01.1 Convert the decimal number 198 into hexadecimal.

[2 marks]

198 / 16 = 12 remainder 6 = C6

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

[2 marks]

```
  00001011
  01001010
+ 00010001
  01100110
```

01.3 What binary shift can be used to **quadruple** the value of a binary number?

[2 marks]

Left shift [1] of 2 places [1] (accept two left shifts)

01.4 The Lithuanian alphabet has **32** characters. What is the minimum number of bits needed to be able to represent any character from the Lithuanian alphabet?

[1 mark]

5 bits – the highest number possible with 5 bits is 31 – but don't forget the 0

02.1 A bitmap image is represented as a grid of pixels. State what is meant by the term pixel.

[1 mark]

a single point in a graphical image / a picture element / smallest dot in an image

02.2 State the maximum number of different colours that can be used if a bitmap image has a colour depth of **six** bits.

[1 mark]

64 – highest number with 6 bits is 63 – don't forget the 0

02.3 What is the minimum file size for an 800 pixel by 1000 pixel bitmap image that uses 20 different colours? You should give your answer in **kilobytes**. You should show your working.

[3 marks]

800 x 1000 = 800,000 [1 mark – multiple numbers]

20 colours means colour depth of 5 bits, so 800,000 x 5 = 4,000,000 bits [1 mark – multiply by 5]

= 4,000,000 / 8 = 500,000 Bytes [1 mark – divide by 8]

= 500 kB