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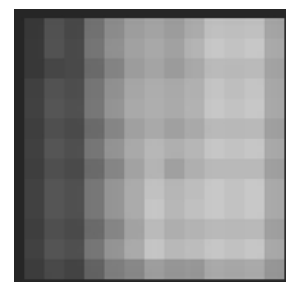
OCR
RECOGNISING ACHIEVEMENT

ADVANCED GCE   **A2 7838**

ADVANCED SUBSIDIARY GCE   **AS 3838**

INFORMATION AND COMMUNICATION TECHNOLOGY

COMBINED MARK SCHEME AND REPORT FOR THE UNITS

JANUARY 2005

AS/A2

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Advanced GCE Information & Communications Technology (7838)

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MARK SCHEME ON THE UNITS

REPORT ON THE UNITS

Mark Scheme 2512
January 2005

1 **(a)** **What is the difference between information and knowledge?**

Information is based on facts (1)
Information is based on processed data (1)
Knowledge is based on rules (1)
Knowledge is based on probability (1)
Knowledge is the result of interpreting data (1) **[2]**

(b) **Identify *two* problems that could occur if the quotation manager ordered a van which was too small.**

Any two from, for example:
Not able to fit all furniture on van (1)
Items may get broken as they are forced in van (1)
More than one trip is necessary (1)
Cost the company money (1)
Another van required (1)
Some furniture not moved/left behind (1)
Customer seeks compensation/litigation (1) **[2]**

2 **Describe *two* benefits to the company of coding the data.**

Any four from:
Less to type in (1) therefore quicker to type in(1)
Less storage space required (1) smaller hard drives needed/cheaper storage (1) faster to process (1)
Only authorised people know what the codes mean (1) more secure (1)
Entry can be validated (1) less likely to have errors (1)
Codes can represent lots of pieces of information (1) **[4]**

3 **Using an example, describe what is meant by syntactic representations of information.**

One mark for description, one mark for example:
Syntactic = rules (1)
Valid example e.g. Sentences start with capital letter and end with full stop (1) **[2]**

4 (a) Describe *two* input devices an employee who does not have use of their arms could use.

One mark for identification, second for description e.g:
Foot mouse (1) mouse controlled by the foot (1)
Head typer (1) stick on the head used to press a key on the keyboard (1)
Eye Typer (1) method of pressing keys using beam attached to head (1)
Puff/Suck switch (1) use of puff and suck to control cursor and enter keys (1)
Microphone (1) voice recognition (1)

[4]

(b) Describe *two* ways the user interface can be customised for partially sighted employees.

One mark for identification, second for description:
Decreased resolution (1) increasing the size of the icons/pointer (1)
High contrast colour scheme (1) sharp differences in colours (1)
Mouse trails (1) trails that indicate where the mouse has been (1)
Synthesised speech (1) reading what is on the screen (1)
Magnifier (1) increase size of part of the screen (1)
Larger font size (1) readability improved (1)

[4]

5 (a) Describe *two* characteristics of a batch processing operating system.
Any four of the following:
Transactions collected and stored (1) for processing at a later date (1)
Transactions processed (1) at a time where processing capacity is low (1)
Data is not up to date (1) until processing completed (1)
Similar data (1) processed in a similar way (1)
Processed unattended (1)
Time independent (1)
Process large amount of data (1)   **[4]**

(b) Describe *two* characteristics of a single user operating system.
Any four of the following:
Only one person can use the computer system (1) at any one time (1)
Stores data files and config files (1) for that single person (1)
Can be multi tasking (1) running more than one program for that user (1)
User allocated all the processing power of CPU (1)

[4]

(c) Identify the stages required to find a customer called SMITH
Any three of the following:
Find and go to records beginning with S (1)
Go through records one at a time (1)
Stop at SMITH (1)
If no SMITH – error message when passed where it should be (1)   **[3]**

6 (a) What is meant by a foreign key?

Any two from:
Primary key in one table (1)
Field in second table (1)
Used to link tables (1)

Accept diagrams/examples   **[2]**

(b) Explain what is meant by referential integrity.

Any two from:
Every foreign key value (1)
Has a matching value in the corresponding primary key /linked field (1)
Lookup validation (1)   **[2]**

(c) Why are different levels of access required?

Any three from:
Different information presented to different people based on level of access (1)
Different rights – e.g. update, view, edit for different people (1)
Managers need different levels of access to data entry clerks (1)
Protect data (1)
Legal requirement (1)

                                                                     [3]

(d)(i)   Why is testing important?

Any two from:
Gives confidence (1)
Make sure system works (1)
Payment criteria (1)
Identify errors (1)
Ensures the system is robust (1)   **[2]**

(ii)   Why is it important to follow a test plan?

Any two from:
Know if the actual results meet expected results (1)
Tests can be reproduced (1)
Ensure full coverage (1)   **[2]**

(e) Describe *two* output devices the employees can use to retrieve information from the database.

One for identification, 2nd for description, for example:
Monitor (1) – graphical display of data (1)
Printer (1) – hard copy output (1)
Disk/portable media (1) digital copy (1)
Speakers/ headphones (1) – to provide audio feedback (1)
Projectors/ interactive whiteboard (1) – to present to audience (1) **[4]**

7 **(a) Explain the role of a switch in a Local Area Network (LAN).**

Any three points OR one point fully explained:
Make decisions based on addresses (1)
Transfer data to appropriate port (1)
Concentrate connectivity (1)
Make data transmission more efficient (1)
Provides each port with full backbone (1) **[3]**

(b) The removal firm needs to install protocols onto the computers. Explain why a protocol is necessary.

Any two from:
To allow communication to occur (1) between devices (1)
To make sure devices are talking (1) same language (1)
To allow error checking (1)
Set the transmission speed (1)

[2]

8 **(a)** **(i)** **Why are passwords required?**
Any one from:
Comply with law (1)
Protect data (1)
Stop unauthorised access (1) **[1]**

(ii) **Describe *two* ways of making the password remain effective in the long term.**

One for identification, 2nd for description, e.g:
Minimum length (1) must use a minimum number of characters (1)
Numbers and letters (1) must use both mixture of numbers and letters (1)
Not in dictionary (1) cannot use a word from the dictionary (1)
Record of passwords (1) keep a record of what has been used and do not allow them to be used again (1)
Change monthly/regularly (1) force a password change every month/regularly (1) **[4]**

(b) Identify *two* laws that the removal company would break if it was to license one piece of software and use it on all of its computers.

Any two from:
Theft Act (1)
Computer Misuse Act (1)
Copyright Designs and Patents Act/ any reference to copyright (1) **[2]**

9 **Describe *two* advantages to the removal company of having its employees sign a code of conduct.**

One mark for identification, 2nd for description:
Discipline employees (1)
Sets out rights (1) what can and cannot be done (1)
Can be changed (1) outside of contract (1)
Employees to take blame (1) not company (1)

                        [4]

10 (a) Describe *two* characteristics of a WAN.

One mark for identification, second for description:

Geographically remote (1) computers in different towns/countries (1) connects LAN's together (1)

Uses third / external telecommunications links (1) satellites/telephones to connect (1)
                        [4]

 (b) Describe how analogue signals are converted to digital signals.

Any three from:
Input of analogue signal into the modem (1)
The analogue signal is sampled and read as a voltage level (1)
The voltage level is converted into a binary signal (1)
The binary signal is passed onto the computer (1)   **[3]**

 (c) Explain the role of the router.

Any two from:
Makes decisions based on network addresses (1)
Choose best path through the network (1)
Switch data to correct port (1)
Link LAN to WAN (1)
Translates signals from one network to another (1)   **[2]**

11   **Identify *two* principles of the Data protection Act (1998).**

Any two, allow *simplified* versions:

A   "Personal data shall be processed fairly and lawfully and, in particular, shall not be processed unless - at least one of the conditions in Schedule 2 is met, and · in the case of sensitive personal data, at least one of the conditions in Schedule 3 is also met."

B   "Personal data shall be obtained only for one or more specified and lawful purposes, and shall not be further processed in any manner incompatible with that purpose or those purposes."

C   "Personal data shall be adequate, relevant and not excessive in relation to the purpose or purposes for which they are processed."

D   "Personal data shall be accurate and, where necessary, kept up to date".

E   "Personal data processed for any purpose or purposes shall not be kept for longer than is necessary for that purpose or those purposes".

F   "Personal data shall be processed in accordance with the rights of data subjects under this Act."

G   "Appropriate technical and organisational measures shall be taken against unauthorised or unlawful processing of personal data and against accidental loss or destruction of, or damage to, personal data."

H   "Personal data shall not be transferred to a country or territory outside the European Economic Area, unless that country or territory ensures an adequate level of protection for the rights and freedoms of data subjects in relation to the processing of personal data."

            [2]

12 (a) Describe how an employee might get ulnar neuritis

Any two from:
For example
Constant computer use (1) long working hours in front of computer (1)
Poor workstation configuration (1) incorrect monitor etc (1)
Inappropriate chair (1) does not have adjustable back etc (1)
Unsatisfactory working technique (1) incorrect mouse technique/typing technique (1)
Poor posture (1) slouching and not having back supported (1)
Lack of wrist rest (1)

[2]

(b) Describe how an employee might get eyesight defects.

Any two from:
For example
Constant computer use (1) long working hours in front of computer (1)
Incorrect/broken monitor (1) blurry images
Incorrect lighting (1) no blinds (1)/direct light (1)/reflective desk (1)
Incorrect brightness/contrast on monitor (1)

[2]

13 Identify *two* different organisations who might purchase the information and explain how each would use it.

One mark for who might want it, up to two for what they would do with it, for example:
Decorating company (1) offer to decorate the house (1)
Curtains/Blinds (1) offer to put up curtains (1)
Garden services (1) offer to do the garden (1)
Marketing firm (1) offer promotions (1)
Not government/police etc

[4]

14   Discuss the impact on the removal company of using ICT for route planning.

	MARK
I	1
I I	2
P or N	3
PP or NN	4
P and N	5
PN and PN	6
PP and NN	6
C	1

      1 mark for conclusion

I – Identify
N – Negative
P – Positive
C - Conclusion

      Example of areas of discussion:
            Avoid low bridges and damage to vehicles
            Directions printed so no chance of getting lost
            Can plot in fuel stops
            Total miles and costs calculated
            Can calculate distances and times for legal purposes
            If route planned not taken can cause problems
            Maps might be out of date
            Times can only be estimates as delays can occur
            Need to update the software
            Need training and skills to use it
            Organisation restructure to cope with new department
            SatNav to avoid getting lost and for tracking vehicles
            Calculating journeys and loads and making sure no part loads leave   **[7]**

Above are examples of I, to be a P or an N the impact on the organisation needs to be considered – more than Time or Cost, for example:

Avoid low bridges and damage to vehicles, means vehicles are not off the road getting repaired which will allow the jobs to be completed and customers satisfied (P)

                                   Total [86]
                                   QWC [4]

Mark Scheme 2514
January 2005

1 **(a)** *Identify **three** differences between vector (VG) and bitmap (BM) graphics*

Up to 3 x 1 per point
VG Take up less memory than BM (1)
VG make greater demand on Processor than BM (1)
VG takes up less space on disk than BM (1)
VG can be grouped (1)
VG made up of lines (1)
VG can be created using lines/formulae/equations (1)
BM made up of pixels (1)
BM less precise than VG (1)
BM takes longer to load than VG (1)
BM pixelate on enlargement (1)

[3]

(b) *Describe **two** advantages and **two** disadvantage of using clip art when creating the logo for The GreenHouse*

Up to 2 per point, 1 for identify, 1 for further explanation
For example:

Advantages
Readily available (1) do not need to buy expensive software (1)
Can be used by most users (1) do not have to employ designers (1)
Choice (1) most categories are available (1)
No need to buy special equipment (1) such as scanner (1)

Disadvantages
Can be copyright(1) need to check with originator (1)
May not be unique (1) other company may have used the graphic (1)
Clip art is limited (1) have to use what is available (1)
Quality (1) could be poor (1)
May not have specific images required (1) such as plants (1)

[8]

(c) *Explain the need for different file types.*

Any 3 points for 1 mark

The user knows what software can be used with the file (1)
The user knows what the file may contain from the extension(1)
An application program knows how to load & interpret the data (1)
Reduces non-usable file types (1)   **[3]**
Can search by file type (1)
Is impossible for one file type to be used for all types of data (1)
Portability, files can be exported in formats compatible with a wide variety of packages (1)

(d)   *Explain how the logo shown in Fig 1 was created.*

Does not have to be in correct order
Any four from:

Insert image/clipart/suitable example of file type (1)
Insert text object e.g. WordArt (1)
Draw frame/text box (1)
Insert text (1)
Adjust size of text (1)
Layering text / graphics (1)
Format style of text (1)
Positioning of text /graphic(1)
Shadow added (1) to text/frame (1)   **[4]**
Insertion of border (1)

(e)   *Describe how the following features of a painting package,*
             could be used to modify the logo.

Max 2 per point, MUST apply to logo

Soften
Reduces the harshness of the image/ smoothens (1)
Can blur the edges of an image/ colours blend in (1)

Sharpen
Used to define the edges in an image (1)
Corrects blurring (1) introduced when scanning (1) or
photographing (1)

Contrast
Difference between dark & light areas (1) High contrast
shows high differences between dark & light (1) whilst low
contrast shows low difference (1)

                [6]

2 **(a)** *Describe the following features of spreadsheets which make them suitable for this task*:

Max 2 per point
Formulae
To calculate the values/perform calculations (1) use of mathematical operators (1) example given (1)

Functions
Standard routines (1) used to perform common tasks (1) example given (1)

Variables
Enables values to be changed (1) without changing many cells (1) to see effect (1) a reference to the contents of a cell that can be used in a function (1) example given (1)

[6]

(b) *Explain **three** advantages of using a spreadsheet for modelling.*

1 for identify, 1 for further explanation
For example:

Can predict future 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]

(c) *State the most suitable type of chart for this task*

Bar chart/column chart/histogram/line graph(1)

[1]

3   **(a)**   *Explain the benefits of using static data in the new website*

                     3x2 or 6x1
                     For example:
                     Static information does not change (1)
                     Structure stays the same (1)
                     Company details do not change (1)
                     Decreased maintenance (1)
                     More chance of being found if data does not change (1)
                     Search engines can be used with greater confidence (1)
                     Increased confidence if web site stays static (1)
                     Corporate image of company can be maintained (1)
                     Less technical knowledge required to create website(1)
                     Company knows exactly what data customers have seen(1)

                                                                                        [6]

   (b)   **(i)**   *Identify two problems the customers may experience if they typed the keyword 'plants' into the Search Engine.*

                     Any two from:

                     Will find sites that are not The GreenHouse site (1)
                     Search may find results from all over the world (1)
                     Site may not be found (1)
                     Many results may be found (1)
       (ii)   Search may return unrelated sites (1)

                     Identify two methods that a customer could use to improve the results of the search   **[2]**
                     Any two from:
                     Search can be improved by use of the company name (1)
                     Need to add '+UK' to find The GreenHouse (1)
                     Use of logical operators (1)
                     Use of grouping (1)
                     Use of speech marks to find exact phrase match(1)
                     Narrow down the search(1)

                                                                     [2]

   (c)   *An image library could be used to show pictures of the plants on the website as a series of miniature (thumbnail) images. Identify three benefits of using miniature (thumbnail) images.*

                     Any 3 from:

                     Fit lots on a page (1)
                     Quick to load (1)
                     Large number of images can be shown on web page (1)
                     Can be selected to provide bigger image (1)
                     Less memory space is used (1)

                                                                     [3]

4   **(a)**   *Explain **three** reasons why a database is suitable to store and handle customer records.*

                1 for identify, 1 for further explanation Max 2 per point

                For example:
                Query / search facilities (1) for example: specific customers can be found (1)
                Production of reports (1) commonly used reports can be programmed into d/b (1)
                Can be linked to WP (1) use for mail merge (1)
                Data entry can be validated (1) reduces risk of user error (1)

                                                                              [6]

    (b) **(i)**   *Primary Key,*
                Max 2
                A PK is unique (1) is used to identify a record (1)

          (ii)   *Foreign Key*
                Max 2
                A FK is a field in a table (1) related to the PK of a second table (1)

          (iii) *Composite Key*
                Max 2
                PK (1) made up of more than 1 field (1) can be used to sort a file (1)

                                                                              [6]

    (c)   *The entities & attributes in the database are:*

                Exact match only for (i) and (ii)
          (i)   Cust_ID (1)

          (ii)   Cust_ID (1) OR Plant_ID (1)

          (iii)   One CUSTOMER to Many ORDER (1) OR 1:M (1)

                                                                            [3]

5   **(a)**   *Wizards*

          Max 2 points or 1 point and further explanation:

          Structured set of choices (1) Example (1)
          Assists inexperienced users (1) Example (1)

                                                                                        [2]

          Templates

          Max 2 points or 1 point and further explanation:

          Consistent style for document (1)
          Pre-determined layout (1)
          Some details already filled in (1)
          Set places for information (1)
          Example given (1)

                                                                                       [2]

    (b)   *Explain **two** reasons why templates could be used.*

          1 for identify, 1 for further explanation

          Templates are read only (1) less chance of user error (1)
          Can use different templates (1) appropriate for document being
          produced (1)
          Templates can be created and saved (1) do not have to start
          from scratch each time (1)
          Inexperienced users can produce documents (1) less chance
          of errors (1)
          Templates can have standard text on them (1) no possibility of
          something being left out (1)
          Consistent style (1) corporate identity (1)

                                                                                      [4]

(c) *Identify **four** methods which could be used to make the document fit onto a single side of A4 paper, without removing any of the content.*

Any three from:

Reduce the font size (1)
Change text style (1)
Make side margins narrower (1)
Make top/bottom margins smaller (1)
Take out bullets (1)
Fit to page / Shrink to fit (1)
Make graphics smaller (1)
Remove paragraph spaces (1)
Add hyphenation (1)
Change font (1)
Remove bold formatting (1)
Reduce line spacing (1)
Reduce kerning spacing (1)
Wrapping text around image/text box (1) **[4]**

(d) *Describe **two** benefits of using mail merge to send the mail-shot letter.*

1 for identify, 1 for further description

Can use standard letter (1) no important information omitted (1)
Only have to edit 1 copy of letter (1) no chance of user-error (1)
Bulk customised printing (1) can be left to batch print (1)
Can select customers (1) based on queries (1)
Letters can be targeted (1) only send to customers who fit profile (1)
Personalised letter (1) customers feel 'wanted' (1)
Using an existing data source(1)less user error(1) **[4]**

(e) (i) *Identify **three** examples of word fields.*

Any 3 from:

Next Record If (1)
Ask (1)
Fill_in (1)
If..Then..Else (1)
Next Record (1)
Skip Record If (1)

[3]

(ii)   *State **two** benefits of using word fields.*

For example:

Can take data from other sources (1)
Can filter out unwanted data (1)
Can use to run a macro (1)
Can insert standard information such as time/date (1)

[2]

Total [86]

QWC [4]

RECOGNISING ACHIEVEMENT

Mark Scheme 2515
January 2005

1 **(a)** **(i)** connects a terminal/ computer to the network (1)
printed circuit board (1) that fits into an expansion slot (1)
Layer 2 device (1) has unique code (1) called MAC address (1)
Allow credit for description of purpose (1) **[2]**
hardware device (1)

(ii) Point of connection (1) between two networks / computers (1)
Connects two networks with different protocols (1)
Controls the transmission of data (1) between networks (1)
Capable of selecting data (1) and prioritising (increasing) data transfer (1)
A router (1) **[2]**

(b) Allows different networks/ computers to communicate (1)
Provides a framework (1) for network providers (1)
Defines network functions (1)
Describes how information is transmitted (1)
Allows equipment from different manufacturers (1) to communicate (1)
Sets standards for hardware (1)
Breaks system down into simpler parts (1) **[4]**
Protocol / set of rules (1)

(c) Breaks the protocol down (1) into different sections (1)
Changes in one layer (1) do not affect other layers (1)
Allows each layer to be treated independently (1)
Useful for trouble shooting (1)
Enables security measures (1) to be applied to data transmission (1) **[2]**

(d) Signal (1) with continuously (1) varying voltages (1) as used in phone networks (1)
Example – e.g. as a (slow) connection to the Internet (1)
Connect to Internet via a modem (1)
Max 1 mark for suitable example. **[3]**

(e) Signal consists of discrete bit patterns (1), 1's and 0's / on-off (1) stream of bits (1)
Example
ISDN (1)
ADSL (1)
Used in video conferencing (1)
Sending large graphics files (1)
Other suitable example (1)
Max 1 mark for suitable example **[3]**

2 **(a)** Provides a communication system (1) within an organisation (1)
Intranet run from local server
Similar to a web page (1) can only be accessed by authorised users (1) has secure
internal e-mail (1) may allow controlled Internet access (1)
transfer speeds are good (1) because there is no need to 'dial up' (1)   **[4]**

(b) **(i)** e.g.
can store teaching resources e.g. worksheets, video clips.(1)
can store (useful) websites from the Internet (1)
students can access resources outside of lesson times (1)
use of resources for interactive white boards (1)
can facilitate interactive learning (1)
may use tailor made programs (1) to suit individual students (1)
can store details of student progress (1)
track use of resources (1) teachers can share resources (1)
control access to suitable resources (1)   **[4]**

(ii) Students can submit work by e-mail (1) and receive feedback (1)
Students can contact teachers outside of lesson times (1)
Possibility of 'chat' times with teacher (1)
Course information/timetables etc are available (1)
Use of bulletin boards / message boards (1)
(Allow 'flow over from (i))   **[4]**

(c) **(i)** The capacity of a channel (1)
Transmission rate / Bits/sec, baud rate (1)
Range of frequencies (1)
Not 'speed', **not** 'quicker' **not** 'fast'   **[1]**

(ii) (Low) bandwidth will limit the number of users (1)
time sensitivity (1) e.g. having to wait for live video (1)
High bandwidth required for graphics (1) and video-conferencing (1)
Bandwidth less important for application software (1)   **[4]**

3 **(a)** **(i)** tree and branch – cable laid along street (1)
each house has a separate cable (1)
branching off from the main cable (1)

(labelled diagram worth 2 marks) **[2]**

(ii) (Switched) star (1) **[1]**

(b) e.g.
Ability to vote (1) during a broadcast (1)
select camera angle (1) whilst viewing current activities (sports) (1)
Access e-mail (1) without having to dial up (1)
Take part in a quiz/games/gambling (1) with other on-line viewers (1)
Use a shopping channel (1) for cashless shopping (1)
2x2
TV on demand (1) to watch programmes at a convenient time (1) **[4]**

(c) Consult users of the system (1) e.g. questionnaires/interviews/observations (1)
regular user group meetings (1)
decisions reflect (all) users comments (1)
overview committee referencing developments to requirements (1)
involve users through prototyping (1)
involve users through testing (1)
Make changes as a result of user feedback (1) **[4]**

4 **(a)** Facilities:
e.g.
Teleconferencing (1), allows employees to hold meetings at a distance (1) without the need to travel (1)
Fax (1), send documents at any time (1)
call waiting (1), allows user to know they have a call queued (1)
voicemail (1), allows message to be left if line engaged (1) or person not available to answer the phone (1)
ring back (1), if number is 'busy' caller can 'book' next slot (1).
phone memory/ speed dialling (1), useful to store frequently dialled numbers (1)
broadband connection (1) for easy internet access (1)
and e-mail (1)
video calling (1)
speaker system (1) needed if hands free required (1)
Max 1 mark for attempt at conclusion, **[7]**

(b) e.g.
Home environment may present security risk (1)
Password in files/folders
Data protection act implications (1)
as work may be seen by other members of the household (1).
Solution: Always work in a separate room (1)
Many people may not have a spare room (1)

Link to office may not be secure (1),
interception of data (hacking) (1)
data encryption (1)
install firewall at home (1)

Could be costly (1) **[6]**

(c) e.g.
Effects: Choice of working hours (1)
May work at times to suit family commitments (1)
e.g. collecting children from school/ nursery etc (1)
Less commitment/ motivation (1)
Lack of direction (1)
No need to pay for travel to work (1)
No need to spend time commuting (1)
Thus allowing more time for other things (1)
Thus keeping costs down (1)
Feel isolated (1)
May miss the camaraderie of the office (1)
May be more easily distracted at home (1)
e.g. 'Would you like to come to the supermarket with me?' (1)
Job credibility (1)
Spouse or others may not appreciate that working from home is real. (1)
Household bills may go up (1)
Heat, light, power etc needed for longer time (1)
Mark as 3x2 **[6]**

5   **(a)**   **(i)**   Division of an area / region into a number of cells (1)
Each cell has a base station (1)
a signal is sent to nearest mast (1) – then to base station (1)
transferred from cell to cell as appropriate (1)
Network keeps track of phone location (1) in a data base (1)
Base station supplies frequency (1) and connects callers/ phones (1)
Call is automatically transferred (1) as user moves into another cell (1)   **[4]**

         (ii)   Can contact the appropriate service from wherever they are (1)
SMS (1) can be used to text destination (1) to advise of situation (1)
Can ring home/work (1) to let people know where they are (1)   **[2]**

         (iii)   Network coverage (1) is not totally reliable (1) (dead area)
Phone may not be connected to the network (1) lack of credit/ battery (1)   **[2]**

  (b) Call handling systems (1) can route calls (1) quickly (1)
Can locate geographical position of caller (1)
Line of sight (1)
GPS systems (1) can provide route (1)
and hazard information (1)   **[4]**

  (c) Liable to attack by virus (1)
Need for anti-virus policy (1)
Virus checking software (1)
Data integrity (1) may be lost (1)
Corruption of data in one centre is not an issue because copies exist (1)
Data needs to be encrypted (1) - to protect from hackers (1)
Users need to be identified (1) – to provide access rights (1)
User ID's and passwords (1)
More access points – so more chance of hacking
Ensuring hardware is protected (1) – from unauthorised use (1)
physical security (1)   **[4]**

6 **e.g.**
Biometric security devices (1)
retinal scans (1), but cannot always be recognised (1)
finger printing (1)
chips on cards (1) can now store much data (1)
DNA – human rights issues (1)
miniaturisation of components (1)
database implications (1)
Internet implication (1)
social/cultural issues provided they stem from a technical advance (1)
For possible full marks the answer should contain at least two technical points
1 mark for a conclusion **[7]**

Total [86]
QWC [4]

Mark Scheme 2517
January 2005

If the same answers are used in 1(a) and 1(b) the second mark cannot be credited.

1   (a)   (i)   Explain why it is important for the information on the website to be accurate and up-to-date.
Up to 4 points or two points explained for full marks.
E.g.
So that the student can make informed decisions (1) based on the data provided. (1)
If the data is inaccurate (1) then the student may have wasted his year out. (1)
The student may end up choosing a task (1) for the wrong reasons. (1)
If data is not accurate (1) the site has no value. (1)
Inaccurate data could lead to the site being discredited, (1) because people loose faith in the data provided. (1)
It should reflect changing circumstances, (1) such as world events(e.g. SARS). (1)
Following links which do not work will frustrate the user (1) and they will stop using the site. (1)   **[4]**

(b)   (i)   What is a Management Information System (MIS).
e.g.
A MIS is a system of analysing data (1) to provide understandable management-level information. (1)
A MIS converts data from internal and external sources into information(1)
      [2]

(ii)   Describe how the company would make use of a MIS.
For planning, directing or controlling the business. (1)
For making tactical and strategic decisions. (1)
Analysing data (1) to highlight trends. (1)
An aid to making effective decisions. (1)   **[2]**

2   **(a)**   **(i)**   **Identify which of the methods of connection is digital.**
                The ISDN line is digital. (1)   **[1]**

          (ii)   **Describe the differences between an analogue and a digital connection to the Internet.**
                The modem is needed when connecting to an normal phone line (1) as it will convert the digital signals to analogue signals. (1)
                The digital connection generally has a faster transfer rate than using a modem. (1)
                Digital provides a greater bandwidth. (1)
                Digital allows you to use the phone line at the same time.(1)
                Digital has automatic error correction. (1)
                Digital can be always on. (1)   **[4]**

    (b)   **The network manager at the company is worried that confidential data held on the server might be accessed by the students. Explain <u>two</u> methods which could be used to protect the data.**
            e.g. Access control (1) so that some files are hidden (1)
            User ID and password (1) will dictate level of privileges. (1)
            Firewall (1) is a program to prevent unauthorised external users accessing the data. (1)
            Authorisation (1) such as user ID. (1)
            Authentication (1) such as password. (1)
            Encrypting the file (1) will make it unreadable to unauthorised users. (1)   **[4]**

    (c)   **Give two health problems related to working with ICT and state how each might be caused.**
            (No marks for the solution to the health problems)
            e.g.
            Two marks for each of two health issues (e.g.)
            Carpal tunnel syndrome (1) is a pinched nerve in the wrist. (1)
            Ulnar neuritis (1) can be caused by damaging a nerve at the elbow. (1)
            Eye and eyesight defects (1) may be caused by long periods at the screen. (1)
            RSI (1) can cause pains in the wrist. (1)
            Back pain (1) incorrect posture/ incorrect seat (1)   **[4]**

3 (a) Explain the advantages for the company in using the latest technology to run the website.

e.g.

The user will have greater confidence in the site (1) if it is fast and efficient. (1)

Users are more likely to stay on the site (1) if the links respond quickly. (1)

Designing new pages (1) can be done more efficiently. (1)

More data can be stored more reliably (1) on up-to-date equipment. (1)

Support (1) is still available on up-to-date hardware and software. (1)

Mobile phones can be used to access the site. (1)

Animation is possible on the website. (1)   **[4]**

(b) (i) The company is to change the website design. Explain how each of the following affect the design:
perception

e.g.

Perception is the input from sight and sound (1). The designer will have to take into account that the user has preconceived ideas about for instance green for go and red for stop. (1)   **[2]**

(ii) attention

The user will have a limited attention span (1). To counteract this the designer should make the screen uncluttered (1) and have the salient points obvious. (1)   **[2]**

(iii) memory

The short term memory will be involved as the user moves from page to page (1). Thus the page layouts should remain consistent. (1)   **[2]**

(iv) learning

The user will not be expected to use this site often (1) and will not expect training. (1)   **[2]**

(c) (i) Describe <u>two</u> process modelling techniques.

Using system flowcharts/ data flow (1) the flow of data through a system using different shaped boxes. (1)

The process model describes the events and operations of the system. (1)

Pseudo-code (1) can describe in a more detailed manner (1) various stages of the system using a mixture of English and computer code. (1)   **[4]**

(ii) Describe <u>two</u> data modelling techniques.

The data model is a diagram of the database (1) showing the entities, attributes and relations between the entities. (1)

Data modelling techniques (e.g.)

An entity relation (1) can be used to assign attributes to the entities (1) and show the relations between the entities. (1)

A data dictionary (1) can give the data types and, descriptions of the data. (1)**[4]**

(iii) Describe how prototyping could be used to develop the user interface.

A working user interface is created (1) which does not process any data. (1)

This is reviewed by the user (1) and changes can be recommended. (1)

This process can be repeated (design-refine) (1) until the interface is satisfactory to the user. (1)

It is an iterative process. (1)   **[4]**

(d)   **Describe the support the company could provide:**

     (i)   **before the installation of the new website**
Inform users of expected changes (1).
Sample pages will appear to be tested. (1)
They will need assurance and support from the company. (1)
A FAQ sheet can be maintained. (1)   **[3]**

     (ii)   **after the installation of the new website**
The student will need to have information in advance of the changes and during the changes. (1)
There will have to be on-line help. (1)
Other forms of documentation (1)
Other forms of support e.g. phone/ tutorial (1)
The new site must be reasonably similar to the old one. (1)   **[3]**

4   **(a)** **Explain the need for the maintenance of this system.**
e. g. Systems may need:
Corrective maintenance (1) to adapt the system to changes (1) or to react to external changes such as new legislation. (1)
Adaptive maintenance (1) to allow the system to run with new hardware. (1)
Perfective maintenance (1) to enhance the performance of the system. (1)

                                                             [6]

  (b) **Discuss why the company and the overseas agency need to make use of agreed standards for the quality and reliability of the information system.**
<u>This answer will be marked as a banded response using **P, E and C.**</u>

P	1 mark
P, P or PE	2 marks
P, PE	3 marks
PE, PE	4 marks
P, PE, PE	5 marks
PE, PE, PE	6 marks

Possible extra mark for conclusion (**C**) but max of 6 for the question

The people using the system will rely on the quality. (**P**) If this quality changes then the company may stop using the agency or vice versa. (**E**)

The credibility of the agency and customer satisfaction (**P**) depend upon the reliability of the information. (**E**)
The data may not be compatible across the systems (**P**) if standards are not agreed. (**E**)
Some standards are set by legislation (**P**) but others are voluntary codes. (**E**)
Data may not be transferred correctly (**P**) leading to incorrect data and the consequences of using incorrect data. (**E**)
Transfer protocols (**P**) will ensure quality and reliability of data. (**E**)
Conclusion:
e.g. Standards are necessary to ensure the smooth running of a business. (**C**)

                                                             [6]

(c) (i) **Identify problems for the agency that may arise from loss of power to the computer system and give measures that could be taken to reduce these problems.**

Problems:
Data may be lost. (1)
The operating system may become corrupt. (1)
Hard discs may become damaged. (1)

Measures:
Use and Uninterupted Power Supply (UPS)/local emergency
Generators/ solar or wind powered devices. (1)
Make regular backups. (1)
Obtain software for rebuild/reboot/reinstallation. (1)

[4]

(ii) **Explain how this could be done and how the confidentiality of data could be maintained.**

Reduced dependence on telephone system:
Use satellite transmission of data. (1)
Install dedicated/private telephone lines. (1)
Use mobile phones. (1)
Download images of data, hold internet pages locally. (1)

Maintaining confidentiality of data
Encrypt the data. (1)
Use passwords to protect the data. (1)
Use electronic signatures. (1) **[3]**

(d) (i) **Describe ways in which technology can help in the case of:**
Lost limbs.
Using carefully machined parts (1) artificial limbs can be fitted to replace those lost. (1) The circuitry of the artificial limbs can be merged with the nervous system of the body (1) allowing the user to control the artificial limb like a real one. (1) **[4]**

(ii) **Damaged eyes.**
Artificial eyes are being created which can replace some damaged eyes. (1) Using laser surgery corrective repairs can be carried out. (1) New pupils can be fitted. (1) Technology allows visually impaired people to interact with devices such as mobile phones, email etc. (1) **[4]**

5 (a) Explain how CAL differs from CBT.

e.g.

Computer Aided Learning is the use of a computer to provide instructional information to a student (1), to pose questions (1) and to react to the student's response. (1)

Computer Based Training is the use of the computer as an instructional system in a training environment (1) but differs from CAL in that the learning area is confined to a particular objective. (1) **[4]**

(b) Describe the disadvantages of using these methods to train the volunteers.

e.g.

The student needs access to a computer (1) which could be expensive/ inconvenient. (1)

The knowledge learned may be wrong (1) and there is no means of discussing or questioning a machine. (1)

The student cannot check with a teacher (1) if they are uncertain about a particular point. (1)

The data may not be up-to-date or accurate (1) and it could be expensive to update the software on a regular basis. (1) **[4]**

TOTAL [86]
QWC [4]

REPORT ON THE UNITS
JANUARY 2005

Chief Examiner's Report

The number of candidates taking this specification rose again this year indicating that ICT is still gaining in popularity in schools as an advanced level subject. The standard of answer is improving and in some cases, particularly at AS level, the candidates seem more able to answer the technical, computing type questions. This was the first time that candidates have answered the questions using lines on the question paper at A2 and it was the general opinion of the examiners that this practice helped the candidates to focus their answers, though it also became much more obvious, through questions remaining unanswered, where there were gaps in the candidate's knowledge.

The AS cohort (2512, 2514) was larger this January and the general standard of answers was good, however quite a number of candidates are being entered without due preparation, particularly where the rote learning questions are concerned. At the A2 level this lack of preparation is even more marked with many candidates finding they had not sufficient knowledge to answer all the questions in the synoptic paper 2517. Centres are reminded that this paper should be the last paper taken and only attempted when it and all other units in the specification have been studied.

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

In general and to keep the standard of answers to this specification rising, it would be encouraging to see more attention to the learning of technical definitions as shown in the learning objectives of the specification and more attention to the quality of the written answer, such as capital letters to start a sentence and a full stop to end it. Candidates should be discouraged from writing silly or unnecessary comments on the papers when they cannot answer the question. Candidates are also reminded that if the examiner has difficulty reading their answer because of poor handwriting, it may not be possible to record a mark for that answer.

2512 - Information, Systems and Communications

General Comments

The overall performance of the candidates was similar to previous years. Compared to previous sessions at this time, most candidates were appropriately prepared for this examination. However, a significant number of candidates were bemused by the technical vocabulary within the paper. The terms come from the specification and these should be familiar to the candidates.

The scenario running throughout the paper appears to have helped many candidates to frame responses to questions more effectively, especially where short answers were required. The focus of responses was often upon the topic in general, rather than addressing the specific requirements of the question. Candidates need to be aware that their responses are expected to use the scenario given in the question.

There were clear gaps in student knowledge that suggested the syllabus had not been thoroughly applied by schools. As usual, this is very significant in modules 2512.2 and 2512.3 – the technical aspects and 2512.4 – databases.

In order to know how much to write and what to write it is essential that the candidates are familiar with examination technique and can identify the key words within the question and have an understanding of what the key words mean.

Comments on Individual Questions

1   The first part of the question was often poorly answered though many pupils were aware that processed data was connected to information. Descriptions of both were given but no attempt was made to show the difference. The standard formula for information was seen regularly but no commentary on how it differed from knowledge was offered.

         In the second part most students thought of the furniture not fitting the van whereas a common wrong answer was centred around costs to the end user rather than to the company. Problems were often being backed up with appropriate implications. Extensive answers, whilst gaining the marks, reflected an ignorance of the key word in the question's stem - identify.

2   Rather than considering the effects of having less data on the hardware students concentrated on the speed elements. Many gave that searches would be quicker. There was confusion between verification and validation and aspects of security seemed to concern many. Examination technique would have prepared the candidates to give an extended answer and gain the second mark. Too many candidates are putting an "identify" answer into a sentence and expecting two marks for it.

3   Candidates struggled to gain a second mark for an example after having given an answer that associated syntactic with rules. Those gaining the second mark gave the structure of dates as an example. Fewer still, convincingly explained how the application of these rules, depending upon nationality, gave different meanings.

         Further examples of both syntactic and semantic representations of data need to be learnt. Confusion between the two was evident in candidates' answers and perhaps highlights limited subject reading.

4	This was one of the better answered questions; pupils were aware of aids for disabled users and gave correct answers. There were however many answers giving a touch screen as an answer without a device other than arms to use it with.

In the second part some pupils expanded the user interface to include input peripherals rather than discussing the ways that the screen could be modified.

5	This question seemed to confuse many students, there were many references to multitasking rather than batch processing in (a). Batch processing is a standard term, used at GCSE, and so it was disappointing that many candidates did not seem to know the term.

In (b) most were aware that it was one user at one time but few thought of the idea of multitasking and fewer were aware that the processor was dedicated to the user.

Unlike previous sessions, many candidates demonstrated an understanding of how an indexed sequential file was organised. Some candidates only obtained one mark or two as they were really describing structured searches or use of a filter based on user-input and failed to fully explain the searching sequence required.

6	Many picked up marks on (a) where the idea of linked tables was usually seen and the idea of key fields seems to have been well taught. Referential integrity however, did not appear to be understood with few students being aware of what was required. Successful responses here showed a command of the subject vocabulary and an understanding of the necessity for referential integrity to be maintained.

Descriptions of cascade update and cascade delete were commonplace. This illustrated that candidates on the whole made no connection between referential integrity having to be established first and the processes that this then facilitates. They would be well served by questioning what a process actually achieved during practical work as well as relying upon it for any automated functions without further consideration. There are elements of the theory in 2512, such as databases, which underpins the practical experience that students should get whilst completing the practical tasks. They should not be seen as separate components but used to support each other.

Part (c) was often poorly answered with students concentrating on just one aspect despite the fact that there were three marks.

Practical experience was evident in answers to part (d)(i) of the question with many candidates gaining both marks.

Whilst part (i) demonstrated that candidates knew why testing was important, this part of the question illustrated that they complete test plans without questioning why one is being constructed. Few candidates were able to gain both marks.

Many awards of full marks were seen here as candidates demonstrated their command of output devices and their preparation for questions of this type. Appropriate devices and well reasoned uses that related directly to the context were commonplace.

7   Very few candidates were able to accurately relate the role of a switch within a Local Area Network. The majority of single marks awarded were for awkward and in some cases tenuous links to data flow or the pathway the data may take. Descriptions of what a switch actually accomplished within a network of this type were rare. Part (a) caused problems for many candidates because they confused a switch with a light switch i.e. used for power purposes only.

Conversely, part (b) saw many full marks being given, mainly for showing reasoning behind devices being able to communicate using the same language. Evident in a small number of centres though, was a tendency to give a short definition of a protocol rather than an explanation of why they are necessary, again indicating candidates' avoidance of any key word in the question.

Some candidates confused network protocols with standard rules for behaviour. It is important that the terminology used within the specification is known and understood by the candidates.

8   Very few candidates failed to gain the mark for part (a).

With an obvious correlation between the context given and their own usage, candidates were able to describe two methods of maintaining the integrity of passwords although a smaller number were then able to give a reasoned explanation of why their suggestions should be implemented, making the second of the two marks more elusive.

"Write down any two pieces of computer legislation you have heard of or wish to invent" may have generated a similar range of responses. Much confusion was seen here with the Data Protection Act and the laws that were being asked for. Many single marks were seen for an answer related to copyright with a significant minority of candidates being able to fully quote the name of a law relating to misuse.

Computer Licences are not, in themselves, legislation but were a popular answer.

9   Many candidates understood that such a code of conduct set out the rights of individuals within a company and gave guidance on what the company may accept as appropriate behaviour. Many instances of just two marks were seen with four being an exception. The right to discipline an employee saw many single marks. The extent of this discipline was often over exaggerated and gained no further award as reasons for such punishment were not given.

10   There was widespread understanding of the geographical remoteness of computers within this type of network, although a qualification of this was not always present. When an example was given, many candidates showed their understanding of external telecommunications links with examples being well documented.

In part (b) it seemed that students did not read the question properly because they wrote about the reverse of the procedure asked for in the question. Very few seemed to know what was really meant by analogue and digital data.

Part (c) was poorly answered since students had little idea what a router does, many thought that it was solely concerned with bandwidth, broadband or speed

11   Candidates were generally aware of the main principles of this Act. Many interpretations of individual principles gained full marks whilst a notable minority failed to score any marks as they related the rights of data subjects instead.

12   With the exception that some thought that Ulnar had something to do with eyes this question was well answered and many gained marks here, however supporting descriptions of the effect of these were often poor.

Some repetition of 'long working hours' was evident here, yet to their credit, the vast majority of candidates could offer further factors that gained marks.

13   Some students were too keen to just quote removal firms and estate agents which were often inappropriate. Some answers were very vague, saying that a company may want the data rather than a specific type of business. Only rarely were conspiracy theories offered up for explanation here, with well reasoned examples of potential purchasers of this type of information being ably communicated and so gaining the majority, if not all, of the available marks.

14   Many students failed to write about implications, often stating uses of ICT & route planning but not taking their answers far enough to access the higher marks available in the question.

How to answer a question of this type needs to be addressed by a good many centres. Many impacts of using ICT were given by candidates and plausibly detailed. The majority of candidates relied upon guesswork for further marks rather than giving explicit positive or negative implications for the business.

A small number of candidates have associated a 'Discuss' key word with having to draw their answer to a conclusion and thus earned a single mark. Further examination of previous mark schemes would demonstrate that two impacts, with a positive and a negative implication discussed for each, would gain the remaining six marks. The length of answers seen here does not indicate any adversity towards writing, but the quality of answers seen does highlight the need for examination technique.

2514 - Practical Applications of ICT Using Standard/Generic Applications Software

General Comments

The paper was generally well answered but there were still candidates who did not read the question and give the required answers. 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.

The examination technique of many candidates hindered their ability to score marks –
Centres must practise 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.

Most candidates' work is legible – however, 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

1   (a)   Generally answered well with some candidates identifying more than 3 differences. However, common misconceptions were that bitmaps have more pixels than vector graphics and that vector graphics used more memory than bitmaps.

   (b)   Generally answered well with many candidates identifying advantages and disadvantages and expanding upon their identification.

   (c)   Answers for this question tended to be consistent across Centres. Many candidates were able to identify specific file extensions but were unable to explain why different file types were needed.

   (d)   Many candidates gained full marks on this question. This was pleasing as this question enabled candidates to demonstrate their practical application of their knowledge.

   (e)   Many candidates repeated the words 'soften' and 'sharpen' in their answer without describing what these features do. Many candidates did not mention edges, which is important for these features. Some candidates earned marks for contrast but usually only one of the two available because they did not expand on their answer. Contrast is not about changing the brightness or darkness alone (this is the brightness feature) – it is about the 'difference' between colours. Candidates should use words other than 'contrast' (e.g. different) when describing the word contrast.

2 (a) Most candidates scored 3 out of 6 marks because they tended not to give examples. This question differentiated between candidates who could describe functions and those who could only describe formulae.

(b) Candidates needed to read and answer the question in context. Many candidates gave standard modelling answers that were not to do with spreadsheets. Too often candidates gave answers that did not relate to the scenario.

(c) Most candidates scored the one available mark.

3 (a) A generally poorly answered question. A number of candidates repeated the word "static" in the forlorn hope of gaining marks. Many candidates believed that static data was data that did not 'move' rather than it not 'changing'. Some candidates did not know that static data did not change, but identified that it could be changed easily!

(b) A well-answered question showing that many candidates can perform searches on the Internet with a high degree of competency. However, candidates often mentioned using keywords such as plant names and yet the question was about finding The Greenhouse website, not specific plants.

(c) Many candidates did well on this question. Candidates that scored poorly tended to answer with phrases like "customers can view products before deciding to buy" – however, any picture allows this to happen, not just thumbnails.

4 (a) Many candidates lost out because they described features such as sorts and filters that can also be done in spreadsheets. Candidates who wrote about searching for plants did not achieve marks because the question was about customers. Candidates mainly gained marks for mentioning reports and queries but failed to expand their answers to gain the extra marks available. Good answers talked about using relationships to relate customers to the plants that they have purchased.

(b) Most candidates achieved the marks for a primary key; although a common misconception was that a primary key uniquely identifies each table rather than each record. Most candidates knew what a foreign key was.

(c) Most candidates identified the primary key and the foreign key correctly, although some used "Customer ID" instead of "Cust_ID". A few candidates identified Plant_ID in the PLANT table as the foreign key rather than the ORDER table. Many candidates identified the relationship correctly.

5 (a) Candidates tended to get the first mark for each of wizards and templates but did not expand appropriately upon their answers. Candidates should think about giving examples for the expansion or describing in more detail or even making another point that helps to describe the feature.

(b) Most candidates were able to identify reasons why templates could be used but failed to expand the identification into an explanation. A common misconception was that templates make documents more 'professional', this is not correct but they do make them more 'consistent'. Although templates can be used for mail merge, this is not one of their advantages as a mail merge document could be created without using a template.

(c)   Most candidates achieved full marks. Some suggested that making margins bigger would help when margins should be smaller. Some candidates also felt that changing the orientation to landscape but this would not be appropriate for a letter. Many candidates gave vague answers such as change the font size but failed to define if the change should be to a smaller or larger font size.

(d)   Many candidates answered this question as if the question was related to templates rather than to mail merge. Some used phrases like "only one letter needs to be written" – this gained no marks, as only one letter needs to be written for a non-merged document. Many candidates described the process of mail merge rather than giving the benefits of using mail merge.

(e)   Very few candidates scored any marks on this question. It was very rare for any candidates to give benefits of word fields, although candidates who did gain marks usually identified examples of word fields well. Too many gave merge fields instead of word fields, part (i). This then put them on the wrong track for part (ii).

2515 - Communications Technology & its Application

General Comments

The paper discriminated well.

The majority of candidates performed well; however a significant number performed badly.

There were no questions that were inaccessible.

There was no evidence of candidates running out of time.

The scripts seemed to be well presented with no problems arising from readability. Centres should consider carefully which candidates they chose to enter and at what stage of the course. There are still too many candidates who simply cannot do themselves justice because they do not have the knowledge or the ability to provide satisfactory responses to the questions set.

As usual, across the board, excellent answers were seen to all questions, and poor answers were seen to all questions.

Comments on Individual Questions

1   Generally poorly answered, with a number of candidates choosing not to attempt the question.

Only the more able candidates scored more than half marks.

(a) Most managed to pick up something, though often through luck rather than judgement. A very few gave excellent answers proving that they knew what they were talking about.

(b) Very poor. The concept of 'standards' is so difficult to take in because it is not something concrete. Many scored half marks for very general comments.

In (c) very few candidates were able give two valid points on the use of layering.

In (d) and (e) knowledge (or its absence) of analogue and digital communications seemed largely to be centre-based. Very few got beyond a GCSE standard of response and the number who got them the wrong way round was disappointing at this level.

2   Reasonably well answered by most candidates, though we did see some strange answers to (b) – along the lines of 'now the teacher does not have to be present' and 'a teacher could now teach many classes at the same time'.

(a) Very poor, particularly when considering the level that this paper is aimed at and also the concrete nature of the question. This response did not require thought, but simply the regurgitation of simple concepts.

(b) It was disappointing to see that few were able to structure an answer. The standard responses kept appearing, but rarely (if ever) enough to be able to award the 8 marks.

In c (i) there were lots of vague definitions of bandwidth, some obviously the result of unclear teaching as whole Centres were giving the same (imprecise) definition.

In (c) (ii) there was often a misunderstanding of the wording- "Explain the importance of bandwidth to the delivery of courses via the internet" with many candidates assuming 'delivery' to be meant in the literal sense of the courses actually arriving in the school. Most candidates only considered high bandwidth, and answers focussed on download. Mostly vague answers.

3   (a) was generally well answered, although some candidates assumed that the question was referring to computer network topologies.

In (b) most candidates were able to give two examples of interactive television services, but often were unable to score the mark for the description.

(c) was less well done, although there were some good answers. 'User centred approach' is still not well understood by some candidates. There was some confusion in the minds of some candidates between 'user centred' and 'user friendly'.

4 (a) A number of candidates either ignored or misinterpreted the stem 'facilities on modern telephone systems' and went down the road of 'you could use the telephone to connect to the Internet' and then proceeded to extol the joys of the Internet. Others talked about facilities of mobile phones.

Candidates should have scored 7 basic marks here. Very few managed more than 2 or 3.

In (b), hacking and encryption were usually seen, and awarded credit, but often very little else.

Some candidates seemed to think that because a person was working from home instead of at the office, they would suddenly be able to see the whole of the company network, and could wreak havoc on it.

In (c) there were few really thoughtful answers and many were on the lines of 'working at home means you'll probably skive because the boss isn't watching you' kind of answers.

5 (a) Mobile phone technology is still not well understood. There are still too many satellites being brought into answers. However, there were some good answers. (ii) and (iii) were well answered.

(b) and (c) less well so.

In (b) most candidates mentioned route planning, but few got further than that.

In (c) – security issues – there was obviously quite a lot of background knowledge although many candidates had difficulty in relating it to the question asked.

6 There were disappointingly few good answers here, and a large number of candidates opted not to attempt the question at all. Some talked about chip and pin cards, others thought magnetic stripes and bar codes counted as 'new' developments in ICT.

Retina scans and fingerprint technologies, when mentioned, were given credit.

2516 - ICT A2 Project

General Comments

The cohort for this session was very small, understandable as few candidates will be ready to have their work assessed yet. However, I suspect that there are a number of candidates who are resubmitting work for a second time. 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. We seem to have got rid of the ring binders and the plastic envelopes, and thank you to Centres for that.

The place of the end user is still uncertain in some minds. This is the person whose problem it is that needs solving and they should be watching over the work and ensuring that it goes in the direction that they want it to take. To that end, it is very important that the presence of the end user is obvious 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 may be penalised for too little. Some of the end user acceptance letters are 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.

There still needs to be work on the interviews. We insist 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 are always exceptions to the rule, for instance the candidate whose end user was in Norway, in this case there were, perhaps, justifiable reasons (which would need to be argued in the report) for collecting the information some other way. In defence of the candidate, he showed common sense by treating it as an interview and conducting his question and answer session by email, providing screen dumps of the conversation. We want to see some evidence of planning of the interview, the requirements have been discussed in detail at the Inset meetings this year, so we look forward to well documented interviews. We also look forward to properly documented interviews, remember, no appendices, and conclusions being drawn from the information collection.

Again, as discussed at the Inset meetings, the candidates should have both a requirements specification and a list of objectives, or design specification.

When considering the requirements specification, remember that these 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, can we please have 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.

Once again, thank you to all these Centres for the way that the work is presented and please remember that if in doubt about any aspect of the project work at all, contact the board who will direct your query in the appropriate direction.

2517 - Systems and Systems Management (Written Examination)

General Comments

Many candidates entered for this examination gave good reasoned papers, however many other candidates who were entered for this examination were not able to attempt all the questions. This may mean that they were entered before they had finished the course, or were entered without being properly prepared. In many cases there was not a lot of evidence of learning or the application of knowledge. The questions which obtained the lowest marks were those requiring knowledge of certain keywords or the understanding of key concepts. A number of papers were marked which contained facile and facetious remarks, particularly where candidates did not know the answer to a question. This practice should be discouraged.

Comments on Individual Questions

1   (a)   Most candidates were able to gain marks for this question though many did not distinguish between "up-to-date" and "accurate". A number began their answers "The data must be up-to-date and accurate because …" This is poor examination technique and will not produce full marks.

(b)   Many candidates clearly had no idea what a MIS was or what it could be used for. Many incorrectly guessed at answers involving spreadsheets and databases.

2   (a)(i)   The majority of candidates were able to identify ISDN as a digital connection method.

(ii)   Many candidates failed to read the words "connection to the Internet" and merely gave differences between analogue and digital which scored no marks. A number of candidates also indicated that broadband was faster without qualification. At this level the concept of rate of transfer is important.

(b)   This question was generally well answered with most candidates able to identify methods of protecting confidential data.

(c)   Almost all candidates gained full marks here. Those that did not, often gave preventative measures, rather than causes of health problems related to working with ICT.

3   (a)   Candidates were not able to focus on concrete reasons for using the latest technology to run the website. Poor examination technique meant that candidates were not trying to give specific advantages but were just filling the space.

(b)   Perception, attention, memory and learning as aspects to be taken into account
(i)-(iv)   when designing a website were not understood by the majority of candidates, many of whom gave the impression that they were just making up answers. Memory for instance, was often interpreted as the random access memory of the computer. At this level candidates should be attempting to learn and explain key words from the specification.

(c)(i) Many candidates were unable to even guess at a process modelling technique and left the question blank.

(ii) Many candidates were unable to even guess at a data modelling technique and left the question blank. Those that did make a guess often confused process modelling with data modelling.

(iii) Prototyping was clearly understood by most candidates, but often poor examination technique led to a failure to gain full marks.

(d) (i)-(ii) The question of support needed when new systems have been introduced has been examined many times. Few candidates showed evidence of studying past examination papers and thus scored poorly. Many candidates failed to distinguish between the "before the installation" in 3(d)(i) and "after the installation" in 3(d)(ii).

4 (a) Well answered by many candidates, though a distressing number clearly had no idea about maintaining a system.

(b) This question was badly answered. Again poor examination technique meant that answers were unfocussed. The idea of agreed standards had clearly not been studied in many cases and the candidates' attempts at making up answers failed to score marks.

(c)(i) This question was well answered though only a very few candidates managed to score full marks.

(ii) Many candidates managed to score marks. Confidentiality of data was clearly understood though some of the solutions to maintain that confidentiality were not sensible.

(d) (i)-(ii) Very disappointing answers showing that many candidates are not keeping up with developments of ICT and were unable to use their imagination. This kind of question, exploring the limits of ICT, has been asked in every paper since the inception of this specification. Almost no candidates scored full marks.

5 (a) Almost no candidates had any idea of the difference between CAL and CBT though it is a clear objective in the specification.

(b) Poorly answered. Few candidates gained full marks.

Advanced Subsidiary GCE ICT 3838

January 2005 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2512	Raw	90	62	56	50	44	38	0
	UMS	90	72	63	54	45	36	0
2514	Raw	90	58	52	46	40	34	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	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	8.3	26.4	55.4	78.8	95.9	100.00	197

Advanced GCE ICT 7838

January 2005 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2515	Raw	90	57	51	45	40	35	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	55	49	44	39	34	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	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	5.6	16.7	55.6	77.8	88.9	100.00	21

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