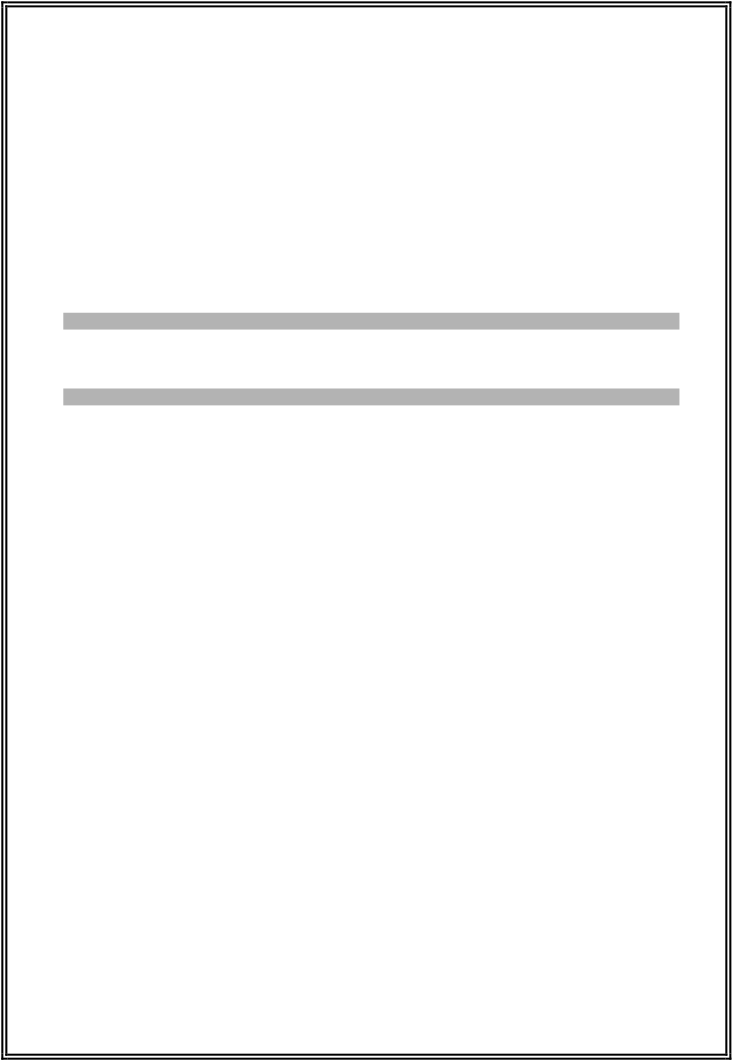
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**GCE A LEVEL MARKING SCHEME**



**SUMMER 2018**

**A LEVEL**

**COMPUTER SCIENCE - COMPONENT 1 A500U10-1**

**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.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Qu** | **Answer** | | | | | | | | | | | | **Mark** | | | | **AO** | | **Tot** | |
| 1 | *A* | | *B* | | A+B | | A.B | (A+B).(A+B) | | (A.B)+(A.B) | |  | | | | 2b | | 4 | |
| *0* | | *0* | | 0 | | 0 | 0 | | 0 | |
| *0* | | *1* | | 1 | | 0 | 1 | | 0 | |
| *1* | | *0* | | 1 | | 0 | 1 | | 0 | |
|  | *1* | | *1* | | 1 | | 1 | 1 | | 1 | | |  |  | | |  | | |  |
| 2(a) (i) | In optimisation, high-level general programming constructs are **replaced** by codes.  The replacement codes are very efficient low-level programming codes. | | | | | | | | | | | | 1 1 | | | | 1b | | 8 | |
| 2(a)(ii) | The objectives of code optimization are to: Achieve the required output of the program. Increase the speed of the program Decrease demand on resources.  Not delay the overall compilation process. | | | | | | | | | | | | 1 1 1 1 | | | | 1a | |
| 2(b) | This code involves repeated assignment of the identifier item.  If the assignment of item is removed from the loop this will save CPU cycles. | | | | | | | | | | | | 1 1 | | | | 2b | |
| 3(a) | One mark for each of the following up to a maximum of four  A study leading to a preliminary report to the end user to advise on Technical practicality  Cost effectiveness  Time scale  Budget  To provide information required to support a decision to proceed. | | | | | | | | | | | | 1 1 1 1 1 | | | | 1b | | 6 | |
| 3(b) | Observation of a sample of operators as they use the current system.  Document inspection, including business documents, user manuals and maintenance records. | | | | | | | | | | | | 1 1 | | | | 1a | |
| 4(a)(i) | A + 1 = 1 | | | | | | | | | | | | 1 | | | | 1a | | 8 | |
| 4(a)(ii) | A.A = 0 | | | | | | | | | | | | 1 | | | |
| 4(a)(iii) | A + 0 = A | | | | | | | | | | | | 1 | | | |
| 4 (b) | B.C.( C+ D) + C.D + C + A  B.C.C+ B.C.D + C.D + C + A B.0 + B.C.D + C (D + 1) + A B.C.D + C + A  C. (B.D + 1) + A  C.1 + A  C+A  Candidates may use more or fewer steps and correctly arrive at the answer – award full marks | | | | | | | | | | | | 1 1 1 1  1 | | | | 2b | |
| **Qu** | **Answer** | | | | | | | | | | | | | | **Mark** | **AO** | **Tot** |
| 5 | A procedural programming language;   * Supports a logical step-by-step process. * Allows the programmer to define precisely each step when performing a task. * Provides close control over the underlying operation of the hardware * Enables similar operations may be carried out at varying stages of the program execution | | | | | | | | | | | | | | 1 1  1 1 | 1b | 4 |
| 6(a) | A shortest path algorithm will analyse a weighted network  to identify the shortest route between two given vertices or nodes. | | | | | | | | | | | | | | 1 1 | 1b | 7 |
| 6(b)(i) | All correct connections shown  No incorrect additional connections shown All values correct | | | | | | | | | | | | | | 1 1  1 | 2b |
| 6(b)(ii) |  | Step | | Vertex | | | A | B | C | D | E | F | G |  | 1 1 |
| 1 | | A | | | 0 | 5 | 3 | X | X | X | X |
| 2 | | C | | | X | X | O | 9 | X |

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