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| Question | Description | Marks |
| 1 a | One mark per each correct character in the correct order:* 9
* 3
* 0
* D
 | 4 |
| 1 b (i) | 00001111 | 1 |
| 1 b (ii) | Any one from:* The value becomes incorrect/inaccurate as the right most bits are lost
* It is divided by 8
 | 1 |
| 2 (i) | It reduces the file size | 1 |
| 2 (ii) | Any four from: • A compression algorithm is used • … such as RLE/run length encoding • Repeating words/characters/phrases are identified // Patterns are identified • … and indexed • … with number of occurrences • … with their position | 4 |
| 3 a (i) | The maximum number of FDE cycles/instructions a CPU canperform/process/execute in a second | 1 |
| 3 a (ii) | Increases/improves the performance // Tasks can be performedquicker/faster … because more FDE cycles/instructions can be processed in a second | 2 |
| 3 b | Stores addresses … … of next instruction/data to be fetched // where data is to be written to | 2 |
| 3 c | Instruction set | 1 |
| 4 | Any two from:− Performs a single/limited/dedicated function/task− It has a microprocessor− It has dedicated hardware− Uses firmware− It is normally built into a larger device/system− User normally cannot reprogram− It does not require much power− It is cheap to manufacture− Works automatically // works without human intervention− It is small (in size)− It is a real-time system | 2 |
| 5 a) | Max three from:− Solid state drive− Non-volatile− Secondary storage− Flash memory− Has no mechanical/moving parts− Uses transistors− … and cells that are laid out in a grid− Uses control gates and floating gates− Can be NAND/NOR (technology)− Use EEPROM technologyMax two from:− Stores data by flashing it onto the chips− Data stored by controlling the flow of electrons through/using transistors/chips/gates− The electric current reaches the control gate and flows through to the floating gate to be stored− When data is stored the transistor is converted from 1 to 0 | 4 |
| 5 b) |  | 6 |
| 6 a) |  | 5 |
| 6 b) | One mark for each correct term in the correct place:− Control− Unique− Identify− Protocol− Dynamic | 5 |
| 7 |  | 5 |
| 8 a) | Any three from:− Liquid crystal display− The display is made of pixels− … arranged in a matrix− Uses a flat panel display− Backlit display− … with CCFLs/LEDs− Uses light-modulating properties of liquid crystals− Crystals can be turned between opaque and transparent (to allow light to pass)− Colours created using RGB | 3 |
| 8 b) | Any three from:− Low power consumption− Runs at cool temperature− Do not suffer image burn− Do not suffer flicker issues− Bright image/colours− High resolution image− Cheaper to purchase than e.g. LED screen | 3 |
| 9 a) | Any three from:− Both need a red laser to read/write data− Both are spun to be read− Both use spiral tracks for data− Both are optical storage− Both are off-line storage // both non-volatile− Both use pits and lands to store data | 3 |
| 9 b) | Any one from:− DVD can be dual layer, but CD can only be single− DVD has higher storage capacity− DVD has a shorter wavelength laser− DVD are spun faster− DVDs have a higher data transfer rate | 1 |
| 10 | 1 mark for each correct answer: PCkeeps track of the memory address of the next instruction to be executed in a programProgram Counter CIRholds the current instruction so that it can be decoded and input to the control and timing unitCurrent Instruction register. | 2 |
| 11 | One mark per mark point, max threeMP1 variables and constants should have meaningful identifiersMP2 …so that programmers/future programmers are able to understandtheir purposeMP3 they are both used for data storageMP4 constants store values that never change during the execution of aprogram // by exampleMP5 variables contain values that have been calculated within theprogram / can change during the execution of the program // byexample | 3 |
| 12 |  | 4 |
| 13 a | DECLARE sum, number : Integersum <- 0number <- 1WHILE number <= 10 DO Sum <- Sum + Number number <- number + 1OUTPUT "The sum of the first 10 number is:" , Sum | 5 |
| 13 b | Sum <- 0num <- 0Is num <= 10falseTrueSum <- sum + numnum <- num + 1 | 5 |
| 14 | One mark for any two correct linesDECLARE P : STRINGP <- "The world"DECLARE Q : CHARQ <- 'W' | 2 |