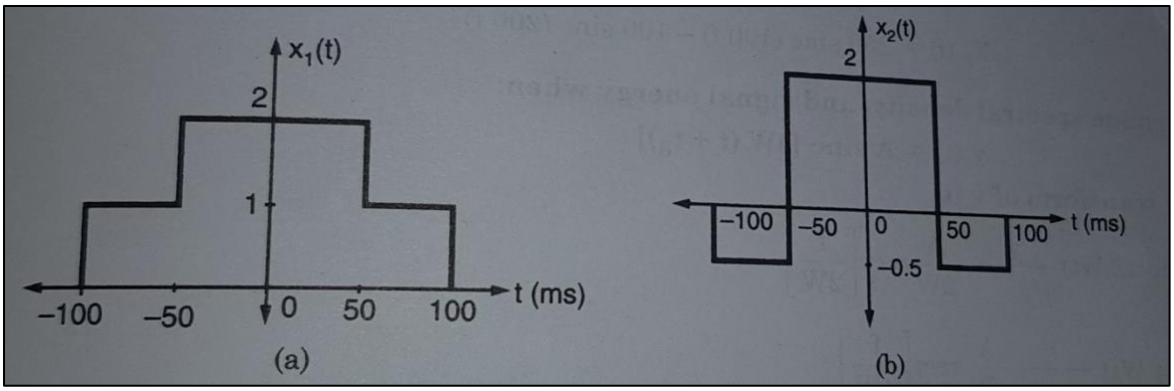
Acropolis Institute of Technology and Research, Indore

CSIT 402: Analog and Digital Communication

Class: CSIT II Year

Assignment- Unit 1

1. Draw the block diagram of a communication system and explain the function of each block.
2. Explain the Electromagnetic spectrum used in communication system.
3. a) Write conditions of existence of Fourier Transform.
   b) Draw a gate function and find its Fourier Transform.
   c) The impulse response of a continuous time system is expressed as h(t) = $\frac{1}{RC} e^{\frac{-t}{RC}}$ u(t)
   Find frequency response and plot the magnitude phase plots.
4. Prove the following properties of Fourier Transform:
   a) Time Differentiation and Time Integration
   b) Time Convolution and Frequency Convolution
5. Determine the Fourier Transform of the following signals:



6. Explain the shifting property of Delta function.
7. Determine the Fourier Transform of $\sin(\omega_o t)\ u(t)$.
8. Determine the Fourier Transform of Signum function.
9. Determine the fundamental period of x(t)=sin 15πt.
10. Determine the signal energy for x(t)= e^(-3|t|)
11. Determine whether the following signals are periodic or not: sin(5n) and cos(7πn)
12. Define Signal and explain i) DC ii) Unit Step iii) Unit Ramp signals.
13. Check whether the following signal is an energy signal or not:
    $X(n)=2(0.5)^n$; $n \geq 0$
14. Determine whether y(n) = x(n)u(n) is linear or non-linear.
15. Explain rectangular pulse, triangular pulse and signum functions with suitable waveform.