



## **General Certificate of Education**

# **Computing 6510**

**CPT2      Principles of Hardware, Software  
and Applications**

## **Mark Scheme**

*2007 examination - January 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.

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## Instructions to examiners

The following forms of notation should be used on candidates' scripts:

- Ticks - To indicate what is accepted as correct or creditworthy, placed in the body of the answer, and on diagrams;
- Underscoring – To identify errors/irrelevance in written answers;
- Crosses – to indicate a wrong answer;
- Brief comments – placed at suitable points in the body of the text to amplify the marking;
- BOD – means benefit of the doubt and is used where the candidate's answer has been given a mark on the balance of probabilities that the candidate's answer has met the requirements of the mark scheme even though it could be interpreted differently;
- NE – means not enough and is applied to an answer that falls short of what is required;
- O/S – means outside the mark scheme. The candidate's answer is creditworthy but the answer does not match any of the answers on the mark scheme for the particular question. Nevertheless a mark is awarded;
- C/F – means carried forward. This arises when a candidate offers an answer which is not creditworthy in one question but is creditworthy in a later question. The mark is carried forward to the question which is creditworthy;
- C/B – means carried back. This is similar to a carry forward but the mark is carried back to an earlier question.
- T/O – means talked out. The candidate's answer is contradictory.
- ^ - means missing term or symbol.
- F/T – means followed through. If a candidate made a mistake in the earlier part of an answer, mark the answer using the correct method on their answer from the earlier part.

**The following notation is used in the mark scheme**

- ; - means a single mark;
- A – means acceptable creditworthy answer;
- R – means reject answer as not creditworthy;
- I – means ignore.
- / - means alternative word or sub-phrase;
- // - means alternative answer

**General Rules for Marking**

**Ignore Abbreviations**

**Ignore Brand Names**

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1	(a)	Interactive	<b>1 mark</b>
1	(b)	Real time	<b>1 mark</b>
1	(c)	Network	<b>1 mark</b>
1	(d)	Batch	<b>1 mark</b>
2	(a)	Lower case letters / digits /symbols; A numerals, number, integer, lower case characters, denary char., space A by example R 'lower case', 'decimal'	<b>1 mark for 2 correct answers</b>
2	(b)	Tabs (indent) / line feeds / carriage returns(enter); A EoF, backspace, form feed (page break)	<b>1 mark for 2 correct answers</b>

- 3 (a) (i) 1 mark for an appropriate medium and 2nd mark for justification

**MAX 2 marks**

<i>Storage medium</i>	<i>Justification</i>
hard disk;	fast access;
	internal to the machine;
	sufficiently large capacity;
	continuously available to user/on line;

- 3 (a) (ii) 1 mark for an appropriate medium and 2nd mark for justification

**MAX 2 marks**

<i>Storage medium</i>	<i>Criterion</i>
DAT tape;	high capacity ;
	fast write process;
<b>A</b> flash memory	removable medium;

- 3 (a) (iii) 1 mark for an appropriate medium and 2nd mark for justification

**MAX 2 marks**

<i>Storage medium</i>	<i>Criterion</i>
CD-R / DAT tape	off line storage;
	robust;
	sufficient capacity;
For CD-R only	cannot be overwritten;

- 3 (b) Any 3 of the following to **MAX 3:**

- Ability to select different print resolutions / high resolution;
- Ability to change the thickness of paper used / to accept special photo-paper;
- Ability to print directly from a memory card or digital camera;
- Ability to print in colour;
- Borderless printing;
- Individual ink cartridges (to reduce wastage);
- Fast dry inks (to reduce the risk of smudging);
- Having 6 (> 3) colour inks for 'smoother' tones;
- Having pigmented inks for better quality;
- A** Ability to print on small size of paper (tray)

- 4 (a) by common / shared attributes;  
/ by primary and foreign keys;  
**A** actual example(s) from the tables  
**A** fields instead of attributes  
**1 mark**
- 4 (b) BookID, DateOut;;  
I MemberID  
Other fields, penalise  
**2 marks**
- 4 (c) To speed up searching; **1 mark**
- 4 (d) Check digit; **1 mark**
- 5 (a) (i) *Security: 1 mark for each of 2 **examples** of different **types** of security failure* **MAX 2 marks**  
Unauthorised access to data;  
Unauthorised / deliberate corruption / loss / alteration of data/software;  
Theft of / damage to hardware;  
Accidental destruction of data by hardware failure /operator error;  
Loss of data through natural hazards e.g. fire, flood, earthquake;
- 5 (a) (ii) *Integrity: 1 mark for each of 2 reasons* **MAX 2 marks**  
Error on data entry;  
Insufficient validation checks;  
Virus corrupting file;  
Program error corrupting a file or data;  
Transmission errors;  
(Duplicated) info. not fully updated;

- 5 (b) (i) Information about (living,) identifiable individuals  
/ information that can identify (living) individuals;

**1 mark**

- 5 (b) (ii) *Up to two marks for practice relevant to a school / college for each type of security problems given in (a)(i)*

**MAX 4 marks**

*Unauthorised access to data*

Encrypt data;  
only give key to certain people;  
/Password protect;  
change passwords regularly / password policy for 'strong' passwords;  
/ Use *relevant*;  
access rights;  
/ Keep administration and academic networks;  
separate;  
/ Install firewall;  
and regularly update it;  
/ Described physical protection of system / data / workstations;;  
(*marked in spirit of above*)

*Unauthorised / deliberate deletion / loss of data*

/Virus checker;  
kept up to date;  
/Regular backups;  
kept securely;  
*plus relevant items from unauthorised access if not already given*

*Accidental destruction by hardware failure / operator error*

/ Require confirmation;  
of any editing / deletion;  
/Regular backups; (*if not already given*)  
kept securely;

*Natural hazards*

Regular backups; (*if not already given*)  
kept securely;  
/Uninterrupted power supply;  
To allow systems to close down safely;

*Theft of / damage to hardware*

/ Described physical protection of system / data / workstations;;  
(*marked in spirit of above*)

- 6 (a) *Purpose: any of following to* **MAX 3 marks**  
 Provide itemised bill for customers;  
 Maintain accurate stock control;  
 Speed up checkout process;  
 Enable accuracy at the checkout/ look up price;  
 Provide means of paying for goods electronically;  
 Record every transaction (electronically);  
 Provide management information;
- 6 (b) (i) *Inputs: any two of following to:* **MAX 2 marks**  
 Barcode of item; **A** item code  
 Quantity of item;  
 Payment details/ PIN;  
 Weight of loose goods;  
 EmployeeID / Password / User login credentials;  
**A** Price of item, description of item  
**R** Input device
- 6 (b) (ii) *Outputs: any two of following to:* **MAX 2 marks**  
 Itemised bill;  
 Details / amount owed /change displayed on VDU;  
 Switch / credit card payment receipt;  
**A** Individual items to max 1 mark  
**R** Output device
- 6 (c) *Processing: any two of following* **MAX 2 marks**  
 Totalling bill;  
 Deducting stock from stock levels;  
 Processing of payment;  
 Look up item / retrieve item details;
- 6 (d) *Two marks for each of two reasons* **MAX 4 marks**  
 Customers return to that store;  
 so increasing sales;  
 // Could use information gathered to sell;  
 to other organisations / other unsolicited services;  
 // Target customers with relevant offers;  
 leading to more sales;  
 // Chains now target advertising at customers;  
 so saving them money;  
 // Provides valuable information;  
 on customers' buying habits;



- 7 (a) (i) Hard drive;  
// physical drive **1 mark**
- 7 (a) (ii) Directory / folder; **1 mark**
- 7 (a) (iii) Sub directory / sub folder; **1 mark**
- 7 (a) (iv) Logical drive; **1 mark**
- 7 (b) Save with a different filename;  
Save in a different directory;  
Save with a different file extension (e.g. .bak);  
**A** Relevant example from given tables **MAX 2 marks**
- 7 (c) Printer **1 mark**
- 7 (d) (i)  $4 + 25 + 11 + 8 = 48$  **1 mark**  
 $48 * 100 = 4800$  **1 mark**  
**A**  $5 + 26 + 12 + 8 = 51$ ;  $51 * 100 = 5100$
- 7 (d) (ii) extra data has to be stored such as header, end-of-file marker;  
/ probably an exact number of records would not fit into a block, so bytes  
wasted;  
/File may include an index;  
**MAX 1 mark**

- 8 (a) (i) The master file is read from start to finish (once);  
and all updates are made; **2 marks**
- 8 (a) (ii) Saving in processing time / complexity; **MAX 1 mark**  
Inexpensive/ compact serial media may be used (for both files);
- 8 (b) The master file is ordered sequentially; **MAX 3 marks**  
The transaction file is originally ordered serially / by date and time;  
The transaction file must be sorted;  
into Part number order  
/ in the same order as the master file;

- 9 (a) *social*;
- so much space;
  - that they have to change their e-mail address;
  - / that legitimate e-mails get submerged by them;
  - / service degrades;
  - //Some ISP's spam filters;
  - reject legitimate e-mails;
  - // unkind / spiteful/ gossip type e-mails;
  - can be spread about a work colleague / ex 'partner';

**MAX 2 marks**

*economic*

- wastes resources;
- dealing with junk e-mail;
- // corruption /damage to software and data;
- from viruses carried by spam;
- //many spam are fraudulent;
- people pay for things that never arrive;
- // ISPs have to pass on the cost of extra bandwidth;
- to their customers; (Spam slows down Internet)
- //people with dial-up connections
- / who receive e-mails on mobile phones;
- have to pay to download the junk mail;
- cost of;
- spam filters;

**MAX 2 marks**

*ethical*;

- /people / vulnerable adults upset by;
- obscene / inappropriate e-mails;
- phishing e-mails;
- extracting personal /financial information;

**MAX 2 marks**

**A** *ethical - social, economic - social* cross over where valid, but points must be different.

- 9 (b)
- Have more than one e-mail address;
  - Use a spam black-list to refuse e-mails from known spamming sites;
  - Use a spam filter in the e-mail software / in house;
  - Careful choice of e-mail address;

**1 mark**