01 A bit pattern is shown in **Figure 1**.

Figure 1

```
00101101
```

01.1 Convert the bit pattern shown in **Figure 1** into decimal.

[1 mark]

45

01.2 Convert the bit pattern shown in **Figure 1** into hexadecimal. You should show your working.

[2 marks]

0010 = 2 [1 mk] 1101 = 13 = D [1 mk] (or convert from 45: 45/2 = 2 with 13 remainder = D)

Answer: 2D – one mark for each half of answer

01.3 What is the result of applying a left binary shift of one to the bit pattern shown in **Figure 1**? Express your answer as an 8 bit binary bit pattern.

[1 mark]

01011010

01.4 What is the arithmetic effect of applying a right binary shift of one to a bit pattern?

[1 mark]

Halves it / divides by 2

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

[2 marks]

```
  01000011
  00100010
+ 10010100
..11111001
```

One mark for each half of answer (1111 and 1001)

03 Write down the largest decimal number which can be represented using an 8 bit binary number.

[1 mark]

255

04 How many bits are there in 3MB? You should show your working.

[3 marks]

3 x 1000 = 3000 kB x 1000 = 3000000B (1 mk for multiplying by 1000 somewhere)

3000000 x 8 = 24 000 000 bits (1 mk for multiplying by 8 somewhere)

Answer = 24 000 000 (1 mk)