**Dr. Seema Awasthi** **Principles of Communication**

EPOC432C Date of Submission: 13/02/2018

ASSIGNMENT 5

1. Find the Fourier response of the system which has impulse response h[n]=u[n]
2. Find the Fourier response of the system which has different equation

y [n - 1] + = 2 x[n]

1. Determine the Fourier transform for in case of each of the following period signals:
2. Given that x[n] has Fourier transform , express the Fourier transform of the following signals in term of . You may use the Fourier Transform properties listed in Table 5.1.
   1. +
3. For each of the following Fourier transforms, use the Fourier Transform properties (Table 5.1) to determine whether the corresponding time-domain signal is (i) real, imaginary, or neither and (ii) even, odd or neither. Do this without evaluating the inverse of any given transforms.
   1. where

and

1. The following four facts given about a real signal x[n] with Fourier Transform :
   1. x[n] = 0 for n > 0.
   2. x[0] > 0.
   3. .
   4. .

Determine x[n].

1. A causal and stable LTI system S has the property that
   1. Determine the frequency response for the system S.
   2. Determine a difference equation relating any input x[n] and the corresponding output equation y[n].
2. Consider a discrete-time LTI system with impulse response h[n]=u[n]

Use Fourier transforms to determine the response of each of the following inputs:

1. Let and be the impulse function of causal LTI systems, and let and be the corresponding frequency response. Under these conditions, is the following equation true in general or not? Justify your answer.
2. Consider a system consisting the cascade of two LTI systems with frequency response

and

* + - * 1. Find the difference equation describing the overall system.
        2. Determine the impulse response of overall system.