Mark Scheme - GCSE Computing - Mock Exam A451

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| **Qn** | **Answer** | **Marks** |
| 1a | 4GB | 1 |
| 1b | Storage capacity / HDD size | 1 |
| 2 | Keyboard - Input  Touchscreen - Input AND Output  USB stick - Storage Modem - Communication CPU - Processing Scanner - Input | 6 correct - 4 marks  4/5 correct - 3 marks  2/3 correct - 2 marks  1 correct - 1 mark |
| 3a | Short term memory  for currently running programs and currently used data | 1  1  1 (max 2) |
| 3b | **Processor**  Faster execution of instructions  **RAM**  More programs/files open without having to resort to virtual memory  **HDD**  More virtual memory, so better able to cope with more programs running simultaneously | **1 for component**  1 for reason  Don’t allow same component twice (e.g. clock speed & cache size both mean processor)  Max 4 |
| 3c | **Upgrade**  Less expensive in the short term, less environmental impact as fewer parts to recycle. Upgrade might provide limited improvement  **Replace**  More expensive in the short term, more environmental impact as more to recycle. Replacement might  provide significant improvement | Marked in bands. For full marks, must include:  Full consideration. Clear answer/advice. Technical language. SPaG.  Max 6 |
| 4a | Fetch instructions Execute instructions Store results | 1  1  1 (max 2) |
| 4b | i. More instructions executed per second ii.More data available for fast access  iii.More instructions executed simultaneously | 1  1  1 |

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| 5a | RAM is volatile / ROM is not  RAM is (easily) rewriteable / ROM is not  RAM is for currently running programs / ROM is for startup instructions | 1 per response  Max 2 |
| 5b | i. Memory  ii.Acts as a buffer between main memory and CPU  iii.Using part of the HDD as an extension to RAM | 1  1  1 |
| 6a | Data could be damaged, erased or corrupted Meaning that the data (e.g. photo) could not be retrieved / would be lost permanently | 1 for loss  1 for consequence |
| 6b | i. CD/DVD/BluRay  ii.HDD, floppy disc, DAT tape iii.USB stick, SSD, memory card | 1  1  1 |
| 6c | Answers don’t necessarily have to refer to the above choices.  Consideration should include physical size, storage capacity, robustness, cost and portability.  Good answers might suggest external HDD for backup and CD-ROM for sending work to clients | Marked in bands. For full marks, must include:  Full consideration. Clear answer/advice. Technical language. SPaG.  Max 6 |
| 7 | e.g.   * Immediately available... * ... so the shopkeeper can start using it straightaway * Tried and tested … * and so less likely to have errors * No development costs... * ... as this has already been borne by the developer * More support available... * ... many other users who can provide help/third party help books, help lines or web sites available   (marks in pairs) | 4 |
| 8a | Antivirus   * Scans the computer periodically * To check if any software has been installed which contains code that may harm the computer * Removes/quarantines these programs / notifies the user * Prevents these programs from being installed * Protects the computer by preventing important files (e.g. the boot sector or operating system) from being changed | 2 |
| **Qn** | **Answer** | **Marks** |
| 8b | Disk defragmenter   * Moves (parts of) of files around so that all parts of a file are stored together (allowing files to be accessed more quickly) * Free space is collected together (allowing large files to be saved easily) | 2 |
| 9 | E.g.   * Allows more than one program to run (apparently) at the same time * ... by sharing processor time / resources between the programs * Enables the user to be more productive * ... Good example of a situation where multitasking is required (eg cut from browser and paste in word processor)   (1 mark for valid point & 1 for expansion) | 2 |
| 10a | E.g.   * Provides interfaces between user and computer/Determines look and feel of the computer * Provides a platform for software to run * Manages peripherals used by the system * Manages memory. | 2 |
| 10b |  | 4 |
| 10c | * The source code is distributed with the software * The customer can modify the source code * The customer can redistribute the source code (with the same * licence/restrictions) | 2 |
| 11a (i) | * A group of 4 bits | 1 |
| 11a (ii) | * A group of 8 bits * Accept “the number of bits used to represent a character | 1 |
| 11b | 1. Divide by 1024 2 kilobytes | 1 |
| **Qn** | **Answer** | **Marks** |
| 12a | * 128 + 16 + 4 + 2 + 1 * 151 | 2 |
| 12b | Mark points for:   * First nibble correct with carries shown * Second nibble correct * There is an overflow... * ... because the result > 255/cannot be represented in 8-bits   (Accept 9-bit answer) | 3 |
| 13a | Convert the denary number 108 into an 8 bit binary number.  0110 1100  (1 mark per nibble) | 2 |
| 13b | Convert the denary number 108 into Hexadecimal.  6C  (1 mark per digit) | 2 |
| 13c | Convert the hexadecimal number 6C to denary.   * 6\*16(= 96)+12(for C) * 108 | 2 |
| 13d | Convert the hexadecimal number 6C to binary.   * 0110 1100 * (1 mark per nibble) | 2 |
| 13e | Convert the binary number 00111101 to hexadecimal.   * 3D * (1 mark per digit)   (Award 1 mark for working out if answer wrong due to arithmetic error) | 2 |
| 13f | * Hex numbers are shorter/more memorable than equivalent binary numbers.. * ... and can easily be converted to and from binary... * ... as each hex digit corresponds to 4 binary digits   (Accept diagram) | 2 |
| **Qn** | **Answer** | **Marks** |
| 14 | * So that computers can be based on logic circuits. * ( each part of the circuit) can be in one of two states * … 0 and 1/true or false | 2 |