

**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Advanced Subsidiary Level and GCE Advanced Level**

**MARK SCHEME for the May/June 2012 question paper  
for the guidance of teachers**

**9713 APPLIED INFORMATION AND  
COMMUNICATION TECHNOLOGY**

**9713/11**

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 Three from:**  
 Can be sure all targeted customers are reached/not everybody will see the website  
 It is more personal so will attract customers  
 It is more interactive/questions can be answered immediately  
 Can see immediately how successful advertising campaign is/know reasonably accurately how many customers they will have  
 Easier to persuade customers to purchase computers  
 Can contact customers who don't already have a computer so would not see the website/can contact customers whose internet speed is so slow they are reluctant to use it and so might not see the website [3]
- 2 Five from:**  
 temperature sensor monitors temperature of room  
 (number pad) to input the required temperature.  
 Data from the sensors converted to digital (using an ADC)  
 Microprocessor compares temperature data from the sensor with the pre-set value  
 If the temperature is higher/lower than preset value a signal is sent...  
 .... to the actuator  
 if lower microprocessor/actuator switches the heater on  
 if higher microprocessor/actuator switches the heater off  
 Digital to analogue conversion required  
 microprocessor sends data to LEDs indicating the current room temperature  
 Description of PID  
 Description of PLC [5]
- 3 (a) Three from:**  
 be well motivated  
 have good communication skills  
 have good self-discipline/doesn't require supervision  
 have good time management skills/can meet deadlines  
 be well organised [3]
- (b) Three from:**  
 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/therefore distracting them from work  
 May be difficult to find a suitable office space in the home  
 May be difficult to impress manager giving reduced promotion prospects [3]
- (c) Three from:**  
 Don't have to spend so much on utilities  
 Don't have to pay travelling expenses for conferences  
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 due to flexible staffing  
 Lower costs as can rent smaller/as many offices [3]

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(d) **Three** from:

- Saves time/trouble of going to the fax machine to retrieve/send faxes
- Equipment costs are lower as there is no need for a dedicated fax machine/phone line
- Description of why running costs are lower
- Confidential faxes are more secure/on a manual fax any worker could pick it up
- Faxes can be downloaded remotely/don't have to be in office to receive faxes
- It is easier to send to many recipients at the same time.
- Description of how you are less likely to lose the fax

[3]

**4 Four** from:

- Fewer errors in completing/easier to complete the form because there are individual character boxes
- Fewer errors in completing/easier to complete the form because there could be Boolean tick boxes
- Fewer errors in completing the form/easier to complete because closed questions/restricted number of answers
- Fewer errors in reading the form as OMR could be used
- Fewer errors in completing the form/easier to complete because there are instructions on how to fill in the form
- Easier for the secretary to read completed forms because there are individual character boxes
- Fewer errors when secretary enters data into computer as it is easier to read completed forms
- Less likely to get lost as there will be clear instructions where to send the form

[4]

**5 Four** from:

- Description of IVR
- Displays caller ids
- Queues calls
- The operator's phone communicates directly with the server
- The server controls all the phones.
- The operator's computer does not control/is not controlled by the phone although it may be physically connected
- Any computer in the system can be used to control any phone
- Allows supervisors, for example, to intervene if the call proves too complex for the operator to handle.
- The server can direct a call to the appropriate operator
- Calls up matching customer records
- Displays the script for the operator
- Can record conversations with customer
- Software enables on-screen phone control such as answer, hang up, hold, Conference, re-dial

[4]

**6 (a) Two** from:

- Two people sharing a job normally done by one person.
- Each person is paid on part time basis though together they do a full time job
- One person works specific days/mornings/afternoons while other works remainder

[2]

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**(b) Two** from:  
 Company gets the skills of two workers for the price of one  
 Working fewer hours makes worker fresher/more creative  
 When company is busy can get the two workers to work together/  
 If worker is ill or on holiday part of job still gets done/other worker can be invited to cover  
 No need to (spend money on) train(ing) a new person  
 The two workers can have different skills, knowledge and experience  
 May mean that workers stay with the company since they might leave if they had to work full time [2]

**(c) Two** from:  
 Money may need to be spent on providing an extra desk or additional equipment  
 Extra training costs for training two workers instead of one  
 Difficult to arrange training/meeting times/working hours to suit all workers  
 May be difficult to maintain communication between workers  
 May be difficult to maintain continuity [2]

**7 (a) Four** from:  
 Employees who handle confidential information about individuals have a personal duty of confidence both to the individuals and to their employer.  
 They must not tell anybody except with the permission of the person who told them  
 They must not use the information for any reason except with the permission of the person who told them.  
 If they attempt to tell somebody/use the information the person who told them can take out a legal injunction preventing them.  
 In order for a duty of confidence to exist, the employee must be asked to treat the information as confidential/it must be obvious that the information is given in confidence.  
 Employer will ask the employee to sign a confidentiality agreement [4]

**(b)** Anonymised information is information about individuals without mentioning the person by name [1]  
 Aggregated information is where personal details of individuals are combined to provide information without naming those individuals. [1]

**(c) Two** from:  
 It is possible to guess the salaries of workers if the department/position is mentioned  
 There may be only one worker in a specific department and so it is obvious who the company is referring to. [2]

**8 (a)** A file where records are stored one after the other using a key field to order them [1]

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**(b) Five** from:  
the transaction file is sorted  
first record in the transaction file read  
reads first record in the old master file  
They are compared  
if records don't match computer writes master file record to new master file.  
if it matches transaction is carried out  
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 [5]

**9 Three** from:  
Open her private calendar to see when she is free  
Open the public calendar showing when other workers are free  
Identify a suitable time when she is free and when others are free/where there are no clashes  
Type in the details of the meeting  
Notify others of time/date of meeting  
Sets an alarm to alert her when the meeting starts [3]

**10 (a) Two** from:  
a calculation is performed on a long series of digits to produce another digit  
This digit is then added to the end of the string.  
The computer re-calculates the digit when data is entered  
To check whether it gives the same result. [2]

**(b) Three** from:  
Scanned image of exam paper is saved to file  
Examiner logs on to system  
Examiner loads script  
Examiner enters mark next to each response  
Mark is checked for validity  
Mark for each question is saved to candidate's record  
Total mark is saved to candidate's record [3]

**(c) Three** from:  
Marking process is more accurate  
Marks are recorded more quickly than by manual methods  
Don't have to pay for posting scripts to examiners  
Scripts less likely to go missing in the post  
Statistical analysis is more easily carried out [3]

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11 (a) **Three** *matched* pairs from:

Terminator

When data flows from or to somebody or somewhere outside the system, that somebody or somewhere is called a terminator. Here it is the examiner.

Process box

The data from the examiners are the marks which are processed to produce the candidate's results. The processing of the marks is put in a process box.

Store

The actual data output from the system such as the candidate grades (are recorded for future use).

Data flow arrows

Each arrow is labelled to show what data is flowing at that point in the diagram whether it be marks or grades [6]

(b) **One** for each reason:

Field name

So that the contents of the field are easily identifiable/so that no two fields have the same name

Field type

So that validation can be more easily performed/text or Boolean can be chosen when appropriate to save storage space

Field length

So that record lengths are not too long/when chosen appropriately saves storage space

Validation rules

So that the number of errors in input data is reduced

Key field

To make it easier to sort data/to uniquely identify each record in a database/to make it easier to search databases [5]

(c) Live data is data that has been used in the existing system/is data which will be used because the outputs are already known. [1]

**Three** from:

He will select a session where there may have been special circumstances

He will also choose another session where it was quite an average session.

He will then run this/these sets of data on the new system

He will compare the results with the grades already in existence

If there are differences between the results amendments will need to be made to the system. [3]

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(d) **Three** matched pairs from:

Method: Could observe examiners/users performing set tasks and record their progress using video recording/ Get an examiner/user to perform a task and measure the time it takes them to carry out the task

Drawback: Description of the Hawthorne effect

Method: Interview examiners/users to gather their responses about what they thought of the system and how easy it was to use.

Drawback: Examiners/Users have to be available at the time the analyst wants to interview them/time consuming as can only interview one user at a time/may get answers which the user thinks the analyst wants to hear

Method: Hand out questionnaires to them to ask them about their thoughts on the new system with regard to how easy they found it to use.

Drawback: They may give answers which are exaggerated as they are anonymous/question cannot be changed once they are typed up/follow up questions cannot be asked. [6]