01.1 Convert the binary number 10010111 into decimal.

[1 mark]

151

01.2 Convert the decimal number 125 into hexadecimal. You should show your working.

[2 marks]

112 / 16 = 7 remainder 13; [1] 13 is D in hex [1] Answer: 7D

01.3 Give one reason why programmers often use hexadecimal, instead of binary, to represent numbers.

[1 mark]

Hexadecimal is easier (for humans) to read (than binary) [1]; hexadecimal is easier to convert (to binary) than denary [1]; numbers are displayed in a more compact way (in hexadecimal than in binary) [1]; quicker to type in hexadecimal [1]; more accurate to type in hexadecimal [1]

01.4 What is the result of applying a left binary shift of two to the bit pattern 00001100? Express your answer as an 8 bit binary bit pattern.

[1 mark]

00110000

01.5 State the arithmetic effect of left binary shifting a binary number by 4 and then right binary shifting the result by 5.

[1 mark]

Halve it [1]; divide by 2 [1] – NOT right binary shift of 1 – this is not an arithmetic effect

02 Add together the following three binary numbers and give your answer in 8 bit binary

[2 marks]

```
  00110100
  01000100
+ 01010101
  11001101
```

03.1 The ASCII character set uses seven bits to encode each character.
What is the total number of characters that can be encoded in ASCII?

[1 mark]

128 – don't forget the 0

03.2 How many bits are there in 2 Bytes?

[1 mark]

16