AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

General Certificate of Education

Computing 6510

CPT2   Principles of Hardware, Software and Applications

Mark Scheme

2007 examination - June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

1 (a)   The full <u>file path name</u>
            / the <u>path</u> of the <u>document / file</u>;   **1 mark**

   (b)   (i)   H:\   The logical <u>drive</u> on which the file is <u>stored</u> ;   **1 mark**

        (ii)   CPT3   The sub<u>folder / directory</u> in which the file is stored;   **1 mark**

        (iii) PE   The <u>filename</u> of the document/file;   **1 mark**

        (iv)   .doc   file type/format;
               / that it was a word processed document;
               / what program to launch when opening the file;   **1 mark**
               A What application created the document
               R document created by Word (Brand name)

2 (a)   *Data is backed up:*
            So that if lost or corrupted;
            It can be restored;   **A** retrieve, recover, replaced, etc **1 mark**
            A prevent data being lost

            //To protect against data loss;
              /Safeguard the security of the data;

            One mark for each of 2 points to max 2 marks

   (b)   *Data is archived:*
            If it is no longer used regularly / not to be used regularly in the future;
            It may be required later / for future reference;
            To save disk space / to eliminate 'clutter' on hard drive;
            One mark for each of 2 points to max 2 marks

3   *Input devices: up to 3 devices which, between them, cover the specified tasks (no*
            duplication)
            Bar code reader;   to identify the purchased items;
            /Bar code scanner   /to capture the product code;   **2 marks**
                                     A check / get price
            touch screen;   to select method of payment;
                                     manually input information (*relevant to context*)
                                                                                2 marks
                                     A to select item for purchase;

            credit / debit /smart card reader / keypad;
                                     for entering the PIN;
                                     /capture the card data;   **2 marks**
            A Trackball; to select method of payment / select item for purchase;
            Keypad only accepted with role (to enter PIN)

4   (a)   (i)   *Unauthorised access*

                    password protect sensitive files;   **1 mark**
                    //have username & passwords to log on;
                    / have username & password / use biometrics to restrict access;
           AND   change passwords on a regular basis;   **1 mark**
                    / choose passwords that are difficult to guess;
                    / do not write passwords down;
                    / shut down after (e.g.) 3 attempts at guessing the password;
                    A and set attributes/permissions/access rights;

                    //Set attributes/permissions/access rights;   **1 mark**
           AND   to restrict access to specific users or groups of user;   **1 mark**

                    //Use biometrics /lock doors to rooms where terminals are   **1 mark**
                    /employees log off / lock machines when they leave them;
           AND   to restrict access to sensitive files to certain terminals;   **1 mark**

                    // encrypt (sensitive) files;   **1 mark**
           AND   only authorised users have (decryption) code/key;   **1 mark**

       (ii)   use software that can monitor /log user activity   **A** record, **R** store
              /monitor file changes;   **1 mark**

   (b)   (i)   *data protection*
              Firewall;   **1 mark**
              A 'strong' passwords
              A Encrypt data ;

       (ii)   Use up to date virus checking software;   **1 mark**
              A Regular backups (*if not given in iii)*

       (iii)   <u>Regular</u> / automated backups;   **1 mark**
              /Uninterruptible power supply; (so that system can be shut down safely)

   (c)   *restore*
              a good recovery / restore procedure;   **A** description of this   **1 mark**
              /backup media must be available immediately;
              / availability of alternative hardware;
              A Make regular backups *if not given in (iii)*
              A have a contract with an outside recovery service;

5   (a)   (i)   *operating systems*
Allocate hardware resources;
between applications / processes requiring them;
to ensure efficient use / no hold-ups / maximise throughput;
to deal with hardware malfunctions / maintain hardware functions;
1 mark per point to max   **2 marks**

        (ii)   Processor / CPU;
(Main) Memory / IAS ;
Backing Store / Secondary Store /File space; **A** *examples, but only one*
Input devices;   *of each type*
Output devices;
Peripherals; *(if I/O devices NOT given)*
File space;
R programs, data, files (as *not hardware*)
1 mark per resource to max 3 marks

     (b)   hides the complexity of the hardware;
from the user;

// provides an interface; **A** GUI
between the user and the computer;   **max 2 marks**

     (c)   (i)   *Batch processing*
Payroll;
BACS cheque processing;
Producing Utility bills;
1 reasonable example   **1 mark**

        (ii)   Data entered off line;
Processing delayed until all data entered
       / data collected over a fixed period of time before processing;
Batch integrity checks employed;
There is an acceptable time delay between data input and final output
Processing frequently carried out at night when system is quiet;
Once started, there is no interaction between user and computer;
Data is processed sequentially;
Process controlled by instructions written in JCL;
1 mark per point to max 2

      (d)   *Batch operating system*
             Supports processes which are sequential in nature;
             Requires all data and commands to be supplied along with job;
             Once started, there is no interaction between user and computer;
             Processes (jobs) are queued;
             Operator can intervene;
             Process controlled by instructions written in JCL;
             OS schedules tasks;
             1 mark per point to max 2

6   (a)   *general purpose application packages*

             word processor; to produce the letters;
                        to produce notices;
             spreadsheet;   for the finances;
                        to store details of members;
                        can then be used with wp for mail merge;
             database;   to store details of members;
                        can then be used with wp for mail merge;
                        can easily select members for a competition using
                                        queries;
                        managing finances;
                        letters;
             Desk top publisher;   notices / posters;   **A** letters
             Presentation package;   notices / posters;
             I Integrated package;   **R** accounting package
             Any <u>logical</u> combination of packages and reasons to max 6, (but credit any one task once.)
             If brand name given, do not credit that but can credit role of that type of application
             Application must have at least 1 role to be credited

      (b)   (i)   Data Protection Act;   **R** DPA   **1 mark**
                 because they are holding personal data / members' detail;   **1 mark**
                 / / data which can identify a living individual /members' details must be kept securely;
                 A Computer Misuse Act;
                 someone might change their judo level or competition result;
                 R Freedom of Information Act

(ii) *Keep in context*
Keep secure / password protect files /computer locked away;
/ delete personal data if a member leaves the club;
/ keep data accurate and up-to-date / ask members to update details annually;
/ provide a copy to the data subject on request;
/Register with the Information Commissioner; **A** Data Protection Registrar

// members vote @ each AGM not to comply with Act/sign to agree;

A For CMA keep data secure/ password protect files;
/computer locked away;
1 practical measure **1 mark**

7

Typical Capacity	Storage Medium
100 Megabytes - 750 Megabytes	Zip disk;
650 Megabytes - 800 Megabytes	CD-ROM;
128 Megabytes - 12 Gigabytes	flash memory;
4.5 Gigabytes - 50 Gigabytes	DVD;
40 Gigabytes - 500 Gigabytes	hard disk;

1 mark per correct answer to max 4

8 (a) *fixed and variable length records*
the field Description (**A** ProductID, **I** Price, NumberInStock) will frequently not
need so many bytes; **1 mark**
and will be padded with spaces or similar; **1 mark**
/but the full field length will be saved;

(b) space saved by only saving the required number of bytes/characters;
so more records can be stored in the same space;
space required for bytes to store end of field and end of record markers
/ character count; **2 marks**

(c) more complex processing required / harder tp program;
searching process is slower;
records cannot be updated in situ;
it is harder to estimate file sizes correctly;
some programming languages don't support variable field lengths;
1 mark per point to max 3

(d)

```
            ........
While Not EOF Transaction
    If Product.ProductID < Transaction.ProductID
    Then
            Copy Product record to NewProduct file;

            Read next Product record;

        Else
          While Product.ProductID = Transaction.ProductID and
not EOF Transaction file ;

            Update Product.NumberInStock;

            Read next Transaction record;

        Endwhile
            Copy Product record to NewProduct File;

            Read next Product record;

    EndIf
EndWhile
While not EoF Product File

    Copy Product record to NewProduct File ;

    Read next Product record;

EndWhile

    Copy Product record to NewProduct File ;

        .   .   .   .
```

A last two lines in either order
A Write in place of Copy, Move to in place of Read
1 mark per correct step in correct place to max   **5**

9   (a)   *RFID*   Cut down on theft;   **A** prevent (Bod)
                   Cut down on money laundering;
                   Cut down on lost items/ can identify found items;
                   Ability to track goods being sent around the world;
                   Keep supermarket shelves stocked;
                   Easier for fork lift trucks to find the correct item in a warehouse;
                   Know customers' purchasing habits;
            1 mark for each of 2 benefits to max 2

    (b)   If your pet is lost / stolen, it can be identified;
                   less chance of your baggage going astray;
                   Lost items more easily retrieved / found;
            1 benefit   **1 mark**

    (c)   loss of privacy / can be tracked wherever you go;
                   powers that be' know where you spend your money;
            1 concern   **1 mark**