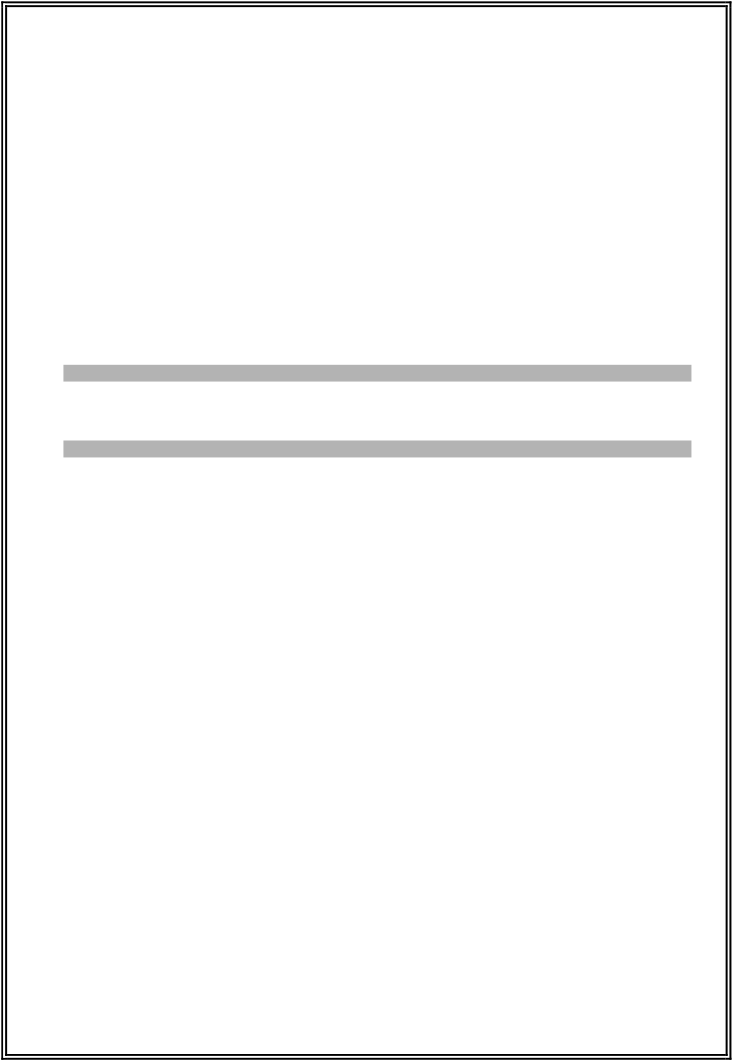
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**GCE A LEVEL MARKING SCHEME**



**SUMMER 2017**

**A LEVEL (NEW)**

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

**INTRODUCTION**

This marking scheme was used by WJEC for the 2017 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.

**GCE A LEVEL COMPUTER SCIENCE SUMMER 2017 MARK SCHEME**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Qu** | **Answer** |  |  |  |  |  |
| 1(a) (i) | Storage space wasted as would need to cater for every possible 7 digit component number. | 1 |  | 2a |  | 1 |
| 1(a) (ii) | A suitable hashing algorithm will map component numbers onto a smaller range of addresses, by generating fewer digit address references. | 2 |  | 2b |  | 2 |
| 1(b) | Use progressive overflow, if the location is occupied use the next available location if the end of the file is reached wrap around and start searching from the beginning again.  OR  Flag original block and move data into designated overflow area for subsequent linear search | 2 2 | 1b 1b |  |  | 2 |
| 2(a) | One mark for each of the following:  Inheritance enables new objects to take on the properties of existing objects.  A superclass is used as the basis for inheritance. A class that inherits from a superclass is called a subclass.  Inheritance defines relationships between classes and organises classes into groups. Inheritance enables classes that are similar to existing classes to be created by indicating differences (rather that starting again) and thereby allows code to be organised and re-used effectively | 1  1 1  1 | 1b  1b 1b  1b |  |  | 4 |
| 2(b) | Award one mark for each of the following up to a maximum of two:  Abstraction Encapsulation Polymorphism Object Hierarchy | 1 1 1 1 | 1b 1b 1b 1b |  |  | 2 |
| 3(a) | A compiler takes the entire program as input to produce a machine code version of the program.  An interpreter takes a single source code instruction as input, translates and executes it.  A compiled program can be re-run without further translation. Interpretation needs to be repeated each time the program is run | 1 1 1 | 1a 1a 1a |  |  | 3 |
| 3(b) | Award one mark for each of the following up to a maximum of two:  Errors are reported after compilation has finished.  One error may cause many related/spurious errors Recompiling after fixing an error adds time to the process. | 1 1 1 | 1b 1b 1b |  |  | 2 |
| 3(c) | One mark for identifying the error and one mark for the example. Maximum of four marks.  Example must match the error.  Syntax error  e.g. IF without ENDIF or punctuation error or spelling error if correct words given  Linking error  e.g. calling a standard function where the correct library has not been linked to the program  Semantic Error  e.g. Variable declared illegally | 1 1  1 1  1 1 | 1a 1b  1a 1b  1a 1b |  |  | 4 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Qu** | **Answer** | | | | | | | | |  |  |  |  |  |
| 3(d) | Lookup tables to be used during the translation of this source code are:  Reserved word Hex Token  input 5C  = 5D  \* 5E  + 5F  output 60  Award 1 mark for all reserved words and symbols Award 1 mark for unique hex tokens | | | | | | | | | 1 1  1 1 1 |  | 2b 2b  2b 2b 2b |  | 5 |
| Identifier | Type | Hex Token |  |  |  |  |  |
| basicCost | real | 2C |
| VAT | real | 2D |
| totalCost | real | 2E |
| Award 1 mark for all identifiers Award 1 mark for data type = real Award 1 mark for unique hex tokens | | | | | | | | |  |  |  |  |  |
| 4(a) | **A.( +**  **)**  **A. + A. 0 + A. A.**  NOTE  Candidate must use De Morgan's law, however may use more or fewer rules and correctly arrive at the answer – award full marks | | | | | | | | | 4 |  | 2a |  | 4 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Qu** | **Answer** |  |  |  |  |  |
| *4(b)* | One possible solution is: \_ \_ **Ā.B.C + A.B.C + A.B.C + Ā.B.**\_**C**  \_ \_  Ā.B.C + A.B(C + C) + Ā.B.C  \_ Ā.B.C + A.B(1) + Ā.B.C \_  Ā.B.C + A.B + Ā.B.C  \_ Ā.B.C + Ā.B.C + A.B  \_  Ā.B.C + Ā.B.C + A.B  \_ |

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