MARK SCHEME for the May/June 2011 question paper
for the guidance of teachers

0417 INFORMATION AND COMMUNICATION TECHNOLOGY

0417/13 Paper 1 (Written), maximum raw mark 100

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<table>
<thead>
<tr>
<th>Ques. No.</th>
<th>Answer</th>
<th>Part mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A Microphone</td>
<td>1, 1</td>
</tr>
<tr>
<td></td>
<td>B Scanner</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C Pen drive</td>
<td>1, 1</td>
</tr>
<tr>
<td></td>
<td>D Web cam</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Flash memory card</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Graph plotter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Graphics tablet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laser printer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Magnetic disc</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Touchpad</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Presentation software is used to create slide shows</td>
<td>✓ 1</td>
</tr>
<tr>
<td></td>
<td>Laptop computers do not have USB ports</td>
<td>✓ 1</td>
</tr>
<tr>
<td></td>
<td>DTP software can be used to produce databases</td>
<td>✓ 1</td>
</tr>
<tr>
<td></td>
<td>Measurement software is used to create magazines</td>
<td>✓ 1</td>
</tr>
<tr>
<td></td>
<td>Buzzers are input devices</td>
<td>✓ 1</td>
</tr>
<tr>
<td>4</td>
<td>A bar code reader</td>
<td>is used to input data about products at a POS.</td>
</tr>
<tr>
<td></td>
<td>A laser printer</td>
<td>is used to produce high quality hard copy.</td>
</tr>
<tr>
<td></td>
<td>A temperature sensor</td>
<td>sends data to a microprocessor in a washing machine.</td>
</tr>
<tr>
<td></td>
<td>A graphics tablet</td>
<td>is used to input freehand drawings to a computer.</td>
</tr>
<tr>
<td></td>
<td>A speaker</td>
<td>is used to output sounds from the computer.</td>
</tr>
<tr>
<td>5 (a)</td>
<td>Database</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Keyboard</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Spreadsheet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Animation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Microphone</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Video camera</td>
<td>✓</td>
</tr>
<tr>
<td>(b)</td>
<td>One advantage from:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>She can update it more regularly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More personal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be used as a diary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>More interactive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>One disadvantage from:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Has to be continually updated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Animation/video/sound more difficult to incorporate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It’s possible for people she might not want (e.g. outside school) to see her blog</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not everyone she would want to see it might have the internet</td>
<td>2</td>
</tr>
</tbody>
</table>
6

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>PENDOWN LEFT 90</td>
<td>1</td>
</tr>
<tr>
<td>REPEAT 6</td>
<td>1</td>
</tr>
<tr>
<td>FORWARD 50</td>
<td>1</td>
</tr>
<tr>
<td>RIGHT 60</td>
<td>1</td>
</tr>
<tr>
<td>END REPEAT</td>
<td>1</td>
</tr>
</tbody>
</table>

Alternative answer:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>PENDOWN RIGHT 90</td>
<td>1</td>
</tr>
<tr>
<td>REPEAT 6</td>
<td>1</td>
</tr>
<tr>
<td>BACKWARD 50</td>
<td>1</td>
</tr>
<tr>
<td>RIGHT 60</td>
<td>1</td>
</tr>
<tr>
<td>END REPEAT</td>
<td>1</td>
</tr>
</tbody>
</table>

1 mark for each correct statement

7

<table>
<thead>
<tr>
<th>Device</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dot matrix printer</td>
<td>to produce very large high quality hard copy</td>
</tr>
<tr>
<td>Plotter</td>
<td>to display data from a computer on to a large screen</td>
</tr>
<tr>
<td>Multimedia projector</td>
<td>to alert mobile phone users to incoming calls</td>
</tr>
<tr>
<td>Buzzer</td>
<td>to output multipart forms</td>
</tr>
</tbody>
</table>

8

<table>
<thead>
<tr>
<th>Data Type</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boolean</td>
<td>Data that is only one of two possible values such as yes/no, true/false</td>
<td>Gender/Absent or present</td>
</tr>
<tr>
<td>Alphanumeric</td>
<td>Any character of the alphabet or number or punctuation mark</td>
<td>Name/Tutor group/Address/Phone number</td>
</tr>
<tr>
<td>Numeric</td>
<td>Must be a digit(s) or decimal number</td>
<td>Number of siblings/exam marks/number of days present/absent</td>
</tr>
</tbody>
</table>

9

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Records are updated immediately when using online processing</td>
<td>✓</td>
<td>1</td>
</tr>
<tr>
<td>A transaction file is often created when batch processing is used</td>
<td>✓</td>
<td>1</td>
</tr>
<tr>
<td>The processing of bank cheques is an example of batch processing</td>
<td>✓</td>
<td>1</td>
</tr>
<tr>
<td>Batch processing is needed for operating ATMs</td>
<td>✓</td>
<td>1</td>
</tr>
</tbody>
</table>
| 10 | Five from:  
Data is gathered/collected from experts  
Knowledge base is designed/created  
A structure to relate each item in the database/knowledge base is created  
An interrogation technique to access the data is created  
A user interface/method of displaying the results/method of inputting data/input screen/output screen is designed/created  
The inference engine is designed/created  
The rules base is designed/created  
The system is tested | 5 |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11 (a)</td>
<td>4</td>
</tr>
<tr>
<td>(b)</td>
<td>7</td>
</tr>
<tr>
<td>(c)</td>
<td>The Old Curiosity Shop</td>
</tr>
<tr>
<td>(d)</td>
<td>The Moon’s a Balloon</td>
</tr>
</tbody>
</table>
| (e) | Three from:  
Format check  
Checks data in each record is in same format  
Data in the form dd/mm/yy  
Must be two digits then slash then two digits then slash then two digits  

OR  
Length check  
No less than 8 characters  
No more than 8 characters only  

OR  
(Invalid) character/type check  
Only digits or slashes can be entered  
No alphabetic or punctuation marks other than slash  

OR  
Range check  
Day must be <32  
Month must be less than 13  
Year must be <100  
All items must be >0  
Whole date must be < today | 3 |
| 12 | Three from:  
Data in main memory can be lost if computer shuts down  
Data in main memory can be corrupted  
Data in main memory can be accidentally deleted  
Data/software may need to be switched from machine to machine | 3 |
### 13 (a)

**Four** from:
- Router to connect LAN to Internet
- Proxy server to send requests for pages/receive pages for passing on to users
- Internet browser to search for information
- Email software to communicate with other (external) users
- Description of electronic conferencing hardware
- Description of electronic conferencing software

### 13 (b)

**Three** from:
- Get distracted from own work
- Viruses could be downloaded
- Spyware could be downloaded
- Hackers could get into the system

### 14

**Problem** – Description of how electrocution might be caused
- Prevention – RCB installed/don’t allow liquids near computers
- Problem – trailing cables trips users up
- Prevention – create ducts/cover cables with carpets etc.
- Problem – heavy equipment falling injuring users
- Prevention – sturdy tables
- Problem – Description of how fire might be caused
- Prevention – CO₂ extinguisher/don’t overload sockets

1 mark for each problem (2 max)
1 mark for each prevention (2 max)

### 15

**Four** from:
- Data fills the screen
- Clearly defined input area for each field
- Tick boxes/radio buttons to enter choices
drop down menus to select data options
- Appropriate spacing for each field
- An easy to read font/font size
- A sensible font colour/background colour
- Easy to follow instructions for completing screen/help icon
- No overlapping of items

### 16 (a) (b)

**Four** from:
- Two strategies and two reasons from:
  - Testing each module with normal/live data/user testing
  - To see how system behaves in an ordinary day to day situation/system works as you would expect i.e. no error messages/to ensure system meets the needs of the user
  - Testing each module with abnormal and extreme data
  - To see how system reacts in unusual circumstances/to make sure error messages appear when data is abnormal
  - Testing whole system
  - To ensure the whole system works when all modules are combined

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17 (a)  Sensor – infra red/movement/proximity
Use – detect movement of burglar

Sensor – pressure
Use – detect body weight

Sensor – temperature
Use – detect body’s presence by monitoring temperature

Sensor – light
Use – detect break in light beam

Sensor – sound
Use – detect any noise made by burglar

1 mark for each sensor (2 max)
1 mark for each use (2 max)

(b)  Four from:
Microprocessor continually monitors sensors.
If light sensor detects light beam interrupted:
If movement sensor activated:
If contact switch activated:
If pressure sensed by processor is greater than preset value:
If temperature sensed by processor is greater than preset value:
If sound sensed by processor is greater than preset value:
Microprocessor sends signal to output device.

(c)  Four from:
Microprocessor controlled devices do much of housework
Do not need to do many things manually
Do not need to be in the house when food is cooking
Do not need to be in the house when clothes are being washed
Can leave their home to go shopping/work at any time of the day
Greater social interaction/more family time
More time to go out/more leisure time/more time to do other things/work
Are able to do other leisure activities when convenient to them
Can lead to unhealthy eating due to dependency on ready meals
Can lead to laziness/lack of fitness
Can encourage a healthy lifestyle because of smart fridges analyzing food constituents
Microprocessor controlled burglar alarm provides a sense of security
Do not have to leave home to get fit
Manual household skills are lost

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### 18

Number Six from:

**Email**

- **Advantages**
  - Saves school cost of printing copies
  - Can include colour at no extra cost
  - Can include animated text effects

- **Disadvantage**
  - Need to have everyone’s email address/not every home has an email address/computer/internet access
  - Email might be treated as Spam
  - People might not welcome unsolicited emails

**By hand**

- **Advantage**
  - Can be sure everybody gets a copy
  - Easier to target who head wants to get it

- **Disadvantage**
  - Cost of delivery/paying someone to deliver

One mark available for reasoned conclusion

### 19 (a)

Number Three from:

- Web cam/video camera to input/capture video (images of participants/documents)
- Router/modem to transmit data to participants’ (computers)
- Microphone to input voices of participants/to speak to other participants
- Headphones/speakers to output voices to participants/hear other participants
- Large screen/projector to see other participants
- Router to connect to internet
- Codec to compress data

### 19 (b)

Number Two from:

- Saves travelling time
- Do not have to pay for conference room
- Do not have to hire transport/pay travel costs
- Conferences can be called at short notice
- Don’t have to carry bulky documents to conference

### 20

Number Three from:

- Causes data to be scrambled/encoded
- Requires an encryption key/software to encrypt
- Requires a decryption key/encryption software to decrypt
- Results in data which is not understandable/readable
- Protects sensitive data…
  - … from being understood if it falls in to the wrong hands

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