



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

COMPUTING

9691/01

Paper 1 Written

For Examination from 2011

SPECIMEN MARK SCHEME

1 hour 30 minutes

MAXIMUM MARK: 75

This document consists of **5** printed pages and **1** blank page.



- 1 (a) (i) -Controls responses to external requests/controls hardware/makes system work/acts as an interface between the user and the hardware/controls input and output [1]
- (ii) -Program that allows the user to do something useful/something that would have needed to be done without the computer [1]
- (b) -Batch not time sensitive
-Real-time must produce some sort of immediate output [2]
- (c) -e.g. payroll
-because data must be collected before the appropriate processing is carried out [2]
- 2 (a) (i) Communication is only one way [1]
- (ii) Communication is two way and may be at the same time [1]
- (iii) Communication is two way but only one way at a time [1]
- (b) (i) -Processor transfers data from primary memory to fill buffer
-Data sent from buffer to secondary storage while...
-processor continues with other tasks
-When buffer empty, interrupt sent to processor
-Processor may interrupt current job
-Deals with request to fill buffer
-Mark for mention of importance of priority of interrupt
(1 per -, max 5) [5]
- (ii) -Half-duplex
-because the system may be set to transfer data and then stop when a set number of packets are transferred in which case the replying interrupt is only sent when data is not being transferred
(2 possible mark points) [2]
- 3 (a) -Is the solution technically possible?
-If the hardware or software does not exist then the solution cannot be implemented
-Is the solution economic to produce?
-If the cost of the new system will not reasonably be recoverable then it is not sensible to produce it
-Is the solution economic to run?
-If the running costs will not be smaller than at present then cost is not a reason for change
-Effect on the work force
-If the human cost (e.g. mass redundancy) is great then there may be unacceptable social costs
-Is the work force skilled enough?
-If there are no skilled workers to work the new system then it is not worth producing
-Will customers notice a difference?
-If there is no improvement in price/quality/reliability of the product then is the extra expense worthwhile?
-How long will the introduction of new system take?
-If it is too long then any beneficial effects may have been lost

- What are the legal implications?
 - e.g. if the DPA says that it is not legal to use the data in this way then the proposed system cannot be used
- (2 per pair, max 3 pairs, max 6) [6]

- (b)** -Interviews...
 - to allow important members of staff to make their own points
 -Questionnaires...
 - so that all members of staff can feel that their view is important
 -Document collection...
 - to ensure that current data required is covered on the new system
 -Observation...
 - to see how the processes are carried out and what the processes are

(1 per -, max 5) [5]

- 4 (a) Custom:**
- A package especially written to solve a specific problem
 - Contains all the features that the business needs...
 - including non standard ones
 - Does not contain features that will not be used
- Off-the-shelf:
- Pre-written (generic) software
 - Immediately available
 - Shared development costs makes the software cheaper to buy
 - Ready pool of trained workers
 - Software will be fully tested
 - Compatible with other organisations
 - Readily available help groups
- (1 per -, max 3 points from either type, max 5) [5]

- (b)** -Word processor
 - to process reports/write letters to customers
 -Spreadsheet/Accounting software
 - to store accounts/produce itemised invoices for customers
 -Database
 - to manipulate customer/stock files
 -CAD
 - to design new buildings/extensions/interiors...
 -Graphical/presentation
 - to produce advertising material/marketing presentations

(1 per -, max 3 pairs of points, max 6) [6]

- (c) (i)** -Contrasting colours for background and text or text becomes difficult to read
- Colour (red) to highlight items more important than others, needs to be used sparingly
 - Use of corporate colour scheme
 - Care with red/green because of colour blindness
- (ii)** -Layout should follow normal reading pattern for eye because less chance of errors or omitting detail
- Limit the volume of information because otherwise too daunting

- Ensure that all areas of screen are used and that density of information is not dependent on position
- Layout should be similar on different types of software so that user gets used to it

- (iii) -Content should be similar across pieces of software to enable user to be trained easily
- Content must be relevant or user will begin to ignore it
 - Content type must be accurate (if in red it really must be urgent)
 - Help should be available

(1 per -, max 9)

[9]

- 5 -Barcode consists of pairs of dark lines
- of varying thickness
 - which combine to give a (character) code
 - Used to identify worker
 - OCR is a means of computer reading standard characters
 - comparing the values with examples in memory
 - Light reflected off character
 - determines shape by reading intensity reflected in small squares
 - fewer characters the better
 - Used for reading times/signatures...
 - Different days signified by different positions of data on the card
- (1 per -, max 3 for each, max 6)

[6]

- 6 (a) -Size of array calculated
- Location of array decided...
 - according to data type/size
 - Locations reserved
 - Array named in look up table
 - Size of array stored in table
 - Lower/Upper bound of array stored in table
 - Data type stored in table
 - Address of first element stored in table
- (1 per -, max 4)

[4]

- (b) -Index set to 0 (or other sensible value)
- Array(index) searched
 - IF = Item then "Found"
 - ELSE increment Index and repeat line 2
 - Until found or produce "Error Report"
- (1 per -, max 4)

[4]

- 7 (a)

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	1

(-1 for each error in the output column) [2]
- (b) (i)

A	B	C	S
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

(1 per row) [4]
- (ii) -Adds together two single bits
-Part of an accumulator/half adder [2]
- 8 (a) -A set of rules/instructions
-to allow communication between devices [2]
- (b) (i) -Circuit switching involves setting up the route for the message before any of it is sent
-Packet involves sending the message in segments of equal size, each of which finds a different route to the destination [2]
- (ii) -Circuit means that the message does not have to be reordered at the destination
-Packet means that the message is almost impossible to intercept/large amounts of the communication medium are not idle for other messages until the given message is completed [2]

