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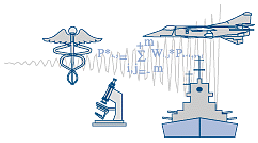

**Tutorial 0**

**Digital Signal Processing**

## Linear Time Invariant Systems

1. If *x[n]* and *h[n]* are both odd signals, that is,*x[-n]= - x[n]* and *h[-n]= - h[n]*, then *y[n]=x(n)*h(n)* is

an even signal
an odd signal
such that *y[0] = 0*
none of the above

2. If a discrete-time LTI system is such that the output signal is always identical to the input signal, then the unit-impulse response *h[n]* is

a unit step
a unit impulse
all zeros
all ones

3. If an LTI system has a unit-impulse response with a finite number of nonzero values, and the input signal has a finite number of nonzero values, then the output signal

is all zeros
is constant
has a finite number of nonzero values
none of the above

4. If *h[n]* is a unit-step function h[n] = [1 1 1 1 …1] and the input signal *x[n]* is a unit ramp, x(n)= [ 0 1 2 3 4 5 ….], then the output signal value *y[2]* is

0
1
2
3
none of the above

5. Suppose *h[n]* is all zero, except *h[0]=h[1]=h[2] = 1/3*. The best description of the LTI system is (try it on an example):

it is a low-pass filter
it is a high-pass filter
it is a bandpass filter
it is an all-pass filter