01 Figure 1 shows four stages in converting sound into a digital form.

Place the stages in the correct order 1-4, where 1 is the first stage and 4 the last.

[3 marks]

Figure 1

Stage	Order (1-4)
binary representation of audio stored	4
microphone picks up sound waves	1
audio sampled and converted to a digital value	3
converted to en electronic analogue signal	2

02 A way of representing sound digitally is to take samples of the original sound.

02.1 A sound engineer records a 4 second sound recording using a sampling rate of 4000 Hz and a sample resolution of 4 bits.

What is the minimum file size of the recording? Your answer should be given in **bytes**.

You should show your working.

[3 marks]

size = time x sample rate x sample res

= 4 x 4000 x 4 [1] or = 16,000 x 4 [1] or = 16 x 4,000 [1]

= 64,000 bits [1] (no need for units)

= 64,000 / 8 [1]

= 8,000 bytes (no need for units)

02.2 What does a sampling rate of 4000 Hz mean?

[1 mark]

4000 samples taken per second

02.3 Define the term sampling resolution in the context of representing sound digitally.

[2 marks]

The number of bits/memory used [1] to store each sample [1]

credit idea of greater sample res = better quality at [1] if necessary