UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE O-Level

MARK SCHEME for the June 2004 question papers

7010 COMPUTER STUDIES

7010/01 **Paper 1, maximum raw mark 100**

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UNIVERSITY of CAMBRIDGE
International Examinations

June 2004

INTERNATIONAL GCSE

MARKING SCHEME

MAXIMUM MARK: 100

SYLLABUS/COMPONENT: 7010/01

COMPUTER STUDIES
Paper 1

UNIVERSITY of CAMBRIDGE
International Examinations

1 Generally, **one** mark for each valid point. Two examples gain two marks.

(a) byte
fixed number of bits, 8 bits
represents a character

e.g.
a hex example
or

1	1	0	1	0	0	0	1

[2]

(b) compiler
program
converts/changes/translates high-level language into machine code/machine language/low level language/object code
changes each high-level language instruction into machine code instructions
produces independent program capable of being executed by itself
all (syntax errors) listed
converts whole program before execution/in one go
converts source code to object code [2]

(c) handshaking
exchanging of signals
to establish communication
between two devices/computers
e.g. printer and computer, modem and computer [2]

(d) technical documentation
documentation to ensure that the system can be maintained/updated/altered/developed/upgraded
trouble shooting/correcting errors/correcting faults
explanation of what the program does/how the system works
contains file structures
algorithms/flow charts/pseudo code
program listings
hierarchical charts [2]

(e) simulation
studying the behavior of a system
by using a model/represents real-life/mathematical representation
e.g. flight simulator (or others), hazardous applications
results can be predicted [2]

2 **(a)** Any **one** method of transmission **AND** device

method of transmission e.g.

blue tooth	radio
optical	satellite
infra-red	microwave

device e.g.

3G (WAP) mobile phones/mobile phones/cell phone/remote key pad/remote control/keyboard
infra-red mouse
multimedia mobile handsets/notebooks
GPRS (general packet radio service) mobiles
WLAN(or WiFi) hotspots sited in public areas - e.g. coffee shops, railway stations, airports, motorway services
linked printers
PDA's (personal digital assistants)
GPS [1]

(b) Any **one** advantage (advantage need not be linked to **(a)**) e.g.

no wires
fast/high speed wireless Internet access
WLAN is faster than a modem or mobile
WLAN for working at home one day a week/teleworkers
see internet content away on the move
create and send multimedia messages to mobiles or e-mail
picture messaging - send photos/pictures text/sound/recorded greetings from mobiles to mobiles/PCs
instant transmission - no busy signals/no searching for phone jacks
download e-mail and file attachments on mobile
watch live web cast on mobile/hotspot
listen to streaming video on mobile/hotspot
news/weather/sport/games while on the move
access information from mobile anytime
send/receive/delete e-mail while on the move
wireless Inbox on mobile - to contacts and calendar
view business appointments while out of office on mobile
send corporate e-mail while out of office - even behind a firewall on mobile
wireless internet connection from chat rooms for discussions with colleagues while on the move
give visual demonstrations from mobile and colleagues watch back at the office

Any **one** disadvantage e.g.

WLAN speeds are slower than Net access at work/narrow band width
any one within the WLAN nodes range with an appropriate device can use your WLAN and broad band link
any one who walks past your house or WLAN linked into a corporate system can access sensitive information or credit card details
3G phones not compatible with 2G phones
Blue tooth - has limited range
blocked signal/distorted signal/weak signal/lag
health problems from microwaves [2]

3 **(a)** **Two** PLACES from e.g.

car factories/factories
chemical/nuclear factories
production lines
warehouses
deep in the ocean/down mines
on other planets/in space
road junctions [2]

(b) **Two** from

reduced labour costs/do not need paying
reduced cost of goods
improve speed of production/productivity
high degree of accuracy/precision/less errors
can operate where humans can not go
do not take breaks/holidays/get tired
work 24 hrs a day
reduce accidents at traffic lights
improve traffic flow
can work in dangerous conditions [2]

4 **(a)** Any **two** from e.g.

memory used up/slows down computer/alters setting/systems failure
erases files/erases data/corrupts data/data needs restoring
infects other computers on network
production loss/financial loss [2]

(b) Any **two** from

do not allow outside floppy disks/CD's/DVD's
use disk free work stations
download/install and use anti virus software
scan hard disks regularly
update the anti virus program regularly
do not open file attachments from unknown sources/download doubtful software from the Internet
do not use files that come from unknown sources
buy original software/do not buy pirated software
use firewalls [2]

5 Any **three** points from e.g.

novice can use the system right away
user-friendly/easy to select
click on icons/picture to select
easier to input/words are replaced with icons
no need to know command language to use the system/remember command language
selecting item using mouse is faster than entering commands
avoids typing errors
no need to type
no need to remember commands
no need know the different commands for the different software
multitasking (several programs open at the same time therefore easier /faster to switch
easier/faster switching between files, folders etc. [3]

6 **(a)** **One** item from e.g.

camera	microwave
washing machine	video recorder
fridge	sewing machine
air conditioning	games console
electronic game	electronic toys
rice cooker	dish washer
TV	alarm clock
radio	

[1]

(b) Award **one** mark for each task controlled e.g.

camera	film speed, position (end of film), distance, light
washing machine	amount of water, speed of wash/temperature/time
fridge	temperature, display panel
air conditioning	temperature, timing, display panel

[2]

7 **One** mark each section.

F4
L90/R270
F4
L90/R270
F2
L90/R270
F2 one mark

R90/L270
F2 one mark

L90/R270
F2
(any L/R, B1, B2) one mark

[3]

8 **(a)** **One** from

text editor/web editor
HTML (editor)
word processing
desktop publishing software
web publishing software/web developing software/authoring
presentation software

[1]

(b) **Two** from

changing the background colour or background image on a page
formatting text (size, font, colour, bold, italic, underline etc.)/frames
working with tables
inserting graphics/pictures/sound clip/video clip/animations
working with links/creating buttons/list box
switching to a browser to check the appearance of a page
use templates
use auto tags

[2]

(c) on a server
stored on ISP/web host (server)

[1]

9 **(a)** Any **two** from e.g.

check digit
product number/item number/code
country of origin
manufacturers number/code
weight
price [2]

(b) Any **two** points from

check digit calculation is performed on the check digit
remainder = 0 if barcode has been read correctly
weights and modulus 11 and use remainder
or subtractions and addition and use answer [2]

(c) random/direct/online [1]

(d) **Two** from e.g.

search file/master file
using barcode number/product code
and decrease number in stock/increase quantity sold [2]

(e) Any **two** from e.g.

more accurate/improved stock control/recording system/automatic reordering/automatic updating of stock file
less staff/wages needed
sales statistics now available
faster throughput
itemised receipt
records every transaction
records staff work rates
less pilfering by staff/easier to identify pilfering
less errors
faster calculations
links to EFTPOS [2]

10 **(a)** Any **four** points from

specify output requirements
design documents/screen displays
data for input/storage
form design
storage devices
file structures/access/design
data security/back up files
systems flowchart etc.
implementation i.e. pilot/intermediate/parallel running
testing strategy
training
hardware/software
programming/algorithms
validation
user manual
technical documentation
entering data into system [4]

(b) **Two** points from

user changes his mind
new government legalisation/company policy company changes
changes in hardware
changes in software/upgrades/new versions
improved operating efficiency/ease of use [2]

11 **(a)** Award **one** mark from each section

Hard disk drive
to hold the operating system/communication and applications software/ISP software
for storing files/information/cookies on backing store

RAM
for data, computer programs and operating instructions which are moved into it/downloaded
for data currently in use

DVD writer
Films/videos/pictures/music/multimedia data downloaded/ purchased

Modem
link/dial up/establish communication with the Internet
Convert digital signals to analogue/audio tones (and vice versa)
Which can travel across the telephone system
[4]

(b) Award **one** mark for each

for logging on	-	dial up/communications software/ISP software	
for searching	-	browser/search engine	[2]

(c) Award **one** mark for an advantage

on-line catalogues can be viewed
much larger choice of products
product reviews obtainable before purchase
orders placed over internet any time day or night
download software purchased straight away
good and services usually cheaper on the internet
programs that can search for best price/cheapest
very fast placing an order has been placed as customer name, address and credit card details are stored so no need to re enter
buy goods from anywhere in the world
no need to go to shop/save travelling time

Award **one** mark for a disadvantage

spam
need a credit card to shop on-line/not everyone has a credit card
hackers could retrieve credit card numbers and use them to buy goods
security fears - of giving credit card number over the internet/fraud
goods must be delivered/can not have the goods immediately
can not touch/handle/see the goods [2]

(d) Award **one** mark for each

loss of jobs as some traditional shops/banks close
lower profits for companies that do not get involved with e-commerce
decline of leisure shopping as goods are bought on-line
city centres becoming deserted as shops/banks close down
gap between rich and poor widening as richer get savings from shopping on-line
more people choosing to interact with computers rather than people
increase in small businesses
less pollution/travelling [2]

12 **(a)** ONLY
general/text/alphabetic/alphanumeric/string/centred/bold/text-wrapped/sans-serif [1]

(b) Allow brackets

B3*B7 + B4*C7	or	
B3*B7 + B4*C7	or	
B7*3 + C7*2		
1 mark	1 mark	[2]

(c) Award one mark per stage

select/highlight/click on D7
description of copy and paste/replicate into cells D8, D9, and D10/fill down/drag and drop [2]

(d) =IF(D10 > E10, Profit, Loss) [1]

(e) A6:A10 and D6:E10 or

A7:A10 and D7:E10
1 mark 1 mark

or individual cells listed e.g. A7, A8, A9, A10 and D7, D8….E10 [2]

13 **(a)** Any **two** from

Better/improved traffic flow control
reduces accidents
keeps delays to a minimum
reduces pollution
cars use less fuel [2]

(b) Award **one** mark each

<u>input</u>

from sensors
from camera images [Max 2]

<u>processing</u>

analyse data from sensors
calculate average traffic flow/speed
send signals to adjust change lights/timing [Max 3]

<u>output</u>

change lights at junction
change timing plan [Max 2]
[5]

(c) Award **one** mark

give uninterrupted path through the system of linked traffic lights/
green link - wave
turn all lights to red
activate emergency generator
alarm [1]

14 **(a)** Any **one** point from e.g.

star - if one computer goes down the others can still be used
ring - if one computer goes down the others can not be used [1]

(b) On diagram drawn and labelled

correct network **one** mark

Any **two** from award **one** mark each

server
printer
modem/bridge/gateway [3]

(c) Any **two** from

share database (from one source)/access same information
access to database by staff from any LAN machine
only one database to backup [2]

(d) Any **two** from

data must be accurate/up-to-date
personal data must be registered
data must be used for the purpose that is registered for
if data is to be used for another purpose the registrar must be notified/ subject gives consent
patients must able to see the data and have it changed if it is incorrect
processed fairly and lawfully
kept no longer than needed
kept secure
not transferred to other countries without protection [2]

(e) Any **one** way of saving - award **one** mark

backups/dumps of files
copy of files on CD/tape streamer
file generations

Any **one** from - award **one** mark

mirrored hard disk/hot stand by/second computer
re-run the old master file with the transaction file [2]

15 **(a)** Award **one** mark each

(i) 33.8 [1]
(ii) 41 [1]

(b) Award **one** mark for each correct step in the algorithm

Initialise
Loop
Input temperature (x24)
Convert to Fahrenheit
Find maximum and minimum
Calculate average (outside loop)
Output maximum, minimum, average [5]

Examples of correct answers are:

(i)
```
sum = 0
min = 100
max = 0
count = 1
while count <= 24 do
    input temp
    F = (temp*1.8) + 32
    sum = sum + F
    if F < min then min = F
    if F > max then max = F
    count = count + 1
endwhile
average = sum/24
print average, min, max
```

(ii)
```
sum = 0
min = 100
max = 0
count = 1
repeat
    input temp
    F = (temp*1.8) + 32
    sum = sum + F
    if F < min then min = F
    if F > max then max = F
    count = count + 1
until count > 24
average = sum/24
print average, min, max
```

16 **(a)** 6 [1]

(b) text/alphanumeric/string [1]

(c) Award **one** mark per point

less errors on input
requires less storage space
validation
quicker to input
quicker to find [2]

(d) **One** mark each

M1057, M1124 [2]

(e) **One** mark each stage

highlight/select SURNAME field
click on sort A to Z icon/in menu

or query, click on (sort) ascending [2]