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]

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:
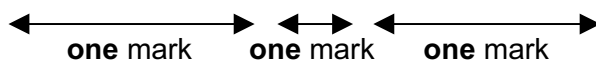   presence
      type
      description

        [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
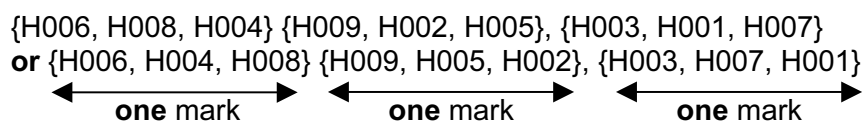
[3]

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]