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 - InputTouchscreen - Input AND OutputUSB stick - Storage Modem - Communication CPU - Processing Scanner - Input | 6 correct - 4 marks4/5 correct - 3 marks2/3 correct - 2 marks1 correct - 1 mark |
| 3a | Short term memoryfor currently running programs and currently used data | 111 (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 reasonDon’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 mightprovide 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 | 111 (max 2) |
| 4b | i. More instructions executed per second ii.More data available for fast accessiii.More instructions executed simultaneously | 111 |

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| **Qn** | **Answer** | **Marks** |
| 5a | RAM is volatile / ROM is notRAM is (easily) rewriteable / ROM is notRAM is for currently running programs / ROM is for startup instructions | 1 per responseMax 2 |
| 5b | i. Memoryii.Acts as a buffer between main memory and CPUiii.Using part of the HDD as an extension to RAM | 111 |
| 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 loss1 for consequence |
| 6b | i. CD/DVD/BluRayii.HDD, floppy disc, DAT tape iii.USB stick, SSD, memory card | 111 |
| 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 10242 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 |