01.1 Convert the binary number 00101110 into a decimal number.

[1 mark]

46

01.2 Convert the decimal number 62 into hexadecimal. You should show your working.

[2 marks]

62 / 16 = 3 remainder 14

= 3E

Answer: **3E**

01.3 What is the arithmetic effect of applying a left binary shift of three to a bit pattern?

[2 marks]

Multiplies by [1] 8 [1] – or doubles, doubles and then doubles again [1]

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

[2 marks]

```
  01000010
  00001010
+ 01001011
  10010111
```

One mark for each half

03.1 Write down the largest decimal number which can be represented using a 3-bit binary number.

[1 mark]

7

03.2 Agnetha has recorded an audio file on her smartphone. The file has a size of 2MB. How many bits are there in 2MB? You should show your working.

[3 marks]

2 MB = 2 x 1000 kB = 2000 **[1 mark for multiplying by 1000]**

= 2000 x 1000 B = 2 000 000

= 2 000 000 x 8 bits = 16 000 000 **[1 mark for multiplying by 8]**

Answer: 16 000 000 / 16 million – no need for units