

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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	IGCSE EXAMINATIONS – JUNE 2003	0420, 0421, 0422, 7010

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]

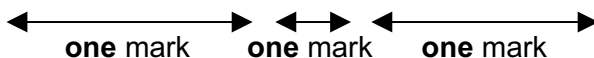
- (c) 19000, 15000, 12000, 9000
minus one mark each error; ignore order and dollar if given

[2]

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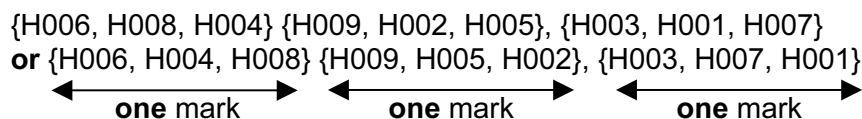
(d) $(\text{RENT}(\$) < 15000) \text{ AND } (\text{AREA} = \text{"South"})$



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]

Page 10	Mark Scheme	Syllabus
	IGCSE EXAMINATIONS – JUNE 2003	0420, 0421, 0422, 0423, 0424, 0425, 0426, 0427, 0428, 0429, 0430, 0431, 0432, 0433, 0434, 0435, 0436, 0437, 0438, 0439, 0440, 0441, 0442, 0443, 0444, 0445, 0446, 0447, 0448, 0449, 0450, 0451, 0452, 0453, 0454, 0455, 0456, 0457, 0458, 0459, 0460, 0461, 0462, 0463, 0464, 0465, 0466, 0467, 0468, 0469, 0470, 0471, 0472, 0473, 0474, 0475, 0476, 0477, 0478, 0479, 0480, 0481, 0482, 0483, 0484, 0485, 0486, 0487, 0488, 0489, 0490, 0491, 0492, 0493, 0494, 0495, 0496, 0497, 0498, 0499, 0500, 0501, 0502, 0503, 0504, 0505, 0506, 0507, 0508, 0509, 0510, 0511, 0512, 0513, 0514, 0515, 0516, 0517, 0518, 0519, 0520, 0521, 0522, 0523, 0524, 0525, 0526, 0527, 0528, 0529, 0530, 0531, 0532, 0533, 0534, 0535, 0536, 0537, 0538, 0539, 0540, 0541, 0542, 0543, 0544, 0545, 0546, 0547, 0548, 0549, 0550, 0551, 0552, 0553, 0554, 0555, 0556, 0557, 0558, 0559, 0560, 0561, 0562, 0563, 0564, 0565, 0566, 0567, 0568, 0569, 0570, 0571, 0572, 0573, 0574, 0575, 0576, 0577, 0578, 0579, 0580, 0581, 0582, 0583, 0584, 0585, 0586, 0587, 0588, 0589, 0590, 0591, 0592, 0593, 0594, 0595, 0596, 0597, 0598, 0599, 0600, 0601, 0602, 0603, 0604, 0605, 0606, 0607, 0608, 0609, 0610, 0611, 0612, 0613, 0614, 0615, 0616, 0617, 0618, 0619, 0620, 0621, 0622, 0623, 0624, 0625, 0626, 0627, 0628, 0629, 0630, 0631, 0632, 0633, 0634, 0635, 0636, 0637, 0638, 0639, 0640, 0641, 0642, 0643, 0644, 0645, 0646, 0647, 0648, 0649, 0650, 0651, 0652, 0653, 0654, 0655, 0656, 0657, 0658, 0659, 0660, 0661, 0662, 0663, 0664, 0665, 0666, 0667, 0668, 0669, 0670, 0671, 0672, 0673, 0674, 0675, 0676, 0677, 0678, 0679, 0680, 0681, 0682, 0683, 0684, 0685, 0686, 0687, 0688, 0689, 0690, 0691, 0692, 0693, 0694, 0695, 0696, 0697, 0698, 0699, 0700, 0701, 0702, 0703, 0704, 0705, 0706, 0707, 0708, 0709, 0710

- 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.