|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Candidate name | Centre number | | | | | Candidate number | | | | |
|  |  |  |  |  |  |  |  |  |  |  |

**GCSE DIGITAL TECHNOLOGY**

**UNIT 1 THE DIGITAL WORLD**

**BLOCK 5: SECURING DATA AND SYSTEMS**

**1 hour 30 minutes**

**INSTRUCTIONS FOR CANDIDATES**

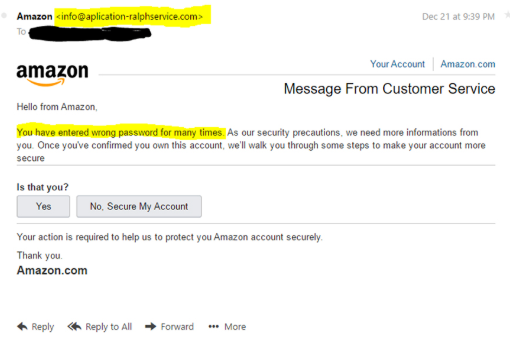
Answer ALL questions.

* Write your name, centre number and candidate number in the spaces provided at the top of this page.
* Write your answers in the spaces provided in this booklet.
* Use black ink or black ball-point pen.
* Do not use pencil or gel pen.
* Do not use correction fluid.

**INFORMATION FOR CANDIDATES**

* The number of marks is given in brackets at the end of each question or part question.
* You are advised to divide your time accordingly.
* The total number of marks available is 80. You may use a calculator.

1. Sue is registered with Amazon, she recently received the email shown below in Fig 1.



**Fig 1.**

1. State **two** items in the email that would cause Sue to be concerned.

* ……………………………………………………………………………………………………………
* ……………………………………………………………………………………………………………

**[2]**

1. The email above is a social engineering technique known as phishing.

Describe **two** other social engineering technique.

1………………………………………………………………………………………………………………….…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

2………………………………………………………………………………………………………………….…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**[4]**

1. Malware is malicious software designed to cause damage to your computer, whether it’s stealing data or damaging files. In the table below are various types of Malware.

|  |  |  |  |
| --- | --- | --- | --- |
| **A** | **B** | **C** | **D** |
| Adware | Spyware | Virus | Worm |

1. Use the letters above to match them to the descriptions below:

|  |  |  |
| --- | --- | --- |
| **No.** | **Description** | **Malware** |
| 1 | A computer program hidden inside another program. It can delete or corrupt data held on a computer. It replicates itself into other programs or files that can be then passed on |  |
| 2 | This does not need another program to carry it. It can replicate and send itself in emails and passes through user’s contacts. It consumes computer resources and can therefore slow it down. |  |
| 3 | This displays unwanted adverts or diverts browser requests to advertising sites. |  |
| 4 | This often comes packaged with other software and the user does not know they are installing it. It spies on the user like a Trojan by sending information to a criminal. |  |

**[4]**

1. Identify **two** measures that can be used to prevent malware infected your computer.

* ……………………………………………………………………………………………………………
* ……………………………………………………………………………………………………………

**[2]**

1. Describe **two** other types of malware.

Malware 1: ………………………………………………………………………………………………………

…………………………………………………………………………………………………………………….

…………………………………………………………………………………………………………………….

Malware 2: ………………………………………………………………………………………………………

…………………………………………………………………………………………………………………….

…………………………………………………………………………………………………………………….

**[4]**

1. There a range of methods used to identify any vulnerabilities within the security of a network.
2. Draw **one** line to match the network security threat to its correct description.

|  |  |  |
| --- | --- | --- |
| 1. Packet Sniffers |  | 1. Use of bots to spread useless requests to multiple devices on a network, to a point where the server becomes unresponsive. |
| 1. SQL Injection |  | 1. Use of tracing software to intercept data as it passes along the network. |
| 1. DDoS Attack |  | 1. Use of special commands to test the robustness of a websites validation, in the hope that I can gain access to their database. |

**[3]**

1. Another threat to network security is a brute force attack.

Describe what is meant by a brute force attack and identify **one** method that can be used to prevent this.

Description: ……………………………………………………………………………………………………..

……………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………

Prevention: ……………………………………………………………………………………………………..

…………………………………………………………………………………………………………………...

**[3]**

1. Name **two** other ways to identify and/or prevent vulnerabilities to network security.
2. ……………………………………………………………………………………………………………
3. ……………………………………………………………………………………………………………

**[2]**

1. Not all attacks on a network or computer are malicious and deliberate.

Identify **two** examples of accidental damage.

1. ……………………………………………………………………………………………………………
2. ……………………………………………………………………………………………………………

**[2]**

1. Explain the potential consequences of a cyber-attack.

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**[3]**

1. It is important that all users of a computer network realise what they can and cannot access on the network. The **table** below lists some actions that a student, a tutor and a network manager have authority to perform on a school network.

Tick **one** box in each row to show which action a student, a tutor and a network manager are authorised to undertake.

|  |  |  |  |
| --- | --- | --- | --- |
| **Action** | **Student** | **Tutor** | **Network manager** |
| Change system settings |  |  |  |
| Access a shared area for students |  |  |  |
| Add or delete network users |  |  |  |
| Access the student’s file and make changes to it |  |  |  |
| Access a shared area for tutors |  |  |  |
| Install software |  |  |  |

**[6]**

1. There are other pieces of legislation that must be considered when using technology.
2. Draw **one** line to match the piece of legislation to its correct description.

|  |  |  |
| --- | --- | --- |
| 1. GDPR |  | 1. It makes provision for the retention of internet connection records for law enforcement to identify the communications service to which a device has connected. |
| 1. Computer Misuse Act |  | 1. Controls how your personal information is used by organisations, businesses or the government. |
| 1. Investigatory Powers Act |  | 1. An act to make provision for securing computer material against unauthorised access or modification; and for connected purposes. |

**[3]**

1. Identify **three** principles of GDPR.

* ……………………………………………………………………………………………………………
* ……………………………………………………………………………………………………………
* ……………………………………………………………………………………………………………

**[3]**

1. List **three** examples of computer misuse.

* ……………………………………………………………………………………………………………
* ……………………………………………………………………………………………………………
* ……………………………………………………………………………………………………………

**[3]**

1. The data collected about each user contributes to their digital footprint.

Name **two** types of digital footprint, describe each one using an example.

Type 1……………………………………………………………………………………………………………….

Description with example…………………………………………………………………………………………..

………………………………………………………………………………………………………………………..

………………………………………………………………………………………………………………………..

Type 2……………………………………………………………………………………………………………….

Description with example…………………………………………………………………………………………..

………………………………………………………………………………………………………………………..

………………………………………………………………………………………………………………………..

**[6]**

1. Privacy means keeping some personal aspects of your life private.
2. Cookies can be seen as risks that make it easier for others to gain to your accounts. But there are some benefits to the user aswell.

Give **two** benefits of cookies to a user.

1…………………………………………………………………………………………………………………

2…………………………………………………………………………………………………………………

**[2]**

1. State **two** ways technology can be used to track your location.

* ………………………………………………………………………………………………………………..
* ………………………………………………………………………………………………………………..

**[2]**

1. The Metropolitan Police has announced it will use live facial recognition cameras operationally for the first time on London streets. **[QWC]**

Discuss the impact facial recognition cameras have on individual privacy and wider society.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**[8]**

1. Josh works in the finance department of a council. He has been asked by his manager to email an important document containing personal and financial information, to Saida, who works at a firm of accountants located in another part of the country.
2. State **one** method that a business could use to ensure that sensitive documents will not be read by anyone except the intended recipient.

…………………………………………………………………………………………………………………….

**[1]**

1. The **table** belowlists three statements. Tick **one** box in each row to show whether a statement is **True** or **False**.

|  |  |  |
| --- | --- | --- |
| **Statement** | **True** | **False** |
| The Caesar cipher is an example of a substitution cipher. |  |  |
| A private key can be made available to everyone. |  |  |
| Advanced Encryption Standard uses 128-bit, 192-bit or 256-bit keys. |  |  |

**[3]**

1. As well as digital security risks, there are physical risks to your equipment and your data.
2. Describe **one** biometric method that can be used to authenticate a person’s identify when they are trying to enter a building or log on to a computer system.

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**[2]**

1. DataPro is a large software company. The employ 80 programmers to develop software for other computers. **[QWC]**

Discuss the security measures that DataPro should take at their offices.

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**END OF QUESTION PAPER**

**[12]**