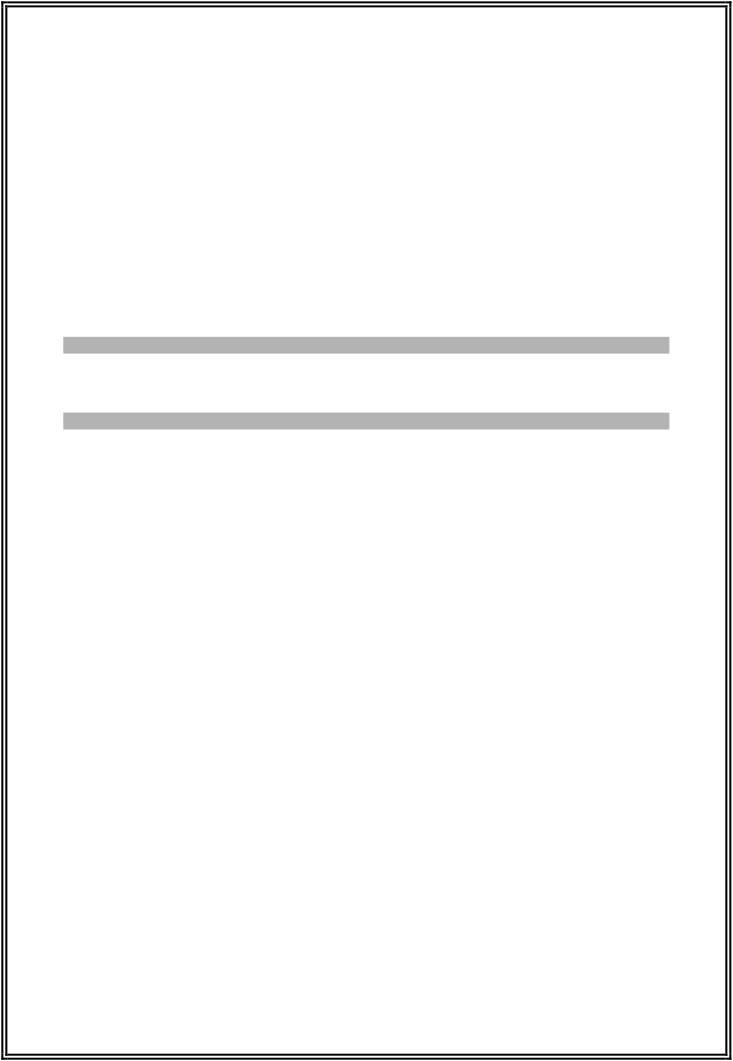
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**GCE AS MARKING SCHEME**



**SUMMER 2018**

**AS**

**COMPUTER SCIENCE - COMPONENT 1 B500U10-1**

**INTRODUCTION**

This marking scheme was used by WJEC for the 2018 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

**WJEC Eduqas**

**GCE AS Computer Science – Component 1**

**Summer 2018 Mark Scheme**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 1a | One mark for each of the following:   * Impossible to create networks that communicate without standards. / Allows communication between different network devices. * Easier to develop – can be done one layer at a time * Allows different companies to work together / international standardisation * Not forced to use one vendor / no monopoly. * Leads to more competitive pricing. | 4 | 1.1b |  |  | 4 |
| 1b | One mark for each of the following:   * Simple Mail Transfer Protocol (SMTP) is an Internet standard for electronic mail (email) transmission between servers * Internet Message Access Protocol (IMAP) is an Internet standard protocol used by email clients to retrieve e-mail messages from a mail server over a TCP/IP connection (IMAP ensures that the mail server and client remain in synchronisation). | 2 | 1.1b |  |  | 2 |
| 1c | One mark for each of the following up to a maximum of three:   * Each packet has a destination address * Packets are analysed by each node * Packets are sent down the most appropriate path to reach its destination * Each node maintains a routing table * Packets may take different routes * Packets reassembled at destination. | 3 | 1.1b |  |  | 3 |

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| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 2 | One mark for each of the following maximum of two from each, total of four.  Solid State Drive   * Solid State Drives feature a non- mechanical design of NAND flash mounted on circuit boards * NAND flash is shock resistant * SSDs have faster data access than BD * No moving parts to an SSD * Files are stored on microchips * Non-volatile.   Blu-ray Drive   * Optical drives work by using lasers to store data * Burning microscopic indentations into a disc * This pattern of indentations is created in a spiral pattern, starting from the middle * Indentations and their absence create pits and lands * A laser is aimed at the disc and reflected back, which can cause interference with the original laser * Blu-ray data is stored on two layers * Blu-ray data can be stored on both sides of the disc * Two lasers of differing wavelength are used to read data from the two layers * Pits and lands are stored closer together, meaning that the laser’s wavelength must be shorter (blue) * Non-volatile.   One mark for each of the following up to a maximum of four.  Typical Capacity   * **SSD**: 500MB – 4 TB * **BD**: 25GB – 128GB   Typical Use   * **SSD:** Programs / OS / Server backup / phones / cameras * **BD:** Movies / Games | 4  4 | 1.1b |  |  | 8 |

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| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 3a | **NOT( (A OR (A OR**  **B)**  **A B) AND A OR XOR**  **XOR**  **A B B B AND AND**  **(A**  **(A B)**  **B))**  0 0 0 0 0 1 0 1 0 1 1 0 1 0 0 1 1 0 1 1 1 1 0 1  One mark for each of the following columns:   * A AND B * A OR B * (A OR B) XOR (A AND B) * NOT((A OR B) XOR (A AND B)) | 4 |  | 2.1a |  | 4 |
| 3bi | One mark for each of the following:   * Use AND logical operator * Mask 100000002 * Worked example:   00111001 10000000 00000000 | 3 |  | 2.1a |  | 3 |

|  |  |  |  |  |  |  |
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| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 3bii | One mark for each of the following:   * Use AND logical operator * Mask 000000002 * Worked example:   10111001 00000000 00000000  **Or**   * Use XOR logical operator * Mask 001110012 * Worked example:   10111001 10111001 00000000 | 3 |  | 2.1a |  | 3 |

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| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 4 | One mark for each of the following (Max 3):   * Fixed length record has same number of bytes in each record and same number of fields, whereas variable length record has different number of bytes in each record or different number of fields * Fixed length records are easier to program as it can be calculated know how much space will be required whereas variable length record makes it difficult to calculate how much space will be required * Fixed length records are quicker to process (read/write) by computer as start and end locations are known whereas variable length records are slower to process (read/write) by computer as start and end locations have to be calculated at read/write time * Fixed length record wastes storage space as fields have blank space whereas variable length record saves storage space as no blank space * Fixed length record will truncate long fields whereas variable length record avoids truncation as each field can extend to accommodate any number of characters   One mark for each of the following up to a maximum of 2:  Fixed length example: DOB / NINO / Tel Number  Variable length example: Surname / Address | 3  2 | 1.1b |  |  | 5 |
| 5 | Award one mark up to a maximum of six from the following   * File B will take longer to load than File A * File A is stored **on a single track** which is quicker for the HDD head to read. * The read head reading A does not physically move * File B is fragmented * File B has been split and physically stored on different parts of the disk * Defragmentation can be used to overcome the problem * Files are physically rearranged and stored together on disk. | 6 |  | 2.1b |

**This document was truncated here because it was created in the Evaluation Mode.**