

**CAMBRIDGE**  
INTERNATIONAL EXAMINATIONS

**June 2003**

INTERNATIONAL GCSE

MARKING SCHEME

MAXIMUM MARK: 100

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

COMPUTER STUDIES  
Paper 1



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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/alterd  
 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]

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- 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]

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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.:

assembler            one → one  
 written for the particular machine code/machine

translates assembly language = 0

compiler            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]

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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]

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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]

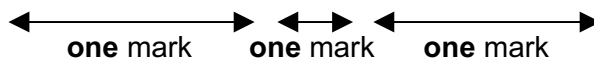
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- (d) Any **one** item from:  
time is saved/no time lost  
no travel expense  
no accommodation expense  
no conference room costs  
[1]
- (e) Any **two** disadvantages **for employee** from e.g.:  
isolation/less social interaction  
need to reorganise 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  
minus 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 named check:  
presence  
type  
description  
[1]
- (c) 19000, 15000, 12000, 9000  
minus one mark each error; ignore order and dollar if given  
[2]



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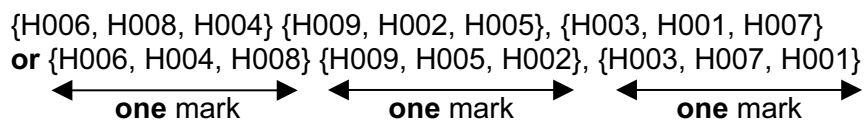
(d)  $(\text{RENT}(\$) < 15000) \text{ AND } (\text{AREA} = \text{"South"})$



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



[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]

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(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]

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- 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]