|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Candidate name | Centre number | | | | | Candidate number | | | | |
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**GCSE DIGITAL TECHNOLOGY**

**UNIT 1 THE DIGITAL WORLD**

**BLOCK 1: DATA**

**45 Minutes**

**INSTRUCTIONS FOR CANDIDATES**

Answer ALL questions.

* This paper consists of three section: Section A: Images, Section B: Sound and Section C: Measuring and storing data
* 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.

|  |  |  |  |
| --- | --- | --- | --- |
| A | B | C | Total |
|  |  |  |  |

*Answer all questions*

**SECTION A: IMAGES**

1. Fill in the gaps in this sentence using three of the words from the list below.

|  |
| --- |
| Resolution, Colour depth, Pixel, Metadata, Hexadecimal, Binary, Denary, Colour |

A bitmap image is made up of a series of ………….. which each display a ………….. which is represented by a ………….. value.

**[3]**

1. Explain how the resolution of an image affect the size of the file.

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

**[2]**

1. Compression is often used to reduce the size of files before sending them electronically.
2. Describe **one** advantage for compressing files in this way

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

**[2]**

1. Describe what is meant by lossy compression.

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

**[2]**

1. Describe what is meant by lossless compression.

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

**[2]**

1. MP3 files are compressed sound files.

Give **one** advantage and **one** disadvantage of compressing sound files.

Advantage …………………………………………………………………………………………………………………………………………………………………………………………………………………………………………Disadvantage

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

**[2]**

1. Digital images can either be in the form of a bitmap image or vector graphic.

Identify **two** differences between a bitmap image and a vector graphic.

Difference 1: ………………………………………………………………………………………………………...

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

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

Difference 2: ………………………………………………………………………………………………………...

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

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

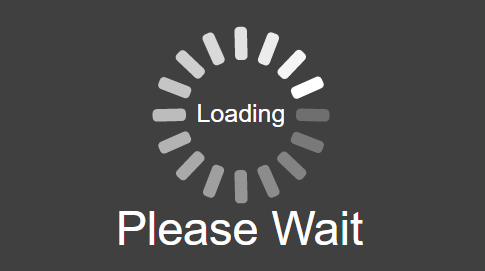
**[2]**

1. A moving image file such as a video file can be streamed or downloaded from websites.
2. Identify the difference between streaming and downloading a video file.

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

**[2]**

1. When users stream video files it might cause buffering.



Describe what is meant by the term ‘buffering’.

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

**[3]**

**SECTION B: SOUND**

1. Steve is a musician who would like to make use of technology to record some of his songs

Give **one** piece of hardware that can be used to input sound into a computer and the format that the sound has to be converted to. Give a reason why this conversion is needed.

Hardware: ………………………………………………………………………………………………………….

The sound has to be converted from: ………………………………. to ………………………………………

Reason for conversion: …………………………………………………………………………………………..

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

**[3]**

1. When recording these songs, Steve needs to be aware of sampling frequency.

Explain how the sampling frequency may affect Steve’s recordings.

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

**[3]**

1. MegaBitz are due to release a new album and have now launched a new website. They would like to upload a copy of the album cover and some sample track recordings in order to further promote the band and their album.  **[QWC 8]**

Discuss the impact of adding these to the website. In your answer you might consider the impact of:

* Quality of the album cover and track recordings
* Storage requirements
* Compatibility issues

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

1. Computers use binary to process instructions.
2. List these units of data in order from smallest to largest.

**Bit, Byte, GB, KB, MB, Nibble, PB, TB**

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

**[1]**

1. State what is meant by a bit.

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

**[1]**

1. State how many bits are in a byte.

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

**[1]**

1. Computers use primary storage and secondary storage.
2. Explain why secondary storage is needed.

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

**[2]**

1. Data can be either externally or internally stored in secondary storage devices.

Name **two** external secondary storage devices.

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

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

**[2]**

1. Give **three** types of secondary storage and identify **one** advantage for each of their uses.

Type: …………………………………………………………………………………………………………….

Advantage: ……………………………………………………………………………………………………...

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

Type: …………………………………………………………………………………………………………….

Advantage: ……………………………………………………………………………………………………...

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

Type: …………………………………………………………………………………………………………….

Advantage: ……………………………………………………………………………………………………...

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

**[6]**

1. The checkouts at DC supermarket use a barcode reader to store and read items being scanned.
2. State which type of storage uses a barcode reader to store and read items being scanned.

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

**[1]**

1. Explain **one** reason why this type of storage the most suitable.

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

**[2]**

1. Using the table below. Identify the most suitable type of secondary storage for each scenario and justify your choice.

|  |  |  |
| --- | --- | --- |
| **Scenario** | **Type of storage** | **Justification** |
| A software developer wants to provide a free trial of a new game inside a magazine. | ……………………… | ………………………………………………….  ………………………………………………….  …………………………………………………. |
| A large organisation needs to back-up their data every night. | ……………………… | ………………………………………………….  ………………………………………………….  …………………………………………………. |
| A student is taking photos with a digital camera which are to be published in the school newsletter. | ……………………… | ………………………………………………….  ………………………………………………….  …………………………………………………. |

**[9]**

1. Calculate how many bytes are in 3MB of data. You must show your working out.

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

**[2]**

1. Fill in the table below by placing hard disk, DVD, CD against its most appropriate capacity.

|  |  |
| --- | --- |
| **Capacity** | **Storage type** |
| Up to 4.7Gb |  |
| Upto 800Mb |  |
| 200Gb to 1Tb |  |

**[3]**

1. Apart from optical, magnetic and solid-state. Name **one** alternative type of storage.

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

**[1]**

1. James cannot decide whether to store his data locally and online.

His job requires him to work in several different offices during the week.

State **two** benefits to James using online storage rather than local storage.

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

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

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

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

**[2]**

1. Give **one** drawback to James of online storage.

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

**[1]**

1. Kerry is a student who needs to bring their homework into school.

Discuss whether an optical or solid-state device is the most appropriate media to transfer these files**.** You may want to consider the following characteristics in your answer: **[QWC 12]**

* Portability
* Durability
* Capacity
* Cost

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

**END OF QUESTION PAPER**