Name Answers

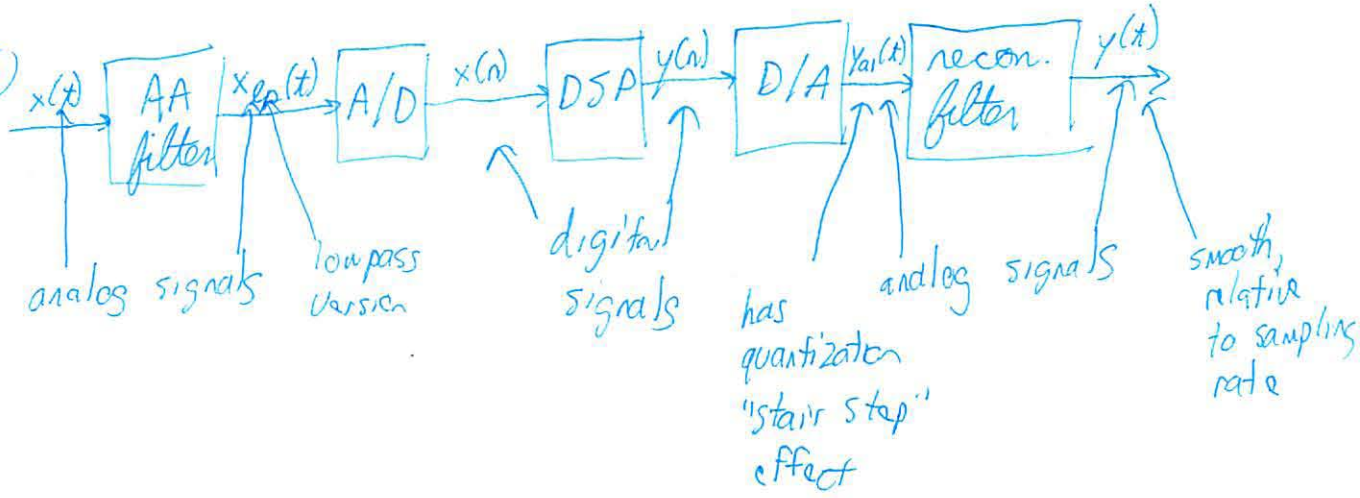
**EE-3220-11 – Dr. Durant – Quiz 1**
**Winter 2015-'16, Week 1**

1. (2 points) Define "quantized."
2. (1 point) Besides being quantized, which is the other key property of a digital signal relative to an analog signal?
3. (3 points) Draw the basic DSP system block diagram including anti-alias and reconstruction filters, an ADC, and a DAC.

(1) A quantized signal has its level restricted to one of a finite set of values. This allows it to be stored as a binary value with a given # of bits. E.g. an 8-bit signal can take on $2^8 = 256$ discrete values.

(2) It is sampled, usually at a fixed rate of time, e.g. 1000 samples/s or 1000 Hz.

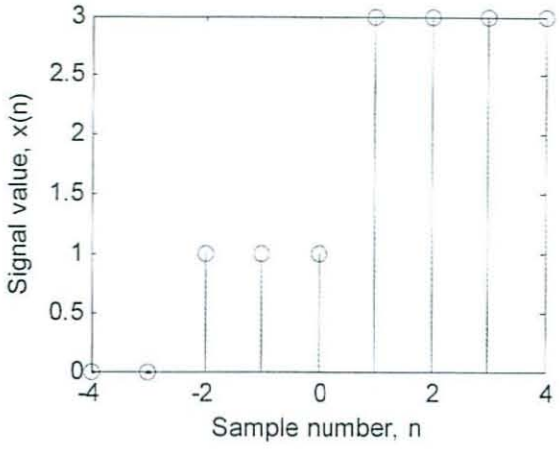
(3)



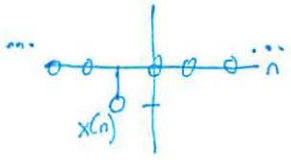
4. (1 point) Draw a stem plot sketch of $x(n) = -\delta(n+1)$ for a reasonable range of n values.

5. (1 point) Draw a stem plot sketch of $x(n) = 2u(n-3)$ for a reasonable range of n values.

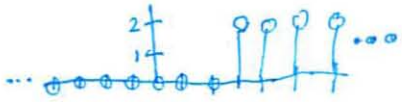
6. (2 points) Express the signal in the given figure as the sum of 2 step functions. Note that $x(n) = 3$ for $n>4$, although this continuation to infinity is not shown in the figure.




(4)




(5)




(6) $x(n) = u(n+2) + 2u(n-1)$

turn on @ $n=-2$; go up by 2; turn on @ $n=+1$

When $n \geq 1$, we have $1+2$, yielding the desired output of 3.