Name: Class: Mark:

1. A simple three-letter code word is saved to a hard disk.

(a) What is the size in bytes of the code word? [1]

(b) The code word is represented on the disk in a binary format, saved as:

**01000011 01000001 01000010**

|  |  |
| --- | --- |
| **Character** | **Binary** |
| **A** | **01000001** |
| **B** | **01000010** |
| **C** | **01000011** |
| **D** | **01000100** |
| **E** | **01000101** |

Using the section of the ASCII table above, what is the code word? [3]

(c) What is the hexadecimal representation of the code word? [2]

(d) Calculate the denary value representing the letter **E**. [1]

2. Integers which are to be used in calculations are represented as binary numbers.

(a) What is the 8-bit binary representation of the number 76? [1]

(b) The ASCII character 7 is represented by the denary number 55.

Convert the ASCII string ‘76’ to binary. [1]

(c) Give **two** advantages of representing integers in binary rather than ASCII. [2]

3. (a) Name one limitation of the 8-bit extended ASCII character set. [1]

(b) Explain how these limitations can be overcome. [2]

4. The following program has been created.

1 OUTPUT "Enter your age in years (between 0-8): "  
2 INPUT age  
3 charNum ← ord(age)  
4 charNum ← charNum + 1  
5 age ← chr(charNum)  
6 OUTPUT age

(a) Explain what line 3 of the code does. [2]

(b) Explain what line 4 of the code does. [2]

(c) The program requires the age to be between 0 and 8.  
  
Explain the problem that will occur if numbers outside this range are used. [2]

[Total 20 marks]