

**You will have a Take Home Quiz 3315 given out on Wed March 31 – Due April 5, 2021 OPEN Book**

**Quiz 2 REVIEW Example Problems and lectures to review.**

**CENG3315\_Review5\_Ch4\_Presentation2\_Sampling2.pdf Lecture Slides On Web - Also See Videos on BB (3/24/2021)**

**HW 3 Problem 2:** Choose proper sampling rate  $f_s$  and digital  $x[n]$  of sampled sinusoid, and  $\omega$  and  $\hat{\omega}$

**Problem 2 20 points**

- (a) The function  $x(t) = \cos(2\pi 100t + \pi/3)$  is sampled at the minimum sampling rate for 10 seconds. How many points are generated?
- (b) If  $f_s = 1200$  samples/second, what is the time between samples?

**Problem 3 and 5:** Compute Aliased Frequency for improper sampling.

**Problem 3 10 points**

Given the signal  $v(t) = \cos(3 \times 10^6 \pi t) + \sin(5 \times 10^6 \pi t) + \cos(7 \times 10^6 \pi t)$ , determine the minimum sampling rate to avoid aliasing for  $v(t)$ .

**Problem 5 20 Points**

A 100 Hz sinusoid is sampled at rates listed below. In each case, determine if aliasing has occurred, and if so, what is the aliased (Positive frequency) as  $\cos(\omega t \pm \phi)$ .

(a)  $f_s = 240$  Hz.

(b)  $f_s = 140$  Hz.

**Reviews:** CENG3315\_Review6\_Ch5\_FIR\_Convolve\_LTI.pdf On Web

Running Average filter, Convolution, Impulse Response

CENG3315\_Review7\_Ch6\_f\_responseFIR.pdf Slides On Web Also, Lectures on BB 3/24/2021

Use  $H(\exp(j\hat{\omega}))$  to determine the effect of a filter. Chapter 6 Lecture

Watch the video.

**Practical Demonstration of Aliasing of a Signal 5:44** T J Moir Practical  
Aliasing

<https://www.youtube.com/watch?v=UeqtACRwNrw>