

School Of Coding

**GCSE OCR (9-1) Computer Science**

**Component 1 - Computer Systems &**

**Component 2 - Computational Thinking, Algorithms and Programming**

Practise MIxed Paper

|  |  |  |
| --- | --- | --- |
| **Question** | **Answer** | **Mark** |
| 1 | a |  | 1 mark per bullet point:* A computer uses RAM to store programs (and data)....
* while they are being executed - condone being run / processed
 | 2 |
| 1 | b |  | 1 mark per bullet point:* A computer with 8 gigabytes of RAM can have more programs opened at the same time.
* all the programs might fit in RAM and not have to be read in and out to/from disc
 | 2 |
| 1 | c |  | 1 mark per bullet point:* It has four processors /
* carry out four instructions at the same time
* It means the computer could run programs faster
 | 2 |
| 1 | d |  | 1 mark per bullet point:* This is the clock speed of the processor 8GHz means (8 billion or 8 000 000 000) ...
* cycles per second
 | 2 |
| 2 | a |  | 2 marks for description of each layerE.gApplication layer* Allows the browser software to communicate [1]
* with the world wide web via a protocol [1]
* such as HTTP or HTTPS. [1]

Transport Layer* Determines the route for the transmission [1]
* and opens up socket connections [1]
* using TCP [1]
* which is reliable protocol [1]
* Splits the data into sequentially numbered packets [1]

Internet Layer* Adds IP address headers [1]
* to the transmission and routes packets to their destination [1]

Link Layer* Adds the MAC address of the network device to the packet [1]
* and physically transmits the data along the medium being used [1]
 | 8 |
| 2 | b |  | * POP, [1]
* IMAP [1]
* SMTP [1]
 | 3 |
| 2 | c |  | 1 mark for each bullet point, upto 6 marks.* POP is used for receiving an email
* IMAP is used for receiving an email
* SMTP is used when sending an email
* POP downloads the email from the server whereas IMAP reads it online
* POP deletes email from the server whereas IMAP leaves the mail on the Server.
* IMAP syncs the emails on all devices while POP does not
 | 6 |
| 3 | a |  | 1 mark for what it provides, 4 marks for description based on the situation* A mesh network can provide emergency coverage. [1].
* They don’t rely on any specific infrastructure [1] ….
* so can be set up quickly [1].
* Easily extended into areas where there is not normally any coverage [1]...
* by using portable technology [1].
 | 5 |
| 3 | b |  | 1 mark for an advantage, 1 mark for a disadvantage* Disadvantages:
	+ Every computer sends/forwards all the data , meaning the available bandwidth is lower ...
	+ Whereas in a star network, the data is only switched/sent to the target machine
	+ Difficult to manage/maintain
	+ Lack of centralised control/services ...
	+ Whereas a star network has a centralised server and set of resources
* Advantages:
	+ Very robust and reliable
	+ Not reliant on a server
	+ If one computer breaks the rest are fine.
 | 2 |
| 4 | a | i | 30 | 1 |
| 4 | a | ii | 45 | 1 |
| 4 | b |  | 1 mark for each bullet point* Reject inappropriate data // only accept appropriate data
* To ensure the program will not crush / cause problems later on from the values input
* To ensure the program handle invalid / inappropriate data correctly
 | 2 |
| 4 | c |  | * Repeatedly asking for the input (e.g in a loop) [1]
* Looping until *username == “playerA”* …. [1]
* Printing that the username is wrong [1]

e.g username = input(“Please enter your username again.”)while username != “playerA” then print(“Your username is wrong. Try Again”) username = input(“Please enter your username again.”) | 3 |
| 4 | d |  | * Opening *resultsData.txt* in write mode [1]
* ….using a variable [1]
* Writing final to file
* Closing the file

e.gfile = OPENWRITE( “resultsData.txt”)file.WRITELINE(final)file.CLOSE() |  |
| 5 | a |  | 1 mark for description, 1 mark for example* High-Level is in English sentences/words/phrases [1]
* Low-level is binary [1]
* High-level is written/understood by programmers [1]
* Low-level is understood/executed by a processor // does not need translating [1]
* High-level needs translating (into low-level) before it can be run. [1]
 | 4 |
| 5 | b |  | 1 point for naming a feature for each , 1 point for describing itInterpreter* Feature: runs/checks the code line by line
* Expansion: debugging / easier to find errors

Compiler* Feature: produces executable files / .exe
* Expansion: Can give program without source code
* Expansion: Can run/test without recompiling/ retranslating
* Feature: checks all code at once
* Expansion: Can see/correct errors before testing.
 | 4 |
| 5 | c | i | 1 mark for each bullet point, upto 3 marks.* You can write/edit/read code
* Colour coding for key words
* Auto-complete
* Auto-indent
 | 3 |
| 5 | c | ii | 1 mark for each bullet point, upto 2 marks.* Allows the code to be run/executed
* View the results of the execution
* Allows input of data
 | 2 |
| 5 | d |  | * Indenting
* Show where constructs start and end
* Comments
* Explain what lines/constructs/procedures do
* Appropriate identifier names
* Use names that reflect the meaning/ purpose
 |  |
| 6 | a |  | 1 mark for each bullet point* Create a sorted list and an unsorted list
* Take each item in the unsorted list
* … and place it in the correct position in the sorted list
* The sorted list expands until there are no elements left in the unsorted list
* Moving 8 to the correct place
* Moving 4 to the correct place
* Moving 2 to the correct place

e.g  | 6 |
| 6 | b |  | 1 mark for each bullet point* Compare elements in pairs from start-end/left-to-right
* Swap elements if they are in the wrong order
* When you reach the end of the array/list/items start again
* Continue until you move through the entire list/elements without making any changes

e.g  | 6 |
| 5 | c |  | Merge Sort  | 1 |
| 7 | a | i | 00110001 | 1 |
| 7 | a | ii | 01101010 | 1 |
| 7 | a | iii | 43 | 1 |
| 7 | a | iv | 173 | 1 |
| 7 | b |  | 1 mark for getting a correct answer, 1 mark for showing workings.4x1024x1024 = 4194304 /4x1000x1000 = 4000000 | 2 |