**CAMBRIDGE INTERNATIONAL EXAMINATIONS**
GCE O Level/IGCSE

# MARK SCHEME FOR November 2001 Paper 1
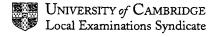
## 7010/0420 COMPUTER STUDIES

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination.*

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination.*

• CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the November 2001 question papers for most IGCSE and GCE Advanced Subsidiary (AS) Level syllabuses.

**UNIVERSITY of CAMBRIDGE**
Local Examinations Syndicate

**Computer Studies 0420/0421/7010 Paper 1 November 2001 Mark Scheme**

Please mark IN PENCIL between 20 and 30 scripts before the meeting in accordance with this mark scheme. Make notes about any omissions or difficulties you encounter and bring both the scripts and the notes to the meeting.

Correct answers should be ticked or underlined and the mark for each part of a question should be placed in the right hand margin. The total mark for each page should be placed in the bottom right hand corner and circled. Finally, the total mark for the whole paper should be written on the front page in the box provided.

Look through some other scripts, but do not mark them formally, to identify any other difficulties which may arise.

Generally the mark scheme gives one mark for each correct answer/point.

After the coordination meeting you should mark in red

1    Generally, **one** mark per valid point.  Two examples could gain **two marks**

(a) *robot*
computer-controlled device/intelligent machine/no human intervention
able to sense/grip/move objects
program (embedded) in microprocessor/follows stored instructions
examples - manufacture of cars          } must be two
              - manufacture of microchips       } different applicns
robot toys = 0 marks                                                          [2]

(b) *on-line processing*
interactive/immediate feedback
under the control of the CPU
whilst user remains in communication with computer
example - cash point
           - airline bookings (only accept one type of booking system)
           - chemical plants
           - POS
E-mails/surfing the internet = 0 marks                                        [2]

(c) *buffer*
temporary
store/memory
allows speed of CPU/devices to be matched
example - data being transferred between peripheral device and CPU
           - print jobs                                              [2]

(d) *modem*
modulator-demodulator
device that allows interconversion between digital bits and analogue
signals/converts binary into sound
allows computer signals to be sent over telephone cables
example – surf/connect to the internet
converter = 0 marks                                                           [2]

(e) *simulation*
method of studying behaviour of a system
by using a model (of the system
example -mathematical modelling
             - to show what might happen in real life
             - queues in supermarket
             - flight simulator/training pilots
             - accounts/profit and loss
predictions (on its own) = 0 marks                                           [2]

2    **Four** problems from:
    redundancies/entrenchment
    cost of re-training
    deskilling
    expensive to set up/run
    possible software problems
    errors when transferring data
    s/ware package may not be adequate for task
    need for more data security/hackers/viruses
    time taken to transfer data onto new system/disruption
    achieving quality of transferred documents
    time taken to re-train staff
    expensive to bring in skilled computer people
    electronic scabbing
    possible health risks
    resentment = 0 marks **unless qualified**
      [4]

3    Any two house hold **appliances (1 mark per device given + 1 mark for purpose)**

    examples -

| | |
|---|---|
| hi-fi/CD player | electric hob |
| microwave/oven | video player/DVD player |
| rice cooker | dishwasher |
| vacuum cleaner | sewing machine |
| washing machine | hair drier |
| television set | iron |
| toaster | clock |
| fridge/freezer | radio |
| camera | telephone/fax machine |
| bread maker | |

    NOT accepted (0 marks):

| | |
|---|---|
| watch | air conditioning |
| computer | calculator |
| central heating | burglar alarm |
| alarms (of any type) | kettle |

    purpose (TWO different purposes required and they must link back to the examples given) –
      controls track reading on CD player
      controls cooking time in oven
      Ceefax pages on tv set, etc.
      controls the wash sequence

    remote control = 0 marks, heat = 0 marks    [4]

4     (a)     Any **two** from:
software/program
that replicates itself
corrupts files/wipes directories/drops characters off the screen

infects other computers = 0 marks
destroys system = 0 marks     [2]

    (b)     Any **two** from:
use anti-virus software/inoculate
don't use outside disks/use software from recognised sources
use of firewalls
don't download unknown attachments/E-mails
stop access to wider network
use dedicated lines

backups = 0 marks, encryption = 0 marks
**don't accept** "trade names" e.g. McAffee, NIMDA     [2]

5     (a)     Any **two** advantages from:
same interface/uses same wording/menus
easier to import/export files
easier to copy and paste/drag and drop data
automatic updates of shared data
less training needed

cheaper (unless qualified), faster, user friendly = 0 marks
automatic (on its own) = 0 marks     [2]

    (b)     Any **two** from:
sequence of instructions replaced by fewer key presses
example across two of: spreadsheet, word processor, database     [2]

6     (a)     Any **one** from:
allows easier/faster interaction with computer
allows non-computer person to use computer (*this answer can only be valid in either part (b) OR part (c) – don't give marks twice*)
user friendly = 0 marks
to create shortcuts, represent icons = 0 marks
command lines = 0 marks     [1]

    (b)     Any **two** reasons from:
easier for novice to use/no need to remember commands
existing file names are already displayed
choice of commands is in built     [2]

6     (c)     Any **three** tasks from:
file management/load/copy/delete/save
input/output management
memory management
scheduling
interacts with the user
security aspects
multiprogramming/batch processing
handles error messages
multitasking
allows time sharing/multi-user
polling
compacting
interrupts

user interface = 0 marks                                                           [3]


7     Any **three** advantages from:
faster as there is no need to keep swapping disks during installation
less chance of the CD-ROM becoming damaged/more robust
read only therefore less chance of corruption
less chance of error
less chance of losing part of the overall package

shelf life = 0 marks
faster (on its own) = 0 marks
less chance of viruses = 0 marks                                                   [3]


8     (a)     Any **two** examples from:
charts/graphs
video clips
animation
sound
table/spreadsheet

multimedia, graphics, photos, hypertext links = 0 marks                            [2]

      (b)     Any **two** points from:
save file electronically/copy file
print out image/picture/text/press "PrtSc"
edit text/image e.g. crop, format
insert saved file into document/paste                                              [2]

      (c)     Any **two** points from:
before transmission data is totalled and added
this total is sent with the original list of data
on receipt list of data is retotalled
and a comparison made

[2]

9    (a)    Any **two** points from:
to see if proposed system meets terms of reference
to consider effects on employees/redundancies/retraining
to consider if new system is cost effective
to make a final decision
to see what problems could/will arise
to suggest a timescale                                                   [2]

(b)    **One** mark per stage:
WRITE – room number, customer details, meals taken, etc.
            into a ledger
CALCULATE – the bill at the end of the stay
TYPE OUT – bill and clear account in system
DIAGRAM – give a mark for a clear diagram showing manual
            process
**Alternative answer:**
**One** mark per stage:
Input customer data e.g. how many people, no of rooms, no of nights
Check if room(s) already booked
If NOT booked, take payment details
If fully booked, reject booking/offer alternatives
Loop for next customer                                                   [3]

(c)    Any **two** benefits from:
split into many tasks so that development time is faster
easier to debug
easier to modify/update/understand/edit
leads to a structured approach
many programmers can be used
complex problem is broken down into simpler tasks

split into many tasks (on its own) = 0 marks                             [2]

10    (a)    **One mark per correct *output*:**

| Input | Output |
|-------|--------|
| 0 | *Fail Grade* |
| 5 | *Pass Grade* |
| 99 | *Not a valid mark* |

(NOTE: accept the words FAIL, PASS without the word GRADE.  If
the word GRADE precedes the words FAIL, PASS still accept the
answer.  The letters "P" and "F" on their own = 0 marks)

[3]

(b)    For example (1 mark per line up to the maximum):
mark = mark/10
mark = INT(mark)

mark = mark DIV10 is worth 2 marks on its own                           [2]

11   (a)   **One mark per correct group up to maximum of 4 marks.**

sort

sorted transactions

old master file               update              error report

new master file

**NOTE**
group together **sort** and **sorted transactions** for 1 mark
group together **old master file** and **new master file** for 1 mark
**error report** in correct position = 1 mark
**update** in correct position = 1 mark        [4]

   (b)(i)   Any **two** from:
          potential lives lost/planes crash/increase in accidents
          need to re-route traffic
          angry passengers/delays
          secondary/back up system comes in    [2]

      (ii)   Any **two** from:
          delay in paying wages to people
          need to do manual calculations
          increase in possibility of errors in wage calculations
          need to do re-run when system comes live again   [2]

12   (a)(i)   any cell from A1:F1  or  from A1:A7
      (ii)   any cell from B2:E7 (EXCEPT blank cells)    [2]

   (b)   SUM(B2:E2)  or  B2+C2+D2+E2 (accept SUM before this list)
       (Deduct 1 mark if candidate writes *SUM(B2:E2) = F2* or
       *B2+C2+D2+E2 = F2*
       Deduct 1 mark for incorrect terms such as *SUM OF*, etc)   [2]

   (c)   Any **two** from:
       select F2
       drag down to F7
       (NOTE: **only** accept different variations of above, e.g. from s/sheets
       which are not Excel-based, if you are convinced they work)   [2]

   (d)   SUM(F2:F7)  or  SUM(B2:E7)  or  F2+F3+F4+F5+F6+F7
       (Deduct 1 mark if candidate writes *SUM(F2:F7) = F8* or
       *SUM(B2:E7) = F8* or *F2+F3+F4+F5+F6+F7 = F8*
       Deduct 1 mark for incorrect terms such as *SUM OF*, etc.)

                                           [2]
   (e)   column A shaded (1 mark)
       column F shaded (1 mark)    [2]

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13    (a)(i)    SALES/PUBLISHED        [1]
        (ii)    CATNO        [1]

        (b)(i)    CATNO        [1]
        (ii)    Any **one** from:
            uniqueness/prevents duplication
            used to search for records

            used to carry out sorting = 0 marks    [1]

    (c)    Any **one** from:
        customer code field/customer identifier
        customer reference field    [1]

    (d)    C499 (1 mark)
        B295 (1 mark)
        correct order of output (1 mark)    [3]

    (e)    Any **three** from:
        length check
        type check/alphanumeric/invalid character check
        existency check
        format check
        presence check
        (NOT range check)

        check digit, check sum = 0 marks    [3]

14    (a)    Any **two** from:
        programmers can choose best one to suit the task e.g COBOL for business
        HLL are problem orientated so are easier to program
        programmer may have been trained in certain languages only
        closer to English/easier to understand

        HLL are problem orientated (on its own = 0 marks)    [2]

    (b)    Any **two** from:
        need to manipulate bit and bytes/memory locations directly
        less memory requirement
        helps to understand how computer architecture works
        programmers find it easier in some applications
        faster execution of the code

        speed (on its own) = 0 marks
        more difficult to change/copy = 0 marks    [2]

14    (c)    **Repeat ... Until**
             Any **two** points from:

             all instructions are carried out within the loop
             code within loop could be executed several times
             testing of loop is done at the end

             **If ... then ... else ... endif**
             Any **two** points from:

             only the relevant code is executed
             result of test allows only one execution to be done
             testing is done throughout the loop

             **NOTE:** Examples on their own gain no marks – a description of both
             types of programming construct is required                                    [4]


15    Any **five** points from:
      reference to a temperature sensor
      reference to a water level sensor
      switching heater on/off
      switching water valve on/off
      use of analogue to digital converter (ADC)
      use of digital to analogue converter (DAC)
      comparison of set values in memory/program
      adjustments made
      reference to part played by feedback loop
      (maximum of 4 marks if no reference to feedback made)

      computer checks temperature = 0 marks                                              [5]

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16       Any **five** of the following stages:

INPUT employee                                                    (1) }
                                                                       } maximum of
INPUT no_of_years                                                (1) }
                                                                       } 2 marks for
INPUT type_of_good                                               (1) }
                                                                       } all the inputs
INPUT price                                                      (1) }

(if employee <> "yes") then (discount = 0%)                      (2)

else (if no_of_years < 5) or (type_of_good = "electrical")     (2)

then discount = 10%                                              (1)

else discount = 20%                                             (1)

**up to maximum mark of  [5]**