GCSE 9-1

Computer Science

Mark Scheme for Mixed Paper 2

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| **Question** | | | **Answer** | **Mark** | **Guidance** |
| 1 | a |  | * The amplitude/height of the sound wave is measured * At set/regular intervals * And stored as a binary number * The samples form an approximated sound wave | 3 |  |
| 1 | b |  | * 5KHz = 5,000Hz * 8 x 5,000 = file size for ONE SECOND = 40,000 bits * 40,000 bits x 5 seconds = 200,000 bits * /8 = 25000 bytes * /1000 = 25KB | 5 |  |
| 1 | c |  | * File size increases * ...as more samples are being stored per second * Quality increases * ...as sound is more accurate/truer to the original/analogue sound wave | 4 |  |
| 2 | a |  | * Many computers bombard a server/website/service with requests * ...server/website/service becomes overwhelmed * ...server/website/service can no longer respond to legitimate requests | 2 |  |
| 2 | b |  | Allow any valid effect, e.g.   * Lose profits * Lose customers * Frustrated customers | 1 |  |
| 2 | c | i | * Network Policies * ...users of network must follow rules, stating they must not access content that could potentially harm the network * Firewall * ...blocks harmful content from entering the network | 2 |  |
| 2 | c | ii | * Anti-Malware Software * ...scans files on your computer and removes harmful files | 2 |  |
| 2 | c | iii | * Encryption * ...scrambles data in packets so it cannot be seen by unauthorised users | 2 |  |
| 3 | a |  | * Converts radio waves into data that can be sent over wires * ...and does the reverse (converts data sent over wires into radio waves) | 2 |  |
| 3 | b |  | * Router * ...routes data packets to the correct IP address * ...recieves data packets sent to its IP address * Switch * ...sends data to the correct device on a LAN * NIC * ...connects a device to a network * Transmission Media * ...used to transmit data between devices | 4 |  |
| 3 | c |  | * TCP/IP | 1 |  |
| 3 | d |  | 1 mark per bullet, max 2   * Has a database of IP addresses * Constantly updated by other DNS servers * When you request an address (URL), the DNS server looks up the URL and returns the IP address * This IP address is used to identify the website | 2 |  |
| 3 | e |  | * People do not need to remember IP addresses * IP addresses are easily upgradable (IPv4 to IPv6) without all web addresses needing to be the same * Sites can change their IP address while having the same URL | 1 |  |
| 4 | a |  | 1 mark per correct line  Items in **bold** are sorted   * Step 1: **Quinn**, Doug, Aaron, Carla, Harjit, Fiona * Step 2: **Doug, Quinn**, Aaron, Carla, Harjit, Fiona * Step 3: **Aaron, Doug, Quinn,** Carla, Harjit, Fiona * Step 4: **Aaron, Carla, Doug, Quinn,** Harjit, Fiona * Step 5: **Aaron, Carla, Doug, Harjit, Quinn**, Fiona * Step 6: **Aaron, Carla, Doug, Harjit, Quinn, Fiona** | 6 | Student does not have to implicitly show that they are splitting the list into sorted and unsorted half **IF** method is correct. |
| 4 | b |  | * More efficient | 1 |  |
| 5 | a |  | * Opening the file * ...in read mode * Reading the one line (question) and printing it * Reading the line after (may store in an appropriate variable) * Asking the user for an answer to the question * Using an if statement to check if the answer entered is the same as the answer in the text file * Outputting correct if answer matches answer from text file * Outputting incorrect otherwise * Repeats this * ...3 times (2 in addition to first time) | 10 | Example answer:  myFile = openRead("quiz.txt")  for x = 1 to 3:  print(myFile.readline())  userAnswer = input()  correctAnswer = myFile.readline()  if userAnswer == correctAnswer then  print("Correct")  else  print("Incorrect")  endif  next x  myFile.close() |
| 5 | b |  | * The program does not do what is expected of it/what the programmer expected | 1 |  |
| 5 | c |  | * Uses the same random numbers for each question * Random numbers are not re-generated * ...so every question is the same | 2 |  |
| 6 |  |  | **Mark Band 3–High Level**  **(6-8 marks)**  The candidate demonstrates a thorough knowledge and understanding of a wide range of considerations in relation to the question; the material is generally accurate and detailed.  The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation.  The candidate is able to weigh up both sides of the discussion and includes reference to the impact on all areas showing thorough recognition of influencing factors.  There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.  **Mark Band 2-Mid Level**  **(3-5 marks)**  The candidate demonstrates reasonable knowledge and understanding of a range of considerations in relation to the question; the material is generally accurate but at times underdeveloped.  The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation.  The candidate makes a reasonable attempt to discuss the impact on most areas, showing reasonable recognition of influencing factors.  There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.  **Mark Band 1-Low Level**  **(1-2 marks)**  The candidate demonstrates a basic knowledge of considerations with limited understanding shown; the material is basic and contains some inaccuracies. The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided.  The candidate provides nothing more than an unsupported assertion.  The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.  **0 marks**  No attempt to answer the question or response is not worthy of credit | 8 | Possible points:  Allow points not in this list.  **Stakeholders**:  School Of Coding Company   * Do not need to pay for costs associated with hiring staff, e.g. wages, pension, sick pay * AI can work all day, doesn’t need breaks or time off * AI less likely to make clerical/human errors   Customers   * Can contact reception at all hours * May prefer talking to a real person * Multiple customers may be able to call at one time   Current Employees   * Loss of jobs * Tutors/other non-reception staff may find it difficult to learn how to interact with the virtual receptionist * Fewer errors/wrong bookings passed on to other staff   **Issues**:  Ethical Issues   * Automation/loss of jobs bad for the economy and can be seen as unethical * AI may not be able to deal with all issues e.g. complaints * AI less likely to make mistakes, more reliable so may provide better customer experience   Legal Issues   * Receptionist may be able to be hacked into, could release private information.   Cultural Issues   * People may find it frustrating talking to a “computer” rather than a real person |
| 7 | a |  | 1 mark per correct line   * SELECT \* * FROM EMPLOYEES * WHERE OfficeLocation = “Wolverhampton” | 3 |  |
| 7 | b |  | * 00001 * 00005 | 2 |  |
| 7 | c |  | * The address is shorter (in terms of characters) * The address is easier to remember * 2 characters in hexadecimal can represent 8 characters in binary * Easy/quick to convert to binary | 1 |  |
| 7 | d | i | * 16 x 4 = 64 * B = 11 * 64 + 11 = 75 | 3 |  |
| 7 | d | ii | * First Nibble 1110 * Second Nibble 0111 | 2 |  |
| 8 | a |  | * 1 mark for any correct example, e.g. Python, Java, C# | 1 |  |
| 8 | b |  | * Assembly Language * Machine Code | 1 |  |
| 8 | c |  | 1 mark per bullet, max 2   * Better for specific purposes * ...e.g directly addressing hardware, for use in device drivers * Faster execution * ...as less translation needed | 2 | Must have reason for first mark and explanation for second mark. |
| 8 | d |  | 1 mark per bullet   * Difficult to debug * Difficult to understand * Difficult to maintain * Many instructions needed for one task | 2 |  |
| 8 | e |  | |  |  | | --- | --- | | High Level Language | Low Level Language | | ✔ |  | |  | ✔ | | ✔ |  | |  | ✔ | |  | ✔ | | 5 |  |

**School of Coding**

8 Newton Court

Pendeford Business Park

Pendeford

Wolverhampton

WV9 5HB

**Contact Details:**

Telephone: 01902 509 209

Email: info@schoolofcoding.co.uk

[www.schoolofcodinguk.com](http://www.schoolofcodinguk.com)

