an on-line ordering facility on the website. Explain the design considerations which are needed for the user interface.**

1 for identify, 1 for further explanation
- Should be consistent layout (1) follow existing house style/corporate image (1) User recognition (1)
- Provide clearly marked exits (1) use simple & natural dialogue (1)
- Meaningful messages (1) attempt to provide feedback and assistance (1)
- Provide short-cuts (1) for commonly used functions (1)
- Provide error messages (1) which are useful/clear (1)
- Colours (1) used – should not 'clash (1)'
- Graphics/animation (1) kept to minimum/useful/fit for purpose (1)
- Easy to learn/ use (1)/minimise users' memory load (1)
- Logical order (1) flow of information (1)
- Security (1) payment must use high security protocols (1)
- Use of shopping basket (1) orders can be amended prior to submission (1)

8

4 **a** **The presentation can be produced on overhead transparencies (OHTs) or as a slideshow using presentation software.**

i **Describe two advantages of using OHTs for this task**
1 for identify, 1 for further explanation
- Only need OHP (1) no computer / projector (1)
- OHTs more reliable (1) less to go wrong (1)
- Do not need to be confident with software (1) simple to change slides (1)
- Can write on OHTs (1) in response to audience participation (1)
- Can skip slide**s (1) without audience noticing (1)**

4

ii **Describe two advantages of using presentation software for this task**
1 for identify, 1 for further explanation
- Can use sound (1) to emphasise a point (1)
- Can use video / animation (1) to emphasise a point (1)
- Can be used as a continuous presentation (1) use automatic slide transition (1)
- Position of presenter (1) can be anywhere in room (1)
- Can use other software (1) returning to presentation with minimum disruption (1)
- No chance of dropping slides (1) getting them out of order (1)
- Handouts can be produced (1) which follow the order of the slide show (1)

4

   b   **Presentation software will be used at the event. Both manual and automatic transition methods will be used in the presentation.**

      i   **Describe manual and automatic transition methods**

            Manual max 2   1x2 or 2x1
- The presenter has to interact with the presentation (1) to move onto next slide / point (1)
- Presentation can be advanced by various methods (1) mouse click / button click / pointer (1)
- Can allow audience participation (1) presentation does not progress until presenter advances (1)

            Automatic max 2   1x2 or 2x1
- Timings are allocated to each slide (1) enables presentation to be looped (1)
- Very restrictive (1) does not allow for audience participation/ interruptions (1)
- Can be set to continuously run (1) no interaction (1)   **4**

      ii   **Identify a situation when each method would be suitable.**

            2x1 marks

            Manual
            Delivered by a speaker (1)

            Automatic   **2**
            Unmanned display or presentation (1)

c   **Explain, giving an example, how the following features of presentation software could be used to enhance the presentation.**

Animated Text
2 marks from:
- Different effects can be used (1) to keep audience interested (1)
- Important points (1) can be introduced 1 at a time (1)
- Enables points to be fully discussed (1) before moving onto next point (1)

Example:
1 mark For example:
- Important **information can be given 1 by 1 (1)**

Sound:
2 marks from:
- Different sounds (1) used for points (1)
- Company 'tune' can be used (1) corporate image (1)
- Can be used **to signify start (1) and end of presentation (1)**

Example:
1 mark For example:
- Different sounds for events during presentations i.e. clapping for prizes

6

d   **Describe how the use of a master slide template can aid the production of the presentation.**

Any 4:
- Enable company house style (1) to be used on all presentations (1)
- Presentation has consistent layout (1) different slide layouts do not distract from content of presentation (1)   **4**
- Different people can work on the same presentation (1) knowing that the slides they produce will all have the same layout (1)

     e   **Graphics are to be used in the presentation. Explain two advantages and two disadvantages of using clip-art as the source for these graphics.**

            1 for identify, 1 for further explanation
            Advantages Max 4 for example:
- Clip art is cheaper than employing a designer (2) – cheaper must be clarified
- Do not need to buy special equipment (1) e.g. scanner / digital camera (1)
- Saves time (1) images already created (1)
- Large range of images available (1) from a variety of sources(1)

            Disadvantage Max 4 for example
- Quality of clipart may be poor (1) will not project professional image (1)
- Clip art is limited (1) to what is available (1)
- Clip art is not original (1) images may be used by other company (1)
- Clip art may not be relevant (1) may not portray concept required (1)
- Clip art may be copy-righted (1) may not be able to use it commercially (1)

                                                    8

5   **The sales teams use an on-line route finder when planning their journeys in the UK. Describe the characteristics of an on-line route finder.**

            For example:
- Can get directions in graphical /maps
- Directions can be given in text
- Directions / maps can be printed
- Maps / directions can be saved
- Zoom in feature can be applied
- Places of interest/fuel stations/hotels etc can be shown
- Plot multiple destinations per journey / via
- Can select road types e.g. motorways / roads etc
- Can select fastest / shortest routes
- User gives start place/postcode
- User provides destination name / postcode
- Different routes provided
- Routes can be downloaded to GPS

                                                   8

            TOTAL   **86**

            Quality of written communication   **4**

Mark Scheme 2515
January 2006

THE AWARDING OF MARKS FOR WRITTEN COMMUNICATION

Marks are awarded for the use of accurate spelling, punctuation and grammar according to the following criteria.

Marks

Below Threshold Performance		**0**
Threshold performance	Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately.	**1**
Intermediate performance	Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms with facility.	**2–3**
High performance	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.	**4**

The marks will be awarded on an impression basis and will reflect the candidate's performance in the paper as a whole.

RULE OF THUMB

0   Award only in rare circumstances e.g. no written work or minimal, which is **not** in sentences and is spelt incorrectly, without use of appropriate technical terms.

1   Questions answered using statements or single words only.

2   Candidates use some sentences and some technical words. Some errors in grammar and spelling.

3   Candidates use sentences correctly, with few errors in grammar. Some technical words used appropriately and with limited spelling errors.

4   Almost perfect use of grammar, technical vocabulary and spelling.

The 'norm' will probably be 3 marks. However, do not be afraid to award 4 marks if appropriate.

1   *(a)*   *A chain of book shops has recently introduced a facility for customers to buy books using electronic commerce (e-commerce).*

       (i)   *Explain <u>two</u> advantages and <u>one</u> disadvantage of e-commerce for the customer.*

Advantages
No need to carry cash (1) so safer (1)
ability to shop 24/7 (1) for people who work shop hours (1)
do not have to visit store (1) which helps disabled/ homebound/rural living etc (1)
Can buy from home (1) which saves travel costs/travel time (1)
Goods tend to be slightly cheaper (than on the high street) (1)…
Because of reduced overheads (1)
Guided choice (1) with suitable explanation (1)
Ability to track orders (1)
Two advantages explained for 4 marks.

Disadvantages
Time delay between ordering and receiving books (1)…
which can be frustrating if book needed urgently (1)
need to have a means to pay electronically (1) e.g. credit/debit card (1)
no personal contact (1) to give help where necessary (1)
not possible to browse (1) e.g. font size, illustrations, paper quality…(1)
risk of fraud (1)
by giving credit card details (1)
One disadvantage explained for 2 marks.   **[6]**

       (ii)   *Explain <u>two</u> advantages and <u>one</u> disadvantage of e-commerce for the book shop management.*

Advantages
Attract more custom (1) through website (1)
Less cash to handle (1) therefore less risk (1)
Company can monitor customer choices (1) thus giving up to date information for management (1)
Can advertise more than in stock (1) as books can be reordered when needed /therefore lower costs for the bookshop (1)
Two advantages explained for 4 marks.

Disadvantages
Website required (1) which must be secure (1) which will cost money (1)/ take expertise (1)
extra warehousing may be required (1) with costs implications (1)
staff may need retraining (1) with cost implications (1)
Communication breakdown (1) would lead to loss of sales (1)/ loss of consumer confidence (1)
One disadvantage explained for 2 marks.   **[6]**

(b) *Data sent over the Internet may be encrypted.*
Explain the purpose of encryption.

To ensure that data of a sensitive nature (1)/mention of credit card details (1)
cannot be understood by people of a criminal disposition (1) /can only be accessed
by those for whom data is intended (1)
to maintain privacy (1)
encryption provides security of data (1) especially during transmission **[2]**

2 *A small company based in the UK specialises in the manufacture and sale of hand-made wooden jigsaw puzzles for young children. The office staff use PCs linked through a local area network (LAN).*

(a) *Explain the benefits and drawbacks of a star topology for this network.*

Benefits e.g.
Failure of one link does not disable the network (1)
Each machine has its own cable so fast data transfer rates (1)
easy to add another cable/terminal (1)
proven technology (1)
components widely available (1)
cable faults can be easily identified (1) /trouble shooting is easier (1)
There may be fewer data collisions (1) e.g. if cable used is twisted pair (1)
Max 4

Drawbacks e.g.
Expensive to set up (1) due to cabling costs (1)
Failure of central component/hub/server causes network to stop (1)
Possibility of data collisions (1) because data flows in both direction (1)
Max 4 **[6]**
**NOTE : candidates can only get the collisions marks in one of the
sections**

(b) *Explain the purpose of each of the following network components:*

(i) **server**
Provides central disk storage/ central communication (1) for network
users (1)
Provides security (1) by keeping users files separate (1)
Enables file sharing (1)
allows (scarce) resources to be made available to all users (1)
e.g. printers (1).
supervises transmission of data (1)

(Credit should be given to candidates who discuss printer servers and / or CD-ROM servers)

(ii) **hub**
To be the central node of a network (1)
To enable distribution/reception of data (1) between all nodes (1)
To allow a number of computers to connect to an access point (1)
Idea of dividing the bandwidth (1) – (could be a diagram)
Acts like a switch (1)
But not as intelligent as a switch (1)

(iii) router
receives data (1) and forwards it (1) to the correct location / next location (1)
To select the most effective/efficient/best route (1)
2/2/2 or1/4/1 etc **[6]**

(c) *The company employs sales representatives to market their jigsaws throughout the UK. Each representative is equipped with a cellular (mobile) phone.*

Explain how a cellular phone network operates.

The country is broken down into cells (1)
Each cell has a base station (1)
Code sent from phone to activate call (1)
mobile phone accesses a base station (1) by microwave (1).
with the best signal (1)
usually the nearest (1)
This base station connects to the base station of the receiver (1)
..possibly via a mobile switching centre (1)
If call is to a land line phone (1)
Call is passed on to a Public Switched Telephone Network (PSTN)/ land line (1)
If user is 'on the move' when making the call (1)
system detects this (1) and transfer call to next cell (1)
without user awareness (1)
Any 4 points **[4]**

3 *International communications often use satellites.*

(a) *Describe how satellites are used in making and receiving international telephone calls.*

Transmitter on the ground (1)
send signals to a satellite (1)
using microwave/light/optical/electromagnet means (1)
signal retransmitted (1)
at a different frequency (1)
back to earth (1)
where it is either 'bounced back' (1)
to another satellite (1)
or reaches its recipient (1)
Any 4 points **[4]**

An international manufacturing company has branches and employees throughout the world.

(b) *Explain the advantages and disadvantages to the company in using satellites as a means of voice communication between branches and employees.*

Advantages
Cost is distance independent (1) whether message is sent e.g. 10 km or 6000 km (1)
Bandwidth (1) is such that many (thousands) (1) of simultaneous telephone calls can take place. (1)
Satellite communications can reach remote places (1) so employees can be contacted (1) wherever they are (1)

Disadvantages
Large distance between earth and satellite (1) leads to a time delay (1).. …of a fraction of a second (1)….
which makes telephone conversations difficult/ poor quality (1)
reliant on phases of the sun/ solar activity to work correctly (1)
cost of equipment – e.g. satellite phones are expensive (1)
Cost per call is higher than non-satellite methods (1)
There must be at least one advantage and at least one disadvantage. **[6]**

(c) *Identify two other uses of satellite communication which may be used by the company.*

Examples e.g.
data transfer (1)
video conferencing (1)
multi-media presentations to staff world wide (1)
television broadcasting (1)
sending pictures of new products (1)
satellite navigation (gps) (1)
E-mail
Accept other valid examples
Any 2

[2]

4   *A national dating agency holds information about its clients on a database. Clients can access the database via the agency's website.*

    (a)   *Circuit switching or packet switching could be used to transfer data. Describe the differences between circuit switching and packet switching.*

        In circuit switching the link is set up before transmission begins (1)
Has all the bandwidth (1) for the duration (of the transmission) (1)
Circuit switching keeps the same link (1) throughout the transmission (1)
For short messages this is inefficient (1) as setting up the route is relatively slow (1)
Packet switching breaks the message up into small chunks (1) each of which might be sent by a different route (1). Packets need to be reordered at destination (1) whereas circuit switched messages arrive in correct order (1)
Speed of packet switching depends upon the packet which takes the slowest route (1)
Circuit switching is easier to tap into (1) packet switching is more secure (1)
When errors occur in packet switching only the packets with errors need to be resent (1) whereas with circuit switching the whole message may need to be resent (1)

                                                                       [6]

    (b)   *Explain why packet switching would be used when a client downloads data from the database.*

        Data is being sent over the internet (1) and packet switching is more secure (1) because hackers will only get part of any message (1)
Packet switching is more efficient (1) if there is a large number of clients accessing db (1)
Any 2 points, or 1 point explained.   **[2]**

    (c)   *Identify concerns that a client might have about their details being held on the dating agency's database, and describe ways of overcoming these concerns.*

        Concerns
Data confidentiality (1)
Is my data safe from non-members? (1)
How do I know that I can trust other clients (1) who have access to my data (1)?
Is the data correct ? (1)
How can I be sure that my data will not be passed on to other agencies? (1)
How to overcome
Access rights (1)
User ID's (1)
could be client registration number (1)
passwords. (1)
Firewall (software) (1) which restricts access to the website (1).
Audit log (trail) (1) records when records/files/folders (1) accessed (1) and by whom (1)
Agency meets security standards such as Autheni Sign (little padlock) (1)
Some method of vetting potential clients (1)
Have a box on initial form to give permission for data to be passed on to relevant agencies (1)
Must be at least 1 concern.   **[8]**

5   *(a)*   <u>*Intranets*</u> *and* <u>*Information Services*</u> *are examples of common network environments.*

        (i)   *Describe the characteristics and purpose of an intranet.*

               Characteristics:
               A private computer network (1) that uses internet standards (1) and internet protocols (1)
               A network which is specific to a particular company/organisation (1)/ a company specific (1) network
               holds data specific to that company (1)
               does not allow external access (1) without security (1)

               Purpose:
               To share data within the organisation (1)
               To enable members of the organisation to communicate/ collaborate (1) efficiently (1) thereby increasing productivity (1)
               Any 4 points but must be at least one each of characteristic and purpose.   **[4]**

        (ii)   *Describe the characteristics and purpose of an information service.*

               Characteristics:
               Holds information covering specific subject areas (1)
               e.g. stocks and shares details, exchange rates (1)
               (Allow any sensible example here)
               From a variety of sources (1)
               e.g. newspapers/government statistics/specific websites (1)
               (allow any sensible example here)
               through a single interface (1)
               usually the internet (1)

               Purpose:
               To deliver information requested (1)
               direct to the information seeker (1)
               Any 4 points but must be at least one each of characteristic and purpose.   **[4]**

(b)   *(i)*   ***Explain the importance of bandwidth with respect to the transmission of data.***

Bandwidth is important because:

it determines the volume of data (1) that can be carried in a fixed period of time (1).
It determines the practicability of using remote communications for modern user applications (1)
e.g. sending of text would not be critical (1)
so would not need a high bandwidth (1)
whereas sending of a live movie/video clip would be critical (1)
and would need a high bandwidth (1)
(Accept any sensible points here.)

(ii)   ***Describe how different types of transmission media determine the bandwidth available.***

Types of Transmission media:
Bounded (1) and free (1)
Bounded e.g. generally confined to some sort of physical cable (1)
Unbounded e.g. signals sent between aerials (antennas) or radiation sources and sensors (1)
Copper cable (1)
Optical (1) + description (1)
Coax (1) + description (1)
Cat5 (1) + description (1) etc
Any 6 marking points, but must have at least one point from each emboldened section. **[6]**

6 **(a)** *Explain how ICT may be used in making a telephone directory enquiry.*

Enquiry could be by phone (1)
or by using the internet (1)
if using phone, speak to operator (1)
who will ask for name of person required, or company (1)
and address or post code (1)
search(1) a database (1) (for the information)
return either number, or number not available, or number not found (1)
number found can be sent direct to the enquirer's mobile phone (1)
for internet description similar points to above.   **[6]**

(b) *Chip and pin technology is replacing magnetic stripe technology on credit and debit cards.*
Discuss the implications of chip and pin cards for users and for retailers.
e.g.
Old cards used only magnetic stripe technology (1)
new cards have a (secure) chip in addition to the magnetic strip (1)
As an attempt to reduce the volume of card fraud (1)
To increase the security of card transactions (1).
as PIN must be known (1)
no longer able to get away with copying signature (1)
reduces numbers of muggings, burglaries, car break-ins (1) (in the search for cards)
as cards no longer so easy to use for criminal activities.

Users
Makes their card more secure (1)
Problems if they forget their PIN (1)
wrong PIN entered three times, and card is locked (1)
possibility of being watched when entering PIN (1)
No more secure than before when buying on-line or over the phone (1)

Retailers
Cost of the new equipment (1)
Cost of staff training (1)
Time taken to train staff (1)

Customers or Retailers
Expected reduction in fraudulent use should reduce the costs payable to the credit card companies (1)
Allow 1 mark for an attempt at a conclusion   **[8]**

Mark Scheme 2517
January 2006

THE AWARDING OF MARKS FOR WRITTEN COMMUNICATION

Marks are awarded for the use of accurate spelling, punctuation and grammar according to the following criteria.

		Marks
Below Threshold Performance		0
Threshold performance	Candidates spell, punctuate and use the rules of grammar with reasonable accuracy; they use a limited range of specialist terms appropriately.	1
Intermediate performance	Candidates spell, punctuate and use the rules of grammar with considerable accuracy; they use a good range of specialist terms with facility.	2–3
High performance	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.	4

The marks will be awarded on an impression basis and will reflect the candidate's performance in the paper as a whole.

RULE OF THUMB

0　　Award only in rare circumstances e.g. no written work or minimal, which is **not** in sentences and is spelt incorrectly, without use of appropriate technical terms.

1　　Questions answered using statements or single words only.

2　　Candidates use some sentences and some technical words. Some errors in grammar and spelling.

3　　Candidates use sentences correctly, with few errors in grammar. Some technical words used appropriately and with limited spelling errors.

4　　Almost perfect use of grammar, technical vocabulary and spelling.

The 'norm' will probably be 3 marks. However, do not be afraid to award 4 marks if appropriate.

In question 1(a) only mark first two examples given.

1 (a) (i)   ***Give two accommodation resources relevant to this company.***
               e.g.
               The stores themselves. (1)
               Head office. (1)
               Warehouse. (1)
               Car parks. (1)   **Total [2]**

        (ii)   ***Give human resources relevant to this company.***
               Not public or customers
               e.g.
               The managers. (1)
               The employees. (1)
               Salesmen. (1)
               Tradesmen. (1)   **Total [2]**

        (iii)   ***Give technological resources relevant to this company.***
               e.g.
               The checkouts. (1)
               Internet. (1)
               Fax/telephone. (1)
               Automatic doors. (1)
               The computers/ databases/ electronic catalogues. (1)   **Total [2]**

  (b) (i)   Define the terms 'data' and 'information'.

               Data is meaningless characters/code. (1)
               Information is data which has been interpreted. (1) **Total [2]**

        (ii)   Using an example from this ordering process show how data differs from information.

               The answer must be in context
               Example of data 1234. (1)
               Example of information1234 becomes the price £12.34. (1)   **Total [2]**

(c)   (i)   *For each of the following give an example of information that could be exchanged and state its purpose.*

Allow an example (1) and a purpose (1) written either way round.
       <u>Store and customer</u> e.g.
       The order for an item (1) so the store knows what to send the customer. (1)
       Inform for the customer that a special event is taking place (1) so the customers will come to the sales. (1)
       Closing dates over a holiday period (1) to keep the customer informed (1)
       To pass on news about special offers (1) to attract customers to the stores. (1)
       To provide the customer with a catalogue (1) so the customer can read descriptions and prices. (1)
       Letters of complaint to the store (1) to point out poor quality goods (1)

   (ii)   <u>Store and Head Office</u> e.g.
       Information concerning the current stock position (1) allowing head office to monitor sales. (1)
       To provide management information such as the current sales figures (1) so management can make the decision to drop some lines. (1)
       To inform Head Office of staff changes when someone leaves or gets promoted (1) so that salaries get paid. (1)

  (iii)   <u>Head Office and the public</u> e.g.
       To organise a nationwide TV advertising campaign (1) to give information on special offers/promotions (1)
       Information from pressure groups (1) to try to influence the sale of certain items. (1)

Total [6]

2 (a) *Describe three characteristics that would be necessary in this system.*
(Not just the general characteristics of any system.)
One mark for characteristic and one mark for description. E.g.
There should be an easy-to-use (1) interactive interface/could provide information with the minimum of training. (1)
The processing should be fast/real-time (1) using advanced technology. (1)
Rapid response from the system is required (1) so the customer is not kept waiting (1)
Advanced technology could be used (1) such as a touch screen/voice input (1).
The system should be intuitive to use (1) so use a WIMP interface. (1)
Making the system robust (1) and less liable to damage by customers (1).
The system could be networked (1) to allow access to a common database. (1)

Total [6]

(b) *Explain an advantage to the customer and an advantage to the company of using modern technology for such a system.*

Max 2 for shopper advantage, 2 for company advantage. Only 1 advantage allowed for each.
Advantage to the customer e.g.
The customers are more likely to be more content (1) if they find their shopping experience going smoothly. (1)
The customer gets an efficient service (1) and so spends less time in the store. (1)

Advantage to the company e.g.
If the customers are happy (1) they are more likely to return to buy more goods thus increasing company sales. (1)
Customer loyalty is more likely (1) if the customers are getting a fast and efficient service. (1)
The company can obtain useful data concerning the customer purchases and shopping habits (1) with the up-to-date technology. (1)
Less staff are needed (1) giving the company greater profit. (1)

Total [4]

(c)   ***The company uses both batch and real-time processing systems.***

      Discuss the differences between these two types of processing giving examples of how the company might use each system.

      For a full discussion differences between the systems should be discussed. 1 mark is available for any kind of conclusion although all 7 marks are available without a conclusion. Use (P) for a point (E) for an expansion of that point and (C) for the conclusion.

      Examples

P	1 mark
(P+P) or PE	2 marks
(P+PE) or PEE	3 marks
(PE +PE) or (P+PEE)	4 marks
(P+PE+PE) or (PE+PEE)	5 marks
(PE+PE+PE) or (PEE+PEE)	6 marks
(P+PE+PE+PE) or (P+PEE+PEE)	7 marks
C	1 mark for a conclusion

Examples of discussion points expected.
For batch processing the transaction data will be saved and then processed over a period of time **(P)** whereas with real-time processing the processing takes place at once. **(E)** The company can use batch processing for calculating the wages of the staff at the end of the month. **(E)**
Real time processing effects the database instantly **(P)** whereas the effects of batch processing are delayed. **(E)** This makes real time processing ideal for automated stock control. **(E)**
Batch processing is often carried out when the systems are less busy such as at night **(P)** whereas a real-time system is needed when the customers are in the store and the system is very busy. **(E)** This means that a mail shot to customers is most likely to be a batch processed task. **(E)**
In conclusion it seems that both systems will find a place in the day-to-day running of the company. **(C)**

                                                       Total [7]

3 (a) *Head Office wants to upgrade the existing system. A project team is formed to carry out the task. One role will be that of project manager. Identify three other roles of members of this project team and in each case state a responsibility of that team member.*

e.g.
Systems analyst (1) will be responsible for analysing the existing system. (1)
Systems designer (1) will build on the results of the systems analyst to design the new system. (1)
Programmer (1) will create the programs/code/software for the new system. (1)
Database administrator/ database manager/ information officer (1) is responsible for the structure and control of the data in the company database. (1)

Total [6]

3 (b) *The project team decide to create custom-written software for a new computer-based information system which will be used by the customers in the store.*

(i)   *Describe the steps involved in producing this software.*

Do not penalise incorrect order when marking
The company specify their needs. (1)
The system is designed. (1)
An alpha version is written (1) and tested. (1)
A user interface is created. (1)
Data structures are created. (1)
Bugs are fixed (1) and a beta version is written (1) and tested. (1)
The software is implemented. (1)
The software is maintained. (1)

Total [4]

(ii)   *Give the advantages and disadvantages of producing a custom-written solution rather than using an off-the-shelf solution.*

Max 3 advantages, 3 disadvantages
Advantages
e.g.
The company gets exactly what it wants. (1)
The software is likely to be compatible with existing systems/data. (1)
It can be sold to other similar companies once it is produced. (1)
The footprint is likely to have a smaller than an off-the-shelf solution. (1)
Disadvantages
e.g.
It can take a long time to produce. (1)
Can be more expensive to produce. (1)
It may take a long time to remove the bugs/may have bugs. (1)
It's a new system that will have training implications. (1)
Help may only be available from the original manufacturer/ no user groups (1)

Total [4]

(c)   (i)   ***Describe phased and pilot installations.***

Phased installation
When part of a new system replace part of the old system (1) while other tasks continue to use the old system (1). The installation is spread over a period of time. (1)
Pilot installation
is where the new system is only used in one/a few stores first (1) to be tested (1) before being fully implemented. (1)

                                                      Total [4]

    (ii)   ***Choose one of the methods and give your reasons for choosing it for this application.***

Up to 3 marks if reasoning is correct even if method chosen is wrong.
Pilot conversion   **[1] plus max 3**
Results of running the system this way can be compared with the old system. (1)
Bugs can be cleared from the system. (1)
Training of staff can be modified in the light of experience. (1)
Comments from customers can be taken note of before the system is implemented in all stores. (1)

                                                      Total [4]

(d)   ***Describe a translator, a linker and a loader.***

Up to 2 marks for each definition.
Translator
e.g.
A translator is a computer program (1) used to convert a program from one language to another. (1)
A translator is a computer program (1) used to convert high-level language to object code. (1)
Linker
A linker allows already compiled code/library routines (1) to be combined with the newly compiled program. (1)
Loader
A loader is the program that copies the object code (1) into the main memory for execution. (1)

                                                      Total [6]

(e) *Give three different modes of navigation of the user interface and for each give a reason why it is suitable for the system.*

e.g.
Menus (1) limit the options open to the customers/ take up less space on the screen. (1)

Touch screen (1) would be useful in a wet or dirty environment. (1)

Buttons (1) would limit the training required to use the system. (1)

Icons/hyperlinked picture/hotspots (1) would lead the customer through the system. (1)

Search boxes (1) quickly take the customer to the area they want. (1)

Shortcut keys/keypad/keyboard (1) allow a customer familiar with the system to rapidly retrieve the information they require. (1)

Mouse/pointer (1) is a commonly used selection tool which is familiar to most users. (1)

Total [6]

4   *Discuss the importance of consultation, participation and communication when managing this change, considering the needs of the employees and the customers.*

In order for full marks the candidate must have mentioned all three of consultation, participation and communication. In addition there is a mark for a conclusion (C) but a good answer can score full marks without a conclusion. Each good point scores a P and all elaborations on that point gain an E.

Examples
(Good definition could be up to **P-E**)
e.g.
Consultation (max 4)
Head Office needs to carry the staff with them (**P**) in order that the changeover should be successful. (**E**)
The method of changeover should be decided (**P**) and when this might happen. (**E**)
A survey among the customers could be carried out (**P**) to find how the customer perceived possible change. (**E**)
Participation (max 4)
Training opportunities need to be made available (**P**) to both staff and customers. (**E**).
The transfer of the data (**P**) would need to be managed without disruption or error. (**E**)
The misgivings the staff may have about the new system need be listened to. (**P**)
Communication (max 4)
The staff need to be reassured that their jobs are secure (**P**), that their existing skills are not undervalued (**E**).
Head Office needs to explain the benefits of the new system to the staff. (**P**)
Advertising campaigns or leaflets in the store (**P**) would explain the advantages of the new system (**E**).
Conclusion 1 mark
(Example)In conclusion if the company is thoughtful and involves the staff at every stage the changeover to the new system should proceed smoothly. (**C**)

P	1 mark
(P+P) or PE	2 marks
(P+PE) or PEE	3 marks
(PE +PE) or (P+PEE)	4 marks
(P+PE+PE) or (PE+PEE)	5 marks
(PE+PE+PE) or (PEE+PEE)	6 marks
(P+PE+PE+PE) or (P+PEE+PEE)	7 marks
(PE+PE+PE+PE) etc.	8 marks
(P+PE+PE+PE+PE) etc.	9 marks
C	1 mark for a conclusion

Total [9]

5 (a) (i) ***Describe the characteristics of a nomadic network environment.***

A nomadic network may consist of a portable computer (1) and a mobile telephone (1).
Locally networks can be wireless based (1) with laptops fitted with transmitter receivers for contact with the central system (1).

Total [2]

(ii) ***Give two benefits for the buyers of using a nomadic network* environment.**
Nomadic networks enable the buyers to gather up-to-date information from the database. (1)
Can retrieve information at once from a remote site, such as a factory abroad. (1)
Nomadic networks allow buyers to check stock levels/ to access the management information system/ receive information regardless of time differences between countries. (1)
Details of goods purchased can be entered into the company system immediately. (1)

Total [2]

(b) ***Discuss the ways hardware and software advances such as voice input to order goods, affect the way stores may run in the future.***
Each good point scores a P and all elaborations on that point gain an E. In addition there is a mark for a conclusion (C) but a good answer can score full marks without a conclusion.
(Allow elaboration on the theme of voice input but no mark for the term "voice input")
e.g.
Robots could collect the goods from the warehouse. (**P**)
Intelligent software to note the customers buying habits (**P**) and suggest "you bought that, perhaps you would like this." (**E**)
Intelligent terminals using "chip and PIN" (**P**) for automatic ordering and paying. (**E**)
Customers can order on the Internet (**P**) and arrange to pick up their goods at the store. (**E**)
(Allow discussion of voice input.)

P	1 mark
(P+P) or PE	2 marks
(P+PE) or PEE	3 marks
(PE +PE) or (P+PEE)	4 marks
(P+PE+PE) or (PE+PEE)	5 marks
(PE+PE+PE) or (PEE+PEE)	6 marks
C	1 mark for a conclusion

Total [6]

Chief Examiner's Report 7838

General Comments

The standard of candidates' answers seems to be improving. Training appears to be successful and a text book endorsed by the Examination Board is now in circulation for the AS units. Many past examination papers exist and these, together with the marking schemes make a useful guide as to the standard expected of this examination. Teachers are urged to attend a training session from time to time as, particularly for the two practical units , useful understanding of what is expected can be gained.

Many candidates are apparently being entered for the examination without proper preparation. The January examinations will expect the same level of maturity from the candidates as the June examination. When candidates score in single figures the question has to be asked if they were ready to be entered at all.

A small number of candidates entered a project and the standard here was very high, with Centres marking well and candidates adhering to the project guidelines and the guidelines issued in training.

The learning objectives in the specification are the key to this examination and it is the learning objectives that should form the basis of any teaching process. All candidates should be given copies of these objectives at the start of the course so that they are aware of exactly what is expected of them. At the A2 level it is not sufficient to work solely from a book. In the scenario based questions, although the awareness is improving, it is important to keep candidates focussed on the question. Thus examples of information in a company selling goods should not be based on schools or sports for instance. Too often candidates reproduce learned work without applying it to the scenario carried by the paper.

Please remind candidates that **no marks** are ever given for proprietary names and so if a candidate wants to mention say, Microsoft Word, they must also mention that it is a word processor to gain any marks.

Since up to 16 marks can be gained from the quality of the candidate's written communication over the four examined units, the very least expected in written answers is a capital letter at the start of a sentence and a full stop at the end. Candidates often carelessly misspell a word even when that word appears as part of the question.

Finally, a reminder to candidates that they should read the questions carefully, making note of the key words, both before and after they have written the question. Other useful guidelines as to the quality and quantity expected for answers are the number of lines set aside on the examination paper and the number of marks to be awarded for that question.

Report on the Examination – January 2006

Information and Communications Technology

AS Level 2512

The overall performance of the candidates seems significantly better than in previous examinations. Most candidates were appropriately prepared for this examination. Most candidates were familiar with the technical vocabulary and the key terms used within the paper.

As with previous sessions, technical aspects of the syllabus such as describing the clock speed of a computer or the use of sequential/ serial/ direct access were not well known

There were few candidates who wrote nothing on questions.

Many marks are still being lost because candidates continually refer to branded products, especially those from Microsoft. Many students rarely use technical terms and when they do they are often not accurately applied. There is continued variability by centres. Clearly some topics are not being covered adequately or are not being covered according to the rubric consistently.

There were an increased number of candidates who did not read the question. Answers that could not be given because they appeared in the question were offered for marking and the focus that the candidates answer should take was often ignored completely.

Comments on Individual Questions

Question 1

a) The majority of candidates scored well for the first part of this section, although many of the examples offered for the second part were somewhat vague, with surprisingly few candidates using 'date' as an example. The majority of candidates knew the meaning of information, and had clearly been taught this. Less candidates were able to identify the stages involved in changing data into information, giving examples from recycling – many omitted to explain the effect that 'structure' has. The question did ask for examples from recycling but unfortunately a large proportion of candidates failed to see the significance of this and gave a book learnt response.

b) Most candidates could give factors which effect the quality of information but they could not always then go on to give a description or example of these.

c) Costs were generally well known but, again, candidates could not always go on to expand upon the costs. A large number of candidates referred to the cost of delivering the leaflet.

d) Most candidates managed to identify one advantage and one disadvantage with a very small number providing two of each.

Question 2

a) Generally well answered, the most common error being candidates' failure to refer to 'programs' when describing software. It was disappointing to see candidates still referring to software by their proprietary name especially when this is stated as not allowed on the front of the paper.

b)   Very few candidates answered this part well, with those who did score marks only achieving 1, or sometimes 2 out of 3. It was clear from the answers that few candidates understood 'machine cycle'.

c)   Generally well answered with many candidates scoring full marks. Unfortunately there were a substantial number of candidates who failed to read the question which excluded user guide as an answer.

Question 3

This was often well answered, but was not known by a substantial minority who guessed.

Question 4

Many of the candidates' responses to this question contained 'crossings out' and corrections indicating that there was no real understanding of the different access methods. In addition, a number of candidates provided the correct reason but the incorrect method, further indication of a lack of understanding. In contrast, candidates from certain centres answered the question well and achieved full marks. A common misconception was that 'random' stored files 'randomly' and therefore was slow to find the required file.

Question 5

Unfortunately, despite it being highlighted in previous reports, a fair number of candidates are still of the impression that telephone number is stored as a number. Otherwise this was generally well answered.

Question 6

Most candidates answered this well and were able to gain at least half of the marks. Some candidates misinterpreted the question and talked about input devices specifically suitable for disabled people. Many candidates offered appropriate input devices but were unable to suggest an appropriate use for the relevant user interface instead giving a description of the device. A few confused "natural language" with, eg, English-French translation.

Question 7

(a)   Most candidates knew the answer was to do with communicating between computers.

(b)   Most candidates could get two marks here but very few were able to get the mark about external telecommunications as well as third party cables. The most common response was "spread over a large area/geographically remote", although a significant number referred to 'the Internet' or similar. A small number answered the question well and achieved full marks.

(c)   This question appeared to cause considerable confusion and was therefore not particularly well answered in general. A large number of candidates offered general advantages of networking computers (share peripherals, cheaper software, access data from any computer, etc) rather than providing a focused response which outlined the advantages to the management.

(d)   Generally well answered although many students did not read the question carefully enough and referred to methods of maintaining a password's integrity rather than rules for selecting.

(e)   There were a substantial number of answers referring to the use of email by the management rather than the facilities available within an email package. Candidates also referred to the advantages of using email rather than what email can do.

Question 8

It was clear from the candidates' responses that very few knew what the role of the BCS is and some did not know what the organisation does. A number of candidates referred to providing passwords, offering help to fix network problems or providing cheap software. They had some idea that the BCS was a technical support group. Those candidates that had some knowledge of the nature of a professional support organisation answered the question well.

Question 9

Although a very small number of candidates referred to safety issues, most provided a number of relevant responses to this question. In some cases however, the health issues suggested were very vague (eg bad eyes/sore back/headaches) and occasionally solutions were repeated. Far fewer candidates were giving over generalised solutions such as take breaks and comfortable chair, most understood the need to quantify this type of response. An impressive number of candidates were using terms such as ulna neuritis correctly.

Question 10

The final essay question is an opportunity for the candidates to express themselves and their ability to create a reasoned argument. It is not about writing lists. Too many candidates are giving long lists (in sentence form) and not then going on to develop any of the points. Those that do develop their arguments are of the impression that faster, cheaper and easier are enough of a justification. This is not so and any arguments based around those terms achieved no marks.

There were many instances where the impact on customers and employees were discussed at length generally drifting from the main focus of the question.

Candidates must be given the opportunity to learn how to create an argument and convert it into written statements. Writing grids are acceptable and even welcomed if it would enable the candidate to structure their response.

The final element of any discussion essay must be a conclusion. This is an easy mark for candidates to acquire and requires a personal opinion. It was disappointing to see how few candidates availed themselves of this mark.

Report on the Examination – January 2006

Information and Communications Technology

Practical Applications of ICT Using Standard/Generic Applications Software

AS Level 2514

General Comments

This is a scenario-based paper and as such candidates should give examples, when asked for, in the context of the scenario. In some cases it was evident that the candidates had some knowledge but were unable to apply this knowledge to the context of the questions. Failure to do this leads to candidates failing to be awarded marks for examples. Some candidates are still using terms such as cheaper, professional and faster without any explanation or qualification

The examination technique of many candidates hindered their ability to score marks – centres must practice examination technique and assist the candidates to understand what is required by the command words such as discuss, explain, describe, state and so on.

There appears to be a general lack of knowledge of technical terminology relating to applications. There is no doubt that candidates are able to manipulate applications in a practical manner but are unable to apply their practical skills in a theoretical situation.

There are still many candidates whose writing is very difficult to interpret – this slows down the marking process considerably and candidates can often miss out on marks because the examiner cannot read the writing. Candidates should be encouraged to use legible handwriting in order to maximise their chances or earning marks.

Even though candidates were asked not to mention specific brands of software, many did. Many candidates seem to be under the impression that there is only one type of computer in existence with one operating system. It is important that all areas of the specification are covered to ensure that candidates have a wide range of knowledge.

Comments on Individual Questions

Question 1

(a) Many candidates wee able to describe bitmap graphics with a minority confusing the characteristics of vector and bit-mapped graphics. Some candidates still referred to pixels as 'dots' or 'little squares'. There were a few instances of candidates stating that bitmap graphics had a larger file size without quantifying their answer.

(b) Most candidates performed badly on this question. There was little mention of the user needing to know the file type so that the correct program can be opened or that the application program can interpret the data held within the file correctly. Many candidates answered this question relating their answer to the size of different files types. There were many instances of brand names of software given as answers to this question.

(c) Many candidates simply stated that the logo would be professional without quantifying their answer.

(d)   Some candidates provided clear answers to this part of the question demonstrating a good understanding of the advantages/disadvantages of using wizards and templates.   A minority of candidates are still unclear as to the differences between wizards and templates.   Some candidates lost marks by explaining about the use of wizards and templates when creating documents.

Question 2

(a)   Some candidates confused the characteristics of the spreadsheet as a financial modelling tool with computer aided design.   Many showed a lack of clarity when attempting to describe the characteristics, often confusing a spreadsheet with a database.   Many students wrote about designing the office (placing the furniture, windows, wall etc) or general spreadsheet features rather than specific financial reasons.

(b)   Many candidates just repeated the points they made in part (a) of this question without explaining why the spreadsheet is used rather than a database.   Many candidates simply stated that databases were harder to use

(c)   Most candidates scored 2 marks in this part of the question.   Some candidates provided graphical representations of the charts - this was not required and gained no extra marks.

Question 3

(a)   Most candidates answered this part of the question well.

(b)   This was generally well answered by most candidates but some failed to read the question correctly and wrote about what data/fields should be included on the screen rather than design concepts.

Question 4

(a)   This was generally well answered.   The common misconceptions were that graphics or printed text could not be on an OHP with an assumption that OHPs had to be hand drawn/written.   Some candidates thought that OHTs were all written by hand and that only slide shows could look "professional".

(b)   Most candidates were able to describe the difference between manual and automatic transition methods but marks were lost by not stating that user intervention was not required on an automatic transition.   Candidates lost marks on part ii by failing to apply the situations to the scenario.

(c)   Many candidates were able to explain the features given in the paper but, again, marks were lost by the examples given being out of the context of the scenario.

(d)   This part of the question was not well answered.   Many candidates confused master slide templates with master file updates.   Very few candidates were able to explain that a master slide template would enable many different people to work on a presentation at the same time or that the slide layout would be consistent.

(e)   This part of the question was generally answered well by most candidates.   However, some candidates answered this question with terms such as quicker and cheaper which failed to gain any marks.

Question 5

Many candidate gained full marks on this question. The point given by the candidates were described fully by many candidates, most who seemed to have had experience of using such a package.

2515   January 2006   PE Report to Centres

General

The paper was appropriate for the level of knowledge of the candidates.

Overall the paper was well received by most candidates.

There was little evidence of candidates experiencing time problems although some candidates did fail to give an adequate response to the last question; these tended to be the weaker candidates.

There was some evidence to suggest that learning is very centre-based. There were occasions where all the candidates in a particular centre failed to answer a particular question or, worse, all demonstrated some misconception as though it was fact.

All the questions managed to elicit the full range of marks and the paper as a whole produced a reasonable spread of marks. It was a fair test of the weaker candidates, allowing them to demonstrate their abilities, whilst still remaining a considerable challenge to even the most able candidates.

Candidates tended to be of a good standard, and most had been well prepared for the examination, often giving very concise answers.

There was evidence that some candidates did not read questions properly and therefore often missed the point of the question; these candidates tended to 'latch onto' key words within the question, and wrote answers which were somewhat tangential. Many candidates appeared to be unable to differentiate between 'state', 'explain', 'describe' etc.

Comments on Responses to Particular Questions

Question 1

This proved to be a fair starter question which most candidates answered well, giving them a good confidence boost.

(a)   (i)   Most scored at least 4/6 here. Weaker candidates gave valid points, but did not go on to explain them e.g. 'You can shop from the comfort of your own home' (1 mark) but did not go on to score the second mark – which saves time/ saves travel costs/ helpful for the housebound etc.

(a)   (ii)   This was generally less well answered. Many candidates assumed that the on-line system was replacing the shop and thus gave inappropriate responses here.

(b)   This was a good example of some candidates misreading the question, which was about the **purpose** of encryption; those who described encryption were penalised here.

Question 2

(a)   Well done by most candidates, with many scoring full marks.

(b)   Only the more able candidates scored well here. A lot of confusion was evident here from candidates not really understanding the difference between servers, hubs and routers.

(c) Again, only the most able candidates scored well here. Most candidates probably have access to a mobile phone and it seems rather strange that they have little or no idea how they work. Many seemed to think that mobile phones communicate directly with satellites.

Question 3

(a) Able candidates had no trouble with the two types of phone communication; weaker candidates had difficulty distinguishing between them. Many talked about geo-stationary satellites and satellite orbits rather than answering the question asked.
Approximately 1/3 of candidates scored well here.

(b) This was another example of candidates misinterpreting the question, blotting out the word 'voice' thus giving inappropriate answers such as 'reduces travel costs' etc.
A significant minority of candidates seemed to think that the company would need to launch their own satellite.

(c) Most scored at least 1 mark here – usually for suggesting video conferencing.

Question 4

(a) This question was well answered by most candidates. This topic was well understood.

(b) This was perceived to be a much harder question with only the more able candidates scoring marks.

(c) All candidates were able to score some marks here; some scored full marks.

Question 5

(a) (i) Well understood by many candidates who typically scored 2/3 marks.

(ii) Almost the worst answered question on the paper; most misconceptions seemed to assume that the response required was some kind of a 'help' screen. Perhaps this was because 'Information systems' is rather a vague term.

(b) (i) The concept of bandwidth is not well understood; a frequent response was 'the amount of data (1) received/sent at **any one time** (0) – 'in a (specified) time would have gained credit. Most candidates assumed that bandwidth was related to SPEED without much qualification.

(ii) Definitely the worst answered question on the paper. By far the majority of candidates chose to ignore the word 'transmission' and latched on to 'media'. They then proceeded to talk about e.g. video as opposed to text files. No credit could be given for this interpretation.

Question 6

(a) Some excellent answers were seen here; those who had experienced using directory enquiries mostly scored 4 or more marks. A small minority seemed to have no idea of what was required. This should have been an easy question to answer but was misinterpreted by about 50% of the candidates.

(b) A well answered question by candidates of all abilities; this was probably helped by 'chip and pin' being fairly topical at the time the paper was taken..

2516: ICT A2 Project

General Comments

The cohort for this session was small, understandable as few candidates will be ready to have their work assessed yet. There are a number of candidates who are resubmitting work for a second time and it appears that there is a move by some centres to enter incomplete work to get some indication as to whether the work is acceptable or not up to this stage. The size of the cohort means that there are a limited number of useful comments that can be made. The following are some observations that centres may find useful when it comes to submitting in the next session, which were triggered by the work submitted this January.

The presentation of the work was excellent and Centres are making less use of ring binders and plastic envelopes.

The place of the end user is being taken more seriously and it is gratifying to see that in the majority of projects this responsibility is being taken seriously. Suggestions have been made in the past that this responsibility best falls on a family member or someone else who is particularly close to the candidate and there are indications that candidates are following this advice. It is becoming obvious that the end user is present throughout the report. The candidate is not going to be penalised because there is too much evidence of the end user's involvement, but they will be penalised for too little. Some of the end user acceptance letters are still very unconvincing. It is a shame that candidates who have spent a lot of time and effort on producing an impressive piece of work cannot have its final assessment in a form that does the report justice. It is accepted that there will often be cases where the end user will not have headed notepaper in the realm of the problem solution. In this case it is simple to use school headed paper for the user to write their end user comments.

Although these pieces of work are demonstrating a more thorough approach to interviews, there still needs to be work done on them. There is some insistence on an interview being conducted because the criteria clearly states that there is a single end user and the sensible way to collect information from a single person is to interview them. There should be some evidence of planning of the interview. Interviews should be well thought out with evidence of questions being planned and alternative follow up questions which can be chosen according to the initial responses. The interview(s) should be properly documented, with conclusions being drawn from the information collection which are signed off by the end user. It is better not to have appendices. If the information needs to be included then it needs to be included at the appropriate point in the body of the document.

Candidates should have both a requirements specification and a list of objectives, or design specification. When considering the requirements specification, the requirements are likely to be subjective and they follow directly from the conclusions drawn from the interview. One part of this will be a consideration of the hardware and software requirements. These lists should be reasoned lists. For example, we don't want to know that we will require a 17" monitor, we want to know why we require a 17" monitor. Ensure that candidates keep thinking that this report is for their end user, and if they expect a (probably) non computer literate person to sensibly sign things off, they need to provide the reasons for their decisions.

The objectives are getting more sensible. Thankfully there were no examples of large numbers of objectives to be met. Make sure that candidates understand that these are central to much of the rest of the work and will need to be referred to in the test plan and also in the evaluation. It is far more sensible to number the objectives for easy reference rather than to simply bullet point the list.

Report on the Examination – January 2006

Information and Communications Technology

AS Level 2517

General Comments

The general standard of answers for this paper continues to improve. Some excellent performances were recorded this session. However many candidates are still being entered for the examination without proper preparation. Some discussion questions are just left out altogether and there are far too many instances of doodling on the paper and failing to attempt questions at all.

There is evidence this session that candidates have looked at past papers and marking schemes and have applied that experience successfully to interpreting the questions.

The standard of handwriting and the quality of written English remains poor from a significant number of candidates.

Comments on Individual Questions

Question 1

(a)   This question was generally well answered, though some candidates penalised themselves by not giving two examples of the appropriate resources.

(b)   This synoptic question was generally well answered, though candidates often struggled to find sensible examples for part (ii).

(c)   Some good, imaginative examples of the exchange of information though the second mark was sometimes missed as the candidate failed to provide a purpose, often just further describing the example.

Question 2

(a)   This question was not well answered by many. Looking at past papers and past marking schemes can often help candidates to understand what is meant by the characteristics of a system.

(b)   Candidates often failed to make clear whether they were giving the advantage to the customer or the advantage to the company in their answers. At this level candidates should be trying to make their answers clear and logical.

(c)   Some good answers here. Most candidates understood batch and real-time processing and were able to answer the question coherently.

Question 3

(a)   Well answered by the majority, though a large number of candidates "invented" job titles and functions and were therefore not awarded marks.

(b)   Some excellent answers to parts (i) and (ii). This part of the specification is clearly understood.

(c)   Many candidates had not learned the different types of implementation, indicating that they were probably entered for the examination too early. Of those who knew the answer to part (i) not all were then able to gain marks in part (ii) where they had to give reasons for the choice of methods within the context of the question.

(d)   Very few candidates scored high marks on this question indicating again a lack of preparation. This lack of preparation or early entry shows clearly in this type of question which can only be answered correctly if the candidate has studied the particular objective questioned.

(e)   Generally well answered. Most candidates have a wealth of practical and personal experience to draw from.

Question 4

Some very good answers to this question, though not all candidates remembered to include all the strands in their discussion. Most candidates gave a reasonable conclusion as this was a discussion question.

Question 5

(a)   This question was surprisingly badly answered, a number of candidates just left blanks. Again suggestive of not all parts of the specification being covered before the examination was taken.

(b)   A disappointing result from what the examiners had hoped would be a set of imaginative and informed answers. Many candidates just focussed on the voice input mentioned in the question and did not discuss any wider implications that hardware and software advances might have on the way stores are run in the future.

Advanced Subsidiary GCE ICT 3838
January 2006 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2512	Raw	90	65	58	52	46	40	0
	UMS	90	72	63	54	45	36	0
2514	Raw	90	63	56	50	44	38	0
	UMS	90	72	63	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
3838 (Agg code)	300	240	210	180	150	120	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
3838 (Agg code)	8.9	28.1	50.7	77.8	95.6	100.0	217

Advanced GCE ICT 7838
January 2006 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2515	Raw	90	62	56	50	44	38	0
	UMS	90	72	63	54	45	36	0
2516	Raw	120	98	87	76	65	54	0
	UMS	120	96	84	72	60	48	0
2517	Raw	90	69	62	56	50	44	0
	UMS	90	72	63	54	45	36	0

Specification Aggregation Results

Overall threshold marks in UMS (i.e. after conversion of raw marks to uniform marks)

	Maximum Mark	A	B	C	D	E	U
7838 (Agg code)	600	480	420	360	300	240	0

The cumulative percentage of candidates awarded each grade was as follows:

	A	B	C	D	E	U	Total Number of Candidates
7838 (Agg code)	8.3	33.3	50.0	66.7	100.0	100.0	24

Statistics were correct at the time of publication.