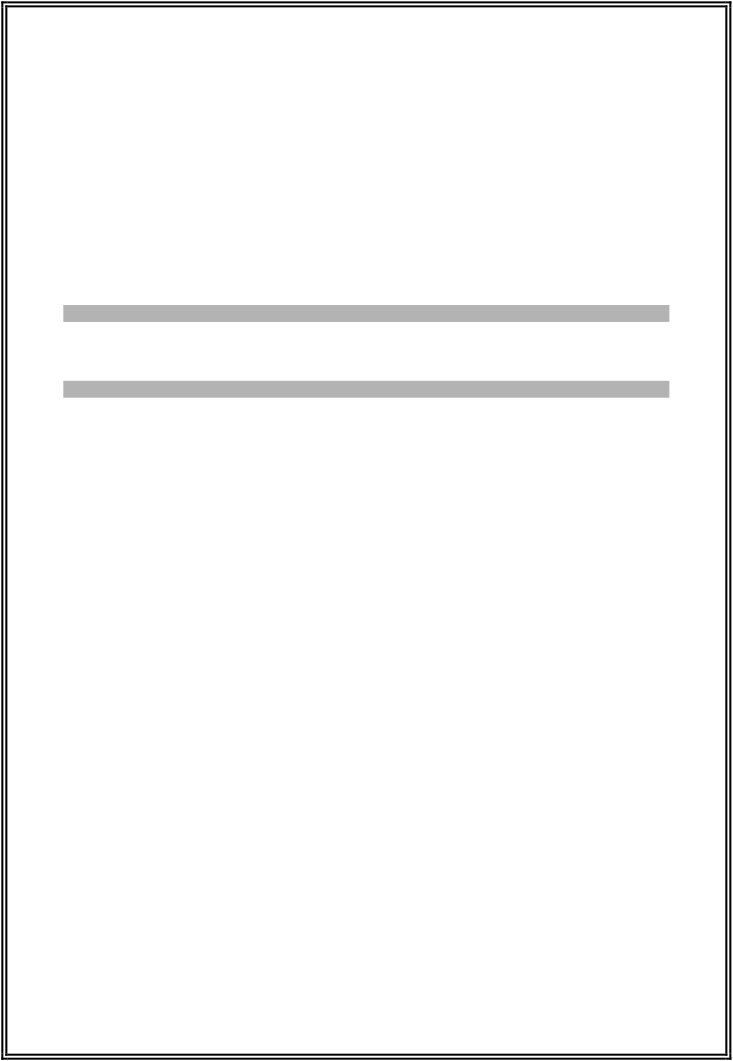
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**GCE AS MARKING SCHEME**



**SUMMER 2018**

**AS (NEW)**

**COMPUTER SCIENCE - UNIT 1 2500U10-1**

**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**

**GCE AS Computer Science - Unit 1**

**Summer 2018 Mark Scheme**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 1 | **(A NOT ((A OR C) OR C)**  **A OR C B AND C XOR (B XOR (B**  **AND C) AND C))**  0 0 0 1 0 0 0 1 1 0 1 0 1 0 1 0 1 0 1 0 1 1 0 1 1 0 1 0 1 1 0 1  One mark for correct each column:   * A OR C * B AND C * (A OR C) XOR (B AND C) * NOT ((A OR C) XOR (B AND C)) | 1 1 1  1 |  | 2.1a 2.1a 2.1a 2.1a |  | 4 |
| 2a | Assigns dynamic IP addresses to devices on a network. | 1 | 1.1b |  |  | 1 |
| 2b | Internet standard for electronic mail (email) transmission | 1 | 1.1b |  |  | 1 |
| 2c | Transfers webpages over a network | 1 | 1.1b |  |  | 1 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 3a | Award one mark for each of the following up to a maximum of four:   * Hacking - gain unauthorised access to data/to a computer system. * Virus - a program which is capable of copying itself and typically has a detrimental effect, such as corrupting the system or destroying data. * Trojan - a program designed to breach the security of a computer system while ostensibly performing some innocuous function. * Worm - a standalone malware computer program that replicates itself in order to spread to other computers. * Spyware - software that enables a user to obtain information about another's computer activities by transmitting data from their hard drive. * Botnets - a network of private computers infected with malicious software and controlled as a group without the owners' knowledge, e.g. to send spam. * Malware - software which is specifically designed to disrupt or damage a computer   system.   * Keylogger - a computer program that records every keystroke made by a computer user, especially in order to gain fraudulent access to passwords and other confidential information. * Malicious damage - when a person intentionally sets out to corrupt or delete electronic files, data or software programs. * Accidental damage - when a person unintentionally corrupts or deletes electronic files, data or software programs. * Loss of data leading to damage to company’s reputation * Loss of data leading to fines or prosecution / GDPR * Hardware failure leading to a loss of data * ID theft leading to personal losses / fraud | 4 | 1.1b |  |  | 4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Q** | **Answer** | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 3b | One mark for each of the following:   * Levels of permitted access – certain users would have different/restricted access to certain data or parts of the system * Write-protect mechanisms – only certain users will have permission to write/edit data already stored on the system. * Strong secure password – the organisation limits access to the network by ensuring that all authorised users have a strong secure password. * Access rights - access to confidential files on the network is limited to authorised users only by assigning access rights to users that only allow certain users to access specified area of the network and/or   specified files.   * Encryption - hackers are prevented from reading the confidential files even they gain access to it by encrypting the files * Encryption – an encryption key is used and known only by the organisation * Firewall - the servers would be protected with firewall software blocking / checking all network traffic entering or leaving specified ports / stop programs accessing the internet * Antivirus software - file servers would be protected with antivirus software which regularly scans all files stored on them for possible infection by malware * Antivirus software - email server would be protected with antivirus software and all incoming emails would be scanned to see if attached files are infected * Antivirus software - workstations would be protected with antivirus software and all files from external media would be scanned before they’re allowed to be accessed * Backups – copies of data held in order to restore in the event of data loss * Policies / Legislation – relevant descriptions based on current legislation or   company policies   * Accounting or auditing software – all files accessed by a user are recorded in an activity log | 4 | 1.1b |  |  | 4 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Q** | **Answer** |  | **Marks** | **AO1** | **AO2** | **AO3** | **Tot** |
| 4 | .( + ) + .( + ) + .( + ) + . .( + ) + .( + ) + .( + )   * + . + . + . + . + .  * + . + . + . + .   .( + ) + . + . + . |  | 1 1 1 1 |  | 2.1b 2.1b 2.1b 2.1b |  | 8 |
|  | .( + ) + .( .+ ) + . |  | 1 |  | 2.1b |  |  |
|  | .(1) + (1) + .   * . * .   To obtain full marks candidate must show some working out.  Do not accept truth tables |  | 1 1 1 |  | 2.1b 2.1b 2.1b |  |  |
| 5a | * 00110001   31 6D  16 2   * 01101101   16 2  00110001  2  01101101  2  10011110  2  No marks for answer only in the addition |  | 1 1  1 |  | 2.1a 2.1a  2.1a |  | 3 |
| 5bi | 10000.001  Mantissa = 0.10000001000 Exponent = 0101  Answer must be normalised Accept 16 bit number |  | 1  1 1 |  | 2.1a  2.1a 2.1a |  | 3 |
| 5bii | Mantissa = 0.1111 (0.9375 )  2 10 Exponent = 3  Answer = 0.9375 x 23 = 7.5 |

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