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| Question | Description | Marks |
| 1 (a) | One mark for each correct definition:   * The sample rate is the number of samples taken in a second/per time unit * The sample resolution is the number of bits per sample | 1 |
| 1 (b) | * Lossy compression | 3 |
| 1 (c)(i) | Any two from:  e.g.   * Destination/receivers (IP) address * Packet number * Originator’s/senders (IP) address | 1 |
| 1 (c)(ii) | Any five from:   * Data is broken/split/divided into packets * Each packet (could) take a different route * A router controls the route/path a packet takes * … selecting the shortest/fastest available route/path * Packets may arrive out of order * Once the last packet has arrived, packets are reordered * If a packet is missing/corrupted, it is requested again | 3 |
| 2 (a) | One mark per each correct character in the correct order:   * 9 * 3 * 0 * D | 4 |
| 2 (b)(i) | * 00001111 | 1 |
| 2 (b)(ii) | Any one from:   * The value becomes incorrect/inaccurate as the right most bits are lost * It is divided by 8 | 1 |
| 2 (c) | Any two from:   * Easier/quicker to understand/read/write * Easier/quicker to debug * Less likely to make a mistake * Shorter representation // Takes up less screen space | 2 |
| 2 (d) | One mark for two correct characters, two marks for three correct characters in the correct order:   * 1 * 2 * D | 2 |
| 3 (a) | Any three from:   * A character set is used * … such as Unicode/ASCII * Each character has a unique binary value | 3 |
| 3 (b)(i) | * It reduces the file size | 1 |
| 3 (b)(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 (b)(iii) | Any two from:  e.g.  • To save storage space  • To make it quicker to transmit  • To make it small enough to attach to an email  • To reduce the bandwidth needed to transmit | 2 |
| 4 (a)(i) | Two from:  • Data is sent one bit at a time  • A single wire is used | 2 |
| 4 (a)(ii) | Any two from:  • Data won’t be skewed  • Less chance of interference/crosstalk/corruption/error  • Transmission speed is adequate | 2 |
| 4 (a)(iii) | * The data may be transmitted quicker | 1 |
| 5 (a) | * Each correct line (1 mark)   “S1110”  REAL  54  INTEGER  “TRUE”  BOOLEAN  False  STRING  60.25  “12/12/2000” | 6 |
| 5 (b)(i) | Any one:   * a diagram of the sequence of movements or actions or activity. * a graphical representation of a computer program | 1 |
| 5 (b)(ii) | Any one:   * description of the steps in an algorithm * detailed description of what a computer program or algorithm should do written in a formal. | 1 |
| 5 (b)(iii) | * Storage location that can change its value during program | 1 |
| 5 (b)(iv) | A value that does not change over time | 1 |
| 6 | One mark per bullet point  55  • Data type name Integer  • Data type description (Any) whole number  BS1100  • Data type name String  • Data type description A group of characters/text  20.0  • Data type name Real  • Data type description (Any real) number that could be a whole number or a fraction  True  • Data type name Boolean  • Data type description True and False  “False”  • Data type name String  • Data type description A group of characters/text | 10 |
| 7 (a) | Variable declaration 1 marks  input 1 marks  Selection statement 3 marks  Output 1 marks  Declare num1, num2, num3 : INTEGER  INPUT “Enter First Number “, num1  INPUT “Enter second Number “, num2  INPUT “Enter third Number “, num3  IF num1 > num2 AND num1 > num3  THEN OUTPUT num1 , “is greater”  ELSE IF num2 >= num1 AND num2 > num3  THEN OUTPUT num2 , “is greater”  ELSE IF num3 > num1 AND num3 > num2  THEN OUTPUT num3 , “ is greater” | 6 |
| 7 (b) | 1 mark for each circle  Start  INPUT  Num1, num2, num3  A  True  Is  Num1 > num2AND num1 > num3?  OUTPUT  Num1, “is greater  A  OUTPUT  Num2, “is greater  A  Is  Num1 > num2AND num1 > num3?  True  Is  Num1 > num2AND num1 > num3?  True  OUTPUT  Num3, “is greater  A  END | 8 |