

Oxford Cambridge and RSA Examinations



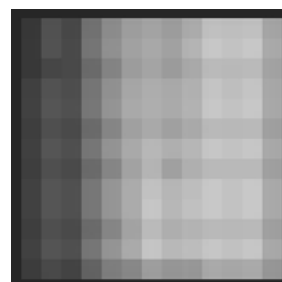
**ADVANCED GCE
ADVANCED SUBSIDIARY GCE**

**A2 7820
AS 3820**

COMPUTING

**COMBINED MARK SCHEME
AND REPORT FOR THE UNITS
JANUARY 2005**

AS/A2



3820/7820/MS/R/05J

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Any enquiries about publications should be addressed to:

OCR Publications
PO Box 5050
Annersley
NOTTINGHAM
NG15 0DL

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

CONTENTS

Advanced GCE Computing (7820)

Advanced Subsidiary GCE Computing (3820)

MARK SCHEME ON THE UNITS

Unit	Content	Page
2506	Introductory Computer Systems, Communications & Software	1
2508	Computer Systems Development & Practical Applications	9
2509	Systems Software Mechanisms, Machine Architecture, Database Theory and Programming Paradigms	17
2511	Integrated Information Systems	25

REPORT ON THE UNITS

Unit	Content	Page
*	Chief Examiner's Report	34
2506	Introductory Computer Systems, Communications & Software	35
2508	Computer Systems Development & Practical Applications	38
2509	Systems Software Mechanisms, Machine Architecture, Database Theory and Programming Paradigms	40
2510	Computing Project	42
2511	Integrated Information Systems	43
*	Grade Thresholds	46



RECOGNISING ACHIEVEMENT

Mark Scheme 2506
January 2005

- 1 (a) -The hardware that allows the user and the computer to communicate/interact.
-The software that allows the user and the computer to communicate.
(Max 1 point) [1]
- (b) **Command line:**
-User must type in specific commands
-e.g. technician needing access to whole system/example must be one where the user can be expected to know all the commands necessary/accept computer programmer.
Menus:
-User is given a set of options from which to select
-Application where it is important to restrict choice/make input simple/not use keyboard e.g. tourist information system/accept the idea of a list of files to choose from/mobile phones. [4]
- 2 (a) (i) -allocate space for storage
-Store/ retrieve files
-Creation of directory/folders
-Defragmenting drive
-Deletion of files
-Merging of files
-Sorting of files
-Searching of files
-Copying
-Moving
-Re naming
-Setting attributes
-Hiding files
-Print spooler
(1 per point, max 3) [3]
- (ii) -To make an unsupervised...
-uninitiated/at set intervals (not "automatic")
-copy of a file/set of files...
-so that if the original is damaged...
-there is a replacement available.
Do not accept automatic
(1 per point, max 3) [3]

- (b)-Data transfer programs...
to control the communication of data.
- Hardware drivers/defragmentors...
set the rules to allow communication between devices/concatenate discontinuous files.
- Error detection utility
to ensure data not corrupted during transfer
- Disk formatting
to clear files from disk/prepare it for storage
- Disk scanner
to identify problems on disk
- system information utility
to show CPU usage/disk usage
- text editing
to modify documents
- Anti-virus software.../firewall...
continually searches for and deletes any virus found/restricts entry to system/prevent virus accessing system/repair errors
- Compression...
to reduce file size.

Do not accept a printer queue

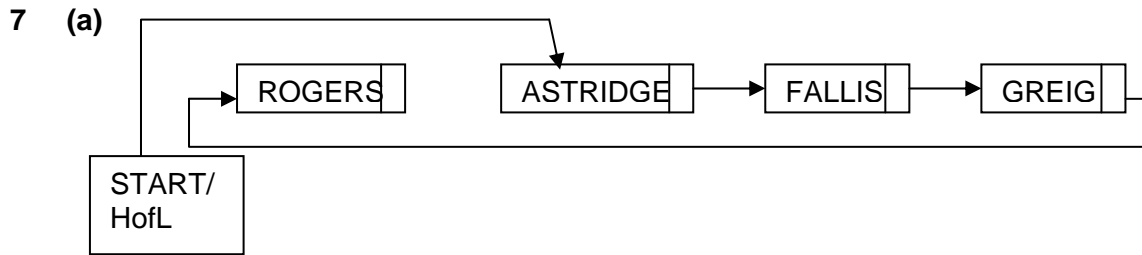
(Any pair of answers, max 2) [2]

3	(a)	<table border="0"> <thead> <tr> <th style="text-align: left;">Field</th> <th style="text-align: left;">Data Type</th> <th style="text-align: left;">Size of field</th> </tr> </thead> <tbody> <tr> <td></td> <td>Char/string/text/alphanumeric</td> <td>3</td> </tr> <tr> <td></td> <td>Date/long integer</td> <td>4or6or8</td> </tr> <tr> <td></td> <td>Currency/integer/decimal/real/fp</td> <td>2or4</td> </tr> <tr> <td></td> <td>Boolean/Yes,No/True,False</td> <td>1or2</td> </tr> </tbody> </table>	Field	Data Type	Size of field		Char/string/text/alphanumeric	3		Date/long integer	4or6or8		Currency/integer/decimal/real/fp	2or4		Boolean/Yes,No/True,False	1or2	
Field	Data Type	Size of field																
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	Boolean/Yes,No/True,False	1or2																
		(1 per value in table, max 6)	[6]															

- (b) -Attempt to multiply by 100,000
-Attempt to add overheads
-Attempt to divide by 1024 or 1000 ...
-Answer given in Mbytes/Kbytes as appropriate (not less than 1 MB or greater than 1000 KB).
(1 per -, max 4) [4]

- 4** **(a)** **On-line:** - ATM connected to bank computer/connected to bank network
Real-time: - Process carried out immediately/before next input/output
- necessary to check funds before payment made/payment history/check if card reported missing/needs to give up to date information/updated immediately after transaction. [3]

- (b) **Batch:** - (request) placed on file/stored for later processing
Off-line: - printer not connected to/under control of bank computer
- necessary to keep processor free for other requests/request not time sensitive/can be done at quiet time/large quantities/similar processing. [3]
- 5 (a) -Serial transmits data 1 bit at a time
-Parallel uses >1 wire to transmit/> 1 bit at a time. [2]
- (b) (i) -data needs to travel in both directions...
-though not at the same time [2]
- (ii) -Buffer is area of memory between memory and printer/in printer/temporary store.
-Interrupt is signal sent to the processor/OS
Communication between processor and printer to ensure readiness
-Buffer filled...
-then emptied to printer...
-allowing processor to continue with other tasks
-Interrupt sent to processor...
-requesting buffer to be refilled
-Priorities mentioned
(1 per point, max 3) [5]
- 6 (a) (i) -Error in the grammar/use of language/misspelled command word
-e.g. plint instead of print
- (ii) -Error in the design of the solution/code does not match algorithm
-e.g.wrong formula used/wrong procedures called
- (iii) -Incalculable arithmetic used
-e.g. Division by zero [6]
- (b) Any three from:
-Translator diagnostics/ Rejected by program translator/dry run/
-Black box testing/modular testing of code/white box testing/
-Trace table/breaks/variable dumps/alpha and beta tests. [3]



(If shown in an array, mark as these mark points allowing numbers as pointers)
Diagram showing the following mark points:

- Head of list table/start point
- Pointers
- Null pointer
- Alphabetic order
- Free space
- (1 per -, max 4)

[4]

- (b)
- Alphabetic order not appropriate/unfair system
 - Should be stored in order of arrival
 - Linked list should be treated as Q/FIFO
 - new jobs enter at one end and are accessed at the other
 - otherwise a job for (Zac) may never be printed
 - Identifying jobs by user name not appropriate...
 - does not distinguish between two jobs for the same user
 - Linked list appropriate as the length varies with the number of jobs for printing
 - (1 per -, max 4)

[4]

- 8 -Repeat loop...
control is at end of loop/the loop must be repeated at least once

-While loop...
control is at start of loop/the loop may not be executed at all

-For loop...
counter used to count number of times loop is visited/value of counter known before loop is accessed
Accept others if description fits one of these
(3 x 2 marks for each pair)

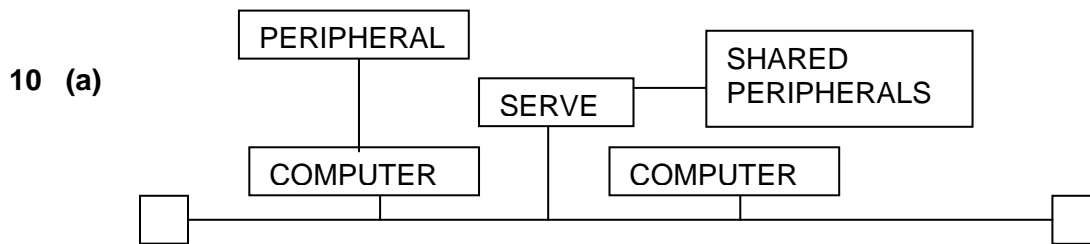
[6]

9 A school chess team

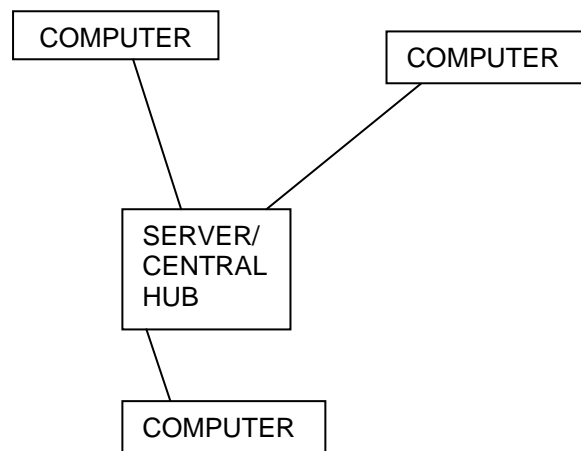
E.g.

- 1,13,15,18,12/to test the effect of an age being too young
- 12,13,14,15,22/to test the effect of an age being too old
- 12,12,13,14,15/to ensure that program will accept equal values
- 12,12,13,14,15/to test the effect of a negative age
- Twelve,13,14,15,16/to see the effect of non digits
- 12,13,14/to see the effect of fewer than five ages
- 12,13,14,15,16,17/to see the effect of more than five ages
- 11,12,13,14,15/to ensure works with appropriate data
- 11.5,12,13,14,15/ to see if program will accept fractions
- 11,11,18,18,18/ to test borderline data
- (less than 5, 3 is common, allow once)
- (Any three sets of test data with reason, max 6)

[6]



- (i) -Network cable connecting machines (not in a ring)
- Terminators
- Server



- (ii) -Cable to some central hub
 - Hub or server at centre
 - General:
 - Indication of peripheral device being shared.
- (1 per -, max 5)

[5]

- (b) (i) -Path is set up from the sender to the receiver for the life of the transmission
- Message is received in order/accept “does not have to reassembled”
- Ties up a route for the duration of the message/if route breaks communication collapses/less secure transmission
- (ii) -Message divided into packets which may use **different routes** to the receiver
- Not possible to intercept message/does not tie up part of the network/if broken circuit message gets through
- Message must be reassembled at reception.

Do not accept speed as an advantage for either

[6]

11 (a) 01010001

[1]

- (b) (i) 10101111
- (1 per nibble)

[2]

- (ii) 11000100
- (1 per nibble)

[2]

- (c) (i) 01110011 (follow through from their answers to (b)) [1]
- (ii) -The result suffers from overflow
-The carry in to the MSB<>the carry out
-The result is positive
-The result is +115 instead of -141
-The answer is too large to fit into a single byte
(1 per -, max 2) [2]

Total [86+4] = 90



RECOGNISING ACHIEVEMENT

Mark Scheme 2508
January 2005

1 (a) Any three factors from:

- Technically feasible
- Whether or not the proposition is practical
- System may require hardware that is unavailable
- Economically feasible
- Establishing whether it is cost effective
- Only feasible if the benefits outweigh the costs

- Socially feasible
- How will the users react with a new system?
- Change of job or loss of jobs

- Time feasible
- Time required for new system to be ready
- Can the system be ready for a given time scale?

- Legally feasible
- Is it the proposed system in conflict with any legal requirements
- Meeting the requirements of data protection legislation [6]

(b) Any three from:

- Interviewing
- Questionnaires
- Observation
- Record/document inspection
- Group Meetings [3]

(c) (i) Any two from:

- Processes/activities to be carried out
- File storage (or media)
- Input
- Output
- Files to be used

(ii) Any two from:

- Source of the data
- External entities
- Data processes
- Data flows in/out of processes
- Data stores [4]

(d) (i) Any two points from:

- The old system is discontinued and...
- ...replaced immediately by the new system.
- Changeover usually occurs at a convenient time
- The system may have to 'go down' while errors that emerge are corrected

(ii) Any two points from:

- Old system and the new system are run side by side by side...
- ...for a period of time
- Output from each system can be compared and errors detected
- Errors can be corrected without causing interruptions to the business operations

[4]**(e) Any two points from:**

- Adaptive maintenance
- Changing needs (of the hospital system)
- Changes in legal requirements
- Corrective maintenance
- Correcting errors (in hospital system)/Errors/bugs removed (from the software)/
Debugging
- Perfective maintenance
- Improving performance

[2]

2 1 mark for software and 1 mark for suitable reason**(a)**

- Desktop publishing software/word-processing software/graphics package
- To produce high quality graphics and text
- Integration of text/graphics
- To use an advertisement template **[2]**

(b)

- Spreadsheet software/database software/Financial accounting software
- To perform automatic calculations
- To query customer order details **[2]**

(c)

- E-mail/ Web authoring/messenger
- To send e-mails to potential customers/ with website link
- To create an interactive website **[2]**

(d)

- Database software/Spreadsheet software/stock control software
- To create a suitable record structure
- Query/add/delete/amend stock details **[2]**

3 2 marks for description and 1 mark for use.**(a)**

- Data is input in audio form
- Directly through microphone
- Indirectly through a tape
- Software analyses sound inputted
- Matches against a library of sounds/voice training
- Match found, it is processed
- Else new sound generated, processed and stored
- **Use** Security systems/ dictating text into word processor/ instructions to a robot/ mobile telephones **[3]**

(b)

- Scanner reads the reflected light from marks
- Marks made at specified points...
- ...on specially designed forms
- Marks equate to pre-set values
- Once read, sent for processing
- **Use** National Lottery/ multiple choice tests/ school register /meter readings **[3]**

(c)

- User can make selections by touching the screen
- They operate by means of criss-crossing beams of infrared light/ wires/ embedded just in front of the glass
- When the users finger touches the screen two sets of rays are blocked giving an x-axis and an y-axis point
- **Use** banks/ tourist offices/ museums/ information kiosks/ restaurants/ PDA/ Phones/ATM machines **[3]**

(d)

- Data can be read from the stripe
- By a magnetic stripe reader
- The stripe can only store a small amount of data
- The stripe consists of a thin layer of magnetic tape similar to that in a video/music tape
- **Use** credit card/ bankcard/ loyalty card/membership card/ car/ hotel key **[3]**

- 4 (a) Any two points from:
- Allows the human and the computer...
 - ...to interact / communicate
 - Users can input/output data
- [2]
- (b) Any three from:
- Window
 - Icons
 - Mouse/pointer
 - Menu
 - Toolbar
 - Buttons
 - Dialogue boxes
- [3]
- (c) 1 mark for the name and 2 marks for description and 1 mark for reason
- **Command driven**
 - Idea of prompting the user for a command
 - It also requires the ability to join commands to form instructions
 - The syntax in the command is critical/will not operate if typed incorrectly.
 - Single commands can allow the user to perform powerful operations
- [3]
- 5 1 mark for process, 2 marks for description and 1 mark for reason
- (a)
- **Batch processing (1)**
- Description (2)**
- Employee hours are collected over a period of time (week/month)
 - Input as a batch
 - Processed individually
 - Processed as one run at time convenient to the computer system
 - At a time when the computer is not being used interactively (such as night time)
 - Batch of wage slips produced/ output as a batch
- Reason (1)**
- Large quantities of data
 - Same processing for all
 - Time of processing is not critical
 - No user intervention is required during processing
- [4]
- (b)
- **Transaction processing /real time /rapid response (1)**
- Description (2)**
- Data is processed as quickly as possible/ short time delay
 - Record locking occurs
 - Output happens immediately/output occurs before next input
 - System is updated before next transaction
 - **Confirmation of seat details are sent to the user almost immediately**
- Reason (1)**
- Booking needs to be processed as quickly as possible
 - Need to prevent double booking
- [4]

6 (a)(i) One mark for name and one mark for description

- Length check
- Whereby the product number has a fixed number of digits
- A character type check
- to check only digits have been read

[4]

(ii) Any four from:

- Weights are applied to each digit in the code
- Sum of the products is calculated
- divide sum by 11 and the use remainder
- $11-R = \text{Check digit}$
- Special cases, such as $R=1$ check digit $=X$

OR

4 Marks for a correct method of calculation

Applying weights to digits (2)

Sum of products (1)

$11-R$ (1)

[4]

(b) Any one from:

(i)

- used for day to day decision making
- such as planning resources/manpower
- ...balance the tills at the end of each day
- ...checking stock levels
- daily information maybe required
- such as best selling stock item(s) on given day(s)

(ii) Any one from:

- Data is processed to allow for tactical decisions
- Used for short to medium term planning
- Such as ...need for moving stock from one area of a store to another
- Increase/decrease in item prices
- ...planning for staff training
- ...analysing weekly sales/profits

(iii) Any one from:

- Used for long term planning
- by company directors
- To support "What if" decision making by management
- decision support
- Such as... acquiring new stores
- ..selling existing stores
- what if the rent of a store increases
- ...predicting future turnovers

[3]

7 (a) Any two from:

- Difficult to log the hours of employees
- Difficult to monitor employees
- Initial set-up costs
- Lack of teamwork spirit
- Difficult to arrange meetings
- Security issues when transferring data

[2]**(b) Any two from:**

Advantages:

- More flexible working hours/time
- Reduced travelling time to work
- Working in a known environment
- No travelling costs

Any two from:

Disadvantages:

- Lack of interpersonal communication with colleagues
- Create an office at home- expense involved
- No sharing of ideas
- More distractions at home/lack of self motivation
- Stress, never leave work/temptation to work longer hours

[4]**(c) Any four from:**

- Personal data should be processed fairly....
-and lawfully with the consent of the data subject
- Personal data should be used for the specified purpose only
- Personal data should be adequate and relevant for its intended purpose
- Personal data should be accurate....
-and up to date
- Personal data should not be kept for longer than necessary
- Personal data should be processed in accordance with the rights of the data subject
- Personal data should be held securely, with no unauthorised access
- Personal data should not be transferred to other countries that do not comply with
- any form of data protection laws

[4]**(d) Any two from:**

- Difficult to monitor individual applications....
-on whether they are abiding to the principles of the act

- Individuals may find it difficult to source....
-who is holding personal data about themselves

- The changing nature of technology....
-requires constant reviewing of data protection legislation

- Some parts of the world/outside the EU
- May not comply to data protection law

[2]

(e) Any three points:

Data Privacy

- Use of passwords...
- ...to prevent unauthorised
- Use of physical measures...
- ...such as stripe readers
- Use of firewalls
- Use of data encryption
- Use of *spying* cookies
- Use of access right...
- ...read only/read and write/ no access/read and copy

Any three points from:

Data Integrity

- Use of data validation
- Use data verification...
- ...to ensure accuracy of data
- Design relational database structures/normalise data
- Preventing viruses
- Record Locking
- Keep backup copies...
- ...in case of corruption, fire

[6]

Total [86+4]=90



RECOGNISING ACHIEVEMENT

Mark Scheme 2509
January 2005

Each bullet point is worth **one** mark, up to the maximum for that section, unless stated otherwise.

1 (a)

- A signal/message/request
- Generated by a source (example acceptable)
- ...which causes a break in execution (of the current routine)
- Mention priorities

[2]

(b)

- Peripheral e.g. printer (buffer empty)
 - Clock interrupt
 - User interrupt
 - Power failure
 - System software
- Reason*
- More than one interrupt can occur at a time
 - Handle more urgent interrupt first...
 - ...to avoid loss of data

[2 for examples, + 1 for reason, max 3]

(c)

- Check for further interrupts
- If one of higher priority...
- ...service it
- Restore values...
- ...from stack...
- ...into registers

[3]

2 (a) (i)

- Convert from source code/high level language/language used by humans...
- ...into object code/low level/intermediate code/machine code/binary

[2]

(a) (ii)

- Compiler translates whole program & interpreter translates & runs 1 line at a time
- Interpreter stops when it finds an error, a compiler doesn't
- Error diagnostics
- Compiler produces intermediate/executable file/code and interpreter does not

[1]

(b)

- Statements are checked...
- ...against the rules of the language
- Errors are reported/listed/diagnostics may be given

[2]

(c)

- It allows files/modules/libraries...
- ...that have been compiled...
- ...to be combined with a compiled program...
- ...& converted into an executable file
- Completing address links

[3]

3 (a)

- Single control unit/processor manages program control
- One instruction at a time...
- ... in linear sequence
- Program stored with data (in some format)
- Fetch-execute cycle

[3]

(b)

- Address of next instruction is copied from PC to MAR
- Address is obtained from CIR to PC (in the case of a jump instruction)
- PC stores address of next instruction
- PC is incremented (at start of each cycle)
- PC is changed by a jump instruction
- MAR holds the address...
- ...of an instruction
- ...or piece of data

[4]

(c) (i)

- More than one processor...
- ...controlled by a complex operating system
- working together...
- to perform a single job...
- which is split into tasks...
- each task may be performed by any processor

[3]

(ii)

Advantage:

- Increased speed/multiple instructions processed at once
- Complex tasks performed efficiently

[1]

Disadvantage:

- Not suitable for some programs
- Programs written specially/may need to be rewritten

[1]

4 (a) (i)

- Start at "apple"
 - Look at each item in turn...
 - to compare with "damson"...
 - until end of list/sequential search stopping at "melon" as data in order
 - message indicating result (not found)
- (accept a full description)*

[3]

(ii)

- mid point "melon"
- "pear" > "melon" so look in correct half of list
- repeated halving of list
- until found
- message indicating result

[3]

(b)

- Faster (on average)...
- As (generally) fewer items are checked

[2]

(c)

	24 →	8	37	11	15 ←
Swap 24 & 15	15 →	8	37	11	24 ←
	15	8 →	37	11	24 ←
	15	8	37 →	11	24 ←
Swap 37 & 24	15	8	24 →	11	37 ←
	15	8	24 →	11 ←	37
Swap 24 & 11	15	8	11 →	24 ←	37
	15	8	11	24 ←	37 →

Split into sublists, repeat...

Marks for:

- highlight first number in the list (the 'search number')
- pointer at each end of list
- Repeat:
- Compare numbers being pointed to...
- ...if in wrong order, swap
- Move pointer of non-search number
- Until pointers coincide so search number in correct position
- Split list into 2 sublists
- Quick sort each sublist
- Repeat until all sublists have a single number
- Put sublists back together

OR

alternative answer using a pivot:

- Select an item at random, the pivot
- Create two new lists:
- ...one with all items less than pivot,
- ...other with items greater than pivot
- Repeat
- ...until lists only have one item

(demonstrate this on numbers given)

eg:

24	8	37	11	15	Pivot is 37
24	8	11	15	37	numbers moved to left of pivot as smaller, choose 11 as new pivot for left section
8	11	24	15	37	24 moved to right of 11 as larger

etc

[6]

5 (a) (i)

- Valid

[1]

(ii)

- Not valid
- Starts with B/should start with a digit

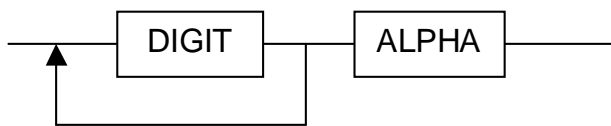
[2]

(iii)

- Not valid
- A not allowed
- 5 on right

[3]

(b)



- Both ALPHA and DIGIT shown (no other boxes)
- Correct order
- Recursion on DIGIT

[3]

(c)

$\langle \text{IDENTITY} \rangle ::= \langle \text{SYMBOL} \rangle \langle \text{ALPHA} \rangle \mid \langle \text{IDENTITY} \rangle \langle \text{DIGIT} \rangle$

↑
↑
↑

1 mark
1 mark
1 mark

[3]

(d)

- Describes syntax of computer language/needed in compiler design
- Provides replacement rules that...
- ...show how an element of the language is built from...
- ...choices of simpler elements

[2]

6 (a) (i)

- Unique identifier
- CustomerId / OrderId or similar

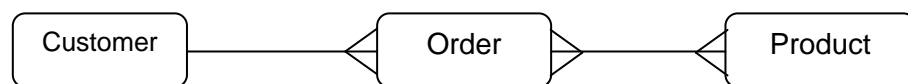
[2]

(ii)

- A primary key for another entity...
- stored as an attribute...
- to provide the relationship between entities
- CustomerId is foreign key in Order

[3]

(b) (i)



- Correct customer-order relationship (one to many) (1)
- For each correct end of Order-Product relationship (2)
- Correct relationships (ie: no extras) (1)

[4]

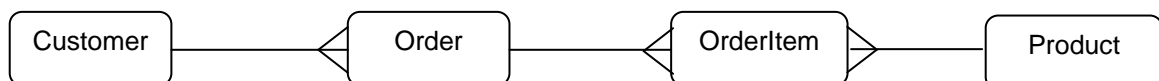
(ii)

- Need to resolve many-many relationship (between Order & Product)
- To avoid data duplication/errors
- Only allowed many-one or one-one relationships

[1]

(iii)

- Insert link entity
- correct one to many relationship Order and link entity
- correct many to one relationship link entity and Product

**[3]**

7 (a)

- A (storage) register...
- ...within the Arithmetic Logic unit
- Holds data (currently) being processed
- Used for I/O
- Used for arithmetic/logic
- Used for temporary storage...
- ...before data is sent to memory unit

[3]

(b)

Direct:

- Uses the data in the address field...
- ...without alteration
- to provide an address (in memory)
- The simplest method of addressing

Indirect:

- Uses the address field (operand) to hold the address of a location...
- ...which contains the required address
- The location holding the real address is a vector

[max 4 (max 3 for only one type of addressing)]

(8) (a)

Static:

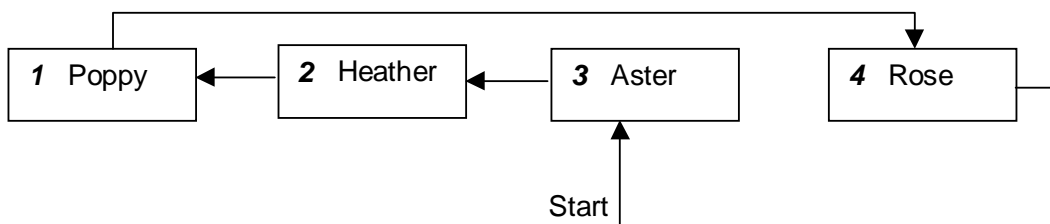
- Size is fixed (when created)

Dynamic

- Size can change during program execution

[2]

(8) (b) (i)



- Start pointer to Aster
- Correct order for other pointers (shown with arrows or numerically)
- Null pointer from Rose

[3]

(b) (ii)

Algorithm in any form acceptable – marks for:

- Begin at start pointer
- Follow pointers...
- Until item to delete is found
- Update pointer from previous item..
- To take value of pointer from item to delete
- Insert pointer to item to delete into free space list
- Report error if item to delete is not found.

[5]**Total [86+4]=90**



RECOGNISING ACHIEVEMENT

Mark Scheme 2511
January 2005

1(a)

- OMR is a direct entry system
- OMR helps to eliminate (transaction) errors
- The user makes marks ...
- ... on an OMR document ...
- ... in pre-defined positions
- These marks are read by a scanner/reader ...
- ... using a light/laser beam

[1] for each of three points**[3]****1(b)** Off-line processing

- The order form is processed away from direct control of the computer system
- The results of processing are stored ...
- ... away from the computer system ...
- ... e.g. on magnetic tape
- ... until the results of processing are required on-line
- batch processed
- ...when computer not busy
- ...during quiet period

[1] for each of two points**[2]****1(c)** On-line processing

- The order form is processed under direct control of the computer system
- The data is input and processed immediately
- On-line external memory is used ...
- ... e.g. magnetic disk

[1] for each of two points**[2]****1(d)**

- In response to 'spoken'/pre-recorded prompts from the computer ...
- ... the manager would speak the order ...
- ... which is interpreted by software
- ... known as voice recognition software
- The manager must speak in item details in a pre-determined order
- Item details are usually given in numerical form ...
- ... using item numbers and quantities, for example
- The manager must speak carefully/clearly
- Bill goes directly into system

[1] for each of four points

OR

- In response to menu prompts from the computer ...
- ... the manager would choose options ...
- ... which is interpreted by software
- The menu would ensure item details are in a pre-determined order
- Item details are usually given as a series of digits ...
- ... using item numbers and quantities, for example
- bill goes directly into system

[1] for each of four points**[4]**

2(a)

- Each stock item has a bar code ...
- ... which identifies the (type of the) item ...
- ... uniquely
- Bar codes will be scanned ...
- ... by a bar code reader ...
- ... which uses a laser beam
- Bar codes will be used to record new stock received into the warehouse
- Bar codes will be used to record stock removed/sold from the warehouse
- Records of stock levels will be updated automatically
- Records of stock levels will be updated immediately

[1] for each of three points**[3]****2(b)**

- Every time an item is sold/At regular intervals ...
- ... an automatic reorder check will be performed
- The current stock level of each item will be compared with the item's reorder level
- If the reorder level has been reached ...
- ... details of the item will be placed in a reorder list ...
- ... perhaps along with a reorder quantity
- In this way an item will never be out of stock

[1] for each of four points**[4]****2(c)(i)**

- The company must pay for any stock it receives
- Storing the stock also involves expenditure
- If this expenditure can be kept to a minimum, the company will be more profitable
- Stock goes out of date

[1] for each of two points**[2]****2(c)(ii)**

- The current stock level of each item can be monitored/analysed ...
- ... over a period of time
- ... automatically/by regular reports
- The demand for the item can be used ...
- ... to set the reorder level as low as possible
- This will keep the stock stored at the warehouse at any time to a minimum

[1] for each of three points**[3]**

3(a)

- A computer networks consists of a number of computers/terminals/workstations ...
- ... linked together ...
- ... so that resources can be shared ...
- ... such as hardware/peripherals ...
- ... and software/data
- Communication between users of the network is possible

[1] for each of three points**[3]****3(b)**

- The network nodes are all located in the same building
- The network nodes are connected together physically
- Direct/wireless cabling is used to connect the nodes
- ... because of the short distances involved

[1] for each of three points**[3]****3(c)****Bridge**

- A bridge joins two or more network segments
- ...which may not be the same topology
- ... within one logical/larger network
- It behaves like a network switch
- It is usually used to link parts of a network which communicate frequently with one another ...
- ... but not frequently with other parts of the network
- The bridge examines the destination of a data packet
- ... and decides whether or not to pass the packet on

[1] for each of two points**Modem**

- A modem converts a digital signal
- ... used by the computer
- ... to an analogue signal
- ... used by the telephone system
- modulator/demodulator

(Or vice versa)**[1] for each of two points****[4]****4(a)**

- Plan the project
- Staff the project
- Resource the project
- Control the project's budget
- Evaluate risks to the project
- Monitor the progress of the project
- Adjust the project's schedule
- Monitor individual team member's performance
- Report to management

[1] for each of four tasks**[4]**

4(b)

- Software can be used at all stages of the project ...
- ... from planning to implementation
- Software tools can be used to create ...
- ... and modify Gantt charts
- Software tools can be used to perform critical path analysis
- The critical path network can be created by the user ...
- ... and CPA performed automatically
- calendar of events
- set targets
- organise time

[1] for each of four points**[4]****4(c)****Advantage**

- SSADM is a (UK) standard approach to analysis & design
- Its aim is to improve the quality of the software system
- It is specially designed for use in large-scale software projects
- SSADM takes the system development through a number of clearly defined stages

- Each stage is developed using standard techniques/methodologies
- Standard documentation is produced throughout the development
- Training and materials are widely available

[1] for each of two points**Disadvantage**

- SSADM is not suited to smaller scale projects ...
- ... which may not require all the stages of SSADM
- SSADM is not suited to projects which need to be developed quickly ...
- ... SSADM is a very well defined approach with a number of set stages
- Using SSADM for the first time can be very expensive
- ... because of the need for suitably trained/experienced developers/designers/programmers

[1] for each of two points**[4]****4(d)(i)**

- A Gantt chart

[1]**4(d)(ii)**

- It assists the planning of a project
- ... by identifying the stages in a project
- ... and the relationships between the stages
- ... such as which stages must be completed before others can start
- ... or which stages overlap
- identifies total time
- identifies parallel tasks
- It assists the allocation of resources
- ... and the budgeting of resources
- ... such as personnel
- ... or technology
- It enables the progress of the project to be monitored
- Problems can be identified as early as possible
- ... and reactions planned

[1] for each of four points**[4]**

4(d)(iii)

- Code generator
- Interface generator
- Data modelling tool
- CPA software

[1] for one tool**[1]****5(a)**

- Light/laser sensors could be used ...
- ... to monitor/check the liquid level in a bottle ...
- ... by reflecting light off the liquid
- alarm sounded if necessary

[1] for each of three points

- Light/laser sensors could be used ...
- ... to detect the presence/position of the label on the bottle
- ... to read the contents on the label ...
- ...perhaps via a bar code/special coordinates on the label
- alarm sounded if necessary

[1] for each of three points

- Tactile sensors could be used ...
- ... to detect the position/presence of the bottle
- ... to detect the position/presence of the boxes
- ... to detect the position/presence of the bin
- alarm sounded if necessary

[1] for each of three points

- Touch/weight sensors could be used ...
- ... to monitor/check the liquid level in a bottle ...
- ... by checking weight of bottle and contents
- ... against expected weight
- ... allowing for tolerances
- alarm sounded if necessary

[1] for each of three points

- water/humidity sensor
- ...detects level in bottle
- ...by dipping in bottle
- sounds alarm if water level too low

[1] for each of three points**[3] for each of two sensors****[6]**

5(b)

An actuator could be used

- ... to control a motor ...
- ... to move a 'gripper' ...
- ... and tighten it around a substandard bottle ...
- ... to lift the bottle off the conveyor belt

[1] for each of three points

An actuator could be used

- ... control a motor ...
- ... to release the 'gripper' ...
- ... to drop a bottle
- ... in the bin

[1] for each of three points

An actuator could be used

- ... activate a switch ...
- ... to sound an alarm ...
- ... if an extreme/emergency condition occurs ...
- ... such as the complete absence of bottles on the conveyor belt

[1] for each of three points

[3] for each of two actuators

[6]

5(c)

- Improved accuracy
- Increased consistency
- Increased throughput
- Reduced wastage/breakage
- Increased flexibility/adaptation to new situations
- Can work 24/7
- Economically better
- Does not need breaks

[1] for each of three points

[3]

5(d)

- A human will respond better ...
- ... to the unexpected
- A human will use common sense/intuition ...
- ... and overrule agreed procedures

[1] for each of two points

[2]

6(a)**Advantages**

- Multimedia effects can be included
- Updated editions can be produced more quickly/at lower cost/with less environmental damage
- Improved version management – there will only be one current version of the catalogue
- The user can be guided through the catalogue in a more structured manner
- The user will be able to browse/search the catalogue using links/input boxes
- Can advertise worldwide

[1] for each of two points

Disadvantages

- Access to the internet is required
- Not all customers may be computer-literate
- On-line ordering may be (considered to be) subject to fraud
- Catalogue can be shown to friends/left in doctors waiting rooms etc

[1] for each of two points**[4]****6(b)**

- The catalogue will consist of a number of web pages
- Hypertext links can be inserted into a web page
- A link may be a specially formatted word ...
- ... or a graphic/icon
- Clicking on the link ...
- ... automatically displays the related web page
- ... or executes some code
- Links can be used to take the viewer through the catalogue ...
- ... or enable the user to see pictures of products ...
- ... or play sounds/commentaries

[1] for each of six points**[6]****6(c)****Customers**

- Customers must be confident ...
- ...that any details they enter will be kept secure
- ... and will not be used fraudulently by the company itself
- ... or by an employee acting alone
- ... or by others such as hackers
- ...company exists

[1] for each of three points**Supplier**

- The supplier must be confident
- ... that customer orders are legitimate
- Unscrupulous customers could use someone else's details ...
- ... to make purchases

[1] for each of three points**[6]****6(d)**

- Data encryption could be used
- Data is scrambled before transmission ...
- ... by coding the data ...
- ... and unscrambled at the receiving end
- Only a recipient with access to the encryption code will be able to access the data
- Not all details of the transaction will be transmitted
- For example, only the last four digits of the credit/debit card will be transmitted for existing customers
- Firewall
- ...to prevent illegal access to data

[1] for each of four points**[4]****Total [86+4]= 90**



RECOGNISING ACHIEVEMENT

REPORT ON THE UNITS
January 2005

Chief Examiner's Report

The method of asking candidates to answer the questions on the examination paper for Modules 2509 and 2511 proved to be very successful. Candidates were able to target their answers much more accurately. This meant that they did not write too much and did not contradict themselves as they have in the past. It also ensured that candidates were able to complete these papers within the time allocated.

However, as has been reported in the past, the quality of written communication of many candidates is still very poor. As has been reported by one of the Principal Examiners, the ability to spell correctly is very poor. Sentence construction also appears to be deteriorating. Two examples of poor written communication taken from the A2 papers are 'If for sum reason ...' and 'When the computers are not in use at it takes along time to process.' This is not acceptable at this level.

Candidates need to be warned that poor communication skills can mean that they underachieve in examinations. After all, if these candidates are going to enter the world of Information Technology and Computing for a career, they will have to communicate clearly and accurately.

This also applies to writing algorithms. An essay style answer rarely describes an algorithm accurately. Candidates are not confined to using a single method, but, at this level, a series of numbered steps is probably most appropriate. Flowcharts tend to become very complex when describing algorithms at this level of examination.

Many examiners reported that some candidates are ill-prepared for these examinations. It is very frustrating to examiners and candidates when a script has a large number of blank answers.

2506: Introductory computer systems, communications and software

General Comments:

The examining team reported that the paper was very similar in both design and in level of difficulty to recent sessions. Hopefully, this meant that there were no unpleasant surprises for the candidates and they were able to show their potential without being too phased by the paper.

While most of the presentation continues to demonstrate a high quality, showing that the candidates have a pride in the work that they are producing, there remains a small proportion of the entry whose responses were not only poor but were also poorly presented. Candidates need to understand that responses which are difficult or impossible to decipher must mean that the examiner cannot give credit. It is the candidate's responsibility to ensure that clear communication levels are used. Diagrams were often poorly drawn so that it was not possible to understand their meaning. Examiners are not expecting beautifully constructed diagrams but they are expecting them to be produced in such a way that their meaning is clear.

There is a new problem beginning to creep in which the examiners had not noticed before. Candidates are using the words in the question to provide the answer. An example was in Question 1 where many candidates answered part (a) by saying that a human computer interface is where a human interfaces with a computer. Such responses which merely paraphrase the question are not acceptable.

The major problem, however, remains the small but significant proportion of candidates who are entered for the examination without proper preparation. These candidates demonstrate their poor understanding of the subject matter by presenting many totally blank pages and others where the answers simply do not relate to the questions being asked.

There was no evidence of candidates having trouble completing the paper within the time allocation and there was no evidence of any of the questions being inaccessible at the levels at which they were aimed.

Individual questions

1. a) Generally well answered except by those who could only paraphrase the question.
b) Most candidates were able to describe the types, but a lot of candidates struggled to think of an application area.
2. a) Part (i) was generally well answered, but part (ii) proved more difficult with most candidates simply paraphrasing the question and talking about doing a back-up automatically, or they talked about the need to save your work very quickly when the system crashed.
b) Most scored the two marks with virus checking being the most common response.
3. Some good answers here. In part (a), the main problem was a failure by a small number of candidates to understand the difference between bytes and bits. As bytes were given in the question, the examiners were very generous with these responses, generally giving the candidate the benefit of the doubt, but some penalised themselves because of the unrealistic results that they came up with. In

part (b), the most common omission was to add some value (normally 10%) for the overheads. The marking scheme contains all the acceptable responses and Centres have their attention drawn to it for this and all other questions.

4. Some candidates are still interpreting on- and off-line as being connected or otherwise to the internet. Happily, the number of these continues to fall and hopefully will not be seen the next time this is asked. Most candidates were able to define the meanings, though batch mode was not well answered, but they were unable to offer anything as far as the reason went, simply repeating the answers previously given. This was to be expected because the transfer of facts to a particular situation immediately requires a higher level of skill.
5. a) Last time this was asked it proved a simple question for almost all candidates, this time the majority mistook it for a question about simplex and duplex forms of transmission.
b) This proved to be a good discriminator with most scripts offering responses that were either all correct or all wrong. Again, the main problem, as in the past, is the failure of candidates to understand the directions of flow of data and of signals, and a failure to understand that the processor is in control, not the buffer.
6. a) This was a question for the more able candidates. There were some very good answers but most were unable to come up with a satisfactory response to either logic or arithmetic errors.
b) This question was well answered, with most candidates being able to give good responses.
7. a) This question was intended to be a discriminator at grade E, but the poor standard of the diagrams and the failure of candidates to convey any sensible ideas meant that the question was much harder than was intended.
b) This was meant as a discriminator throughout the levels of ability. Many candidates stated that the system was unfair while a few gave a well reasoned response talking about the shortcomings of the system described and providing reasoned arguments for changing.
8. Most candidates were unable to give satisfactory responses. There was a general lack of discrimination between repetition and selection constructs, a very popular answer being 'If...Then'. Those who correctly identified the constructs were generally unable to give a characteristic of the type of loop.
9. Test data should not prove to be as difficult as most candidates make it. The question simply wanted three sets of five figures and the reason for choosing them. Candidates should be well practised in this because of the work that they are doing in the structured tasks, the testing of solutions being a cross over between the two modules. There is a slight complication in that the sets of data should relate to testing the example given, but this did not normally cause a problem because the candidates did not give sets of five figures.
10. a) The diagrams produced were of a poor quality. Beautiful drawings are not expected, but clarity and labelling are expected. Candidates should also be aware of the number of marks available for the question and make sure that they give enough detail to warrant the award of marks.
b) Whilst accepting that the concepts here are more difficult, it is disappointing that after asking this question, or ones like it, on a number of previous papers, the responses are not improving. There are plenty of examples of this on past papers, so candidates really should know what to expect.

11. There is a general understanding of binary arithmetic. However, it is disappointing to see candidates dropping marks in parts (a) and (c) for not giving the answers as 8 bit bytes, as stated in the questions. Part (b) was relatively well answered although there were many cases of simple mistakes occurring. These would have affected the answers in (c) so examiners used follow through marking from the candidates' answers in (b) so that they were not unfairly penalised. Although the addition of the two values was normally well attempted, the explanations of the result and the reasons for it happening were sparse.

2508 – Computer Systems Development & Practical Applications

General Comments

This examination paper worked well allowing the majority of candidates to score marks in each question. There was evidence of more candidates achieving higher overall marks than in previous papers with few candidates scoring a total of less than 25 marks. It was pleasing to see the thorough way in which most Centres prepared their candidates for this examination. Apart from detailed knowledge more candidates are demonstrating better examination techniques such as reading the questions carefully and taking account of the marks allocated for each question.

The examining team felt there was sufficient time to complete the paper and the spaces provided for the answers was more than adequate. The layout of the paper with structured questions is continuing to prove an advantage to all candidates. The continued use of proprietary names of software is a concern. The rubric on the front cover makes it clear that candidates will not be awarded marks for “brand names”. Candidates need to be careful when stating a suitable software package for a given application.

More Centres are using previous papers, mark schemes and examination reports, which can only assist in candidates improving their performance in this examination. The specification is well understood by Centres, but section 5.3.5 still continues to cause concern. Candidates continue to demonstrate a lack of knowledge in the area of MIS. As the paper focuses on computer applications, candidates would be advised to refer to the stem of the question in their answers. For example, in question 5 a good reason for using real time in an airline booking system would be to “avoid double booking of seats” as opposed to “the immediate updating of the system” which does not make direct reference to the application.

Comments on individual questions

Question 1

The majority of candidates were able to achieve at least half of the available marks. In part (a) many candidates understood the factors of a feasibility study. It was pleasing to see candidates using appropriate names such as “technically feasible”. Some candidates could suggest appropriate factors but could not explain them such as “economically feasible” as a factor followed by a trivial explanation such as “...getting value for money..”. Most candidates scored full marks in part (b). In part (c), many candidates failed to score in both sections. There was evidence to suggest that data flow diagrams are not well known. Changeover methods are well known as evidenced by the high scores in part (d). In part (e) the majority of candidates only scored one mark out of the two marks for the question. Answers were often vague with the focus on “..correcting programs as they were not working properly..”. Candidates would be advised to study other purposes for software maintenance such as adaptive and perfective maintenance.

Question 2

Candidates need to realise that no marks are awarded for using brand names. In part (a) many candidates suggested DTP and were able to give an appropriate explanation. In part (b) answers were often disappointing as candidates suggested a word processing package was used to create invoices for customer orders and did not recognise the need to perform calculations or query customer details to create invoices. In part (c), answers were generally good with the majority of candidates suggesting the correct type of

software giving detailed explanations for their choice. Part (d) was well answered with most candidates recommending a database package.

Question 3

Very few candidates obtained full marks in this question although most candidates were able to achieve at least six marks. The reason why candidates could not achieve full marks was due to lack of detail in their descriptions. The descriptions often did not refer to how data was captured. OMR was often mixed up with OCR, with some candidates even describing bar codes and MICR instead of OMR. Although candidates were able to describe magnetic stripe cards, few could give detailed answers to touch screens. Too often answers to the touch screen were a rewording of the question: "... touching the screen with your hand...".

Question 4

This question was well answered by all candidates. In parts (a) and (b), answers were good with the majority of candidates scoring full marks. Although most candidates were able to suggest command driven HCI, very few could describe the interface. For example "...the idea of prompting the user for a command..." was not well known.

Question 5

It was pleasing to see candidates selecting the correct method of processing in each application given. There has been an improvement in answering questions in this area of the specification. Apart from giving the correct processing name, candidates could describe both batch and real time processing. The better candidates were able to focus on the reason for selecting the processing method, leading to full marks being achieved.

Question 6

There was evidence that a lot of candidates did not read question part (a) (i), as they were describing validation checks that were not relevant to the answer required, such as existence and presence checks. Those candidates who were able to name the correct validation check, could also give a valid description. Part (a) (ii) was not well answered with few candidates achieving four marks. Some candidates did the calculation on the given product code without a formal explanation, leading to full marks being achieved. In part (b) few candidates achieved three marks. Candidates continue to score poorly in the area of MIS as they do not show a good understanding of the levels within a MIS.

Question 7

In parts (a) and (b), candidates were able to demonstrate a detailed knowledge of "...using technology for working from home..." in terms of both the employer and the employee. In part (c), many candidates were able to give relevant features of data protection legislation and achieved maximum marks. Few candidates demonstrated a full understanding of the limitations of data protection legislation in part (d). The better candidates were able to refer to different legislation outside EU countries. In part (e) there was evidence to suggest a lack of understanding of the terms asked, although data privacy was better understood than data integrity.

2509 – Systems Software Mechanisms, Machine Architecture, Database Theory and Programming Paradigms

General points

The majority of candidates used the new format of the examination paper effectively. Many gave clear, concise answers within the space available. In some cases, candidates were extremely well-prepared and gave almost perfect answers for a number of questions. A few candidates made the paper more difficult for themselves by re-writing the questions and leaving insufficient space for their answers. Only a small minority of candidates were unable to demonstrate any real knowledge of the subject.

Comments on individual questions:

- Q1 (a) This was generally well attempted, though the majority of answers assumed that an interrupt was generated by a fault or error condition.
(b) Some candidates were unable to give examples of sources of interrupts with different priorities and named two input or output devices. Others gave reasons for different priorities which were unrelated to their examples.
(c) This was poorly answered; most answers described how the context was saved when an interrupt occurred, not how it was restored after the ISR was finished.
Centres may find it helpful to spend more time on this topic when preparing candidates for future examinations; it is clearly an area of weakness.
- Q2 Most candidates gained marks for each part of this question. In part (c) a common misunderstanding was to confuse a linker with the link or relationship between tables in a relational database.
- Q3 (a) Most candidates answered correctly, though many failed to gain all 3 of the available marks.
(b) A standard piece of work, examined frequently in the past, but good answers were rare.
(c) Again, it was disappointing to see that many candidates could not give good answers to this.
- Q4 Many candidates gained a number of marks here. The quick sort was demonstrated extremely well by a minority of candidates. Many answers used other sorting methods by mistake. In a few cases, it seemed that candidates thought a “quick sort” was any sorting method that worked quickly.
- Q5 (a) This was answered well by many candidates.
(b) A considerable number of candidates do not appear to know what a syntax diagram is.
(c) As in the past, the less able candidates found the recursive definition difficult.
(d) It was rare to see a good answer to this question.
- Q6 As in the past, most candidates gave good answers for this topic. The final diagram proved too difficult for some candidates. A common error was to change one end of the many-many relationship to make it many-one.
- Q7 This question was answered badly by many candidates. In part (b), many started quite well but confused indirect addressing with indexed addressing. It was rare to see any mention of the operand.
- Q8 (a) Poor English appeared to limit success here. Many candidates gave answers relating to the structures “changing” or not, but failed to make it clear what was changing.
(b) Some failed to give their answers on the diagram. Many forgot the null pointer

Report on the Units taken in January 2005

at the end of the list.

The algorithm was very badly done; clear steps should have been given. Instead, many wrote descriptions or deleted an item of their choice from the example.

2510 – Computing Project

General Comments

Given the very small entry for this session, it is not appropriate to comment on the work submitted in this report, however it is appropriate to repeat the advice given after the June 2004 series of examinations:

It is appropriate for Centres to give the candidates the mark scheme so that they are able to cover all the marking points and maximise their scores. The moderators appreciate commentaries and/or annotation to show how Centres arrive at the marks awarded.

The project is a systems analysis task and candidates must consider suitable alternative approaches in order to justify their chosen method of solution.

Better projects are distinguished by excellent evidence of continuous end user involvement. This is a major aspect of this project and candidates must convince the moderator that they have consulted, and worked with, the target end user throughout the development of the solution. Original documents, notes from meetings, e-mails with headers shown, headed notepaper and sample forms are all useful evidence.

2511 – Integrated Information Systems

General Comments

At this examination session, the entry for this Module was small. However, the candidates produced a wide range of marks. There were some very good scripts, but there were a few that showed that some candidates were not ready to take this examination. It must be frustrating for candidates when they find the examination difficult and worse still when they receive disappointing results. It would be better for these candidates to wait until the June examination session to take this examination.

Some candidates under achieved because the standard of English was poor. This meant that the examiner could not understand the meaning of some answers. Every attempt is made to both understand the meaning of answers and to read poor writing, but candidates will disadvantage themselves by the use of poor spelling and grammar. Candidates should be made aware that illegible writing and English that is not understandable may lead to under achievement.

Candidates need to be reminded that very short answers, such as faster and more efficient, are not enough at this level. There was some improvement on the answers given compared to previous sessions, probably due to the new style of paper. There was evidence that the method of writing answers on the examination paper proved to be helpful to many candidates. It gave them an indication of how much was expected in order to gain good marks. There was also some evidence that candidates used the marks at the end of questions to help them provide adequate answers.

There was no evidence of candidates not having sufficient time to complete the questions.

Comments on Individual Questions

- 1)
 - (a) The candidates provided some good answers. Most candidates mentioned the user making marks on an OMR document in pre-defined positions. Marks were also given for mentioning that OMR is a direct entry system that helps to eliminate transaction errors.
 - (b) Most candidates scored full marks by mentioning the idea of batch-processing and how it is relevant to this system.
 - (c) This was not well answered. Candidates were expected to explain that the order is processed under direct control of the computer system and that the data is input and processed immediately. Mention of on-line external memory was also expected.
 - (d) Some quite good answers were presented, most of which mentioned the use of menus and that the choices would be made using the telephone key pad. Some candidates explained the use of voice recognition systems, which was acceptable. Unfortunately, these answers were often vague.
- 2)
 - (a) Although there were some excellent answers, too many were poor. Candidates should be very well aware of how a computerised stock control system works. Many candidates did not understand the idea that the stock level is increased or decreased as stock is received or sold. Also, those who did mention stock levels assumed that single items were bought and sold when this is not the case.

- (b) Few candidates knew the purpose of `current_stock_level` and `reorder_level`. More often than not, candidates thought that the `reorder_level` gave the number of items to be ordered.
- (c) The most common acceptable answer to part (i) was that stock might go out of date. Some candidates mentioned that stock has to be paid for, as well as warehouse space.
Few candidates could answer part (ii) correctly. Monitoring sales and using the results from this to determine stock levels was not known by the majority of candidates.
- 3) (a) The term computer network as a number of computers connected together so that resources can be shared was mentioned by nearly all candidates. A few also mentioned communication between users.
(b) Most candidates failed to understand this question. It did not ask for the advantages of using a LAN but why a LAN is appropriate in the administration centre. Candidates should have explained that the nodes are in the same building; therefore they can be connected together physically by means of wires or wireless because short distances are involved.
(c) Most candidates knew that the purpose of a bridge is to connect two LANs together to form a large network. The two LANs need not be of the same topology. Modem was also well understood.
- 4) (a) This question was only answered well by the most able candidates. Also, this was very much Centre oriented. Many candidates discussed the software life cycle rather than anything to do with project management. At this stage the feasibility study has been completed and a decision has been made to go ahead with the project and a manager has been appointed. The manager's job is to plan, staff and resource the project, taking into consideration the costs and risks involved. Other tasks are to monitor the progress of the project, adjust the project's schedule and to monitor team members' performances. The results should be reported to management.
(b) This was not well answered. Candidates were expected to discuss the use of software to plan and implement the project. This should include software for the production of Gantt charts as well as the production of critical path analysis (CPA) diagrams and calculations.
(c) Candidates had little knowledge of SSADM as a standard approach to systems analysis and design. The aim of SSADM is to improve the quality of software, particularly for large-scale projects. SSADM has a number of clearly defined stages that should be understood by the candidates. Candidates should also understand that training and materials are widely available. Disadvantages are that SSADM is not suitable for small projects or for rapid application development (RAD). It also needs well-trained staff, which can be expensive.
(d) Nearly all candidates knew that the diagram was a Gantt chart. In part (ii) the common correct answers were that the diagram identifies the total time taken for the project and the tasks that may be undertaken in parallel. Little was mentioned about resources, budgeting, problems or monitoring. Little was mentioned about code and interface generation or data modelling in part (ii). In the final part of this question, the only relevant answer was the use of CPA techniques.
- 5) (a) Light, tactile, touch and weight sensors were mentioned by many candidates and their uses were, generally, well explained.
(b) Actuators, to control devices such as motors and switches, were not well understood. However, a number of candidates did explain their uses to control motors and activate switches.
(c) Most candidates gained full marks for this part of the question.

Report on the Units taken in January 2005

- (d) This was poorly answered with few candidates gaining any marks. Candidates were expected to have discussed problems such as the unexpected happening and the need to overrule agreed procedures from time to time.
- 6) (a) The majority of candidates answered this well, giving good advantages and disadvantages.
- (b) Candidates also provided satisfactory answers to this part of the question, many candidates gaining at least half marks.
- (c) Although some good answers were given for the importance of maintaining security from the point of view of the customer, often the view of the supplier was taken to be very similar. The supplier needs to be confident that the orders are from legitimate customers and not from people who are using someone else's details.

Advanced Subsidiary GCE Computing 3820
January 2005 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2506	Raw	90	70	62	54	46	38	0
	UMS	90	72	62	54	45	36	0
2508	Raw	90	67	60	53	46	40	0
	UMS	90	72	62	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
3820	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
3820	31.82	52.27	72.73	93.18	100.0	100.0	44

Advanced GCE Computing 7820
January 2005 Assessment Session

Unit Threshold Marks

Unit		Maximum Mark	a	b	c	d	e	u
2509	Raw	90	72	64	56	48	40	0
	UMS	90	72	62	54	45	36	0
2510	Raw	120	98	87	76	65	54	0
	UMS	120	96	84	72	60	48	0
2511	Raw	90	66	59	52	46	40	0
	UMS	90	72	62	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
7820	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
7820	0.00	0.00	50.00	75.00	100.0	100.0	4

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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Head office
Telephone: 01223 552552
Facsimile: 01223 552553

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