MARK SCHEME for the June 2004 question papers

7010 COMPUTER STUDIES

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

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 <u>PLACES</u> 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]

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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

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

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

<u>DVD writer</u>
    Films/videos/pictures/music/multimedia data downloaded/
    purchased

<u>Modem</u>
    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]