UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2011 question paper

for the guidance of teachers

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/12   Paper 1 (Written), maximum raw mark 100

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   Laser printer (1)
   B   Plotter (1)
   C   Multimedia projector (1)
   D   Monitor (1)   [4]

2 **Blu ray disc**   ⟨ **Graphics tablet (1)** ⟩   **Inkjet printer**

   Motor   ⟨ **Optical mark reader (1)** ⟩   **Speaker**   [2]

3

	True	False	
A magnetic stripe reader is an example of hardware	✓		(1)
A memory stick is an example of software		✓	(1)
A word processor is a form of operating system		✓	(1)
A CD has a greater storage capacity than a DVD		✓	(1)

[4]

4 **Fixed hard disc**   **Making backups of file servers**

   Flash memory card   **Transferring files from one computer to another**

   Magnetic tape   **Storing software sold by a company**

   Pen drive   **Storing data which needs to be accessed quickly**

   DVD ROM   **Storing photographs in a digital camera**   [5]

5 **(a)** *Birthday*   **Date**

   (b) *Gender*   **Boolean**

   (c) *Home phone number*   **Text**

   (d) *Number of brother and sisters*   **Integer**   [4]

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	True	False	
RAM is volatile	✓		(1)
RAM is used to store the startup instructions of a computer		✓	(1)
The data in ROM is easier to change than that in RAM		✓	(1)
ROM is used to store the data the user is currently working on		✓	(1)

[4]

7 FORWARD 50
PENUP
FORWARD 40
PENDOWN
FORWARD 60
PENUP/RIGHT 90
RIGHT 90/PENUP
FORWARD 60
RIGHT 90/PENDOWN
PENDOWN/RIGHT 90
FORWARD 80

1 mark for each 2/3 statements   [5]

8

Hub	✓	(1)
Printer		
Scanner		
Switch	✓	(1)
Bridge	✓	(1)
Monitor		

[3]

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	True	False	
Paying for goods at an EFTPOS terminal		✓	(1)
Booking a holiday using a computer		✓	(1)
Producing credit card bills	✓		(1)
Processing cheques	✓		(1)

[4]

10 **(a)** **Three** from:
Humidity
Moisture
Temperature
Light [3]

(b) **Five** from:
Computer monitors sensors
Temperature is compared with preset value
If lower than preset value computer switches on heater
If lower than preset value computer shuts windows
If higher than preset value computer switches heater off
If higher than preset value computer switches fan on
If higher than preset value computer opens windows
Humidity is compared with preset value
Moisture level is compared with preset value
If lower than preset value computer switches on sprinkler
If higher than preset value computer switches off sprinkler
Light is compared with preset value
If lower than preset value computer switches on light bulb
If higher than preset value computer switches off light bulb [5]

(c) **Three** from:
More reliable readings taken at regular intervals
Computers are more accurate than human beings
Computers can work continuously/without taking a break
Computers do not forget to take readings
Computers can take readings more frequently
Computers can respond to changes immediately/quicker than human beings [3]

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11 (a) 3   [1]

(b) 5   [1]

(c) **Three** from:
The personal details file and test results files would be saved as separate tables
Primary key/key field(s)/foreign key would be identified
The 'Unique ID number' set to primary key would be used to link the tables together   [3]

(d) **Two** from:
Data does not have to be typed in twice
Quicker to enter/update/edit data
Fewer errors are likely
Reduces storage requirements   [2]

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12 (a)

	True	False	
Defining field length is part of the design of the file structure	✓		(1)
Screen layouts are designed before the system is implemented	✓		(1)
The new system is evaluated before it is designed		✓	(1)
The existing system is analysed before the new system is designed	✓		(1)

[4]

(b) Normal data – data within a (given) range/appropriate for that data type (1)
Abnormal data – data outside the range/of the wrong data type (1)
Extreme data – data on the boundaries of the range (1) [3]

(c)

Produce user documentation		
Design the new system		
Compare the solution with the original task requirements	✓	(1)
Analyse the existing system		
Identify any limitations of the system	✓	(1)
Identify any necessary improvements to the system	✓	(1)
Analyse the users' responses to the results of testing the system	✓	(1)
Produce technical documentation		

[4]

(d) Technical documentation
Two from:
So improvements can be made to system
To know how to repair system
To know how to maintain system [2]

User documentation
Two from:
Help users to learn/know how to use system
Help users to overcome problems [2]

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13 **(a)** Router/modem (1)

   (b) Email (1)

   (c) Web browser (1)

   (d) ISP (1)   [4]

14 **(a)** Encryption
      Two from:
      Despite hackers being able to intercept data
      Data is scrambled
      So that hackers cannot understand/read the data
      Need to have encryption/decryption key to make data readable/understandable   [2]

      Passwords
      Two from:
      Linked to username
      Compared to stored data
      Hackers cannot access data without knowing the password
      Password can be regularly changed/robust passwords make it difficult for hackers to guess
                                                              [2]

      Biometric data
      Two from:
      Use of fingerprints/retina scans
      Compared to stored data
      Almost impossible to replicate   [2]

   (b) **Three** from:
      Fewer cashiers/security staff needed – less spent on wages
      Fewer branch offices needed – less spent on rates/rent/utilities
      Less actual cash handled – fewer robberies
      Cheaper to advertise
      Lower postal charges
      Have access to a wider customer base   [3]

   (c) **Three** from:
      Less danger of mugging
      Don't have to waste time travelling to bank
      Don't have to spend money on travelling
      Can bank at any time of day or night/can bank when banks are closed
      Can use it anywhere if there's an internet connection
      Can ask for a loan over the Internet without being embarrassed   [3]

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15 **Six** from:
   Advantages
   Can call meeting at short notice
   No need to pay travelling expenses
   Can work from home
   Will save time travelling
   Do not have to pay hotel expenses
   Do not have to pay for conference room facilities
   Safer as participants do not have to travel
   Don't have to transport/carry equipment/lots of documents/documents don't get lost in transit

   Disadvantages
   Takes time to learn new technology/to be trained
   Difficult to have international meetings because of time differences
   Initial cost of hardware
   Equipment can break down/power cuts can stop conference
   Strength of signal/time lag/lip sync can be a problem/ connection can be lost/power cuts
   Loss of personal/social contact
   Legal documents cannot be signed

   +1 for reasoned conclusion   [6]

16 **Three** from:
   Phishing is done by email
   Can invite you to go to a website/respond to an email
   Pharming is done by installing malicious code on a pc or server
   Redirects a genuine website's traffic to hacker's website   [3]

17 **Seven** from:
   Type in/use keyboard
   Use touch screen
   Scan Bar code/use bar code reader
   Swipe Magnetic stripe/magnetic stripe reader
   Use biometric methods
   OMR
   Chip reader

   Three max. for methods

   Magnetic stripe quicker than keying in
   Bar codes more accurate than keying in
   Magnetic stripe more accurate than keying in
   Keyboard entry more robust than bar codes
   Keyboard can be used to enter additional data unlike bar code reader
   Magnetic stripe more robust than bar codes
   Biometric methods difficult to forge
   Biometric methods more accurate than other methods   [7]