

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
GCE Advanced Subsidiary Level and GCE Advanced Level

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**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

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- 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]

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**(b) Five from:**

- Typing at a keyboard continuously can cause RSI/wrist problems/finger problems
- Gripping a mouse and repetitive 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]

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- 3 (a) Six from:
- Interview employees/managers face to face
  - Description of situations where interviewing is used – when there is sufficient time/when 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]

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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]

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(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]

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(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]