UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

9691 COMPUTING

9691/13 Paper 1 (Written Paper), maximum raw mark 75

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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1 (a) (i) – A device that allows data to be sent/entered to the computer

(ii) – A device that will store data in the computer system (for later use)

(b) – Keyboard/to allow cashier to input which film or number of tickets
– Magnetic stripe reader/to input details of loyalty card
– chip and pin reader/to input details of credit or debit card
– pointing device/mouse to make a choice
– touch screen to make a choice or press an onscreen button

(2 per –, max 4) [4]

(c) – Screen output or soft copy/to allow customer to check tickets and prices as choices are input to system
– Printout or hard copy/to produce tickets for customer
– sound output/error or confirmation

(2 per –, max 4) [4]

(d) (i) – Producing leaflets/flyers/brochures/posters
– Using frames to divide up content/editing features/...
– combining images and text [2]

(ii) – To write letters to suppliers/customers
– Allows use of standard templates for documents/allows mail merge to send personalised letters to specific people [2]

*Don't accept same point in **(i)** and **(ii)***

(iii) – To keep accounts of the cinema/to keep records of tickets sold and dates sold/cumulative figures/salary details
– Allows calculations to be carried out on numerical data
– graphical representation of sales figures
– financial modelling
– automatic recalculation
– lookups [2]

2 (a) – Manager must provide knowledge of...
– and requirements of business as...
– they are expert in how the business works.
– Analyst provides knowledge of what is possible...
– particularly within confines placed by manager/e.g. budget
– If not properly defined analyst will solve the wrong problem
– Manager's requirements and analyst's understanding must match

(1 per –, max 4) [4]

(b) (i) – Important to analyst to ensure that there is evidence that all objectives hav… been met
– or will not be paid/ruin his reputation

(ii) – Important to manager to ensure that there is evidence that all objectives have been met
– or system may prove unsatisfactory in the future. [2]

3 (a) – Represented by a set of bits...
– Unique to that character
– The number of bits needed is equal to 1 byte/2 bytes
– ASCII/Unicode is a common set

(1 per –, max 2) [2]

(b) – Bits are used to store the correct binary representation of the integer
– Leading zeroes included to complete required number of bits
– Standard number of bits irrespective of size of integer
– Concept of short and long integer dependent on sizes of integers
– Two's complement used to represent numbers

(1 per –, max 3) [3]

(c) – As a single bit/byte
– a 0 or a 1/a byte of all 0s or all 1s [2]

Do not accept Y/N or True/False

4 (a) – Detail is added to the end of the file [1]

(b) (i) – ID numbers are stored in an index…
– in sequence
– This allows a (binary search) to be carried out
– To find the relevant ID number and a pointer to the data
– possible to use multiple indexes

(1 per –, max 3) *Accept a diagram* [3]

(ii) Either: – New ID compared to ID at bottom of index
– If higher than last in index, then add to the end of the index
– Else move last ID down one position and repeat from stage 1

Or: – Add value to the end
– Sort table

(1 per –, max 2) [2]

5 (a) (i)
– Contents of RAM can be altered/ROM cannot
– RAM is usually has a greater capacity than ROM
– Data held in ROM, after processing, can only be written to RAM
– RAM is volatile/ROM is non-volatile

(1 per –, max 2) [2]

(ii)
– The boot-strap program/operating system/system data/BIOS
– It must be available when power is switched on/to boot up the system/so it can't be changed [2]

(iii)
– e.g. A word processor document/user data
– User must be able to alter it

OR

– part of the software being used (application/operating system)
– the processor needs to fetch the instructions/can be replaced by another program at any time

(1 per –, max 2) [2]

(b) (i)
– Processor works at high speed while peripherals are much slower

(ii)
– use of buffer/temporary storage area
– Data transferred from primary memory to buffer (or vice versa)
– When buffer full, processor can carry on with other tasks
– Buffer is emptied to the peripheral
– interrupt ...
– is sent to processor...
– When buffer empty
– requesting more data to be sent to buffer.
– according to priorities

(1 per –, max 5) [5]

6

A	B	C	D	OUT
0	0	1	0	1
0	1	1	0	1
1	0	0	0	0
1	1	0	1	1

Mark points:
– Column C first two values
– Column C last two values
– Column D first two values
– Column D last two values
– OUT first two values
– OUT last two values [6]

7 **Colour**:
- Bright colours to attract young children
- Combinations of colours should allow for suitable contrasts
- Use of colours should be consistent e.g. ticks should be green
- reference to colour blindness/epilepsy

Layout
- The screen content should be placed consistently so that children are concentrating on their spelling
- Details like the score should be easily visible and always in the same place
- big buttons for ease of navigation
- large characters to make it easy to read
- Layout should be consistent with other software in the set (e.g. the arithmetic one)

Content
- The words used should be of the correct difficulty for the age group
- There must be some motivational factor like building a rocket each time an answer is correct
- Content should be kept to a minimum to allow concentration on the main aspect of the software
- relevant images

(1 per –, max 2 per section, max 6) [6]

8 **(a)**
- LAN over short distances/buildings/site // WAN geographically remote
- LAN uses own communication medium/WAN uses third party
- LAN more secure/WAN more open to attack

(1 per –, max 2) [2]

(b) **(i)**
- Individual bits sent one after another/along single wire
- In one direction only [2]

(ii)
- Groups of bits sent together/along multiple wires
- in both directions, but only one at a time [2]

(c)
- The bytes are sent as a block
- The bytes are added up before transmission (ignoring the carry out of the byte)
- The result is sent with the data and…
- compared with the result of the same calculation carried out after transmission

(1 per –, max 3) [3]

9 **(a)** – Multi-user allows many users to all use one computer
– Network links many computers to share data and resources

(b) Batch
– Jobs/data collected together before processing
– e.g. payroll
– happens at a quiet time
– does not require human interaction
– requires a JCL to control the process
– results are not time sensitive

(1 per –, max 4) [4]