

**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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- 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 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]

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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]