

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**  
GCE Advanced Subsidiary Level and GCE Advanced Level

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## **MARK SCHEME for the May/June 2014 series**

# **9713 APPLIED TECHNOLOGY AND COMMUNICATION TECHNOLOGY**

**9713/12**

Paper 1 (Written A), maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

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1 (a)

|  |   |
|--|---|
| Number of passengers   |   |
| A bar code number  | ✓ |
| A flight number (consisting of two letters followed by three digits) |   |
| Name of destination  |   |

[1]

(b)

|  |   |
|--|---|
| Number of passengers   |   |
| A bar code number  |   |
| A flight number (consisting of two letters followed by three digits) | ✓ |
| Name of destination  |   |

[1]

(c)

|  |   |
|--|---|
| Number of passengers   | ✓ |
| A bar code number  |   |
| A flight number (consisting of two letters followed by three digits) |   |
| Name of destination  |   |

[1]

2

|   |   |
|---|---|
| Live data is test data that has never been used before              |   |
| Abnormal data would be 500 passengers on a flight with 300 seats    | ✓ |
| Live data is test data for which the results are already known      | ✓ |
| Extreme data would be 300 passengers on a flight with 300 seats     | ✓ |
| Extreme data is data of the wrong data type for the field concerned |   |
| Normal data is data that is within a given range                    | ✓ |
| Abnormal data is data of the correct type for the field concerned   |   |
| All data that is not abnormal is extreme                            |   |
| Testing will not indicate where improvements can be made            |   |
| Modules are never adjusted as a result of testing                   |   |

[4]

|        |                                |          |
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3 (a) **Three** from:

- Using test results to evaluate the solution
- Obtaining feedback from the user
- (using the results of user feedback/test results) to identify limitations
- Using knowledge of the limitations to make improvements
- Discussing with managers whether new system has met original objectives

[3]

(b) Systems documentation – **one** mark

**Two** from:

- The results of the systems analysis/dfd diagrams
- What is expected of the system/purpose of the system
- Overall design decisions such as the choice of hardware and software
- Overall design decisions such as file, input and output structures
- Test data/test plans so that systems analyst can see the results of these/test results
- Systems flowcharts

Program documentation – **one** mark

**Two** from:

- Description of the software/purpose of the software
- Reasons for choosing those pieces of existing software that were used instead of the programmer having to write code
- Input/output data formats
- Program flowcharts/algorithm
- Program listing – a complete copy of the code used with annotation explaining what each module of code does
- Notes that will help any future programmer to make modifications to the system

[6]

|        |                                |          |
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4 (a) Three from:

- Tick boxes which would be suitable for OMR
- Strike throughs/lozenges would be suitable for OMR
- Multi choice options would be suitable for OMR
- Individual character boxes more suitable for OCR

[3]

(b) Five from:

- Doesn't matter whether the handwriting is poor with OMR
- OMR would need more detailed instructions for the passenger
- OMR does not allow extended answers
- OMR reading is a more accurate process/fewer mistakes
- OCR can be used to read text anywhere/does not rely on reading forms
- OMR is a faster method of input
- OMR forms are easier to complete than OCR

Must have at least one each from OMR and OCR to gain full marks  
One mark is available for a reasoned conclusion

[5]

5 (a) *Phishing*

**Two** from:

- E-mail appear to be from customer's bank
- Ask for customer's details – password, card/account number, other security details
- E-mail makes up plausible reason
- Can include a link/website address for customer to go to which looks just like the actual bank's website but is a fake website

*Pharming*

**Two** from:

- Installs a piece of malicious software/code on customer's computer
- Fraudster redirects genuine website's traffic to own website
- Customer is now sending personal details to fraudster's website

*Spyware*

**Two** from:

- Downloaded/software used to gather user's key presses
- Software detects key presses of user logging on to bank site

[6]

(b) Three from:

- Expense of buying a computer with a broadband internet connection
- Unable to make cash deposits or withdraw cash without physically going to the bank or to an ATM
- May not like it that the bank is not providing the 'personal touch'
- May mismanage accounts as it is so easy to transfer money from one account to another

[3]

|        |                                |          |
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(c) **Three** from:

- Save costs as don't have to rent so many high street premises
- Employ fewer staff therefore less paid in staff wages
- Save costs of printing/sending statements
- Lower running costs, fewer branches so less electricity, heating and lighting
- Because of lower costs can offer higher rates of interest for savers and lower rates of interest for borrowers...
- ...these rates attract more customers
- Less likelihood of the bank being robbed
- Less money is spent as there are fewer security staff [3]

6 (a) *Anonymised information:*  
Information about individuals without mentioning the person by name [1]

*Aggregated information:*  
Personal details of individuals are combined to provide information without naming those individuals [1]

(b) **Two** from

- Can identify the number of customers from a specific area
- Can identify the number of customers who have overdrafts
- Can identify the number of customers who have deposits greater than a certain sum [2]

(c) **Five** from:

- Information must be kept secure
- Must abide by data protection rules
- Employees must not share any customer data with anybody outside the organisation
- Employees should sign a confidentiality agreement/have a duty of confidence
- Employees should have a duty of fidelity
- Information about an individual should not be passed from one organisation to another without permission of the individual [5]

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7 Three from:

- Some workers may have to/will have the opportunity to go part time
- There will be the opportunity to job share
- There will be the opportunity for flexible working hours
- There will be the opportunity to work compressed hours
- Workers will need to have the ability to move from branch to branch

[3]

8 (a) Four matched pairs from:

Conditional formatting

Cells are coloured differently to indicate acceptable progress or otherwise

Graphs/charts

Comparison of student's chart with target grades/class average/previous scores/gradient of the graph shows whether there is improvement or not

Calculate average score of student

Comparison of student's score with average/comparison of student's score with target grades

Maximum function

Could see which was highest mark and when

Minimum function

Could see which was lowest mark and when

Sorting/filtering

To produce a rank order of students + reason – for the purpose of grading/setting/to list best/worst performing students/students achieving a particular mark range/grade so that these students can be set suitable targets

Goal seek

Could see what test results required to achieve satisfactory average

[8]

|        |                                |          |
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**(b) Three** from:

- Results will be calculated more quickly/graphs produced more quickly
- Results will be displayed more neatly
- Results will be calculated more accurately
- Validation can be incorporated
- Results can be exported directly into a report/document
- Easier to manipulate data
- Easier to edit data/errors
- Focus on specific areas more easily

[3]

**(c) Three** from:

- Import/insert data from spreadsheet
- Copy and paste chart from spreadsheet
- Link to data/spreadsheet
- Mailmerge to insert grades/marks/name of student

[3]

**(d) Two** from:

- Inkjet unsuitable for bulk printing
- Don't have to keep changing cartridges like an inkjet
- Faster to print multiple copies than inkjet or dot matrix
- Dot matrix quality is not good enough

[2]

**9 (a) Three** from:

- Don't have to spend so much on utilities
- Increased productivity due to more content workforce/improved motivation
- More likely to retain staff so don't have to spend money on retraining
- Lower costs as can rent smaller/fewer offices
- Don't have to pay travelling expenses for conferences
- Less need for land for car parking space so some land could be sold off

[3]

|        |                                |          |
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(b) **Three** from:

- Time is not wasted travelling/ more free time because of less travelling
- Can spend more time with their family/can arrange their work schedule to suit themselves
- Don't have to live close to the company so can live in area of their choice
- Don't have to spend money on fuel/transport travelling to work
- Don't have the stress of travelling to work in rush hour
- If the payroll worker is disabled it's easier for him/her as he/she doesn't have to travel [3]

10 (a) With no thought given to the order/data has not been sorted/stored in the order they are added [1]

(b) **Three** from:

- Data is collected together in a transaction file
- In the course of the week
- It is processed in one go with the master file
- To produce payslips (usually overnight)
- Without human intervention [3]

11 **Six** from:

- The transaction file is sorted in the same order as the master file
- Sorted on employee number
- First record in the transaction file read
- Reads first record in the old master file
- These two records are compared
- If records don't match computer writes master file record to new master file
- If it matches transaction is carried out

*Then*

*If transaction relates to calculation of pay:*

- Computer calculates the pay
- Using rate of pay from master file
- Using hours worked from transaction file
- Computer calculates the income tax/insurance/pension contributions
- Computer subtracts this from total pay
- Processed record is written to master file
- Process is repeated until end of old master file

*If transaction relates to deletion, amendment or insertion:*

- If deletion or amendment old master file record not written to file
- If amendment/insertion data in transaction file written to master file
- Process is repeated until end of old master file
- Remaining records of the transaction file are added to the master file [6]