UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Advanced Subsidiary Level and GCE Advanced Level

MARK SCHEME for the May/June 2009 question paper

for the guidance of teachers

9713 APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/01   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.

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International Examinations

1 (a) **Two** from:
   User name/account number/credit card number/user id
   Mother's maiden name
   Favourite place
   Date of birth
   PIN
   email address [2]

   (b) **Two** from:
   Hacker can only get hold of three characters in one go
   Hacker might need to know the whole password to get into account
   Will probably be different three characters asked for at next log in
   Hackers would need to intercept password several times to get into account [2]

   (c) **Two** from:
   Phone operators will be paid less
   Buildings needed to house call centres will be cheaper to buy/rent
   Call centre opening during normal hours in India would be unsociable hours in UK leading to a lower wage bill
   Operators would be better qualified
   Operators would be more motivated
   Large population to choose from [2]

   (d) **Two** from:
   The operator might not understand UK dialects
   The customer might not understand operator's accent
   Operators might have difficulty with UK culture
   Operators may be inclined to stick to script/may be unable to answer out of the ordinary questions
   Bad connection resulting in poor quality of communication [2]

2 (a) **Five** from:
   Increased unemployment for cashier staff/security staff
   Increased employment for technical staff/programmers
   Increased employment for call centre operators
   Some workers have had to/had the opportunity to go part time
   The opportunity to job share might have been provided
   Flexible working hours may have been made available
   Technical staff may be able to work from home
   Some workers needed to retrain
   Managers could be relocated

   +1 for reasoned conclusion [6]

(b) **Five** from:

Typing at a keyboard <u>continuously</u> can cause RSI/wrist problems/finger problems

Gripping a mouse and <u>repetitive</u> clicking can cause RSI/wrist problems/finger problems/ carpal tunnel syndrome

Sitting in the same position all day can cause lower back pain

Sitting in the same position all day can cause deep vein thrombosis

Staring at a computer screen all day can cause eye strain/headaches

Poor positioning of screen can cause upper back/neck/shoulder pain

Glare from screen can cause eye strain/headaches [5]

(c) **Six** from:

Bank workers have a personal duty of confidence to individuals whose data is stored

Bank workers should have a personal duty of confidence to their employer

Workers must not tell any unauthorised person about personal data which is held

Bank must not use information for any reason except with the permission of the individual

Workers must be asked to treat the information as confidential/it must be obvious to them that the information is given in confidence

Employer should ask employee to sign a confidentiality agreement

Bank should take responsibility for any information which is passed on

Only the least amount of information that could identify the individual should be used

Online services allow organisations to have access to the most private of data

Examples – names, addresses, phone numbers, financial situation

Information should not be passed on from organisation to organisation without authorisation from the individual

Anonymised information should always omit personal details wherever possible

Aggregated information should never identify individuals

Companies/workers must ensure the security of customer data

Workers must ensure only relevant data is used

Workers should ensure they only use up to date/accurate information [6]

(d) **Four** from:

Call centres employees may copy data to pass on to criminals…

…who use the data to make illegal transactions

Phishing – email appears to be from customer's bank…

…asks for customer's details – password, card/account number, other security details

…email makes up plausible reason

…includes a website address for customer to go to which looks just like the actual bank's website but is a fake website

Pharming – fraudster redirects genuine website's traffic to own website…

…customer is now sending personal details to fraudster's website

Spyware is downloaded/software used to gather user's personal details

Software detects key presses of user logging on to bank site

Hacking to get customer personal information to use against the individual/to commit fraud

Hacking in order to transmit viruses [4]

3 (a) **Six** from:
   Interview employees/managers face to face
   Description of situations where interviewing is used – when there is sufficient time/when it is relatively easy to get people together/interview a small number of workers to get a snapshot of the existing system
   Examining documents used in current system
   Description of situation where examining the documents is necessary – where there is lots of paperwork
   Observing employees and watching over the whole process
   Description of situation where using observation is needed – where gaining an accurate view of what exactly goes on would be difficult otherwise/gaining a broad overview of processes would be difficult otherwise/where workers cannot be interrupted
   Distributing questionnaires to employees using written questions to gather responses/where whole workforce response is required
   Description of situation where using questionnaires is advisable – when it is difficult to get people together/to save time in gathering responses

   Allow only three methods [6]

(b) **Six** from:
   The transaction file is sorted
   First record in the transaction file read
   Reads first record in the old master file
   If records don't match computer writes master file record to new master file
   If it matches transaction is carried out

   if transaction relates to calculation of pay:

   Pay is calculated…
   ….using data from the transaction file
   Processed record is written to master file

   if transaction relates to deletion, amendment or insertion:

   If deletion or amendment old master file record not written to file
   If amendment, 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]

4 (a) Five from:
A relational database consists of a number of separate tables
For example a payroll table and a staff table
Tables are linked to each other…
… using a key field
For example the employee ID
This field is part of other table(s)
Data from one table combined with data from other table(s) when producing reports.
Can select different fields from each table for output
SQL is used for queries and producing reports   [5]

(b) Three from:
Data is not repeated so less storage capacity needed
Data retrieval is quicker/easier to search for information
If data was duplicated hackers would have easier access to data
Easier to expand
Data only needs to be amended once
Easier to produce reports with cross-tabular data rather than separate files   [3]

(c) Three from:

Description of length check
Works number/tax code/social security number/sort code/account number

Description of format/picture check
Works number/tax code/social security number/sort code/date of birth

Description of invalid character check
Tax Code/sort code/account number/number of days

Description of length check
Works number/Social security number/sort code/account number

Description of range check
Income tax/gross pay/net pay/number of days

Description of check digit
Account number

Description of Boolean check
Gender

Description of presence check
Works number/tax code/sort code/account number/social security number/gender/rate of pay/date of birth/number of days

Description of existency check
Works number

One mark for description of validation check
One mark for matched field   [6]

(d) Six from:
Testing (each module) with normal data including appropriate example
If error produced – description of improvement required

Testing (each module) with live data including description
If difference between live and actual results – description of improvement required

Testing (each module) with abnormal data including appropriate example
If error not produced – description of improvement required

Testing (each module) with extreme data including appropriate example
If error produced – description of improvement required

Testing whole system including examples of data
Description of improvements required   [6]

5 (a) Four names and four uses from:
Cameras
– to inspect work
Welding guns
– to weld parts of the car body together
Grippers
– to pick up parts and place them somewhere else
Vacuum cups
– to pick up parts
Drills
– to make holes in the car body
Screwdrivers
– to place and tighten screws
Spanners
– to place and tighten nuts
Riveters
– to place and tighten rivets
Spray guns
– to paint the car body
Polishers/finishers
– to produce a shiny finish after painting
Sanders
– to prepare body for painting   [8]

(b) (i) **One mark for three items, two for five or more from:**
PC (with mouse and keyboard)
Monitor
Speakers/headphones
Broadband network connection/router
Webcam
Microphone [2]

(ii) **Three** from:
Assemble equipment/load software/access the internet/connect to the internet
Need to log on to system/conference
Webcam normally fixed to top of monitor/moved to ensure programmer can be seen
Communicate by speaking into the microphone
Communicate by looking at the webcam
Examine documents using normal software/share documents using conferencing software
Discuss modifications to documents and physically make amendments [3]

(c) **Six** from:

Advantages:
If the programmer is disabled it's easier for him/her as he/she doesn't have to travel
Don't have to spend money on fuel/transport travelling to work/don't have to live close to work
Don't have the stress of travelling to work in rush hour
Can spend more time with their family/can arrange their work schedule to suit themselves
Time is not wasted travelling/more free time because of less travelling
Disadvantages:
Might miss the personal contact with colleagues/more difficult to discuss ideas with colleagues
Home based telework is inappropriate for some people
Many homes are not well equipped for some kinds of telework
Young children might demand attention/friend might drop in and distract programmer/ dog might need to be taken for a walk
May be difficult to find a suitable office space in the home

+1 for reasoned conclusion

Four marks max. for advantages or disadvantages [6]