Lesson 3

Introduction - Digital Audio Basics

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1. The _Sample / Sampling_ rate is the number of measurements taken from an analog signal in one second. (in this lesson in this manual)

2. When we allow frequencies that are twice our sample rate to enter the sampling process, we get _Alias Frequency_ or sounds that are actually harmonic distortion. (page 206)

3. _Quantization_ is the way Digital Audio Workstation (D.A.W.) records the volume component of the digital recording or sampling process. (page 203)

4. _Dither_ is applied to the process to reduce quantization errors and increase in noise and/or fuzziness that could creep into a bitstream to make it sound more natural. (Page 208-209)

5. List and explain in detail the Nyqist theorem. (page 205)

6. The basic theory of digital audio is processed, stored, and reproduced over time through the use of a _Binary Number System_. (page 199)

7. _Mp3_ is the most common type of compression format for e-mailing audio. (page 377-378)

8. When we rip a CD to MP3, we reduce the size _90_ percent. (page 26, Recording Connection Workbook)

Nyquist. In order for the desired frequency bandwidth to be faithfully encoded in the digital domain, the selected sample rate must be at least twice as high as the highest frequency to be recorded.

— Low pass filters eliminate frequencies above Nyquist frey.

— Computers can only accurately represent frequencies up to half the sample rate

— Ex. - 16000 samples/second capture up to 8000 Hz