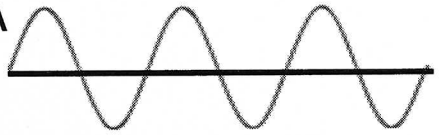
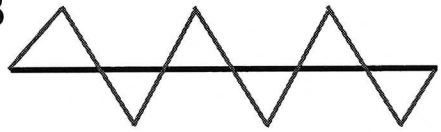
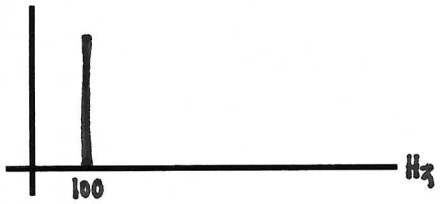
Quiz 2 Name: Sample Quiz Solutions

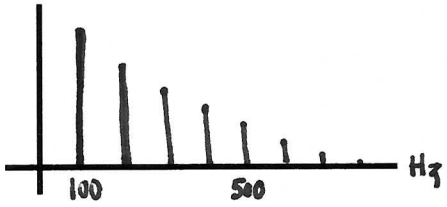
1. Consider the two periodic waveforms below, each of which has a fundamental frequency of 100 Hz.

A 

B 

a) Plot the (approximate) spectra of each waveform below (label the frequency values):

A 

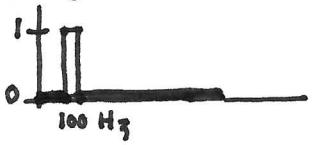
B 

2 pts

b) Is it possible for a transfer function to turn waveform **A** into waveform **B**? If yes, draw it, if no, explain why not:
No; Waveform B contains more frequency components. A transfer function multiplies each the amplitude of each frequency component by some number from [0,1]; when an amplitude in the original spectrum equals 0, it cannot be multiplied by any value to yield anything by 0 (i.e. if a frequency component doesn't exist in the original spectrum, a transfer function can't make it exist

1 pt

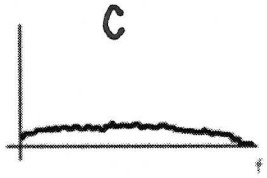
c) Is it possible for a transfer function to turn waveform **B** into waveform **A**? If yes, draw it, if no, explain why not: Yes; a transfer function can be designed like the one below to cut off all of Waveform B's higher frequency components:

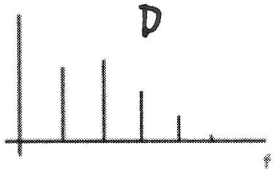


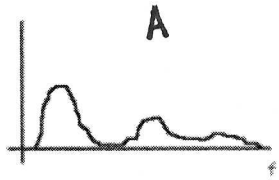
2 pts

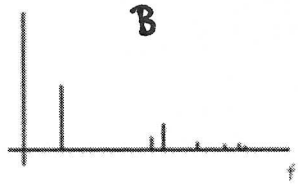
2) Match the following sounds to their corresponding spectra below:

a) Bell after .01 sec b) Bell after 5 sec c) Clap d) Violin

(i) 

(ii) 

(iii) 

(iv) 

2 pts