



► Pre-course Materials

► Topic 1: Course Overview

► Topic 2: Lossless Source Coding: Hamming Codes

► Topic 3: The Frequency Domain

▼ Topic 4: Lossy Source Coding

4.1 Perceptual Coding

Week 2 Quiz due Nov 09, 2015 at 15:30 UTC

4.2: Time frequency analysis

Week 2 Quiz due Nov 09, 2015 at 15:30 UTC

4.3 Masking

4.4 Non-uniform Quantization

Week 2 Quiz due Nov 09, 2015 at 15:30 UTC

► MATLAB download and tutorials

► MATLAB Sandbox

#### 4.4 QUIZ QUESTION 1 (1/1 point)

Suppose that we have a signal that varies between 0 and 3 volts. The signal range between 0 and 3 volts is quantized uniformly using 4 bits, where 0000 corresponds to 0 volts and 1111 corresponds to 3 volts.

What is the voltage difference between adjacent quantization levels? Give your answer to one decimal place

✓ Answer: 0.2

0.2

##### EXPLANATION

There are 16 quantization levels, with 15 equally spaced intervals between the 16 levels spanning the range of 3 volts. Thus each interval is  $3V/15 = 0.2V$ .

*You have used 1 of 3 submissions*

#### 4.4 QUIZ QUESTION 2 (1/1 point)

In MP3 encoding frequencies near a dominant tone are quantized with

☐ more bits, because the increase in the masking threshold means we are more sensitive to them.

☐ more bits, because the increase in the masking threshold means they are less perceptible.

☐ fewer bits, because the increase in the masking threshold means we are more sensitive to them.

☒ fewer bits, because the increase in the masking threshold means

they are less perceptible. ✓

#### EXPLANATION

If the sound has an amplitude below the masking threshold, then it cannot be heard. A larger masking threshold means that we are less sensitive to these sounds. Thus, the distortions introduced by quantizing with fewer bits will be less noticeable.

*You have used 2 of 2 submissions*

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