MARK SCHEME for the May/June 2011 question paper

for the guidance of teachers

9691 COMPUTING

9691/11   Paper 1 (Written Paper), maximum raw mark 75

1 (a) (i) – The physical/electronic parts of a computer system
             Parts you can see /touch no mark

   (ii) – Sequence of instructions/programs [2]

(b) – Printer/to print till receipt
    – Beeper/to indicate correctly read barcode/ error reading barcode
      Speakers/to give instructions to customer
    – LED/LCD screen to show information about purchase

    (2 per –, max 4) [4]

(c) – Sound/indicates barcode properly read without operator diverting attention from job
    – sound to indicate terminal is free
    – Video image or screen output or soft copy/to allow shopper to check goods and prices as they are input to system
    – Receipt or printout or hard copy/to allow shopper to check payments and shopping at home, proof of purchases.

    (2 per –, max 6) [6]

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

   (ii) – Producing presentation for an audience, perhaps for head office/to produce training materials
        – for advertisements
        – Use of multi-media to maintain interest in presentation.

        Don't accept same point in (i) and (ii)
        (1 per –, max 2) [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) Evaluation carried out by:
        – Functional/black box testing
        – Testing against the agreed objectives
        – Testing against user requirements / specification
        – Testing done by software house/alpha
        – Testing done by users/beta

(ii) – Important to analyst to ensure that there is evidence that all objectives have been met
– or will not be paid / ruin his reputation
– Important to manager to ensure that there is evidence that all objectives have been met
– or system may prove unsatisfactory in the future.
(1 per –, max 3 points per dotty, max 4)   [4]

3 (a) (i) – The symbols recognised/used by the computer
– Often equates to the symbols on the keyboard

(ii) – 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 3 per dotty, max 4)   [4]

(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 negative numbers

(1 per –, max 3)   [3]

4 (a) – IDs/indexes kept in sequence
– Attached to each is a pointer...
– which points to the data for that ID
– Possible to use multiple indexes
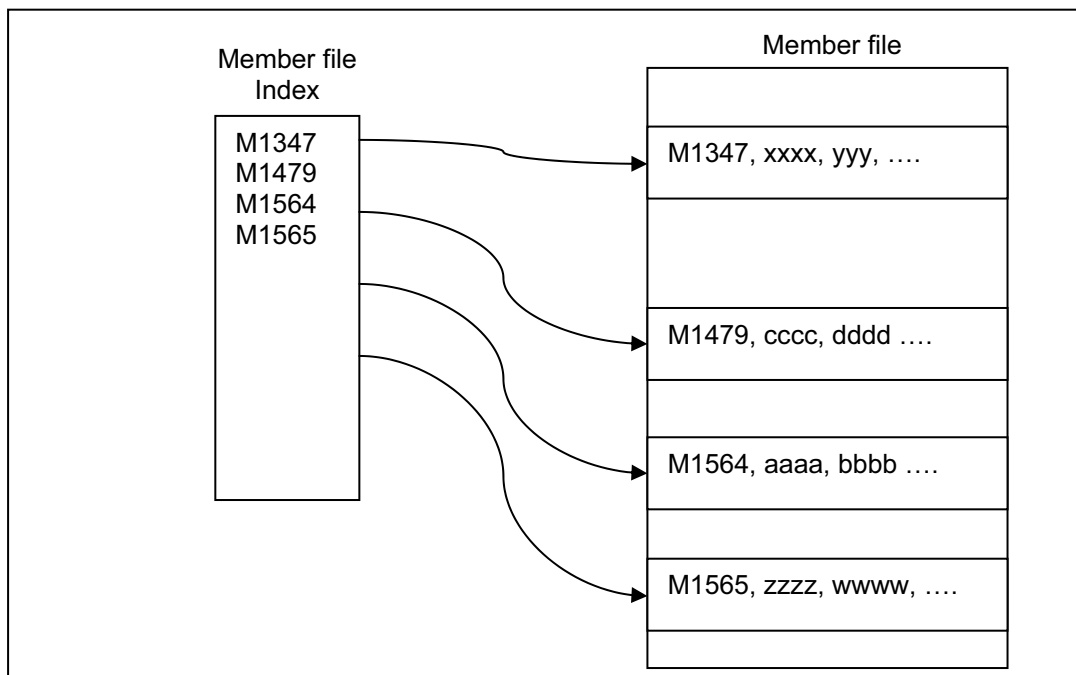
(1 per –, max 2)   [2]

(b) (i) – Digits in ID are used as input...
 – to arithmetic algorithm
 – Result is the location of the data (or pointer to it)

    (ii) – When 2 IDs hash to the same value
 – Locations read sequentially from clash until correct value found..
 – or free location, in which case error.
 – or a linked list structure
 – stored in overflow area with tag or pointer to it
 – a second hashing algorithm is applied

    (1 per –, max 3 per dotty, max 4) [4]

5 (a) (i) – Manages the execution of instructions
 – Fetches each instruction in turn
 – Decodes and synchronises its execution...
 – by sending control signals to other parts of processor [2]

    (ii) – Stores program in current use
 – Stores data in current use
 – Stores parts of OS in current use [2]

    (iii) – Carries out arithmetic operations
 – Carries out comparisons
 – Acts as gateway in and out of processor

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

(b) – 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 hard disk
 – When buffer empty, interrupt sent...
 – to processor...
 – 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	0
0	1	1	1	1
1	0	0	1	0
1	1	0	1	0

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]

© University of Cambridge International Examinations 2011

www.XtremePapers.net

7   Colour…
–   Colours should provide suitable contrasts
–   should be meaningful e.g. red for danger
–   reference to colour blindness / epilepsy

Layout...
–   should use whole screen...
–   important information in top left hand corner/centre of screen
–   big buttons for ease of navigation
–   similar content grouped together
–   consistent layout when moving from screen to screen

Content...
–   must be relevant...
–   must be understandable
–   must be restricted so no information overload

(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
–   can be used over long distances
–   Less chance of corruption/less chance of bits having order changed   [2]

(ii) –   a byte is sent simultaneously / at the same time along 8 wires
–   Much <u>faster transmission</u> rate   [2]

(c) –   01101101/First byte
–   The other three all have an even number of ones/even parity
–   This byte has an odd number of ones   [3]

Second and third marks depend on first mark

9   (a) –   OS will only allow one user <u>at a time</u> to use the computer
–   Each approved user is identified by a user ID
–   multi-tasking
–   Provides security for user files/user profiles

(1 per –, max 2)   [2]

(b) –   Each user given short processor time/time slice
–   In turn/so all users serviced in one rotation
–   Flags used to stop waste of processor time if terminal has nothing to do
–   Priorities used to allow some terminals more regular time slices...
–   or longer time slices
–   different users' data/programs are stored in different areas of main memory

(1 per –, max 4)   [4]

© University of Cambridge International Examinations 2011