

## CO – 1 (QUESTION BANK)

1. Differentiate energy and power signals.
2. Determine even and odd components of a rectangular pulse.
3. Classify Symmetric and anti-symmetric signals?
4. Find the relation between impulse, step, and ramp functions
5. Differentiate discrete-time signal and digital signal with an example.
6. What are the requirements to be satisfied by an LTI system to provide distortion less transmission?
7. Obtain the even and odd components of a square pulse with amplitude 2, cantered at origin.
8. Explain various operations on signals for the design of communication signals with neat diagrams and expressions.
9. Explain the different classifications of signals with an example.
10. State and prove the time-shifting and time scaling properties of signals.
11. Prove that the power of energy signal is zero over infinite time.
12. Prove that the energy of power signal is infinite over infinite time.
13. Plot the given signal  $x(t)$  graphically using signal operations. Given  $x(t)=u(t)-u(t-T)+u(t-2T)-u(t-3T)+u(t-4T)-u(t-5T)+\dots$
14. Validate the following systems for linearity and time-variance.  
(i)  $y(t)=x^2(t)$  and (ii)  $y(t)=x(2-t)$
15. Check that the system  $y(t)=x(t) \sin 400t$  is time variant or invariant system.
16. Check if the system  $y(n)=x(n)x(n-2)$  come under static dynamic causal time variant and conclude the nature of the system.
17. Validate the following systems for linearity and time-invariance.  
(i)  $y(t)=2x(t-2)+3$ , and (ii)  $y(t)=t x(t)$ .
18. Find the response of a system if it is excited by  $x(t) = e^{-2t} [u(t)]$  and impulse response is  $h(t) = u(t-2)$ .