**ASSESSMENT and QUALIFICATIONS ALLIANCE**

# General Certificate of Education

# Computing 6510

## CPT5      Advanced Systems Development

# Mark Scheme

*2008 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.

| 1 | (a) | (i) | *single word answers not enough*<br>*interview:*<br>ask/talk to the finance clerk how costs are charged to departments<br>// ask the finance clerk what info is recorded in the charge book<br>// ask the finance clerk how/when he re-orders items; | Max 1 | *Must say who is being interviewed*<br>*Accept interviewing teachers with details as for (ii)*<br>*Do not accept general descriptions such as 'what he likes about the system'* |
|---|---|---|---|---|---|
| 1 | (a) | (ii) | *single word answers not enough*<br>*survey:*<br>survey teachers to find out what they like/dislike about the method of recording items;<br>survey teachers whether the items they want are always in stock;<br>survey suppliers for delivery times / availability / current prices; | Max 1 | *General responses such as 'survey teachers to find out how they use the system' is not enough. The question is giving them the general so candidates need to be specific.*<br>*Surveying users is also too general* |
| 1 | (a) | (iii) | *single word answers not enough*<br>*paperwork:*<br>examine/look at/read/analyse the charge book to see what/how data is recorded;<br>check the way the costs are charged to the departments;<br>work out volumetrics | Max 1 | *Do not accept general comments. Accept other terms for 'charge book' eg order forms, record book, charge sheet* |
| 1 | (a) | (iv) | *single word answers not enough*<br>*observation:*<br>watch how teachers take items and fill in the charge book;<br>watch how the finance clerk charges each department at the end of the month;<br>watch how the finance clerk orders new supplies; | Max 1 | *Do not accept general comments. Accept other terms for 'charge book' eg order forms, record book*<br>*Accept Fred/he instead of finance clerk* |

| 1 | (b) | (i) | A: Charge Book; | 1 |
|---|---|---|---|---|
| 1 | (b) | (ii) | B: Item Description, Quantity (taken), Dept Code, (DateTaken); | 1 |
| 1 | (b) | (iii) | C: Item Description, Quantity (taken) | 1 |
| 1 | (b) | (iv) | D: Stock Book; | 1 |
| 1 | (b) | (v) | E: Price List; R verb | 1 |
| 1 | (b) | (vi) | F: Item Description, Quantity, (Item) Price, Total, (Dept Code);<br>I Charge Book/Form   R verb | 1 |
| 1 | (b) | (vii) | G: Item Code, Quantity, School Address/Name; A Oder Form; R verb | 1 |

1 (c)
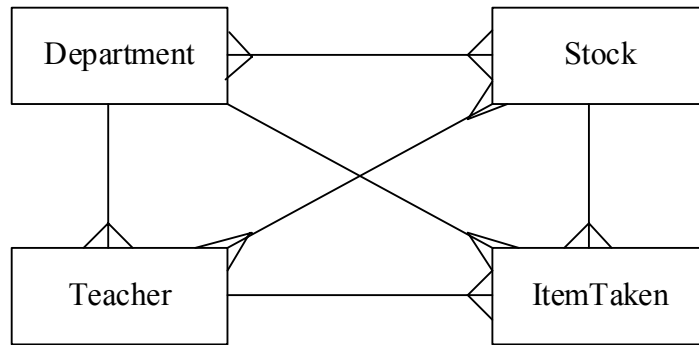


*1 mark per correct relationship*  **I** *other relationships*
A ∞ - 1 instead of 'crow's feet'

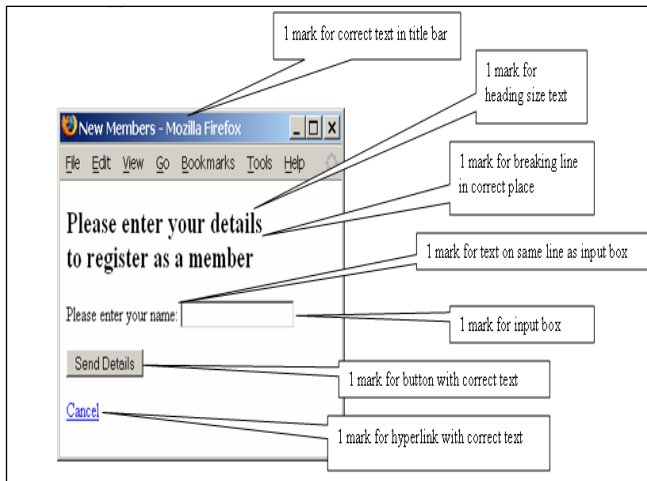| | | | | | |
|---|---|---|---|---|---|
| 1 | (d) | (i) | Department (<u>DeptCode</u>, DeptName, HoDInitials); <br> A DeptID instead of DeptCode <br><br> R initials on its own | 1 | *Accept attribute names consisting of separate words/reasonable abbreviations* |
| 1 | (d) | (ii) | Teacher (<u>TeacherInitials</u>, FirstName, Surname, DeptCode);; <br><br> *1 mark for correct primary key and FirstName, Surname;* <br> *1 mark for DeptCode;* | 2 | *P1 for each extra attribute* *Accept attribute names consisting of separate words/reasonable abbreviations* |
| 1 | (d) | (iii) | Stock (<u>ItemCode</u>, ItemDescription, ItemPrice, QuantityInStock, OrderQuantity,MinStockLevel); | 1 | No marks if extra attributes given *Accept attribute names consisting of separate words/ reasonable abbreviations* |
| 1 | (d) | (iv) | ItemTaken (<u>TransactionNumber</u>, ItemCode, Quantity(taken), DateTaken, TeacherInitials) | 4 | Accept other appropriate names for |

|   |   |   |   |   |   |
|---|---|---|---|---|---|

**A** *ItemCode, DateTaken,TeacherInitials as primary key*
*A TransactionID or similar;*
*1 mark for an appropriate field as primary key;*
*1 mark for ItemCode and Quantity; R QuantityInStock R OrderQuantity*
*1 mark for DateTaken; 1 mark for TeacherInitials;*
P1 for each extra attribute

primary key in place of 'Transaction Number' *Accept attribute names consisting of separate words/reasonable abbreviations*

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1 (e)    SELECT ItemDescription, Quantity, ItemPrice;
FROM ItemTaken, Stock, Teacher;
                              > 30/11/2007                    <1/1/2008
WHERE DateTaken>= #1/12/2007# AND DateTaken<=#31/12/2007#;
AND ItemTaken.ItemCode=Stock.ItemCode;
AND Teacher.TeacherInitials = ItemTaken.TeacherInitials;
ORDER BY (Teacher.)DeptCode;        I table name in this part only
*Alternative answer:*
*SELECT Stock.ItemDescription, ItemTaken.Quantity, Stock.UnitPrice*
*FROM (Department INNER JOIN Teacher ON Department.DeptCode = Teacher.DeptCode) INNER JOIN (Stock INNER JOIN ItemTaken ON Stock.ItemCode = ItemTaken.ItemCode) ON Teacher.TeacherInitials = ItemTaken.TeacherInitials*
*WHERE (((ItemTaken.DateTaken) Between #12/1/2005# And #12/31/2005#));*
Ignore Asc / Desc or Ascending / Descending*P1 for spurious symbols / punctuation*

6

*Follow through attribute names from table definitions Note alternative answer: For answers using INNER JOIN Also note alternative date range using BETWEEN… AND … Accept dates without # No semicolon required at end of statement*

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1 (f)    mail merge / mail merging;    1

2    (a)                                                                    Max 6



Do not give mark for input box if 'NoName or MyName' in input box
P1 for each url showing on page
Ignore minor spelling/capitalisation mistakes but P1 for several words missing of text

1 mark for obvious gaps for new paragraphs between 'register as a member' and each of the following lines;
I alignment of boxes, buttons and hyperlinks.

For the convenience of Examiners, the text in the balloons above are given again below, reading clockwise from 12 noon.
- 1 mark for correct text in title bar
- 1 mark for heading size text
- 1 mark for breaking line in correct place
- 1 mark for text on same line as input box
- 1 mark for input box
- 1 mark for button with correct text
- 1 mark for hyperlink with correct text

| | | | | | |
|---|---|---|---|---|---|
| 2 | (b) | (i) | (A) NoName; | 1 | Ignore case |
| | | | (B) Jack; | 1 | |
| 2 | (b) | (ii) | (A) NoName // MyName=”NoName”; | 1 | Ignore case |
| | | | (B) Emma // MyName=”Emma”; | 1 | |

3    (a)        *normal data*: *accept valid dates within 120 years before present (ie 23/01/2008)*                    3

birthday sometime before today's date;

birthday sometime after today's date;            **A** day/month instead of birthday

*reason:* to check the routine takes into account whether birthday has already been or not;
A 29/2 as a special day to test for

The data values should be any dates within 120 years before the present
If the reason is just given as 'they are normal dates' when both dates are before of after 23/1 of any year then 2 marks max

| | | | | |
|---|---|---|---|---|
| 3 | (b) | *boundary data*:<br><br>a birthday just before boundary;<br><br>a birthday just after boundary;<br><br>a birthday exactly on boundary;<br>A 'yesterday', 'today' 'tomorrow'<br><br>*reason:* to check that age is calculated exactly, taking into account whether birthday is past, now or future<br>// this is the oldest you can be // this is the youngest you can be; | 4 | 22/1 –<br>24/1<br>Any year within 1887 - 2008 |

| | | | | |
|---|---|---|---|---|
| 3 | (c) | **R** anything that is not valid date format<br><br>*erroneous data*: a date after today's date;<br><br>*reason:* can't have an age for someone not born yet;<br><br>OR<br><br>*erroneous data*: a date which makes a person over 120 years old;<br>(ie. Before 24/1/1887)<br>A 'tomorrow'<br><br>*reason*: no person expected to be over this age;<br>**A** outside any expected values // outside range; | 2 | Remember that wrong formats or invalid dates are not acceptable answers<br>Give mark for correct reason even if no acceptable date value given |

| | | | | |
|---|---|---|---|---|
| 4 | (a) | if computer wants to send message/packet to an IP address not on same subnet/network // if computer wants to access the internet;<br>T.O. if implied that all messages are sent to the gateway<br>sends the message/packet to the gateway; which has the IP address subnet.1; | Max 2 | Answer must imply communication not just connection or access |

| | | | | |
|---|---|---|---|---|
| 4 | (b) | Domain name is intercepted by a domain name server;<br><br>Domain name server looks up domain name in its database/table/list;<br><br>Finds matching IP address;<br><br>If it can't find domain name, contacts another Domain Name Server; | Max 2 | The answer must imply the idea of a look up not somehow a conversion which might be a calculation |

| | | | |
|---|---|---|---|
| 5 | | Message/data broken down into packets;<br><br>source/destination (address) is added to each packet;<br><br>message ID added to each packet; | Max 3 |

packet sequence number added to each packet; **A** numbered packet;

each packet may well travel along different paths to get to the final destination

// packets routed independently;

recipient puts packets into correct sequence

// packets reassembled into message at destination;

checking for errors (and resend packets)
// request for corrupted packets to be resent;
// a virtual circuit is established // packets are sent over a virtual circuit;
(allow for non-IP packet switching answers eg. X25 or ATM)

| | | | | |
|---|---|---|---|---|
| 6 | (a) | | because machines do not need a direct presence on the Internet; more secure; **A** private addresses; R machines don't need access to the Internet devices outside of the LAN cannot access them / route to them; | 1 |
| 6 | (b) | (i) | 212.99.34.23 | 1 |
| 6 | (b) | (ii) | 172.31.1.1 | 1 |
| 6 | (b) | (iii) | 172.31.1.x; *where x can be any number between 2 and 254* | 1 |
| 6 | (c) | | too much traffic if single network causing too many collisions // network traffic too slow // to increase bandwith; to restrict access; **A** to improve security; to increase the number of addresses available // too many devices to address on one subnet; problems can be more easily isolated to one segment; | 2 |
| 6 | (d) | (i) | 255.255.255.0 // 1111 1111 1111 1111 1111 1111 0000 0000 ; | 1 |

| | | | | | |
|---|---|---|---|---|---|
| 6 | (d) | (ii) | 172.31.15.3 =   1010 1100 0001 1111 0000 1111 0000 0011 172.31.19.5 =   1010 1100 0001 1111 0001 0011 0000 0101 255.255.255.0 = 1111 1111 1111 1111 1111 1111 0000 0000 AND operation of subnet mask with each IP address; to isolate subnet IDs/network address; (or by example) subnet IDs compared; if same, then on same subnet; if matches NE | 3 | The binary numbers are provided so you can check the answers when a candidate uses them to explain. They are not worth marks by themselves. |

Note that the two IP addresses in the question are NOT on the same subnet
F/T from d(i)
(need to request to see whole page)