CAMBRIDGE
INTERNATIONAL EXAMINATIONS

June 2003

INTERNATIONAL GCSE

MARKING SCHEME

MAXIMUM MARK: 100

SYLLABUS/COMPONENT: 0420/01, 0421/01, 7010/01

COMPUTER STUDIES
Paper 1

1 Generally, one mark for each valid point. Two examples gain two marks:

(a) *check sum*
adding all the elements of a block/bytes/string/instructions in a program
produces a single number/value
which is stored with the block
meaningless total
e.g. hash total

[2]

(b) *relational database*
contents of files are linked/data held in a number of interrelated files or relations
by common fields
uses tables
e.g. one to many relationships

[2]

(c) *random access memory (RAM)*
memory that can be read from
and written to/changed/altered
stores data/programs
directly addressable
volatile/temporary memory

[2]

(d) *top-down design*
breaking down the problem/task/program
into sub problems/smaller tasks/modules
stepwise refinement

[2]

(e) *alphanumeric characters*
letters of the alphabet (alphabetic)
plus numbers/digits 0 to 9
includes characters, e.g. punctuation, +, ?

[2]

2   Any **two** ways **that learning and testing methods** have been affected:

   learn at own speed/pace
   learning using multimedia
   learn any time
   learning/testing on-line
   can revisit the learning material automatically
   distance learning/no need to travel/learn at home
   on-line tutoring/conferencing
   diagnose gaps in student learning and provide appropriate material
   provide appropriate learning material for individual students after analysis
   no need to set aside rooms for exams
   less data entry/automatic marking
   can test more students as world wide
   easier for students with disabilities
   simulations/models allow students to see experiments etc. done
   learning from a CD

[2]

3 (a) Two sensors from:

   light/infra red/PIR
   motion/movement
   pressure
   proximity
   level
   position (end of film)
   distance

[2]

(b) Two points from:

   comparing with stored values
   calculation
   qualified named adjustment
   according to data received from sensor

   Award marks for 2 sensors discussed or 1 sensor with two points discussed.
   Battery, end of film, pushing buttons is ok if explained.

   AC/DC = 0   [2]

4 **(a)** Any **two** types from e.g.:
        fraud
        bugging
        hacking/illegal access/code breaking/cracking code
        stealing data/copying software/software piracy
        viruses/logic bombs
        obtaining credit card information from computers
        fraudulent traders on the Internet
        breaking Data Protection Act/Rules

[2]

  (b) Any **two** ways from:
        password/PIN/user ID/code/restricting access (software methods)
        firewall
        anti-virus software
        encryption
        use a dedicated line (large organisations)

[2]

5 **(a)** Any **two** points from e.g.:
        translate/convert/change
        high level language to machine code/binary/low level language/object code
        so program can be run/computer can understand program

[2]

  (b) Any **one** point from assembler **and one point** from compiler e.g.:

        <u>assembler</u>   one ⟶ one
                        written for the particular machine code/machine

                        translates assembly language = 0

        <u>compiler</u>   one ⟶ many
                        written for a particular H L Language

        For a comparative type statement which states the feature of one and the other is implied, e.g. closer to machine code, award the mark

[1]

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6   Award **one** mark per point:
        disk drive sends an interrupt/signal (to the processor)
        when ready to receive more data/when transfer is complete
        disk fault/disk not in drive/faulty disk/check sum error/disk full/disk not
        formatted

                  [2]

7 (a) Any **two** ways from e.g.:
        crop/cut
        scale/enlarge/reduce/zoom
        flip/rotate
        blur/sharpen/contrast
        trim
        weld
        blend/colour/remove red eye
        skew
        add text
        pattern
        morphing
        animation

                  [2]

(b) Any **one** way **award one mark each stage**:
        copy (1 mark) and paste (1 mark)
        or save (1 mark) and import (1 mark)

                  [2]

(c) Any **one** from:
        sound/audio
        animation
        video

                  [1]

(d) Any **three** from:
        speakers
        mouse/tracker ball/joy stick/remote keypad
        sound card
        graphics card
        CD drive/Zip drive/DVD drive
        large RAM/hard drive
        projector
        electronic whiteboard
        fast processor
        high resolution monitor

                  [3]

8 **(a)** On diagram drawn and labelled award **one** mark each:
   A:/C:/D:………H: I: J: K: etc.
   sub-directory
   file

[3]

   (b) Any **two** file management tasks from e.g.:
   copy
   load/save
   sort
   delete
   calculate file size/space left
   automatic backup
   merge

[2]

   (c) Any **two** from e.g.:
   provides error messages
   auto save
   updates error log
   recovered files
   takes user though a set of routines to recover
   causes an interrupt
   stores status of registers on the stack
   enables interrupt service routine

[2]

9 (a) Any **three** from e.g.:
   manual system now too slow
   increase in business/more through put/faster through the tills
   now insufficient staff/less staff needed if computerised
   more accurate stock control
   less errors
   less space/stationery needed
   easier to check prices
   automatic reordering
   shopping trends more easily identified
   better management statistics
   increased competition

[3]

(b) Any **three** methods from e.g.:
   interviewing/asking questions
   questionnaires
   observing
   inspecting files/paper/screens

[3]

10 (a) Award **one** mark for one from:
   modem/broadband/ISDN

   Award **two** marks for two from:
   communications software/dial-up software/software to connect to Internet
   ISP/browser e-mail/FTP

[3]

(b) Any **two** ways from:
   e-mail
   file attachment
   FTP/uploading to web site
   fax
   messaging/chat room

[2]

(c) Any **two** items from:
   video camera/digital camera/web cam
   microphone
   AD/DA converter with compression for video and sound
   ISDN/ADSL/midband/broadband
   Satellite dish
   Speakers

[2]

(d) Any **one** item from:
        time is saved/no time lost
        no travel expense
        no accommodation expense
        no conference room costs

        [1]

(e) Any **two** disadvantages **for employee** from e.g.:
        isolation/less social interaction
        need to reorganise home environment/phone always being used
        need to organise own working day
        stress on family/distractions

        [2]

11 (a) A2:A6,   F2:F6
        one mark each;   minus one mark each extra cell

        [2]

(b) number/numeric/integer/0 decimal places

        [1]

(c) SUM(F2:F6) **or** F2+F3+F4+F5+F6 **or** SUM(F2+F3+F4+F5+F6)
        'F7 =' seen at the start of the formula is ok
        but 'F7 =' seen at the end of the formula = 0

        [1]

(d) D5, F5 and F7
        <u>minus</u> 1 mark each error/extra one

        [2]

(e) formats and formula already entered and new figures can be inserted

        [1]

12 (a) REF

        [1]

(b) **One** mark per <u>named</u> check:
        presence
        type
        description

        [1]

(c) 19000, 15000, 12000, 9000
        minus one mark each error;   ignore order and dollar if given

        [2]

(d) (RENT($) < 15000) AND (AREA = "South")

   one mark **one** mark **one** mark
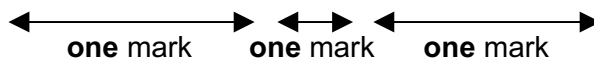
  NOTE   ignore case
       speech marks are irrelevant
       15000 award the mark with or without speech marks
       "South" award the mark with or without speech marks

                            [3]

(e) Award

  {H006, H008, H004} {H009, H002, H005}, {H003, H001, H007}
  or {H006, H004, H008} {H009, H005, H002}, {H003, H007, H001}

    one mark   **one** mark   **one** mark
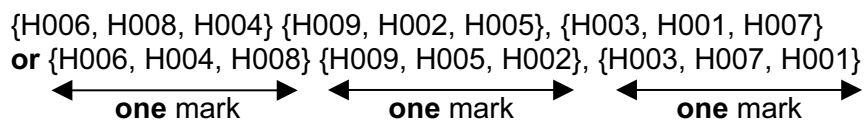
                            [3]

13 (a) 38, 41   or A =38, B = 41 or B = 41, A =38

                            [1]

(b) temporary store to facilitate the swap

                            [1]

(c) Award **one** mark for each:
    less program code
    less memory
    used in other programs
    parameter passing
    e.g. sorting, finding the maximum

                            [2]

14 (a) Any **two** ways from e.g.:
    processed fairly and lawfully
    used only for the purpose for which it was collected
    kept no longer than needed
    kept secure
    must be relevant
    right to view/check/change
    not transferred to other countries without protection

                            [2]

(b) Any **three** data items from e.g.:
  name
  title
  address/postcode/zip code
  occupation/name of employer
  date of birth
  gender/sex
  marital status
  password/ID number/driving license/national insurance number
  telephone number

[3]

(c) Any **two** ways from:
  weights and modulus
  use remainder
  or
  subtractions and addition
  use result

[2]

(d) Any **one** reason from e.g.:
  change of name, title, address, occupation, transactions
  customer leaves bank therefore delete

MAX 1 mark

Any **one** two stages from:
  search file
  using account number
  locate record
  write new item to field in record

MAX 2 marks
[3]

15 Any **three** points from e.g.:
  computer asks questions
  symptoms are input
  knowledge base searched
  uses rules
  inference engine
  computer suggests type illness/treatment
  knowledge base contains knowledge of experts

[3]

16   Any **four** from e.g.:
        accuracy/precision
        calculations
        simulation/testing
        3D view
        links to CAM
        library of parts
        graphics features

                                            Award MAX one mark for graphics features
                                                                                    [4]

17   Award **one** mark for each correct step in the algorithm:
        initialise variables/arrays
        loop each student
        input ID
        input log on
        input log off
        calculate difference
        store difference
        calculate average
        output average

                                                                            MAX 6
                                                                                    [6]