INFORMATION AND COMMUNICATION TECHNOLOGY

Paper 1 Written

MARK SCHEME

Maximum 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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2017 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.
**Question** | **Answer** | **Marks**  
--- | --- | ---  
1(a) | Dot matrix printer | 1  
1(b) | Ink Jet printer | 1  
1(c) | Laser printer | 1  
1(d) | 3D printer | 1  

**Question** | **Answer** | **Marks**  
--- | --- | ---  
2(a) | a hub | 1  
2(b) | a router | 1  
2(c) | a bridge | 1  
2(d) | a switch | 1  

**Question** | **Answer** | **Marks**  
--- | --- | ---  
3 | | 2  

| | **true** | **false** |  
--- | --- | --- |  
Answers to multiple choice exam papers can be read using an Optical Mark Reader. | ✓ |  
MICR reads the information on a credit card. | ✓ |  
The chip on a credit card is read by a PIN reader. | ✓ |  
An RFID chip can be used to track stock. | ✓ |  

4 correct answers – 2 marks  
2 or 3 correct answers – 1 mark  
0 or 1 correct answer – 0 marks  

**Question** | **Answer** | **Marks**  
--- | --- | ---  
4 | | 4  

| | **Design** | **Implementation** | **Evaluation** |  
--- | --- | --- | --- |  
Comparing the outcomes with the original task requirements | ✓ |  
Change over to the new system | ✓ |  
Identifying any limitations and necessary improvements to the system | ✓ |  
Selecting validation routines | ✓ |
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Marks</th>
</tr>
</thead>
</table>
| 5(a)     | Any **four** from:  
The SSD is lighter in weight than the HDD therefore the laptop will be lighter and more portable  
The speed of access in SSD is a lot quicker  
The speed of data transfer in SSD is a lot quicker  
There is less chance of the data becoming corrupted as it can save whilst the laptop is moving  
It is a smaller device therefore the laptop will be smaller/thinner  
SSD uses less energy  
Less chance of impact damage | 4 |
| 5(b)     | Any **three** from:  
As the elements are separate units there is more choice of devices/can be replaced if fails  
Can be easier to upgrade  
Easier to reduce glare on screen as it is separate  
Laptop more expensive for same performance  
Lower chance of it being stolen/lost | 3 |
| 6        | Any **four** from:  
The internet is a public network whereas an intranet is a private network/restricted access  
An intranet is policed or managed whereas the internet has no rules  
The data on an intranet is moderated whereas the internet is not moderated  
An intranet is more secure than the internet  
Internet has greater amount of information than an intranet | 4 |
### Question 7(a)

**Answer**

Any five from:

**Advantages**
- Robots can work in environments where humans would have difficulty i.e. cooler and less light
- Can work without breaks/non-stop/can work 24/7
- Less expensive in the long run
- Overall wage bill is reduced as there are fewer workers
- Productivity is higher
- Less mistakes are made/more accurate
- Allow humans to do more skilled work than picking the tablets
- Greater consistency

Any four from:

**Disadvantages**
- Expensive to maintain (only if Less expensive in the long run has not been given)
- Expensive to purchase/set up
- Replace labour, leads to increased redundancy payments
- If the bar code damaged the human would read the number but robot cannot think for itself

A mark can be awarded for a reasoned conclusion

Maximum 7 marks.

### Question 7(b)

**Answer**

Any six from:

- Can be read at a greater distance
- Don't need to be positioned in line of sight
- Can be updated easier
- Read at faster rate
- More reusable/more robust
- Larger storage capacity
- Greater security
- Cannot misread if RFID grouped together

### Question 8

**Answer**

Unauthorised access to **computer systems**

Any one from:

- Data on the computer system can be corrupted, edited, deleted, viruses added
- Data on the computer system can be copied/stolen/misused
- Data on the computer system can be accessed/read
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Marks</th>
</tr>
</thead>
</table>
| 9        | Any **three** from:  
She has not much space left on her hard disk even though she had previously  
Her computer is performing routine tasks a lot more slowly.  
Pop ups keep appearing on her screen at random.  
Her friends keep telling her that emails about strange things are being sent by her  
Random reboots  
Software errors  
Recycle bin not working  
Computer hanging  
Anti-virus stops working | 3 |
| 10(a)    | Any **three** from:  
Use of strong passwords  
Do not use pet names  
Do not use personal information  
Do not use birthdates  
Do not use a password they have used before  
Do not use company name | 3 |
| 10(b)    | Any **three** from:  
Conforms to company rules  
Hard to guess  
Stop shoulder surfing  
Hard to crack | 3 |
| 10(c)    | Double data entry | 1 |
| 11(a)    | **For example:**  
or  
=IF(B2>=75,"Making progress", IF(B2>=50,"Satisfactory","Needs improvement"))  
or  
=IF(B2<=49,"Needs improvement", IF(B2<=74,"Satisfactory","Making progress"))  
1 mark for IF(...)  
1 mark for B2>=75,  
1 mark for B2>=50, / 1 mark for B2<=49,  
1 mark for second IF(...)  
1 mark for all of the outputs being correct; | 5 |
### 11(b)(i)

**Test data**
- e.g. any number between 75 and 100
- e.g. any number between 50 and 74
- Either 0 or 49
- Either 50 or 74

**Marks:** 4

### 11(b)(ii)

**Any two from:**
- To prove the system works as designed
- So that the system can be implemented correctly/modify the system if errors show up
- Trapping all errors
- Meets the user's expectations/requirements

**Marks:** 2

### 11(c)

**Any three from:**
- Select cells A1 to B21
- Insert chart/click on the chart icon
- Select bar chart
- Add/edit titles/label the axes/legend

**Marks:** 3

### 12(a)

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>12(a)</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>behaviour</td>
<td>content</td>
</tr>
<tr>
<td></td>
<td>(✔)</td>
<td>(✔)</td>
</tr>
<tr>
<td>To format whole web pages</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Consists of navigation pointers</td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Defined by the CSS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To enter scripting language to a web page</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

### 12(b)

**Any two from:**
- HyperText Transfer Protocol Secure
- Secure version of HTTP
- All data is encrypted
- Secure protocol identifier

**Any two from:**
- Uniform Resource Locator
- A reference/identify to a resource on the WWW/internet
- Used as a simple way of addressing a resource

**Marks:** 4
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td><strong>Prolonged use of the keyboard</strong>&lt;br&gt;Prolonged use of the keyboard&lt;br&gt;RSI/carpal tunnel syndrome&lt;br&gt;&lt;br&gt;Any one from:&lt;br&gt;Use a wrist rest&lt;br&gt;Regular breaks to relax the hands&lt;br&gt;Stretching exercises&lt;br&gt;Use of an ergonomically designed keyboard</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td><strong>Looking at a monitor for a long period of time</strong>&lt;br&gt;Looking at a monitor for a long period of time&lt;br&gt;Eye strain/headache/dry eyes&lt;br&gt;&lt;br&gt;Any one from:&lt;br&gt;Resting the eyes by looking in the distance&lt;br&gt;Cutting down on glare&lt;br&gt;Making sure the screen is at eye level&lt;br&gt;Use of blue screen technology&lt;br&gt;Use of flat screen technology</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td><strong>Sitting too long in one position</strong>&lt;br&gt;Sitting too long in one position&lt;br&gt;Back problems/DVT&lt;br&gt;&lt;br&gt;Any one from:&lt;br&gt;Foot rest&lt;br&gt;Taking breaks&lt;br&gt;Ergonomic/adjustable chair</td>
<td></td>
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<table>
<thead>
<tr>
<th>Question</th>
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<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>14(a)</td>
<td>Book_ID</td>
<td>1</td>
</tr>
<tr>
<td>14(b)</td>
<td>Borrower_ID</td>
<td>1</td>
</tr>
<tr>
<td>14(c)</td>
<td>One to Many/Many to One</td>
<td>1</td>
</tr>
<tr>
<td>14(d)</td>
<td>Any two from:&lt;br&gt;Data is only stored once/avoids data duplication&lt;br&gt;Saves storage space&lt;br&gt;Complex queries can be carried out using several tables&lt;br&gt;Better security&lt;br&gt;Avoids inconsistent records/less errors</td>
<td>2</td>
</tr>
<tr>
<td>14(e)</td>
<td>Field name</td>
<td>Data type</td>
</tr>
<tr>
<td></td>
<td>Cost_of_Book</td>
<td>Numeric/currency/real/fixed point decimal</td>
</tr>
<tr>
<td></td>
<td>Borrower_name</td>
<td>Text/ alphanumeric</td>
</tr>
<tr>
<td></td>
<td>Telephone_contact</td>
<td>Text/ alphanumeric</td>
</tr>
<tr>
<td></td>
<td>Date_due_Back</td>
<td>Date/(date/time)</td>
</tr>
</tbody>
</table>
### Question 15

<table>
<thead>
<tr>
<th>Answer</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any four from: <strong>Advantages</strong>&lt;br&gt;Helps to prevent illegal materials from being shown&lt;br&gt;Helps to prevent pornography (for minors)&lt;br&gt;Helps to prevent discussion groups that incite hatred, racism, etc&lt;br&gt;Ensure copyright laws are enforced&lt;br&gt;Remove the Dark Net&lt;br&gt;Safeguards the vulnerable</td>
<td>5</td>
</tr>
</tbody>
</table>

Any four from: **Disadvantages**<br>Unsuitable material is easily available in other ways<br>The rise of mobile communications lessens the impact of the internet<br>Freedom of speech is restricted<br>Very difficult to enforce as the internet spans continents

**Maximum 5 marks**

### Question 16

<table>
<thead>
<tr>
<th>Answer</th>
<th>Marks</th>
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<tbody>
<tr>
<td>To be marked as a level of response:</td>
<td>8</td>
</tr>
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</table>

- **Level 3** 7–8 marks
  - Candidates will give *reasoned* benefits and drawbacks. The issues raised will be justified. There will be a reasoned conclusion. The information will be relevant, clear, organised and presented in a structured and coherent format.

- **Level 2** 4–6 marks
  - Candidates will give both benefits and drawbacks. The issues raised may be justified. There may be a conclusion. For the most part the information will be relevant and presented in a structured and coherent format.

- **Level 1** 1–3 marks
  - Candidates may only give either benefits or drawbacks. Candidate might not give reasons. Answers may be simplistic with little or no relevance

- **Level 0** 0 marks
  - Response with no valid content
<table>
<thead>
<tr>
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<th>Answer</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>16</strong></td>
<td><strong>Examples</strong>&lt;br&gt;<strong>Drawbacks</strong>&lt;br&gt;Loss of control of the data…&lt;br&gt;...as the data is controlled by a data storage provider&lt;br&gt;...the user needs to be able to trust the service provider and its staff&lt;br&gt;...security issues with the storing of the data with the provider&lt;br&gt;...fire/flood/electricity spikes can affect data without the user knowing&lt;br&gt;If data is not encrypted…&lt;br&gt;...can lead to security issues due to loss of control/hacking&lt;br&gt;If connection is lost then the cloud cannot be accessed…&lt;br&gt;...data could be lost due to this&lt;br&gt;If there is a mass/lot of data the data could be split over several servers…&lt;br&gt;...may have problems retrieving the data&lt;br&gt;...may lead to security issues&lt;br&gt;...data may be lost during the saving process&lt;br&gt;Cost of storing data may be higher than physical methods…&lt;br&gt;...most computers have storage so don’t need to purchase one&lt;br&gt;...private clouds can be expensive&lt;br&gt;Difficult to delete all copies of a file…&lt;br&gt;...as the data is stored/backs up several times</td>
<td></td>
</tr>
<tr>
<td><strong>Benefits</strong></td>
<td><strong>The data is accessible anywhere…</strong>&lt;br&gt;...helps to migrate data from one device to another&lt;br&gt;...helps to synchronise data&lt;br&gt;Don’t have to buy storage devices…&lt;br&gt;...some devices do not have hard discs/storage&lt;br&gt;...cheaper than buying storage devices&lt;br&gt;...the cloud can be used for all storage requirements&lt;br&gt;More storage space than using physical devices…&lt;br&gt;...the cloud has lots of storage&lt;br&gt;Don’t have to manage the storage…&lt;br&gt;...the service provider manages the storage&lt;br&gt;...user does not have to worry about security measures as service provider secures data&lt;br&gt;Allows many users to access the data…&lt;br&gt;...as the data is stored centrally&lt;br&gt;Only pay for the storage you use…&lt;br&gt;...much of the space on the hard disc may be wasted&lt;br&gt;The data is regularly backed up</td>
<td></td>
</tr>
</tbody>
</table>