OCR
RECOGNISING ACHIEVEMENT

GCE

Information & Communication Technology

Combined Mark Schemes
And Report on the Units

June 2005

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
June 2005

General advice to Assistant Examiners on the procedures to be used

1.   The schedule of dates for the marking of this paper is of paramount importance. It is vital that you meet these requirements. If you experience problems then you must contact your Team Leader without delay.

2.   Please ensure that you use the final version of the Mark Scheme which will be available at the end of the Examiner's Standardisation meeting. <u>You are advised to destroy all draft versions.</u>

3.   An element of professional judgement is required in the marking of any written paper, and candidates may not use the exact words which appear in the detailed sheets which follow. If the science is correct and also answers the question then the mark(s) should normally be credited. If you are in doubt about the validity of any answer then contact your Team Leader for guidance.

4.   Mark in red. A tick (✓) should be used, at the appropriate point, for each answer judged worthy of credit.

5.   Strike through all blank spaces and/or pages in order to give a clear indication that the whole of the script has been considered.

6.   The mark total for each question should normally be ringed at the bottom right hand side.

7.   In cases where candidates give multiple answers, mark the first answer(s) up to the total number required. In specific cases where this simple rule cannot be applied, the exact procedure to be used will be given in detail at the Examiners' Standardisation meeting.

8.   Some questions may have a 'Level of Response' mark scheme. Details of these are given in Appendices attached to this Mark Scheme.

9.   Abbreviations, annotations and conventions used in the detailed Mark Scheme:

         /   = alternative and acceptable answers for the same marking point
         NOT = answers which are not worthy of credit
         <u>   </u>   = (underlining) key words which **must** be used to gain credit

10.   Abbreviations to be used when marking:

         ^   = omission mark
         bod   = benefit of the doubt
         nbod = not benefit of the doubt
         je   = just enough to get the mark
         tv   = working towards credit, but not awarded the mark, too vague
         con   = contradiction (cases where candidates contradict themselves in the same response)
         NAQ   Not answered the question
         MTP   Miss the point
         NE   Not enough
         r   = repetition
         ( )   = words around text indicate that what is written is irrelevant and has been ignored

1   **Identify *two* hardware upgrades and one software upgrade that could be done to improve the performance of the computer.**

      Two from; examples:
      More RAM (1)
      Faster Hard drive (1)
      Overclock processor (1)
      Faster processor (1)

      Software:
      Disk defragmenter (1)
      Delete files (1)
      Use software tools (1)
      Install newer version of software

                                                                 [3]

2   **(a)** **Describe *two* storage devices that would be appropriate to use to back up the data.**

         One for identification, 2nd for description, examples:
         CD R/CR-RW (1) – a CD you can write to (1)
         DVD R (1) – a DVD you can write to 6GB capacity (1)
         Zip disk/Jazz disk (1) external storage (1)
         Tape drive (1) portable/reel (1)
         Flash memory (1) removable storage (1)   **[4]**

    (b) **Identify a utility that could be used to decrease the size of files before they are transferred.**

         Compression Software(1)

         NOT ZIP   **[1]**

3   **Describe the function of a translator and compiler:**
         Translator, 2 from:
            Converts from one language (1) to another (1)
            e.g. Assembler/Interpreter/Compiler (1)

         Compiler; 2 from:
            Turns high level code/source (1) into machine code/object (1)
            High level language line (1) becomes several low level lines (1)
            Creates independent program (1) which can be run (1)

                                                                 [4]

4 **Draw a diagram to show the input, processing, storage, output and feedback cycle.**

Marks for:
1 mark for Input, Processing Output (in correct order) linked together
1 mark for Storage (linked to processing)
1 mark for feedback linking Output to Input
1 mark for correct direction of flow (arrows)

Or other appropriate terms for input/processing/output/storage/feedback
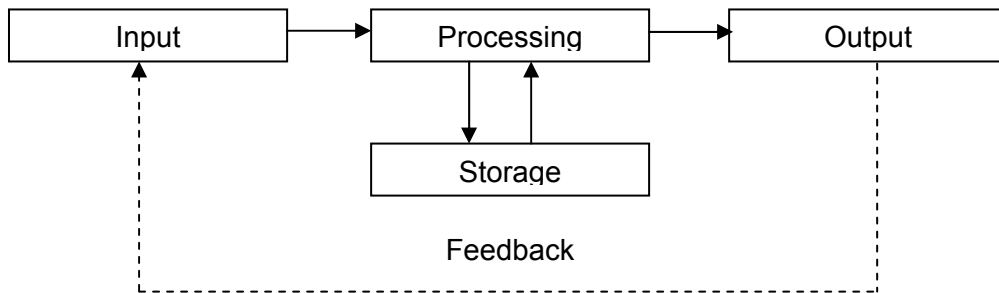
[4]

5 **Describe** *two* **differences between standard applications software and programming languages**

1 for identification, 2nd for comparison, examples:
Standard end product (1) program used to create/write it (1)
Low technical ability to use standard (1) high ability to use programming/training required (1)
Standard can be customised (1) through the use of programming languages (1) e.g. macros (1)
Programming language is not a piece of software (1) The editor is the software (1)/ creates software (1)
Programming languages are standardised (1) standard applications are proprietary (1)

[4]

6 (a) Fill in the table below identifying an appropriate field name for each data type. The first one has been done for you.

One for each field name, examples given:

Data Type	Field Name
String	Surname
Date	Date of Performance (1)
	Date of Booking (1)
Boolean	Disabled (1)
	Adult/Child (1)
Number	Number of tickets (1)
	Price of tickets (1)

[3]

(b) Describe what is meant by the term validation.

Any two from:
Sensible (1)
Reasonable (1)
Within boundaries (1)
Complete (1)
Allowed (1)

NOT correct   **[2]**

(c) (i)   Validation method for telephone number

One from, allow examples:
Length (1)
Input mask/picture/format check (1)

(ii)   Validation method for date of birth

One from, allow examples:
Range (1)
Presence (1)
Input mask/ Format/Picture check (1)
Type/length (1)

[2]

(d) Describe the purpose of verification

Any two from:
Object (1) and source the same (1)
Copied accurately (1)
No transcription errors (1)

[2]

7 (a) Describe *two* advantages of using fixed length records for the new booking database.

One for identification, second for description:
Disk space requirements (1) can be accurately calculated (1)
Faster to search/process (1) as each beginning of record location is known (1)
Reorganisation of records simpler (1) records fit in the gaps (1)   **[4]**

(b) Explain three reasons why the company should use a relational database instead of a flat file database.

Any six from:
Reduced data duplication (1) less to store (1) lower hard drive size (1) less errors (1)
Data integrity/consistency (1) only one item stored (1) data protection act (1)
Faster searching (1) linked tables (1) smaller in size (1)
Security (1) access rights (1) on tables (1)
Grouping of data (1) logical structure (1) concise searching (1)

[6]

(c) Describe two other types of interface.

Two from, 1 for identify, 2nd for description:
Direct manipulation (1) reflects physical actions (1)
Natural Language (1) spoken or written (1) everyday speak (1)
Command Line (1) typed commands (1) prompt (1)
Forms (1) prompts for input (1)
Menu (1) lists or related items (1)

[4]

8 (a) Describe what is meant by a rule based system
User Interface (1)
Knowledge base (1)
Inference Engine (1)
Asks questions (1)
Generates answers (1)
based on collections of rules (1)

[3]

(b) Identify *two* reasons why the theatre company uses a system which relies on rules and probabilities instead of a system that creates standard reports.

One mark for each reason:
Allow example of system working (1)
Can use predictions (1)
Can give conclusions (1)
Give evidence for conclusions (1)
Dynamic (1)   **[2]**

9   **(a)**   **Identify two characteristics of a LAN**

Two from:
Single site (1)
Direct connection possible (1)
Cables owned by company (1)

[2]

   (b)   **(i)**   **Describe *a star* network topology indicating the direction of flow of data.**

If no labels, max 1 mark. 3 from:
Correct diagram (1)
Workstation/computer/node connected to centre (1)
Hub/switch/Server in centre(1)
Flow from and to centre (1)

[3]

         (ii)   **Identify one other suitable network topology that the theatre company could use.**
1 from:
Ring (1)
Bus (1)

[1]

   (c)   **Describe *two dis*advantages to the theatre company of networking the computers.**

One for identification, second for description:
Requires technical staff (1) cost of employment (1)
Increase in office "chatter" (1) messaging, email not work related (1) less work completed (1)
Reliance on central equipment (1) if breaks nothing works (1)
Cost of hardware (1) e.g. hubs/switches/cables (1)
Increased risk of hacking (1) loss of data (1)
New staff do not know old method of working (1) reliant on equipment working (1)
Viruses (1) can spread more easily (1)
More data traffic (1) slower working computers (1)

[4]

   (d)   **(i)**   **Describe what is meant by bandwidth.**

Two from:
Volume of data (1) transmitted over time (1)
Range of frequencies (1)
Capacity of a communications media (1)

[2]

         (ii)   **Explain why the theatre company needs a high bandwidth to transmit live video.**

Two from:
Time sensitive (1) do not want it jerky (1)
Voice and picture synchronised (1) understand what is happening (1)
Multiple users will time out (1)

[2]

10   Compare Instant messaging and video conferencing
Must be comparison, two marks per comparison, topics include:
Multiple conversations – IM yes, VC no
Hardware required – IM – nothing extra to computer, VC camera and microphone
Recording – both can be recorded and played back later
Identification – on IM can pretend to be someone else, not with VC
Bandwidth – VC – High, IM – low

[6]

11 (a) Describe three of the legal rights that individuals have under the Data Protection Act (1998)
1 for right, 1 for description:
Right of Subject Access (1)
        Can get a copy of the data held (1) charge (1)
Prevention of Processing (1)
        Can prevent processing that would cause damage or distress (1)
Prevention of Direct Marketing (1)
        Can stop sending of advertising material (1)
Prevention of Automated Decision Taking (1)
        Can make a human make the decision (1)
Compensation (1)
        Where they have suffered damage and distress (1)
Correction (1)
        Inaccurate data corrected or erased (1)
Assessment (1)
        Anyone can ask the Commissioner to assess whether or not personal data is being processed in accordance with the act. (1)

[6]

12 **Identify *two* measures the theatre company could introduce to prevent hacking.**

Any two e.g.:
Physical security:
    Lock the computer up (1)
    Entry measure to get into building (1)
Logical Security
    Passwords (1)
    Anti virus software/spyware (1)
    Levels of access (1)
    Patches/updates (1)
    Firewalls (1) **[2]**

13 **Identify and explain two of the statements that the Network Manager could include in the code of conduct.**

Any four from, examples:
No copying software (1) licensed to the company not individuals
No hacking (1) illegal (1)
Be polite to customers (1) keep customers (1)
Use resources for company work not personal (1) stealing from the company (1)

(ACM Code of Conduct – allow one mark each to a max of 4)
    Contribute to society and human well-being
    Avoid harm to others
    Be honest and trustworthy
    Be fair and take action not to discriminate
    Honor property rights including copyrights and patent
    Give proper credit for intellectual property
    Respect the privacy of others.
    Honor confidentiality.
  [4]

14 Discuss the impact that ICT has had on the customer when deciding what to see, booking a ticket and watching a performance.

Up to Seven marks for discussion, If Not Seven marks for discussion, 1 mark for conclusion:

0-2	**Identification of Impact Only** Identification of 1 point only (1) Identification of 2 points or more (2)
3-4	**Advantages Only OR Disadvantages Of Impact Only** 1 advantage (3) 2 or more advantages (4) 1 disadvantage (3) 2 or more disadvantages (4)
5-7	**Advantages AND Disadvantages of Impact** 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:
Identify
Reviews available on line
Clips available to see
Booking systems can give availability of tickets
Booking can be done on line
Tickets can be printed at home
Sound systems can enable actor to be heard anywhere
Computerised lighting

Advantages (expanded) to include:
Can get different points of views about reviews and ask questions on a discussion board – interaction.
Clips can give you a feel for the show and tell you if you really want to spend the money to go and see it.
Availability means you can search until you get the tickets you want at the price you want – not continually asking a person who might get annoyed.
Booking on line from anywhere at any time – saving time and fitting it around your lifestyle.

Sound systems improving the experience – for hard of hearing special systems to allow them to enjoy as much as anyone.
Computer effects add to the experience – make it different to a film and worth the money.

Disadvantages (expanded) to include:
Reviews and discussions might give you too much information. Also difficult to tell if the reviewer has a grudge.
Clips require a computer and hardware to see them. Might take a long time to download. Might spoil the show – clips of the best bits raise the expectations.
Once a booking has been made – might not get the right seats or make a mistake and therefore difficult to undo.
Proving purchase if made a long time in advance and finding the receipts is a problem.
Special effects can distract from the action on the stage.
The computer controlling it could fail (Chitty, Starlight) and give a miserable performance.

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

[7]

QOWC [4]

Mark Scheme 2513
June 2005

Task 1

Tick Box

1 **(a)** **(i)** Design specification to include the following **STATED and NOT implied** (can be written or annotated):

1 ❑ Plain white background stated (1)
2 ❑ Specific font size stated (1)
3 ❑ Specific font style stated (1)
4 ❑ Specific colours to be used stated (1)
5 ❑ Screen resolution/size (1)
6 ❑ Style of picture, eg black/white, colour, embossed (1)
7 ❑ Style of hyperlinks, eg buttons, hotspots, text (1)
8 ❑ **All** of the following to be included for **one** mark (1):
   logo of the school
   school name
   contact details
   head teacher named
   picture of school building
   links to other pages on the website
9 ❑ Size of picture indicated (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	5

(ii) Hand drawn design to include (**zero** marks if not hand drawn):

10 ❑ Space for logo (1)
11 ❑ Space for name of school (1)
12 ❑ Space for **all** of the following for **one** mark (1):
   address
   telephone number
   e-mail address
13 ❑ Space for name of head teacher (1)
14 ❑ Space for picture of school building (1)
15 ❑ Use of hyperlinks or buttons – destination must be indicated (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	5

(iii) Diagram to include:

16 ❑ Separate folders for each page (1)
17 ❑ Web page file names or titles stated for each folder (1)
18 ❑ Image file names or titles stated for each folder (**or** all images in an image folder) (1)
19 ❑ At least 5 separate folders (1)
20 ❑ Diagram is hierarchical (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	4

Tick Box

(b) **(i)** 21 ❑ Home page reasonably matches design or reasons given for
deviation (1)
22 ❑ Plain white background (1)
23 ❑ Use of other hyperlinks / buttons (1)
24 ❑ Link to parental mailing list (1)
25 ❑ Use of drop down boxes for sign up page (1)
26 ❑ Both confirm and cancel button on sign up page
(alternative names can be used) (1)
27 ❑ Space for **all** the following on sign up page
for **one** mark (1):
title, forename, surname of parent/guardian
forename and surname of child
class child is in
e-mail address to use for parents/guardians
28 ❑ No spelling errors (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	5

(b) **(ii)** **Note:** Only the home page and parental mailing list page need to have been
created.
29 ❑ Printed evidence of appropriate file names used
(e.g. not page1, page2) (1)
30 ❑ Printed evidence of appropriate file extensions/types
used (1)
31 ❑ Printed evidence that files for both pages are in
separate folders (home page can be in root
directory) (1)
32 ❑ Printed evidence of relative hyperlinks (i.e. not full
path) being used (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	3

(c) 33 ❑ Screenshots included (1)
34 ❑ Description of creating a new page (1)
35 ❑ How to create a folder (1)
36 ❑ How to save page (1)
37 ❑ How to insert image (1)
38 ❑ How to ensure image uses relative path (1)
39 ❑ How to open home page for editing (1)
40 ❑ How to insert a hyperlink from the home page to the
new page (1)
41 ❑ How to make the hyperlink or button relative (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	6

Total for Task 1 [Max 28 Marks]

TOTAL FOR TASK	
Centre	
Internal Moderator	
Moderator	
Max	28

Task 2

Tick Box

2   (a)   Max 7 from examples of items to test given below.
For each mark, whole row must be completed.

For example:

Item to Test	How to test	Expected Result
Works on different types of computers	*Open on Apple Mac and PC*	*Works on both Apple Mac and PC*

1 ❑ Works on different types of computers (1)
2 ❑ Works on different browsers (1)
3 ❑ Adequate download speed (1)
4 ❑ Fits on screen (1)
5 ❑ URL Works (1)
6 ❑ Button – only one button can gain a mark (1)
7 ❑ Colour of snooker balls (1)
8 ❑ Images appear (1)
9 ❑ Accurate content (1)
10 ❑ Hyperlinks work (1)
11 ❑ Spelling or grammar (1)
12 ❑ Consistent use of colour or size or font (1)

Other tests worthy of mark (please state) – must be DIFFERENT:	
13 ❑	
14 ❑	
15 ❑	

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	7

(b)

16 ❑ Simple step by step instructions, eg using bullets or numbers (1)
17 ❑ How to open the software, eg navigate to URL (1)
18 ❑ How to start the presentation (1)
19 ❑ How to click on 'Go to Menu' (1)
20 ❑ How to use the menu (1)
21 ❑ Graphics used (1)
22 ❑ Sentence case used, ie not ALL CAPS (1)
23 ❑ Consistent style suitable for 8-9 year old children (1)
24 ❑ No spelling errors (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	5

(c)   **Max 4** from:

25 ❑ Contents or index page (1)
26 ❑ Introduction (1)
27 ❑ Numbering or bullet points used (1)
28 ❑ Consistent style (1)
29 ❑ Screenshots (1)
30 ❑ Trouble shooting with at least two problems **and** solutions related to the task (1)
31 ❑ Glossary of terms with at least four definitions related to the task (1)

Max 6 from:

32 ❑ How to open existing presentation (1)
33 ❑ How to delete buttons (1)
34 ❑ How to make text appear automatically after a time interval (1)
35 ❑ How to make images appear automatically after a time interval (1)
36 ❑ How to record voice (1)
37 ❑ How to insert recorded voice (1)
38 ❑ How to make recorded voice play automatically (1)
39 ❑ How to make slides appear automatically after a given time interval – eg transitions (1)
40 ❑ How to make the presentation go back to the beginning when it has finished (1)
41 ❑ How to save the file (1)
42 ❑ How to test the presentation (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	10

Total for Task 2 [Max 22 Marks]

TOTAL FOR TASK	
Centre	
Internal Moderator	
Moderator	
Max	22

Task 3

Tick Box

3   (a)   (i)   Marks for (a) (i) can ONLY be awarded if a spreadsheet has been used.

    1 ❑ **All** of the following included for **one** mark (1):
            business Logo
            contact details of business
            date of quotation
            customer name
            customer address (1)

    2 ❑ Area of driveway shown as **84 sq metres (m^2)** - units must be displayed (1)

    3 ❑ Type of paving block shown as **Clay Brick** and type of base shown as **concrete** (1)

    4 ❑ Total cost of paving blocks required shown as **£3,307.50** with 2 decimal places (1)

    5 ❑ Total cost of sand required shown as **£88.20** with 2 decimal places (1)

    6 ❑ Total cost of concrete or hardcore shown as **£336.00** with 2 decimal places (1)

    7 ❑ Labour cost shown as **£750** with or without decimal places (1)

    8 ❑ Total cost including VAT shown as **£5266.00** with two decimal places (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	4

Note: £ sign may be with values OR as part of labels/titles

    (a)   (ii)

    9 ❑ Space for both customer name **and** address (1)

    10 ❑ Space to enter length and width of driveway - indicating that length and width should be in metres (1)

Max 1 from:
    11 ❑ Drop down box or other selection method (not text box) for paving blocks (1)

    12 ❑ Drop down box or other selection method (not text box) for type of base (1)

Max 1 from:
    13 ❑ Button to open and/or print invoice (1)

    14 ❑ VAT rate can be entered on input screen (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	2

(a) (iii)

15 ❑ Correct lookup function (must cross-reference with lookup table) used for either of (1):

cost of paving block **or**

area of paving block **or**

cost of concrete or hardcore

16 ❑ Correct formula used for number of paving blocks (1)

17 ❑ Correct formula for labour days after initial 50 square metres (eg RoundUp function) (1)

18 ❑ Evidence of macro used (1)

Max 2 from the following:

19 ❑ Correct formula for calculating area (1)

20 ❑ Correct formula for calculating cost of bricks (1)

21 ❑ Correct formula for calculating cost of sand (1)

22 ❑ Correct formula for calculating total price of concrete or hardcore (1)

23 ❑ Correct formula for calculating labour cost (1)

24 ❑ Correct formula for calculating total including VAT (1)

Max 2 from the following:

25 ❑ Correct formula for calculating cost excluding VAT (1)

26 ❑ Correct formula for calculating quantity of sand (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	7

(b) (i) Test data table showing test input data and expected output with description of test.
Two examples of tests for invalid input (2)
Three other tests (can be invalid or valid input) (3)

	Tick Box	Description of Test	Type of Test	Input Data Value	Expected Output Value / Error Message
Examples of Invalid Input:					
27 ❏		Text entered for length	Invalid	Twelve	"You must use real numbers only"
28 ❏		Negative number entered for width	Invalid	-5	"You must enter a positive real number"
29 ❏		Enter a customer title that doesn't exist	Invalid	Msr	"Please only use Mr, Mrs, Miss or Ms"
30 ❏		Enter a customer name that is longer than 50 characters	Invalid	(name that is longer than 50 characters)	"Please only use a maximum of 50 characters"
Any other suitable invalid tests (please identify what marks have been awarded for):					
31 ❏					
32 ❏					
33 ❏					
34 ❏					
35 ❏					
Examples of Valid Input (max 3):					
36 ❏		Test for area calculation using length and width	Normal	Data in length and width	nn
37 ❏		Test for lookup of cost per paving block using type of paving block	Normal	Any type of paving block (eg Clay Brick)	£n.nn
38 ❏		Test for quantity of sand calculation using area	Normal	Data in length and width to give area	n.n
39 ❏		Test for labour days calculation using area	Normal	Data in length and width to give area	n (rounded up correctly)
40 ❏		Test for large length	Extreme	10000	1000 in length, all related cells appear OK
41 ❏		VAT rate set to zero	Extreme	0	0 in VAT rate, all related cells appear OK and calculations are correct
42 ❏		Test for combo box showing all types of paving block	Normal	Data in lookup table	All types of paving blocks shown
Any other suitable valid tests (please identify what marks have been awarded for):					
43 ❏					
44 ❏					
45 ❏					

Note:
Invalid data requires a customised error message as output, therefore expected output of #Value or #Error receives **zero** marks.
Test input data value(s) must be clearly identified - not just description of value.
Expected output must be clearly identified including values where appropriate.
All tests must be different.

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	**5**

Different tests include different types of test on the same column (eg normal, extreme, erroneous) but not 3 tests of the same type (eg 3 x normal) on the same column. Testing the same lookup formula should only be credited once, as should testing the same simple multiplication formula. 3 valid tests could be testing a lookup formula, a simple multiplication and a sum or division etc, but not more than one of the same type.

(b) (ii)   Annotated printouts showing results of testing using data from **b (i).**

46 ❏   Printout of invalid test (1)
47 ❏   Printout of different invalid test (1)
48 ❏   Printout of different test - invalid or valid (1)
49 ❏   Printout of different test - invalid or valid (1)
50 ❏   Printout of different test - invalid or valid (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	**5**

Note:
Error messages must be customised, therefore printouts of #Value or #Error receive **zero** marks.
Printouts must be clearly annotated for each test identifying the data input and the actual output.
Each individual test must match **(b) (i)** for each mark including the actual data used therefore if **(b) (i)** is not attempted then **zero** marks for **(b) (ii).**

Mark awarded for (b) (i) determines the max mark for (b) (ii).

Total for Task 3 [Max 23 Marks]

TOTAL FOR TASK	
Centre	
Internal Moderator	
Moderator	
Max	**23**

Task 4

Tick Box

4 (a) Note: must be hand drawn (zero marks if not hand drawn):

1	❑	Space to enter separate forename and surname (1)
2	❑	Drop down box or other selection method (not text box) to select instrument (1)
3	❑	Details of instrument shown (1)
4	❑	Area to add event (1)
5	❑	Area to register attendance at an event (1)
6	❑	Menu screen with buttons for navigation **including** printing lists (1)
7	❑	Annotated or labelled button to print (1)
8	❑	Annotated or labelled button to confirm data entry (1)
9	❑	Annotated or labelled button to cancel data entry (1)
10	❑	Annotated or labelled button to exit (1)
11	❑	Validation check - described or annotated (1)
12	❑	Different validation check - described or annotated (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	8

Note: Validation for status is acceptable for a mark.

(b) Note: marks must be awarded for design, <u>not</u> software development.

13	❑	All 4 tables have a sensible primary key or composite key (1)
14	❑	MEMBER includes at least the following attributes (1): forename surname address (at least 2 separate fields) post code telephone number
15	❑	EVENT includes at least the following attributes (1): description / name date
16	❑	LOAN includes foreign key (labelled) for member (1)
17	❑	LOAN includes foreign key (labelled) for instrument (1)
18	❑	INSTRUMENT includes primary key (labelled) (1)
19	❑	Data type for telephone number is text(1)
20	❑	Data types for primary keys in MEMBER and EVENT match data types for foreign keys in ATTENDANCE (1)
21	❑	Data types for foreign keys in LOAN match data types for primary keys in MEMBER and INSTRUMENT (1)
22	❑	Different validation check to that given in **(a)** (1)
23	❑	Another different validation check to that given in **(a)** (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	8

Note: Autonumber is not a data type.

(c) (i)

24 ❑ At least 20 MEMBERs shown (1)
25 ❑ At least 25 INSTRUMENTs shown (1)
26 ❑ At least 5 EVENTs shown (1)
27 ❑ At least 3 EVENTs attended by at least 15 MEMBERs each in ATTENDANCE table (1)
28 ❑ At least 30 LOANs shown (1)

Note: only allow screenshots if full evidence exists

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	5

(c) (ii) 29 ❑ Correct Entity Relationship Diagram with relationship types similar to that below (1):
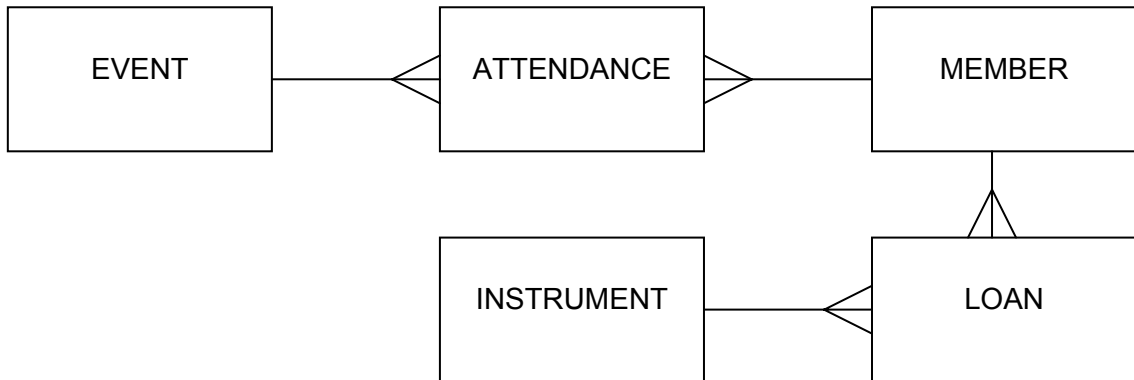
MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	1

(c) (iii)

30 ❑ Appropriate primary key or composite primary key for ATTENDANCE (1)
31 ❑ Appropriate primary key or composite primary key for LOAN (1)
32 ❑ Attributes and data types shown for EVENT (1)
33 ❑ Attributes and data types shown for MEMBER (1)
34 ❑ Attributes and data types shown for INSTRUMENT (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	4

Note: For attributes and data types, allow errors to follow through from **(b)**

(d) (i)   35 ❑   Report includes at least 5 EVENTs (1)

          36 ❑   Each event on a separate page (1)

          37 ❑   Title of the event as a heading on each page (1)

     Note: **Zero** marks for a query list and no report.

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	2

(d) (ii)   38 ❑   Query structure shows how attributes for MEMBERs and EVENTs were included (1)

     Note: Zero marks for query structures which select EVENT by name or key because report must be produced as a single report.

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	1

(d) (iii)   39 ❑   Each member follows on from the next - ie not separate pages (1)

          40❑   Total number of events shown for each member (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	2

(e) (i)   41 ❑   Screens reasonably matches design in **4 (a)** or reasons given for deviation (1)
               42 ❑   Drop down box, option boxes or other selection method included (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	**2**

(e) (ii)   Validation method with evidence of structure and error message:
               43 ❑   Use of input mask validation (1)
               44 ❑   Use of range validation (1)
               45 ❑   Use of combo box (1)
               46 ❑   Use of lookup validation (but not same as combo box) (1)
               47 ❑   Use of exists in list validation (1)
               48 ❑   Use of presence check (except on key fields) (1)
               49 ❑   Use of data type check (not system generated) (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	**4**

Other suitable validation methods worthy of mark (please state) – must be DIFFERENT:	
50 ❑	
51 ❑	
52 ❑	
53 ❑	

Note: Zero marks for system generated error messages.

(e) (iii)   54 ❑   Evidence of field codes or design view of the report used for the certificate (1)
                55 ❑   Printout looks like a certificate (1)
                56 ❑   At least 2 completed certificates with data from 2 different members who attended (1)
                57 ❑   Printed evidence of query structure showing how members were selected for 25 July 2004 (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	**4**

(f)

58 ❑ Annotated button to delete records (1)
59 ❑ Evidence of delete button link (1)
60 ❑ Warning message asking to confirm deletion (1)
61 ❑ Annotated query structure/macro/code to delete records (1)
62 ❑ Annotated evidence in query/macro/code of 3 years being used to compare the return date (1)
63 ❑ LOANs highlighted to show which will be deleted (1)
64 ❑ Correct printout of records after deletion (1)

MARKS:	
Centre	
Internal Moderator	
Moderator	
Max	**6**

Total for Task 4 [Max 47 Marks]

TOTAL FOR TASK	
Centre	
Internal Moderator	
Moderator	
Max	**47**

Mark Scheme 2514
June 2005

General advice to Assistant Examiners on the procedures to be used

1. The schedule of dates for the marking of this paper is of paramount importance. It is vital that you meet these requirements. If you experience problems then you must contact your Team Leader without delay.

2. Please ensure that you use the final version of the Mark Scheme which will be available at the end of the Examiner's Standardisation meeting. <u>You are advised to destroy all draft versions.</u>

3. An element of professional judgement is required in the marking of any written paper, and candidates may not use the exact words which appear in the detailed sheets which follow. If the science is correct and also answers the question then the mark(s) should normally be credited. If you are in doubt about the validity of any answer then contact your Team Leader for guidance.

4. Mark in red. A tick (✓) should be used, at the appropriate point, for each answer judged worthy of credit.

5. Strike through all blank spaces and/or pages in order to give a clear indication that the whole of the script has been considered.

6. The mark total for each question should normally be ringed at the bottom right hand side.

7. In cases where candidates give multiple answers, mark the first answer(s) up to the total number required. In specific cases where this simple rule cannot be applied, the exact procedure to be used will be given in detail at the Examiners' Standardisation meeting.

8. Some questions may have a 'Level of Response' mark scheme. Details of these are given in Appendices attached to this Mark Scheme.

9. Abbreviations, annotations and conventions used in the detailed Mark Scheme:

    /   = alternative and acceptable answers for the same marking point
    NOT = answers which are not worthy of credit
    <u>   </u>   = (underlining) key words which **must** be used to gain credit

10. Abbreviations to be used when marking:

    ^   = omission mark
    bod   = benefit of the doubt
    nbod = not benefit of the doubt
    je   = just enough to get the mark
    tv   = working towards credit, but not awarded the mark, too vague
    con   = contradiction (cases where candidates contradict themselves in the same response)
    NAQ Not answered the question
    MTP Miss the point
    NE   Not enough
    r   = repetition
    ( )   = words around text indicate that what is written is irrelevant and has been ignored

Question			**Mark**

1   **a**   *Identify **two** advantages and **one** disadvantage of using a Wizard facility to develop this presentation.*

Advantages any two from:
Speed with which an item is created (1)
Standard formats to choose from (1)
User-friendly approach (1)
Corporate image can be developed easily (1)
Do not need high level of technical ability to create complex presentations

Disadvantages one from:
Presentation may look similar to other companies (1)
Wizard may offer you options you do not want (1)
Lacks scope form customisation (1)   **3**

      b   *Describe these transition methods*

Up to 4/2 split

Automatic transition
Can be left to show slides in a loop/continuously (1)
Does not need anyone to advance presentation (1)
Timings can be set and left (1)
Timings controls can be 'hidden' from clients (1)
Have to wait for slide to 'come round' (1)
Screens may move too slow or too quick (1)
Audience may not wish to read / see all of presentation (1)
Kiosk Application (1)

Manual
Need to have human intervention (1)
Slides need to be 'clicked' to advance (1)
Could be subject to human intervention (1)
Settings could be changed by clients (1)
Can 'jump' back and forth (1)
Can select what is needed to see (1)
Can select time to see each slide (1)
Stand up presentation (1)   **6**

      c   *Describe vector graphics*

Any four from:
Points described by a relative distance from the origin (1)
Objects can be scaled (1)
Distances can be calculated (1)
Objects can be grouped together (1)
Its features - length, thickness, colour etc, describe every line (1)
Created by mathematical equations (1)
Can't scan in a photograph to produce a vector graphic (1)
Example of use (1)

       4

    d   *Explain the benefits of developing a consistent house style.*

            Any 6 from:
            For example:
            Templates can be used for standard documents (1) so that layout
            and format are consistent (1)
            Master documents can be produced centrally (1) and distributed to
            group offices (1)
            Branding (1) Instant recognition by clients (1)
            All offices in group (1) use same documents / layouts / formats (1)

            DNA Professional   **6**

Question		**Answer**	**Mark**
2	**a**	*Identify and explain **three** advantages to the group of having the database custom written*	

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

The software evolves (1) continues to meet the needs of the group (1)
Integration with current s/w (1) continuation of skills of staff (1)
Support from s/w development company (1) fast response time/less down time (1)
Will not have unwanted features (1) smaller footprint / memory (1) may not need to upgrade h/w (1)
The group owns the s/w (1) it can be sold to other estate agents (1)
Specification of s/w (1) can have exactly what they need (1)

                                                                       6

b   *Identify and explain **two** advantages of using an off-the-shelf package*

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

Software has already been tested (1) quick to use (1)
Readily available (1) quick to get running (1)
Upgrades of s/w are readily available (1) may be free (1)
Support available (1) Internet/support groups/Discussion Boards (1)
Purchase price (1) does not tie up capital (1)

                                                                       4

c   *Describe **four** items of information held about the data in a data dictionary.*

    Max 2 per point, 1 for identify, 1 for description
Characteristics of item of data (1) i.e. such as length (1)
Data type (1) Input masks (1)
Any restrictions on values (1) verification (1)
Relationships between data (1) Primary & Foreign Keys defined (1)
Permissions (1) who can change data (1)
Access rights (1) change/edit/modify/read only (1)

Allow examples

                                                                        8

d   *Identify and explain **two** advantages and **two** disadvantages of using macros for this purpose.*

     Advantages max 4,Disadvantages max 4
     Max 2 per point, 1 for identify, 1 for further explanation

Advantages
Reports produced can be customised (1) to meet needs of the user (1)
Can be produced once (1) and used at any time (1)
Can maintain house style (1) All offices produce identical reports (1)
Users do not need to program (1) good for novice users (1)
Reports can be produced quickly (1) identical each time (1) not created from scratch each time / action only needs to be done once (1)
Less errors (1) eliminates mistakes (1)

Disadvantages
Reports may not meet needs of users (1) requirements change over time (1)
Different reports needed (1) macros will not be useful (1) no option to make changes (1)
If macro 'crashes' (1) reports are not available (1)
Must be the same starting point (1) or the result will not be the same (1)
Can contain viruses (1) can be a security risk (1)
Mistake in macro (1) will appear on all reports (1)
If something needs to be altered (1) must be rerecorded (1)   **8**

e   *Describe what is meant by a parameter query and give an example of when it could be used*

     Max 2 for description, 1 for example – MUST relate to Scenario
Can use a dialogue box when run (1)
Takes value from user / can be built-in (1)
Criterion used for one field (1)
Uses SQL key-word 'where' (1)
Prompts for information relating to the criteria for retrieving the record / s (1)

       3

f   *Describe what is meant by a cross-tab query and give an example of when it could be used.*

     Up to 2 for description, 1 for example – MUST relate to Scenario
Calculate a sum, average, count, or other type of total for data (1) Grouped by two types of information (1)
One down the left side of datasheet and another across the top (1).
Report summarises data (1)
Presents summaries in a compact row / column format (1)
Calculate and restructure (1) data for easier analysis (1)

       3

3 **a** *Explain how the use of the following features of a word-processing package could be used when creating this information sheet:*

Max 2 for each
Header
Are used at the top of a document (1)
Can be changed to be individual to each property (1)
First header can be different if standard front sheet is used (1)
Can appear on every page (1)
Example of use (1)

Can be used to position text or graphics (1)
Can be used to insert photographs of the properties (1)
Can be linked to other areas of the information leaflet (1)
Can be moved as required (1)

4

b *Describe* two *benefits and* one *problem of using a template to complete this task.*

Any 4 from:
Benefits
For example:
Corporate image (1) Consistency of layout (1)
Templates can have standard text / graphics in position (1) only have to complete specific details for each property (1)
Do not have to develop the leaflet from scratch each time (1) saves time (1)
Ensures that nothing is left out (1) Ensures that leaflets are correct first time (1)
Members of staff require minimal training (1) Less capital needs to be spent (1)

Any 2 from:
Problems
For example:
Cannot alter template information (1) client selling property may request different details to be given (1)
Template may not be appropriate (1) all properties are different (1)

6

   c   *Describe four features of the user interface which will have to be considered when this system is being designed.*

   1 for identify, 1 for description
   Any four from:
   Consistency (1) know where to find buttons etc (1)
   Screen design (1) must be clear and uncluttered (1)
   Font (1) must be easy to read / large font option (1)
   Logical order (1) aids user data entry (1)
   Colours (1) different colours to highlight information required (1)
   Using pull/drop down menus / menu options (1) to limit choice / show all the options (1)
   Validation checks (1) to only enter appropriate data (1)
   Help option (1) to assist in using the system (1)
   Difficulty of language (1) choices of language (1)
   Input method (1) appropriate to all ICT ability levels (1)
   Volume of information on screen (1) should not be cluttered (1)
   Navigation (1) options to go back to previous screen / home page (1)   **8**

4 a   *The Lake and City Head Office uses a spreadsheet with a worksheet for each agency to record the sales of each agency. Explain the benefits of using worksheets.*

   Any 6 from:
   For example:
   If a value on one sheet is changed (1) it can be changed on all the others (1)
   Different displays can be used (1) with different formats on each sheet (1)
   Worksheets can be hidden from other users (1) leading to confidentiality of individual agencies data (1)
   Ensures records do not get mixed up (1) each worksheet can have its own access rights (1)
   Totals can be summarised (1) on a master worksheet (1)
   Charts can be used (1) as summary (1)
                                                                                   6

   b i   *The proportion of properties sold by each office in the Lake and City group in February*
           Bar Chart / Histogram
                                                                                   1

      ii *A comparison of the running costs of each office in the Lake and City Group*
          Pie Chart
                                                                                   1

      iii *The quarterly profits of the Lake and City Group*
          Histogram/Bar Chart/Line Graph   **1**

5   *Evaluate the advantages of these approaches to authoring a website.*
1 mark per Point (P), 1 for Explanation (E)
Allow up to 6 / 2 split, MAX 4 P's
For example:

Authoring software
Can get the exact effects required (1) relevant to Lake & City (1)
Less likely to create non-standard pages (1) Conform to corporate image (1)
Create non-proprietary code (1) Ability to edit the code directly (1)
Individual components are specifically made for the purpose (1) so have more features (1)
Wizards included in the package (1) Assist users (1)
Integrate with any web language (1) ensures compatibility with existing software (1)
Can do site map (1) enable website to be upgraded effectively in future(1)

Application software
Less training required (1) users are familiar with s/w (1)
Current documents can be converted (1) lower costs for L & C (1)
Compatible with most browsers (1) can increase compatibility (1)
No additional cost required (1) Company does not have to pay another company to develop website (1)
WYSIWYG editing (1) can see results quickly (1)
May be faster to produce website (1) quicker web presence possible (1)   **8**

TOTAL   **86**

Quality of written communication   **4**

Mark Scheme 2515
June 2005

1   *A national DIY retail company offers a kitchen design service to its customers. Some of the input devices used by the company are touch screens, graphics tablets and scanners.*

     (a)   *Describe the purpose of each of these devices within the company.*   *[6]*

         Touch screen
         – Allows selection of (screen) options (1) with a finger (1) or pointing device (1)
         e.g. used by shop assistant to check availability of stock (1)
         e.g. at checkout points to record sales (1)
         Max 2 marks

         Graphics tablet
         – To input drawings/diagrams (1) with more precision than a mouse (1)
         e.g. used in design department (1) to produce drawings of kitchen layouts (1)
         Max 2 marks

         Scanner
         – Allows printed information (text, diagrams, pictures etc) to be input directly / to be input without the need to be entered manually (1) and then edited (1)
         e.g. customers design sketches can be scanned (1) and then be amended/edited if required (1)
         e.g. marketing department could scan pictures of stock items for inclusion in a sales brochure
         Max 2 marks

The company has shops throughout the country and uses a wide area network (WAN) for communication between these shops.
Customer details are stored in a distributed database.

(b)   *Explain methods of sharing the company's database between the shops.*
                                                                                                          [6]

E.g.

The complete database (1) is duplicated to each shop (1)
duplicated versions are usually read only (1)
with updates allowed only on the master database (1)
probably not necessary in this situation (1)
as most customers would use their local shop (1)
so each shop would only need details of local customers (1)

Centralised database with local indexes (1)
Only the master version of the database is held (1)
shops will hold an index to this database (1)
which is relevant to them (1)
Again, not very useful in this situation (1)

Partitioned (between shops) (1)
horizontal partitioning (1)
shops will have the information relevant to their customers (1)
If they need information from another part of the database it is still possible to get it. (1)
Probably the best option for this situation (1)
as there will be few changes in customer details (1)
which implies limited network traffic (1)
Peer-to-peer replication (1)
There is no master database (1)
And all replicas (do not accept copies here) are treated as equal (1)
The DBMS software must ensure that an update of one replica is then copied to the other replicas (1)
Any 6 points

(c)   *Explain the security measures involved in using distributed databases.*
                                                                                                          [6]

User name and password (1) at each location (1)
To ensure that only valid users access the database (1)
Use of secure links (1) for updating the database (1)
Virus protection (1) updated regularly (1) at each outlet (1)
Access auditing (1) with explanation (1)
Have a (named) person at each shop responsible for security (1)
Not hacking.

2   *Two dental practices in a small town have recently merged and moved to new premises.*
They have found that their computer systems are incompatible and decide to invest in a new system.
A consultant is employed to produce a requirements specification and a system specification.

    (a) *Describe the difference between a requirements specification and a system specification.*   **[2]**

        Requirements specification – what the client would like the system to do (1)
        System specification – hardware/software requirements to make system work (1)
        Details of how this would be achieved (1)

    (b)   **(i)**   *Describe the methods used by the consultant during the analysis stage to investigate the requirements of the dental practice.*   **[4]**

            Analysing the output required (1)
            Analysing existing documentation (1)
            Asking the staff in the dental practices who use the system/ interviewing staff (1)
            Questionnaires (1)
            Observation (of existing practises) (1)
            Look at systems in place in other dental practices (1)
            Considering each of the current systems (1)

    (b)   **(ii)**   *State four items which you would expect to see in this system specification.*   **[4]**

            Objectives (1)
            Layout of screen (1)
            Input designs (1)
            Design of validation/verification methods (for input) (1)
            Layout of printed reports / output design (1)
            User interface design (1)
            File specification (1)
            Methods of processing (1)
            Data flow diagram (1) *Note: accept if given in (i), (ii) or both*
            Software specification (1)
            Implementation plan (1)
            Test plan (1)
            Hardware requirements (1)
            Not test data on its own

    (c)   *State where each of the following would fit into the system life cycle.*
                                                    [2]

        Requirements Specification – in the analysis stage.
        Systems Specification – accept either analysis or design

The consulting rooms and reception are equipped with a local area network (LAN).
A bus topology is used.

(b)   *Explain the benefits and drawbacks of using a bus topology*   *[4]*

Benefits   Uses less cable than other topologies / low cable costs (1)
                     New stations can be added easily (1)
                     Valid discussion of relative costs (1)
                     If one terminal fails the rest of the network is unaffected (1)

Drawbacks   Hard to locate cable fault (1)
                     If cable fails whole network goes down (1)
                     Network degrades under heavy load (1)
                     Information goes in both directions (1)
                     (Which) leads to data collisions (1)
                     Bus technology is now largely redundant (1)
                     Valid discussion of relative transmission speeds (1)
Any 4 points (must be at least 1 benefit and 1 drawback)

The LAN uses optical communication to carry data.

(e)   **(i)**   *Describe the meaning of the term 'optical communications'.*   *[2]*

Light is used as a carrier of data (1)
Light waves can be used for the direct transmission of signals (1)
Use of fibre optics as a medium(1)
Uses optical cable rather than copper (wire/cable) (1)
Use of infra red/lasers (1)

       (ii)   *Describe one advantage to the dental practice of using optical*
                communications.   *[2]*

- Optical transmissions less susceptible to interference (1)…
  …so will not be affected by x-ray machines etc.(1)
- Fibre optic cables are more difficult to tap into (1) (than conventional cables) (1)…
  …so data held will be more secure (1)
- This small network could use infra-red light (1)…
  …so cables would be unnecessary (1) thus
  …easier to move work stations about when required (1)

(f) *Explain the role of communications software in enabling dialogue between network devices.*   *[4]*

To allow components from different manufacturers to communicate (1)
To allow handshaking (1)
So that data is only transmitted when devices are present/ready (1)
To ensure data transmission is coordinated (1)
To ensure data is sent to/from the correct port (1)
To resolve port conflicts by automatically selecting another (1)
To allow matching protocols to be set (1)

3   *Packet switching and circuit switching are methods of data transfer used in data communications.*

    (a)   *Explain each of these methods.*   *[6]*

            Packet Switching
            Message is broken into small segments/packets/chunks (1)
            Each packet carries the ID of the intended recipient (1)
            Each packet contains sequencing information (1)
            Each packet is treated individually (by the switching centre) (1)
            And may be sent to the destination by a completely different route to other parts of the message (1)
            The packets are resequenced at destination (1)
            Checked for errors at destination (1)

            Circuit Switching
            Path is set up before transmission begins (1)
            Path is held for the duration of connection (1)
            (Even though) at some point in time no signals may be passing (1)
            User guaranteed full bandwidth of the circuit for the duration of the connection. (1)

            Max 4 marks for any one part

            The public telephone system uses circuit switching technology, whereas the Internet uses packet switching.

    (b)   *Explain the economic and technical reasons for preferring packet switching to circuit switching for the Internet.*   *[4]*

            Packet switching is more secure than circuit switching (1)
            Reason for greater security (1)
            Speed can be greater (especially for short messages) (1)
            As no set up of circuit time is required (1)
            [No credit for 'speed is greater' without further qualification]
            More cost effective (1) as circuits and switching equipment are not tied up unnecessarily (1)
            Increased routing possibilities (1)
            Which leads to greater volume of traffic (1)

(c) ***Describe how errors in data transmission can be detected and corrected.***
[4]

Parity check (1)
Clear explanation of odd or even parity (1)
Single bit errors can be found and corrected (1)
Mention of compensating errors which cancel out (1)
If incorrect, data has to be re-sent (1)
Cyclic Redundancy check /Binary block check (1)
Sent with pre-calculated check sum (1)
Check sum recalculated when data received (1)
Explanation of checksum (1)
If both check sums agree (1) transmission assumed correct (1)
If two results do not match then data has to be re-sent (1)
Hamming codes (1) can sometimes detect and correct errors (1)
Double send/ data sent twice (1) and compared (1)
If different, re-send (1)
Echo back (1)
Received data is sent back, and the two versions compared (1)

4 **(a)** ***Describe how messages are transmitted and received using satellites.***
[3]

Transmitters on the ground send microwave signals (1)
To a geostationary satellite (1)
Message is amplified (1)
And re-transmitted / redirect back to earth (1)
At a different frequency (1)
Different frequency is used to avoid interference between sent and transmitted signals (1)
The signal will be received within a circular area of the earth's surface (1)
Three geo stationary satellites are sufficient to cover the earth's surface (1)

(b) ***Discuss the advantages and disadvantages of using satellites for communication purposes.*** ***[4]***

Advantages
Can originate from any point (1) and be received at all points within the satellite coverage (1)
Which makes it attractive for broadcasting purposes (1)
Transmissions are not affected by mountains or other obstructions (1)
Bandwidth of a satellite channel enables it to carry thousands of telephone calls simultaneously (1), or 1-2 television programmes (1) or data at rates of several Mbit/s(1)
Idea of large bandwidth (1)
Cost of communication is distance independent (1)

Disadvantages
Messages take an appreciable time to arrive at their destination (1)
Time delay of about .25 sec (1) makes telephone conversations difficult (1)
Signal loses strength (1) and is affected by noise (1)
Satellites have a limited life span (1)
Replacement costs are high /expensive to put satellite into orbit (1)
The geostationary orbit can hold only a limited number of satellites (1)
Must have at least one advantage and one disadvantage.

5 *A bank offers its customers on-line banking.*

(a) *Customers use a form-based interface to access and use their bank accounts.*

Explain why this type of interface is suitable. **[4]**

Bank can control user input (1)
Certain fields can be made compulsory (1)
Input validation checks can be made (1)
Such as user identity (1)
Password (1)
Further identification procedures e.g. secret question (1)
Which are essential for security (1)

(b) *Describe facilities that could be available to support the customers.*
[4]

On-line help (1) + expansion (1)
For information on general difficulties (1)
Drop down menus (1)
Appropriate amplification of drop down menus (1)
Context sensitive help (1)
Bank contact details (1)
Confirmation messages (1)
Error messages / 'beeps' to alert customer to unacceptable response or similar (1)
e-mail facility (1)
Ability to change passwords (1)
Date and time last accessed (security) (1)
Locking access if persistent wrong password entered (1)
Automatic log-out (1) after a period of inactivity (1) *Note: accept in (b) or (c) but not both*

(c)   *Describe the problems of confidentiality involved in using on-line banking, and describe measures that can be used to overcome them.*
                                                       [8]

On-line banking takes place through the Internet (1)
Which is an open network (1)
So prone to attacks by hackers (1)
Bank account information is highly confidential (1)
Customer needs to trust the bank (1)
Bank needs complete control on access rights to customer accounts (1)
Including the banks' own employees (1)
Access control (1)
Customer ID's and passwords (1)
Privileges (1)
By restricting employees to certain levels of information (1)
Firewalls (1)
Which check security rights before allowing access (1)
No access unless the right credentials are apparent (1)
Audit controls (1)
By keeping records of who has accessed each bank account (1)
Encryption of data (1)
Data is scrambled to make it unintelligible during transmission (1)
Authentication (1) e.g. you are who you say you are (1)
Which is a kind of double key scrambling (1)
offered by special microcomputer based devices (1)
Any 8 points.
Not virus

6   *A recent government initiative has introduced 'wages' for students in the 16 to 18 age group. In order to qualify for the maximum payment a student has to achieve 100% attendance in classes (lectures) and all homework and coursework must be submitted on time.*

    Discuss this initiative with particular reference to the ways in which ICT might assist to decide the amount payable to each student.   *[7]*

    E.g.
    Effective attendance records must be kept (1)
    This might involve electronic registration (1)
    By a teacher calling up the class list (1)
    On a laptop or palm held (1)
    Through the school/college intranet (1)
    At the beginning of each lecture/class (1)
    Or by the student swiping a card at the start of the lecture (1)
    Which has issues of trusting the student (1)
    More difficult to monitor homeworks (1)
    As different subjects/ teachers will have different requirements of students (1)
    If homework is submitted and marked on-line (1)
    Then it would be possible to monitor punctuality of submission (1)
    Submission of coursework can be recorded effectively (1)
    Conclusion (1)
    Allow other valid points

Mark Scheme 2517
June 2005

1 (a) **Describe the use of <u>three</u> software applications the student might use as part of an integrated office system.**
e.g.
A word processor (1) to write letters to students. (1)
A spreadsheet (1) to keep his accounts. (1)
A database (1) to keep records of orders and equipment. (1)
An email package (1) to email prospective customers. (1)
DTP package (1) for preparing advertising leaflets. (1)
Presentation package (1), graphics package. (1)
Allow crossover of Word processor and DTP

[6]

(b) **The student will have to plan the business carefully. Identify <u>four</u> pieces of information that could be used for strategic planning.**
e.g.
The costs involved in shipping/packing the computers. (1)
The number of students attending university. (1)
The number who might want to buy a laptop. (1)
The price a student might be prepared to pay for a laptop. (1)
The laptop components the students may require. (1)
The amount of storage space needed to store the computers. (1)
Market research. (1)
Study the competitors. (1)
Look at the latest legislation. (1)

[4]

(c) **Explain why the student must manage this information effectively.**
The information should be managed effectively because decisions will be made (1) based on the information. (1)
He can plan future developments (1) more effectively if the data is properly managed.(1)
Data needs to be accurate and up-to-date (1) so he can check the availability of suppliers (1)
To provide a better service. (1)

[2]

(d) **Describe <u>three</u> peripheral devices the student will need to purchase for the office, other than a mouse, keyboard and monitor, and in each case describe what the device will be used for.** e.g.
A printer (1) for printing letters or invoices. (1)
A CD-ROM/DVD writer/memory stick/tape (1) for backing up his database. (1)
Microphone(1) for dictating letters. (1)
A modem (1) for connecting to the Internet. (1)
A scanner/photocopier (1) for copying documents. (1)
Digital camera/web cam (1) to take pictures for advertisements.(1)
Must be a peripheral device for the office at the student's home.

[6]

2 (a) (i) **Describe the planning that needs to take place before starting the project.**
The budget available (1) would need to be worked out to decide if he needed to borrow money to employ someone to create the site. (1)
The deadlines (1) would need to be planned to make sure that (for instance) the advertising was ready when the web site was launched. (1)
Allocate tasks (1) /assign personnel (1)
Identify skills(1)

[4]

(ii) **Identify two tools that could be used to help with planning this project.**
Project management software. (1)
Critical path analysis. (1)
Gantt chart (1)
Spread sheet (1)

[2]

(b) **Explain how iteration is used in the process of prototyping.**
The look and feel of the user interface is established (1) by asking the user to try it out (1) and suggest alterations (1) before continuing with the design (1).
Design-refine/process repeated (1).
The prototype is modified a number of times (1)
in the light of the user's comments (1).

[3]

(c) (i) **Explain how each of the following affect the design:**
Cognitive psychology
The study of cognitive psychology has led to a better understanding (1) of how the user perceives the interface. (1)
One example for 1 mark
e.g. X on a window means close. (1)
Icon of dustbin means delete. (1)
Red means delete, green means OK. (1)

[2]

(ii) **Artificial Intelligence**
Artificial intelligence allows the computer to guess/ predict words. (1)
It can more intelligently respond in context. (1)
Increased speed and memory capacity of computers (1) has meant that the pattern matching capabilities of the software can keep up with the human. (1)
Explanation by example up to 2 marks.

[2]

(d) **Describe the 'Model Human Processor', developed by Card, Moran and Newell.**
An analogy is drawn between the processing and storage of a computer (1) with the perceptual, cognitive, motor and memory activities of a human (1).
A visual or audible stimulus is captured (1) and the physical attributes of the stimulus are decoded (1)
Examples can be given full marks e.g.
Attention is drawn to a box on screen.(1)
Human interprets the response needed).(1)
A motor response is initiated. (1)

[4]

(e) **Explain the importance of designing the voice recognition system to closely match the student's mental model.**
The student will bring his own preconceptions to the system. (1)
There is an increased speed of learning. (1)
It is important to have an understanding of the users mental model, so that the product matches this model. (1)
The product should be consistent with the mental model (1) so that the user does not get lost trying to use the system. (1)
There needs to be a convergence of the mental model and the system model. (1)
The student will expect the command "save" for instance to save a document. (1)
The users confidence is increased. (1)

[2]

3 (a) **Discuss the costs and benefits of using off-the-shelf software to set up the database.**
<u>All 6 marks can be given for sensible arguments.</u>
<u>If there is a conclusion it should be credited with a mark.</u>
<u>Allow 2 marks for a point if it is explained.</u>
It should have most of the bugs removed. (1)
There are existing users/help groups/on-line help. (1)
The staff may already be familiar with it. (1)
It can be purchased/used immediately. (1)
Existing users can be contacted and asked about performance/suitability. (1)
Training is probably available through third parties. (1)
<u>Costs</u>
It is relatively cheap to buy as it is already written. (1)
It may require significant changes in working practices requiring training (1)
May not do exactly what is required and therefore involve further costs. (1) because you have to pay for features you do not use. (1)
Extra hardware may need to be purchased to accommodate the new software. (1)

[6]

(b) (i) **Describe what is meant by a complex query.**
A complex query uses more than one criterion/ parameter. (1)
Logical operators are used (1) such as AND, OR. (1)
Where two or more queries are linked together. (1)
Examples can be used.

[2]

(ii) **Explain how the results of a complex query could be integrated into a word processed document.** e.g.
Using the built in export facilities of the package (1) the query could be inserted in to the word processed document. (1)
Highlight the results (1) and use cut and paste to transfer the data. (1)
A mail-merge can be used (1) where each field of the query matches a merge field in the word processed document. (1)

[2]

(iii) **Explain a problem when integrating the result of a query with a word processed document.**
The data may be in an incorrect format (1) and not be displayed correctly. (1)
The formatting in the word processed document (1) may be affected by the transfer. (1)
The data in the document (snapshot)(1) may change if the source does. (1)
The object is not compatible with the source. (1)

[2]

(c) **Eventually this database software will have to be upgraded. Explain the factors which will affect the decision to upgrade.**
NOT method of changeover. **NOT** training.
e.g.
The student may feel that he has to "keep up with the Jones'" (1) in order to have credibility as an organisation. (1)
He would have had to take into account his expertise (1) and adaptability. (1)
He should consider the costs of buying and installing the new system (1) compared to the benefits that the new system would bring. (1)
He should consider the disruption (1) that might be caused by retraining/ changeover. (1)
The time-scale of the changeover (1) may effect the customer orders. (1)
Ageing software (1) looses support from software originator. (1)
Additional features are available in new products. (1)

[5]

(d) (i) **Explain why it is important to plan the implementation.**
Disruption will be minimised. (1)
Planned training on the new system/ installation of hardware/ software can take place before implementation. (1)
Loss of cash/business/customers is minimised. (1)
Users react positively if involved in planning the changeover. (1)
Transfer of data needs to be seamless. (1)
Extra staff can be employed. (1)

[2]

(ii) **Give two advantages and one disadvantages of using direct changeover.**
Advantages
The changeover is swift. (1)
Only one system needs to be supported. (1)
There is a minimum duplication of work. (1)
There is minimum disruption to the business. (1)
Disadvantages
If the system does not work as expected total disruption can occur. (1)
Loss of customer confidence if things go wrong. (1)
Staff stress/confidence/training. (1)

[3]

4 (a) **Describe the factors that must be considered when managing this change.**
NOT type of changeover.
All points can be expanded for an extra mark
Staff capabilities must be considered. (1)
The staff may need training. (1)
Extra staff may need to be employed (or staff redundancies). (1)
Staff views will need to be taken into account. (1)
Changes in working practice might require increase in wages. (1)
New systems need testing. (1)
Staff need support to embrace the new systems. (1)
Then installation of the equipment needs to be managed effectively. (1)
Possible implications for health and safety. (1)
Accommodation for the new workforce (1) and for the machines must be planned. (1)
Financial aspects. (1)
Effects on customers/ disruption to the business. (1)

[8]

(b) **The large organisation has a number of sales staff who visit customers to give presentations advertising the laptops. Orders can be taken at the presentation, but need to be sent to Head Office to be processed.**
Discuss alternative methods the sales staff could use to immediately process the orders.
This answer will be marked using **P, E and C.**
Max 5 P. Other marks gained by expanded comments on the point made.

Possible extra mark for conclusion (**C**) but max of 9 for the question
Possible points which may be included:
The student can use a laptop (**P**) to link to a telephone line and access the database remotely (**E**)
A mobile phone (**P**) can be linked to the laptop for nomadic connection to the database. (**E**)
Orders can be taken (**P**) using the secure website (**E**) accessed via mobile phone and laptop. (**E**)
Availability and prices will be up-to-date. (**P**)
The order cycle is faster (**P**) because the manufacturer can be contacted direct. (**E**)
Payment can be made at the presentation (**P**) using a secure method, e.g. "chip and pin". (**E**)
Other points that may be expanded.
Email. (**P**) Fax. (**P**) Phone. (**P**) Internet. (**P**) Security. (**P**) Nomadic Network. (**P**)
Conclusion (**C**)1 mark

[9]

5 (a) **Describe the advances in hardware and software that have made it possible to include a GPS in a wrist-watch.**
High density chips (1) and fast efficient software. (1)
Satellites (1)
Chips small enough to fit in the watch. (1)
Sophisticated receiving equipment. (1)
Display described. (1)
Ability to download maps from satellites. (1)
Solar charged batteries. (1)
Speech synthesis (1) speech input. (1)

[6]

(b) **Apart from the date and time functions, describe other functions you might find on the GPS wrist-watch.**
Any point can be expanded to two marks if well explained.
A mobile phone (1) possible picture receiving and sending capabilities. (1)
Altimeter (1)
"Where am I" beacon for if the student gets lost or injured on the trail.(1)
Health monitor (blood pressure, temperature etc.) (1)
Organiser (1), calculator/ currency converter. (1)
Distance walked calculator. (1)
Temperature sensor. (1)
Stop watch. (1)
Compass. (1)
Display telling you where you are. (1)
Weather forecast. (1)
Any other sensible answer. (1)

[4]

Total [86]

Report on the Units
June 2005

Chief Examiner's Comments

The specification continues to attract more Centres and this has meant an increase in papers to mark and Centres to moderate. It is very important that Centres should avail themselves of the opportunity to come to OCR training sessions particularly to improve the administration of the practical units (2513 and 2516) of this specification. Some candidates are being disadvantaged by Centres incorrectly interpreting the criteria for the various practical pieces of work. It is also essential that the administration of these tasks is completed properly by the teachers to avoid the large number of late entries and arithmetical errors that are originating from the Centres and causing late or hurried judgements. The submission date of 15th May for the Exercises (2513) is known before the students begin their studies. This date is the latest date that the Board can accept the candidates' work. Centres can tell their students any date for submission which is convenient to the Centre. March 31st is probably a realistic date to expect the staff at the Centres to mark and rank the candidates' work and then submit it to the Board.

In the written papers candidates were asked to write their answers on the question papers in the A2 examinations this year, to bring the A2 papers into line with the AS question papers. This has proved successful in giving the candidates a better guide as to how much should be written and helping to focus the candidate on the question.

Once again candidates were apparently entered for the examination without having studied all the learning objectives in the various units. It is important that the candidates take note of the key words in the question, the scenario if there is one, the number of marks available and the space allowed for the answer. Every question in the examination papers is closely linked to the learning objectives in the specification, so the specification itself is a useful revision guide. Many of these points are explained at the training sessions. Finally candidates should be encouraged to work through the papers from question 1 as the questions usually follow an emerging theme and often cannot easily be answered out of context.

2512: Information, Systems, 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 unfamiliar with the technical vocabulary and the key terms used within the paper. The terms come from the specification and these should be familiar to the candidates.

As usual; 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. These elements form a major part of the specification and it is important that all of the specification is covered.

It was apparent that a large proportion of candidates were not familiar with the underlying basic theory requirements for this paper. Questions that relied upon factual recall were poorly done – knowledge of the basic material is essential and needs to be rote learnt by the candidates.

There were large numbers of candidates who wrote nothing on many questions. At this level not attempting a question is likely to severely damage their chances of achieving a pass. The content of 2512 appears in 2514, 2515 and as part of the synoptic element in 2517. If a student is struggling with the content at this stage of the A Level they are unlikely to achieve a high grade overall.

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.

If the handwriting of the candidate cannot be read then it is difficult to award marks.

Comments on Individual Questions

Question No.

1. There was some confusion over what was classified as hardware and what was software. There was also a lack of detail in the candidates responses. The upgrades they suggested were not in sufficient detail to understand what was required.

2. (a) The clue in the question was the volume of data that had to be backed up. This eliminated certain storage devices. The device also had to be capable of being written to by the organisation. Many candidates did not read the question but looked to the stem and gave generic storage devices.
   (b) The use of proprietary software names is prohibited and a warning is given to candidates in the instructions on the front of the paper. This did not stop them using WinZip as an answer to this question.

3. This was a technical question that required a rote learnt answer. It was apparent that many candidates had not been taught this part of the specification.

4. This diagram is a basic component of ICT – candidates should know and understand it. However, it was apparent that many were unfamiliar with the diagram or the direction of flow of data through the cycle. A few candidates made up their own terms instead of using those given in the question.

5. Many candidates, who were also taking 2514, read this question as a comparison between standard application and bespoke software. It was not. Programming languages were not understood by the candidates at all although many had a good attempt at answering the question.

6. (a) Unfortunately, despite it being highlighted in previous reports, a large number of candidates are still of the impression that telephone number is stored as a number. Some candidates were confused by the table and instead of giving field names, as per the example, repeated the data type.
   (b) Giving methods of validation was a common, but incorrect method of answering this question. The focus was on what is meant by, not how to do it. Candidates had seen the word validation and answered incorrectly.
   (c) This was very well answered.
   (d) Many candidates gave methods of verification and not the purpose.

7. (a) Candidates failed to read the question and focused on the fixed length – ignoring the fact that the question was about fixed length records and not fixed length fields.
   (b) This question should have been within the candidates realm of experience – particularly as the structured tasks requires the creation of a relational database.
   (c) This was a knowledge based question. It required the candidates to regurgitate learnt information. It should have been a straight forward set of marks for the candidates to acquire. Unfortunately it appears that the technical terms used were not recognised or understood. It is very important that the candidates are familiar with the terms used in the specification – they will be used in questions and candidates must not be fazed by them.

8. (a) Candidates repeated the question in many different ways and demonstrated a lack of understanding over rule based systems.
   (b) Unfortunately, if the answer to part (a) was unknown then candidates scored 0 on this part of the question. Very few candidates picked up on the fact that reasons were required and not descriptions.

9. (a) This was a bookwork question and has appeared in many previous examinations. Unfortunately many candidates did not score more than half marks on this easy question. This is indicative of the paper as a whole – easy bookwork questions with marks that should have been easy for the candidates to get were not.

(b)(i) The description specifically asked for the direction of flow of data but many candidates did not give this. When something is asked for it must be given otherwise marks will be lost. Most candidates took the opportunity to draw a diagram.

(b)(ii) This was very well answered with the majority of candidates getting the mark.

(c) Unfortunately some candidates did not read the question and gave advantages. Some candidates gave disadvantages to the users – incorrect and no marks. The question was disadvantages to the company. Those candidates who took their time to read the question got high marks on this part.

(d)(i) Candidates were familiar with the term but unable to give any specific marking points.

(d)(ii) This was answered badly by the majority of candidates. The focus of the question was on the immediacy and fact that it was live. This was not picked up by candidates who focused on video. There is a difference between downloading and playing a video and live transmission.

10. This was a comparison. To get the marks the candidates needed to draw a comparison. Giving one half and expecting the examiner to make the other half got no marks. A lesson focusing on examination technique would be of benefit to the candidates especially when answering a comparison question.

11. This question was not on the principles of the Data Protection Act –it was on the rights of the individuals. They are different things. A large proportion of candidates gave the principles and scored no marks.

12. This was answered very well with the majority of candidates achieving both marks.

13. The lack of detail and clarity in the answers let the candidates down. It was obvious they were aware of what was required but wandered around the point without actually making it. A description is worth two marks and many candidates stopped after making the point without expanding it.

14. 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 and enough of a justification. This is not so and any arguments based around those terms achieved no marks. 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 a easy mark for candidates to acquire and requires a personal opinion. It was disappointing to see how few candidates availed themselves of this mark.

There is no reason why any candidate should not attempt the essay. A significant number of candidates left the last question blank immediately endangering their chances of a high grade.

2513: Structured Practical ICT Tasks

General Comments

Presentation of work by Centres has continued to improve this year with very minimal Centres sending work in ring binders. However, as last year, the use of plastic wallets for each task is still an issue and one which slows done the moderator considerably – Centres are reminded to either use one flat file per candidate or treasury tags. As last year, more Centres are encouraging students to include Centre number, Candidate name, Candidate number, task number and task section on each page and the use of headers and footers is improving, but there are still a lot of Centres whose candidates are not labelling their work.

As last year, the vast majority of Centres used the official cover sheets and official mark schemes which helped the moderation process immensely. The use of annotation by most Centres helped to identify where marks had / had not been awarded – in particular the use of numbering of mark points on the mark scheme assisted centres in this process. This year was the second year that authentication was required for the subject but there were still a significant number of centres who failed to provide authentication. There are now very few centres who do not use one mark scheme per candidate – those centres are reminded of the necessity to include annotated mark schemes.

Unfortunately the number of clerical errors was up yet again this year with 34% of Centres making some kind of error (measured with a month left to go) – whether it is an arithmetic error or transcription error – this is very unfair on the moderators and potentially damaging to candidates. It is extremely important that Centres ensure the marks on the MS1 match those on the Cover Sheet and that those on the Cover Sheet are added up accurately on both sides and match those on the Mark Scheme. It is essential that Centres get this right as it is their responsibility to ensure the marks given to OCR are accurate. If changes are made to marks then they should be applied to all paperwork.

Although the marking of spreadsheet testing is significantly improved (with extra guidance in the mark scheme), the marking of presentation testing was generally quite weak. Centres must remember that coursework is not looking for examination answers, but requires candidates to apply their knowledge and understanding in a practical context with specific references to the task.

Again, the general standard of work was better than previous years as teachers are learning more the requirements of an AS Level coursework in ICT – students are then able to reap the benefits of teacher advice. The mark scheme this year gave more specific guidance and removed a few areas where candidates were gaining 'accidental' marks in previous years – this has led to a wider differentiation between A and E grade candidates which is desirable.

32% of Centres were late handing in the MS-1 (measured with a month left to go) – this is an improvement on last year but still far from acceptable. The deadline of 15 May is the same every year and so Centres must plan to meet this.

Comments on Individual Tasks

Task 1

(a)   (i)   Most candidates gained 4 or 5 marks for this section. It was surprising how many missed the plain white background, although most did identify this within their specification. Marking was far better this year with marks only being awarded for specification. Marks were allowed if specification was given as annotation on the hand drawn design but some centres did miss this.

(ii)   Most candidates gained 4 or 5 marks for this. The most common marking point to be missed was for the contact details or hyperlinks. It was essential that candidates identified the hyperlinks rather than assuming that underlined words are hyperlinks and that they also identified the destination of the hyperlinks.

(iii) This question was completed well by certain centres rather than by more able candidates. Many candidates didn't grasp the idea of structuring the files in a way that would be suitable for it to grow in the future. Some candidates produced a design for the structure of the site rather than the files and folders.

(b)   (i)   Most candidates scored at least 4 marks for the home page part of this task. More able candidates achieved 5 marks by also completing the mailing list page.

(ii) Most candidates used appropriate file names and achieved this marks. Only the more able candidates achieved other marks in this section. Evidence of appropriate file extensions cannot be assumed from an icon. Some centres didn't understand the need for relative hyperlinks as candidates often referred to links with the full path name.

(c)   This question differentiated candidates well. Almost everyone got the mark for screenshots but other marks varied amongst candidates. When describing how to open the home page for editing, candidates needed to identify the filename to open. Marking point 40 required a description on how to insert a hyperlink from the home page to the new page. Many candidates missed out the reference to the home page.

Task 2

(a)   This part of the coursework was the weakest of all amongst most candidates. Answers tended to be quite similar from candidates within a centre and it was clear which centres had taught testing well. Weak answers included tests such as "Check the hyperlinks work", "by clicking on them", "Goes to correct page". These were far too vague and did not relate to the actual task. A test plan should identify clearly what is to be tested, otherwise the tester will not know which hyperlink to work or where it should actually go. Good answers would have been "Test the Points button on the main menu", "by clicking on it", "Opens the points page".   This concept needs applying to all tests within the test plan. Unfortunately many centres marked vague answers as correct and this resulted in quite a few adjustments for centres being necessary.

(b)   Very few candidates scored less than maximum marks in this section.

(c)   Most candidates achieved the marks for consistent style and screenshots. However, it was surprising how many candidates are still missing out the other surrounding elements of user documentation. Those candidates who did include trouble shooting and glossary provided good quality submissions that were appropriate to the task. The instructions element of this task was not completed very well in about half of the centres and vague answers were given marks. Candidates that did this properly showed how animations needed to be set to be automatic rather than after a mouse click and directed the user specifically to this action rather than leaving them with a choice. Similarly, candidates who didn't do this task very well didn't direct the user to make the slides change automatically after a time interval. Hardly any candidates thought about the fact that buttons needed to be removed and few remembered the presentation needed to be

saved, tested and looped back to the beginning. Most candidates were very capable at explaining how to insert and record the voice although a few just referred to any sound rather than the recorded voice.

Task 3

(a)   (i)   The vast majority of candidates scored full marks for this section and it was well marked. There were a number of situations where it was difficult to tell whether or not a spreadsheet had been used so benefit of doubt had to be assumed.

      (ii)   This needed to be a separate screen from part (a). Most candidates achieved the 2 marks if they produced a separate screen. Very few candidates achieved mark points 13 and 14 which were for initiative.

(a)   (iii)   This task differentiated candidates well. Weaker candidates were able to achieve marks for some of the simpler formulae whilst more able candidates were calculating labour days correctly. A few centres penalised candidates for getting an early formula incorrect and then continued to penalise candidates for correct formulae further down the spreadsheet that were dependent on the original - candidates should be given credit for what they have done correctly. The lookup function required some reference to the lookup table including a printout of the table itself. The function for calculating labour days needed to include both a ROUNDUP function and an IF function (to determine whether the driveway was up to 50 sqm or more).

(b)   (i)   Candidates are learning very well how to produce good test plans and centres are getting much better at marking this section, although there are still a significant number of centres that are giving marks where tests are not clearly defined, despite the amount of guidance in the mark scheme. Input data values need to be specific values and not descriptions of what the value should be (eg "5" rather than "a number less than 10". It must be clear where the input should be entered, (eg "in length input cell" or "in cell B7"). Error messages must be specific and not just "error message" otherwise the tester will not know which error message they should expect to see. Also the error message had to be one the manager could understand.

      (ii)   Candidates are learning the need to follow the test plan with the same data inputs and centres are also spotting this in the marking. This question was much better marked than in previous years. It was disappointing to see candidates throw away marks because they did not use the exact test data stated in 3bi and/or not complete and annotated screenshots.

Task 4

(a)   This task tended to differentiate candidates well. Most scored at least 5 marks. Very few candidates thought about the need for the menu to include printing lists. Most candidates remembered the need for atomicity for forename and surname. Details of instrument required candidates to show extra data related to the instrument and NOT the loan.

(b)   This task also differentiated candidates very well with most candidates achieving 4-5 marks and the more able candidates achieving the full 8 marks. More able candidates were able to identify a foreign key appropriately. The most able candidates used appropriate data types for the foreign key that matched those of the primary keys in the related tables. Autonumber is a Microsoft Access feature

rather than a data type and so cannot be accepted as a data type within a design – unless candidates also specify the data (eg Integer, Long Integer etc). Primary keys needed to be 'sensible' and so candidates should not choose names for primary keys.

(c)   (i)   This question was well answered by most candidates.

       (ii)   This question was well answered by most candidates although a significant number of candidates needed to include the degree of relationship.

       (iii)   Most candidates achieved all 4 marks for this section, although weaker candidates were missing the primary key marks.

(d)   (i)   Most candidates achieved both marks for this section even if they had done 5 separate queries. Candidates should not be penalised in this section for having 5 separate queries (or for selecting event by name) as this mark is in (ii).

       (ii)   About half of candidates achieved this mark. Other candidates included a criterion for the event which would produce 5 separate reports.

       (iii)   Most candidates achieved the first mark for this section, but only about half of candidates included the count of events.

(e)   (i)   At first glance, this section appeared to be quite difficult but it was actually quite straight forward with 2 achievable marks.

       (ii)   This section differentiated A-C grade candidates well. Some centres were confused by system generated error messages – the key point here is that candidates must do something themselves to create the validation and not take default settings (eg data type, length) from the set up of the table. Input masks were quite common with associated evidence of the user not being able to enter certain types of data. Range validation and exists in list were often used effectively. Many candidates had set up combo boxes in (i) but did not then show how these were set up and how they were used for the mark in this section. Presence check was possible by setting the required property in Microsoft Access or setting the validation to be "IsNot Null".

       (iii)   Most candidates scored 2 marks for this section with more able candidates achieving 3 or 4 marks. The main thing that let candidates down was forgetting to put 25 July 2004 in the criteria. This was necessary because there may have been more than one National Contest. Using Event ID wasn't appropriate as this is not something the user is likely to know.

(f)   This question tended to be answered well by centres rather than able candidates. Those centres that had taught delete queries had candidates that achieved 4-6 marks. When the mark scheme asks for annotated evidence then there must be some written comment by the candidate to state what the evidence is. For example, "Query used for deleting records" and "this criterion selects only loans that were returned over 3 years ago".

2514: Practical Applications of ICT using Standard/Generic Applications of 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. Many candidates simply used terms such as 'cheaper', 'professional', '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

1 **(a)** Generally answered well with many candidates scoring full marks.

(b) Generally well answered but a few students used the terms automatic and manual in their answer. By using these terms candidates did not fully describe the transition methods.

(c) Many candidates failed to read the question correctly. This led to many candidates describing vector graphics by comparing them to bitmap graphics.

(d) Many candidates, again, failed to read the question correctly. Many candidates simply stated that the company would look professional without giving any explanation or justification as to why this would happen. There were many instances of candidates simply repeating the question in their answer.

2 **(a)** Most candidates scored 3 out of 6 marks, as they tended not to explain the advantages they had identified. Most were able to identify that custom-written software would have a smaller footprint but many were confused as to why this would be.

(b) Once again candidates failed to score more than 2 marks as they failed to explain the advantages they had identified. Many candidates, however, were able to identify that off-the-shelf software was readily available, has been tested and has lots of support available.

(c) A very badly answered question with many students not knowing what a data dictionary is or the information it contains. As candidates have used data dictionaries in their coursework this ability to transfer knowledge across units is worrying.

(d) A generally poorly answered question. Many candidates simply explained what a macro is, many explained what a macro can do but very few candidates answered the question by explaining the advantages and disadvantages of using a macro from printing reports.

(e) Many candidates failed to score any marks on these parts of the question. The concepts of database queries should have been utilised by the candidates in their coursework and, once again, it was worrying to note that many candidates seemed unable to transfer their knowledge across units within the AS course.

3 (a) Many candidates scored the marks available for describing a header. However, the response for the description of a frame showed that candidates were confused between a frame and a border.

(b) A well-answered question showing that many candidates were able to identify the benefits and problems of using templates. Many candidates however failed to apply their answers to the specified task detailed in the question.

(c) Many candidates lost out because they described features such as searches and forms that are features of databases. There were many generic answers such as font, colour given without any further detail or explanation. Many candidates seemed to feel that it was important for visually impaired users to see the interface or that sound should be used.

4 (a) Most candidates discussed what could be done in a spreadsheet (i.e. formulae) and generic spreadsheet features rather than the advantages of using worksheets.

(b) Many candidates gave correct responses to parts (i) and (iii).

5 The exam techniques used by the candidates let them down in this question.

Many candidates were able to compare the two approaches detailed in the question but occasionally gave contradictory points in their answers. Many students not good at comparing but just listed points they thought relevant. Some students just listed the advantages of using a web page.

2515:Communications Technology and its Application

General Comments

The paper was of an appropriate level of difficulty; there was no evidence of candidates having insufficient time to complete the paper. The questions addressed all ability levels.
There were few distinct patterns. Different candidates experienced problems with all the questions; there were also very good answers from different candidates to all the questions.
It was very noticeable that some centres had not taught all sections of the specification, since all of the candidates at these centres gave equally vague and ill informed attempts at some questions.
Candidates often felt it necessary to fill the entire space allocated with vague ramblings which gave little evidence of prior planning or of thought about how their finished answer would read.
There was much inaccurate use of technical vocabulary; few candidates were concise and accurate in their use of English.
The general average mark seemed to be higher than usual, and there were more scripts scoring 60+ than in previous sessions.
In general the paper worked well.

Comments on responses to individual questions

Q1 (a)
As a starter question this was marked leniently; even so few candidates scored full marks. No credit was given for saying "it's an input device" since that information was given in the stem. One mark (in each part) was available for a correctly identified purpose and the second was available for any comment which contextualised the answer. The use and purpose of graphics tablets was the poorest understood with some candidates confusing this device with graphics cards, graphics applications and even memory sticks.

Q1(b)
Although there were some good answers to this question, they were few and far between. It was evident that whole centres had not been taught anything about distributed databases. This question was designed to give candidates an 'easy' 6 marks for defining the 3 most common forms of distributed databases.
It was not uncommon for candidates who clearly had no idea of the term 'distributed database' to write at length about methods of sending a file to one of the shops.
'Send it by e-mail' was a not uncommon response, as was CD's, floppies, memory sticks, by post (though it might get lost), and by fax. One candidate's response suggested fax, but conceded that 'it might take a long time'.

Q1(c) At A2 we were looking for answers beyond the 'hacking, virus' approach so often seen in candidates responses. The question wording tried to spell this out by asking for 'security measures', NOT 'security issues'. The answers tended to be better than those seen in 1(b), but still suffered from generalised security issues rather than relating answers to the particular problems of a distributed database.

Q2(a) Mostly well done.

Q2 (b(i)) The majority of candidates had little trouble in scoring full marks here – for 2 methods described; those who simply gave a list of methods usually did less well.
It took an exceptional candidate to relate their answer specifically to the scenario.

Q2 (b(ii)) Again, largely disappointing responses. There were 13 possible marking points here for the 4 marks available. Most candidates were able to score 2 of them – 1 for an answer which implied software requirements, and 1 for implied hardware requirements.
Many went down the line of "you'll need (this much) memory, (this size) processor etc, etc. Some candidates just gave a list of hardware items.

Q2(c) Usually well done. However, some candidates still do not know the system life cycle and gave vague answers – 'in the middle' – 'near the end' etc.

Q2(d) Usually well done.

Q2 (e(i)) Most candidates managed 1 mark, but usually struggled to get them both.

Q2(e(ii)) This question definitely required an answer which was contextualised. Usually only very able candidates scored both marks.

Q2(f) Not well answered. Knowledge of communications software is generally weak.
Candidates rarely scored more than 2 marks here (and they were usually for mention of 'protocols' and 'handshaking'.
Answers addressing 'communication' were commonly seen - "you could use e-mail" etc, etc.
A surprisingly large number of candidates seemed to expect a mark for 'Communications software enables dialogue between network devices'!

Q3(a)
Answers were surprisingly disappointing. It was clear that some centres had not taught this topic. This is by no means the first time the topic has been examined. Whole centres scored zero here. Candidates who scored any marks were clearly more comfortable with packet switching than with circuit switching.

Q3(b) This was aimed at the A grade candidate, and , as such, it succeeded; there were few good answers to this question.

Q3(c) Some excellent answers were seen which were awarded full credit. Weaker candidates showed their lack of knowledge by discussing verification and validation.

Q4(a) This still remains an area of vagueness! Quite low scoring. There are still many candidates who think that a mobile phone communicates directly with satellites. Few candidates knew that the signal is amplified and then retransmitted on a different frequency.

Q4(b)
Advantages and disadvantages were better known and many candidates received credit here.

Q5(a)
The majority of the candidates missed the point of the question here, and consequently there were few good answers. In the main the candidates did not deal with why the type of interface was suitable, but contented themselves with explaining what the interface was.

Q5(b) Generally well answered.

Q5(c) This differentiated well, with the whole range of marks being used. Some candidates tended to labour on individual points – often to the point of repetition. Good answers discussed many issues concisely.

Q6 – Those who keep themselves abreast of developments in IT (or have a lively imagination) do well. Others do less well!

Answers varied in quality; the better candidates discussed the system including use of hardware and software and the flow of data; poorer answers seemed to expect to get marks for paraphrasing the question.

2516 ICT Projects

General Comments

The first point to make is that the moderators are very grateful for the work of the teachers in the Centres who manage to get the assessment carried out to a surprisingly closely agreed standard every session, and this one is no exception. There are some Centres whose assessments have had to be altered but comparatively few and hopefully the individual report to the centre will have highlighted the areas of disagreement and made helpful suggestions for next year. On the subject of reports, we can all improve and hopefully all centres will find comments on the reports that will help the candidates and mean that the reports submitted next year will show improvement.

The reports to Centres have tried to concentrate on one or two areas which would show a benefit by some extra effort or a change of emphasis. Enquiries are always welcome from Centres that are finding part of the work difficult. Centres that would like some more formal assistance or advice about areas that they are not happy with should take advantage of the OCR coursework consultancy service, details of which are available from the board.

Throughout the moderation process we must keep in mind that these candidates are just 17 years old. This was stressed in the training over the past year as something that teachers should also keep at the back of their minds and that we must not expect perfection. I must say that every year I am amazed by the maturity that shines through in so much of the work that is submitted and the candidates who produce such work really should be very proud of their efforts. The down side of this is that as an examining team we are very aware that these candidates are doing other subjects as well and that they should have time for lives away from hard work. As the teachers who have direct contact with the candidates I would ask that you do not allow this project work to get out of hand. It was not unique to see projects this year of over 1000 pages and others that took two lever arch files for each piece of work. This is far beyond the philosophy of the work. There will always be candidates who get really immersed in the work and get a tremendous kick out of the success which they have and I would certainly not try to rain on their parade, but there are others where there seems to be the old concept of grading projects according to weight is rearing its ugly head again.

Remember to instil on your candidates that in the real world this report would be for the benefit of the end user and hence for someone who has a lot of knowledge, for instance the organisation, already. But that this is not the real world because ultimately the report must be intelligible for the moderator, who has no knowledge of the problem that is being solved. To this end please understand that the report is ultimately what is being assessed and as with all reports it should be accessible to the reader. This means that contents pages with page number references are essential and lack of this simple aid to navigating the report will be penalised next year. Similarly, appendices, while valuable in some areas, are not here. An appendix is useful to insert data that the end user can reasonably be expected to be aware of but may want to reference. The moderator is not aware of anything to do with this project report and consequently the presence of an appendix will be interpreted in future as the candidate not being able to decide whether the evidence contained is valuable or not and hence the moderator will not consider any evidence contained therein.

Specific Sections

a) (i) There is still too much evidence in here. Remember, this is before the candidate has carried out any investigation. This has been stressed in training this year, that this section should be very sketchy because the candidates do not know very much. In effect, if the candidate knows too much here, they are giving the lie to the fact that this

is a problem that they are solving for someone else and as such would not expect to get the full marks in future.

Moderators are looking for

- An explanation of what the organisation does
- Who the end user is
- The place of the end user in the organisation
- The problem that the end user has
- A very sketchy idea about what sort of data is involved and where it comes from

a) (ii) Whilst agreeing that there are many things that may be present in this section, many of them being problem specific, there are three items that must be present: 1. the interview. This must be planned thoroughly. This is probably the weakest area of the whole report at the moment. Apart from the normal planning to set up the meeting there must also be a clear indication of planning of the questions (what information needs collecting? How will I do it? what supplementary questions do I need to ask? In what circumstances?) When the interview is over it must be analysed and conclusions drawn. These conclusions need to be discussed with the end user to ensure that they agree with the analysis made. 2. The candidate must then consider different methods of solving the problem. This is not a two line answer on the back of one of the sheets of paper. This is intended to be in enough detail to be able to explain to the end user that there are alternatives and to be able to compare them and suggest the preferred one (with reasons). 3. The requirements specification must follow on from the conclusions made following the interview. All these must show clear end user agreement.

b) (i) There must be a set of objectives. These must be objective. They should be numbered to allow them to be referenced and there should not be many of them, 6 to 8 is ample. The objectives must be signed off by the end user.

The designs may be on paper or may be done directly to screen, but they must be designs, with comments, signed off by the end user and hopefully not linear in nature.

c) (i) Candidates are still producing mountains of tests. This is not necessary. Teachers are advised to ensure that the candidates have a limited number of objectives, this automatically will limit the number of tests that are necessary to prove the objectives. There should be a test plan, part of which is to ensure that the individual objectives are clearly linked to specific tests. There is still a penchant in some centres to produce page after page of the software generated coding. Some may be necessary, if properly annotated, in order to explain how a particular feature of the solution was produced. However, if this is the case it should be in the technical documentation. If candidates produce this makeweight in future sessions they will be penalised.

c) (iii) The specification talks about the necessity of keeping a log. Keep it simple, candidates must keep a diary of what they have done, errors or problems that have arisen and what they did about them. This diary should be no longer than a page of A4 and if hand written and showing the ravages of 6 months in a student folder, then it will appear genuine.

d) (i) As agreed, the maximum mark for a "This is what I did" is 7. Candidates who wish to earn more than that must include thoughts about possible extensions and how they might be accomplished.

d) (ii) The maximum mark for a paper only document is 9. In order to earn more than 9 marks there must be evidence of on screen help. Candidates should remember that as a stand alone document the user guide should have its own contents page.

e) The evaluation stage is probably the least satisfactory of all the stages at the moment. This may well be a result of being at the end and it is difficult to get the candidates to do the work as they have all sorts of other needs pressurising them, but work on this section should bear fruit next year for many centres

(i) Many students are offering much discussion but without offering any proof. There must be pointers to the tests which provide the proof for their assertions.

(ii) The standards of the end user comments are slipping. These really should be on genuine headed notepaper. If it is not possible, then perhaps use school headed paper. Too many are trying to get away with a word processed comment, sometimes on the same page as some other work, and a not very convincing signature. There are 5 marks riding here on a *genuine* end user comment. This may be heavily penalised next year if the end user response is obviously faked.

A brief word about other forms of project. There are still a few websites being offered, and occasionally they are very good. However, they normally fail because the candidate has decided that they do not need to follow the same plan of action as everyone else.

In some respects it would be very nice to let everyone do their own thing and then try to standardise the assessment in some way. We can't. The assessment that we have is the only one we have got and it is important that whatever the problem that is going to be solved, candidates ensure that they follow the scheme for assessment carefully because that is how they are going to assessed.

2517: ICT Systems and Systems Management

1. General Comments

The general standard for this paper is improving, though it still seems that many candidates are being entered for the examination without proper preparation. In particular the psychological and business studies parts of the specification are not well understood. Candidates are still failing to read the question carefully and to address the question with care, often failing to take note of the number of marks available or the key word or words in the question. The sequence of events in the systems life cycle is not generally well known or understood by the candidates, so subtleties such as "strategic planning" or "before starting the project" and "managing the change" were not well interpreted.

All questions are straightforward, based on the learning objectives in the specification and the questions in the examinations follow a familiar pattern over the years. Any candidate who revised from the learning objectives and studied the past papers would put themselves at an advantage.

2. Comments on Individual Questions
Question
No.

1 (a)   Many candidates used brand names here and so failed to gain marks. It is clearly stated on each examination paper that brand names should not be used and this should be drawn to the attention of candidates in the normal teaching as well as on the day of the examination. Additionally candidates failed to respond properly to a use of the software by the student, instead writing in vague terms about characteristics of the software.

(b)   Although this question clearly asked for four pieces of information many candidates gave answers which were in fact what the student would do with the information. Few candidates disciplined themselves to clearly writing four things.

(c)   There was a general understanding of good management leading to good effects but the answers were often more about fortune telling than about fact.

(d)   In general most candidates understood about hardware and its use and this question was well answered.

2 (a)   Many candidates did not read the question and discussed at length the designing of the website instead of the factors to be considered before starting the project. This meant that the second part of the question concerning the project management tools was misinterpreted. In part (ii) management information systems were often confused with project management software.

(b)   Generally well answered though some candidates described prototyping rather than iteration.

(c)   Very few candidates appeared to have covered this section of the specification and of those few were able to give a convincing answer to part (i). Many confused cognitive psychology with mental models and neglected to tie in their answers to the voice recognition system in the question. In part (ii) some were able to equate artificial intelligence to autocorrect features and context sensitive help which they had met in a word processing context.

(d)   A few good candidates had learned definitions from texts or from the answers to previous examinations. Very few candidates scored high marks in this question.

(e)   Some good answers but many thought that it was the system that was trying to understand the student instead of correctly identifying that it was the student trying to understand the system.

3(a)   Many good candidates answered fully and achieved full marks. Many more candidates answered the question as an "advantage – disadvantage"

question and thus failed to score all the marks. The cost issue was largely ignored by candidates.

(b)   Being a synoptic element this question should have scored highly. However, a large proportion of candidates did not know what a complex query was or how to integrate it.

(c)   Some thoughtful answers to the "factors which would affect the decision to upgrade" but far too many candidates wrote about the upgrading itself which scored no marks.

(d)   Part (i) was poorly answered. Few candidates gained full marks. Many discussed the actual implementation not the importance of planning the implementation. Part (ii) had many good and full answers though a disappointing number of candidates gave "cheap", "easy", "quick" and other facile answers and a few gave two disadvantages and one advantage, contrary to the question. Others neglected to distinguish between which was their disadvantage and which were the advantages.

4(a)   Some good answers were given by candidates who had read the question carefully. Of those that misinterpreted the question many wrote about the actual change itself instead of the management of it and thus scored few or no marks.

(b)   Disappointingly this question was poorly answered by many candidates. There were some good imaginative answers but once again it was apparent that the scenario, built up through the paper, had been largely ignored and this question specifically had not been read properly. A number of candidates discussed batch processing for instance, though the question clearly asked for immediate response systems.

5(a)   Many answers were not focussed though many candidates gained at least half marks. Again there was a lack of A2 depth to the answers. "Hardware has got smaller" was a common non-specific answer which scored no marks, whereas with a little more thought and rephrasing this could have scored marks. Again the "smaller", "faster" etc. answer without amplification will not do for A2.

(b)   Some good imaginative answers, though a disappointing number of candidates were not able to gain full marks. Many neglected to mention that one feature of a GPS watch was to tell you where you were! Others mentioned time and date functions though the question disallowed them. Still others wasted the opportunity to score marks by giving facile answers such as "strap" and "light".

**Advanced Subsidiary GCE (Subject) (Aggregation Code(s))
June 2005 Assessment Session**

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2512	Raw	90	56	49	42	36	30	0
	UMS	90	72	63	54	45	36	0
2513	Raw	120	100	90	80	70	60	0
	UMS	120	96	84	72	60	48	0
2514	Raw	90	54	47	41	35	29	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	5.1	17.9	40.8	64.7	83.5	100.0	4660

**Advanced GCE (Subject) (Aggregation Code(s))
June 2005 Assessment Session**

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2515	Raw	90	59	52	45	39	33	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	57	51	45	40	35	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)	6.4	22.2	44.2	71.2	91.5	100.0	2621

OCR (Oxford Cambridge and RSA Examinations)
1 Hills Road
Cambridge
CB1 2EU

OCR Information Bureau

(General Qualifications)
Telephone: 01223 553998
Facsimile: 01223 552627
Email: helpdesk@ocr.org.uk

www.ocr.org.uk

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