

CAMBRIDGE
INTERNATIONAL EXAMINATIONS

June 2003

INTERNATIONAL GCSE

MARKING SCHEME

MAXIMUM MARK: 100

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

COMPUTER STUDIES
Paper 1

Page 1	Mark Scheme	Syllabus
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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 through 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) $(\text{RENT}(\$) < 15000) \text{ AND } (\text{AREA} = \text{"South"})$

← 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]

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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]