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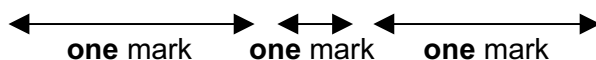
NOTE ignore case
speech marks are irrelevant
15000 award the mark with or without speech marks
"South" award the mark with or without speech marks

[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 ⟶
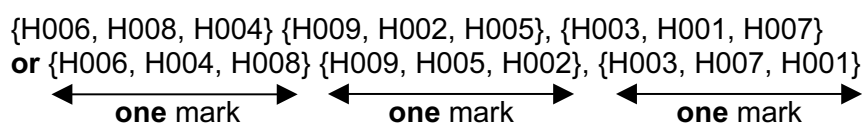
[3]

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]

Grade thresholds taken for Syllabus 0420 (Computer Studies) in the June 2003 examination.

	maximum mark available	minimum mark required for grade:			
		A	C	E	F
Component 1	100	66	47	23	18

The threshold (minimum mark) for B is set halfway between those for Grades A and C.
The threshold (minimum mark) for D is set halfway between those for Grades C and E.
The threshold (minimum mark) for G is set as many marks below the F threshold as the E threshold is above it.
Grade A* does not exist at the level of an individual component.